Federal Emergency Management Agency

Washington, D.C. 20472

SEP - 7 1984

MEMORANDUM FOR: Federal Radiological Preparedness
Coordinating Committee

FROM: Richard W. Krimm
Chairman,
Federal Radiological Preparedness
Coordinating Committee

SUBJECT: Review of the Nebraska and Iowa State and Local Radiological Emergency Plans and Preparedness for the Fort Calhoun Nuclear Station

In accordance with 44 CFR 350, the Federal Emergency Management Agency (FEMA), Region VII, has completed evaluations of the Nebraska and Iowa State and local offsite radiological emergency plans and preparedness for the Fort Calhoun Nuclear Station. These evaluations have been accomplished in accordance with provisions of section 350.11. Pursuant to section 350.12, FEMA intends to make a finding and determination with respect to the status of offsite plans and preparedness in the vicinity of the Fort Calhoun Nuclear Station by October 31, 1984.

The following attachments are for your review and discussion with members of your organization who are directly involved in Regional Assistance Committee (RAC) activity supporting FEMA Region VII. However, at this point in time, only the sections relating to Nebraska should be reviewed.

The attachments concerned with the FEMA Region VII evaluation are:

1. The Regional Director's Evaluation;
2. The RAC's Formal Review of Nebraska and Iowa State and local radiological emergency plans and preparedness; and
3. Exercise reports of the July 22, 1981, September 15, 1982, and December 6-7, 1983, exercises.

Due to excessive volume, the actual plans and other relevant materials are not attached. They are available for your review in Room 506, Federal Center Plaza, 500 C Street, S.W. If you have questions, please contact Ms. Melita Rodeck at 287-0291.

We solicit your comments as they relate to your agency's responsibilities in this area. If your comments are to be considered in our finding and determination they should be provided in writing or by telephone to Ms. Melita Rodeck within thirty (30) days from the date of this memorandum.

Attachments
As Stated

A045
1/1

Federal Emergency Management Agency

Region VII 911 Walnut Street Kansas City, Missouri 64106

September 4, 1981

MEMORANDUM TO: Jack Crandall, Director, Office of Disaster Services, Iowa
Fran Laden, Assistant Director, State of Nebraska Civil Defense
Regional Assistance Committee
Hal Gaut, Preparedness Review - FEMA National

FROM: for Stephen W. Ferris, Regional Assistance Committee Chairman
Plans & Preparedness Division - Region VII

SUBJECT: Post-Exercise Evaluation Report for the Ft. Calhoun exercise.

Enclosed is the Post-Exercise Evaluation Report for the Ft. Calhoun exercise conducted on July 22, 1981.

Enclosure

8308180341

POST-EXERCISE EVALUATION REPORT

EXERCISE OF STATE AND LOCAL RADIOLOGICAL EMERGENCY RESPONSE PLANS FOR AREAS IN NEBRASKA AND IOWA NEAR THE FORT CALHOUN NUCLEAR POWER PLANT

JULY 22, 1981

FEDERAL EMERGENCY MANAGEMENT AGENCY, REGION VII
PLANS AND PREPAREDNESS DIVISION
911 WALNUT, ROOM 300
KANSAS CITY, MISSOURI 64106

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I. INTRODUCTION

On December 7, 1979, the President directed the Federal Emergency Management Agency (FEMA) to assume lead responsibility for all off-site nuclear planning and response.

1. FEMA's immediate basic responsibilities in Fixed Nuclear Facility-Radiological Emergency Planning include:

   a. Taking the lead in off-site emergency planning and review and evaluation of state and local government emergency plans for adequacy.

   b. Determining whether the plans can be implemented, based upon observation and evaluation of exercises conducted in these jurisdictions.

   c. Coordinating the activities of other involved Federal and Volunteer Agencies:

      (1) Nuclear Regulatory Commission (NRC)

      (2) Environmental Protection Agency (EPA)

      (3) Department of Energy (DOE)

      (4) Department of Health and Human Services (PHS and FDA)

      (5) Department of Transportation (DOT)

      (6) Department of Agriculture (USDA)

      (7) Department of Commerce (NOAA)

   Representatives of these agencies serve as members of the Regional Advisory Committee (RAC), which is chaired by FEMA. Submission of emergency plans to the RAC by the states and involved local jurisdictions is followed by the evaluation, exercising, and critiquing of those plans. A Public Meeting is held to acquaint the citizenry with contents of the plans, answer questions about them, and receive suggestions on the plans.

2. A radiological emergency exercise was conducted in cooperation with Omaha Public Power District (OPPD) July 22, 1981, between the hours of about 8:00 A.M. and approximately 3:00 P.M. by the States of Nebraska and Iowa to assess the adequacy of the state and local radiological emergency response plans and preparations to protect the public in the event of a radiological emergency involving the Fort Calhoun Nuclear Power Plant (FCNPP) near Blair, Nebraska. The FCNPP is operated by the Omaha Public Power District, and is located on the Nebraska side of the Missouri River which is also the boundary between Nebraska and Iowa. In Nebraska, parts of Washington and Douglas Counties are within the 10-mile plume Emergency Planning Zone (EPZ), affecting about 12,300 residents. In Iowa, parts of Harrison and Pottawattamie Counties are within the EPZ, affecting about 5,300 residents. Thus this report addresses the off-site response activities that were demonstrated in both states during the exercise.

3. A critique of the July 22 exercise for the participants and the public meeting was held at 7:00 P.M., July 23, 1981, at the Blair Central School in Blair, Nebraska.

4. Public meetings were subsequently held at the Blair Central School at 1:00 P.M. on August 4, 1981, and at 7:00 P.M. at the High School, Missouri Valley, Iowa, on August 5, 1981, to discuss the state and local radiological emergency response plans for the areas near the Fort Calhoun Nuclear Power Plant.

5. General RAC objectives were to exercise and evaluate the operational (and observable) elements described under the Planning Standards and Evaluation Criteria which are set forth under Section II of NUREG-0654, FEMA REP-1. Rev. 1. These criteria are also the basis for development and evaluation of the state and local plans which were being exercised.

6. Principal organizations in Nebraska and Iowa participating in the exercise included:

State of Nebraska

- Civil Defense Agency
- Department of Health - Division of Radiological Health
- State Patrol
- University of Nebraska
- Other state agencies in supporting roles

Washington County, Nebraska

Dodge County, Nebraska

Douglas County, Nebraska

Omaha Public Power District

State of Iowa

- Office of Disaster Services
- Department of Environmental Quality
- Department of Health
- Department of Public Safety
- University of Iowa
- Iowa State University
- Other State Agencies in supporting roles

Harrison County, Iowa

Pottawattamie County, Iowa

Crawford County, Iowa

7. A 24-member Federal observer team was established by the FEMA, Region VII RAC for observing the response in Nebraska and Iowa. Observers included:

OBSERVER

H. Pickering	FEMA Region VII	Various (RAC Chairman)
G. Barber	(CPR)*	Washington County EOC (Blair, Nebraska)
Dr. H. Beumann	USDA	Iowa State EOC (Des Moines)
W. Biedenfeld	PHS	Health and Medical Sites in Iowa
C. Biggs	FEMA Region VII	Pottawattamie County EOC (Council Bluffs, IA)
W. Brinck	EPA	NE Forward Command Post (adjacent to FCNPP)
J. Crafton	Amer. Red Cross	Host Area Facilities (Denison, Iowa)
S. Delach	FEMA (CPR)	Host Area Facilities (Fremont, NE)
J. Devlin	FEMA (CPR	Harrison County EOC (Logan, Iowa)
S. Ferris	FEMA Region VII	Pottawattamie County EOC
Dr. W. Hope	PHS	Health and Medical Sites in Nebraska
C. Huyett	FEMA Region VII	Nebraska State EOC (Lincoln)
A. Isom	FEMA Region VII	Harrison County EOC
Dr. G. Jacobsen	FDA	Iowa State EOC
H. King	FEMA (CPR)	Media Release Center (Omaha, NE)
R. McCabe	FEMA Region VII	Iowa State EOC
J. Meyers	DOT	Washington County EOC
J. Montgomery	NRC	FCNPP EOF/Nebraska Monitoring Teams
B. Morrow	FAA	Washington County EOC
C. Reese	FEMA Region VII	Info. Authentication Center (adj. to FCNPP)
Dr. J. Shannon	USDA	Nebraska State EOC
J. Sutch	FEMA (CPR)	Pottawattamie County EOC
D. Wilson	FEMA Region VII	FCNPP EOF
A. Zahn	DOT	Harrison County EOC

* Center for Planning and Research, Inc. (under contract to FEMA)

8. Under Parts IV and V of this report for the States of Nebraska and Iowa, respectively, are evaluations and recommendations for actions necessary to improve emergency response capabilities. These evaluations and recommendations are organized according to the Planning Standards and Evaluation Criteria set forth in Section II of NUREG-0654.

   In this report 29 recommendations for correcting deficiencies in Nebraska, and 34 recommendations for correcting deficiencies in Iowa, are provided in continuing numerical sequence following the critique of each observed function. Recommendation 1 for each state is located in Part III.

   State and local jurisdictions should establish a schedule of corrective measures, on a point-by-point basis, directed to the formal recommendations of the RAC. State and local government should examine each recommendation and establish a schedule of corrective actions necessary to remedy the deficiencies noted in this report. This schedule of corrective measures should be provided to the RAC Chairman within 30 days of receipt of this report. The response to this report, itemizing the measures to be instituted immediately and the schedule of future corrective measures, will become part of the submission package to FEMA Headquarters.

II. EXECUTIVE SUMMARY

The objectives of the exercise were to assess and evaluate the adequacy of the Nebraska and Iowa radiological emergency response plans and capabilities of the state and local governments to protect the public in the event of a radiological emergency at the Fort Calhoun Nuclear Power Plant (FCNPP) operated by the Omaha Public Power District (OPPD). The consensus of the 24-member Federal Observer Team involved in observing the response in the two states is that the objectives of the exercise were achieved, i.e., the team was able to observe and evaluate the response by the off-site participants.

The exercise focused on the state and local off-site response. The OPPD and the FCNPP also participated to demonstrate the capability of the utility to cope with such an emergency on-site, as well as to provide appropriate interface with the state and local jurisdictions for issuing notification of simulated emergency event classifications and radiological releases through the FCNPP Emergency Operations Facility (EOF) adjacent to the FCNPP.

The principal Nebraska State agencies involved in the exercise were the Civil Defense Agency (CDA), the Department of Health - Division of Radiological Health (DRH), and the State Patrol; all demonstrated a capability to respond at their facilities in Lincoln and in the field. State-level performance included the State Forward Command Post (CRUSH) and the Information Authentication Center (IAC) both located adjacent to the FCNPP, as well as the Media Release Center (MRC) located in the Omaha-Douglas County EOC in Omaha. Several deficiencies were observed concerning the state-level response.

Both Washington and Dodge Counties participated, the latter being designated as a reception center to accommodate those people directed to evacuate from areas within the EPZ. Both of these jurisdictions demonstrated that a good capability for protecting the public exists, with only minor improvements needed.

In Iowa, the state-level response at the capital in Des Moines was acceptably demonstrated and was coordinated by the Office of Disaster Services (ODS). A detailed evaluation of the Iowa State EOC operations was provided as a result of the exercise conducted at the Quad Cities Nuclear Station on May 20, 1981. Accident assessment field teams, directed by the Department of Environmental Quality and supported by teams from the University of Iowa and Iowa State University, generally performed well. Some deficiencies were observed concerning the state-level response.

Demonstrated local response capabilities in Iowa by Harrison and Pottawatamie Counties and by the City of Denison in Crawford County (host area) varied considerably. At Pottawattamie County, which was not well exercised by the scenario of events, response capability was marginally demonstrated. The single protective action that the county was required to take in the exercise was accomplished satisfactorily. The capability demonstrated by Harrison County was minimal, at best, and reflected a serious lack of complete plans, preparations and participation by local officials and staff, as well as apparently reflecting inadequate minimal state-level capabilities to support the county before and during the exercise. Many deficiencies were observed which must be rectified for an acceptable response capability to exist in both counties. The best local demonstartion observed in Iowa was the hosting function that was shown in Denison, all elements of which were considered to be above the minimum standards.

In summary, in Iowa there is a general need for improvement in radiological response readiness in the major areas of planning, organization (including more support by elected officials and intensified state-local efforts), facilities, communications, and training. Affected local governments need special help from both the state and utility in these areas.

Positive observation highlights included:

- The response demonstrated by Washington County, Nebraska, including the dedication and support by local officials and staff.

- Demonstrations of local hosting capabilities and functions in both Nebraska and Iowa.

- Excellent pamphlet developed and distributed by OPPD concerning individual and family protection measures.

Negative observations included:

- Poor response demonstration by Harrison County, Iowa.

- Accident assessment deficiencies in Nebraska.

- Lack of sufficient ODS staff to provide for continuous operations at any location: the media center in Omaha, the State EOC in Des Moines, or liaison to local government.

III. EXERCISE SCENARIO

SYNOPSIS AND CRITIQUE:

The exercise scenario was developed by the Omaha Public Power District in coordination with the States of Nebraska and Iowa to provide an outline of a possible course of events at the Fort Calhoun Nuclear Power Plant (FCNPP). These events were simulated on July 22, 1981. The simulated incident was designed to enable a detailed response by the FCNPP and Omaha Public Power District personnel, as well as to accommodate the off-site response exercise in which the FCNPP provided appropriate interface with the two states. Thus, the state and local exercise events were driven by the simulated events and actual response times by FCNPP plant personnel.

The exercise scenario posed a malfunction at the FCNPP, ultimately resulting in a worsening condition that tested both the on-site capability to respond and make appropriate repairs and activated response, including appropriate protective and recovery actions by off-site state and local governments.

The exercise started with a notification of UNUSUAL EVENT by the plant. Agency notifications were initiated.

Shortly afterwards conditions worsened and the plant declared a SITE EMERGENCY. Notifications to selected state, local and Federal agencies were initiated and government response centers were activated. In Nebraska the Governor simulated a disaster declaration and the State Field Command Post was dispatched to the plant. Two simulated casualties were sustained at the plant requiring medical evacuation to the University of Nebraska Medical Center at Omaha. The plant EOF became operational. The IAC and MRC were activated.

Plant conditions continued to deteriorate resulting in a declaration of a GENERAL EMERGENCY. About this time the Nebraska State Field Command Post became operational, as did the Information Authentication Center adjacent to the FCNPP EOF.

While the exercise date was known, basic exercise information, such as accident information, radiation levels, meteorological information, time of the specific events, and the affected off-site areas was not to be known in advance and was to be introduced by the FCNPP at appropriate times during the course of the exercise. However, many of the state and local participants did know the details of the scenario prior to the exercise, which could have affected the performance.

The simulated release, approximately one-hour in duration, was sufficient to result in recommendations for sheltering of the affected population but did not result in any simulated evacuation actions. However, for exercise purposes, a host area in each state carried out functions to demonstrate its capability as if an evacuation had occurred in accordance with the scenario. The scenario called for the simulated plume to travel northward along the Missouri River, so as to affect both states in a similar manner.

A summary of the exercise incidents is tabulated below. The times are actual for the exercise data, but are approximate since the exercise was driven according to the incidents and response within the FCNPP.

Incidents	Approximate Times
Notification of UNUSUAL EVENT	0755
Notification of SITE EMERGENCY	0805
Notification of GENERAL EMERGENCY	1045
Notification of Release Occurring	1120
End of Release	1220
Exercise Ends	1530

In general, it was felt that the scenario failed to adequately stress the off-site response capabilities as a result of minimal release levels. In addition, the direction of the plume essentially meant that Pottawattamie County faced little response challenge.

Recommendations pertaining to the exercise in general are given under appropriate sections in the evaluations provided in the following Parts IV and V of this report.

RECOMMANDATION:

1. The timetable outlined in Guidance Memorandum 17 should be followed as closely as possible to allow Federal Agency examination of the scenario sufficiently in advance to assure a realistic scenario that will adequately stress the participating organizations. (This recommendation pertains to both the States of Nebraska and Iowa.)

IV. EVALUATIONS AND RECOMMENDATIONS - NEBRASKA

A. Assignment of Responsibility (Organization Control)

STATE

Capabilities pertaining to organization and assignment of responsibilities met or exceeded standards. Each organization reported, appeared knowledgeable of responsibilities, and carried out roles accordingly as the scenario required.

The Department of Health did not demonstrate a 24-hour capability to conduct protracted operations. Current plans and procedures do not describe the utilization of supplemental accident assessment monitoring teams from the Cooper Nuclear Power Station.

LOCAL

The Washington County civil defense director and local officials were well organized and effectively conducted emergency response direction and control activities. Excellent leadership and dedication by the elected officials was evident. A successful demonstration of organization and responsibilities occurred at the hosting facilities in the Fremont EOC. There was no demonstration of hosting capabilities at Bellevue, Nebraska since the direction of the plume did not involve the area served by this reception center.

Neither Washington County nor Fremont demonstrated a 24-hour capability to conduct protracted operations by conducting a shift change, but Fremont displayed a capability by showing a listing of replacement personnel to the observer, and several Washington County officials discussed the matter with observers thereby providing some indication that they could operate for a protracted period, if necessary. In both cases, the first-shift participants were skilled in their fields and capable of carrying out necessary responsibilities.

RECOMMENDATIONS:

2. In future exercises each state agency and local jurisdiction should demonstrate a clear capability to function on a 24-hour basis for an extended time by replacing all personnel during the exercise and by briefing all incoming personnel to bring them quickly up to date and provide continuity of operations.

3. Existing plans should be amended to include augmentation of off-site monitoring capability by personnel from nearby non-affected nuclear power facilities.

4. Additional experience and/or training drills are recommended in order to improve direction and control procedures, increase staff familiarization with the plans and procedures, and fine tune and maintain the demonstrated good performance by state and local emergency response personnel.

5. Future exercises should demonstrate the reception center operations at Bellevue.

B. ONSITE EMERGENCY ORGANIZATION

Section B, NUREG 0654/FEMA REP-1, pertains only to licensee responsibilities for emergency response and is not included in the exercise evaluation of state and local plans.

C. Emergency Response Support and Resources

STATE:

Space at the FCNPP interim EOF is insufficient to fully accommodate state needs (which presumably will be corrected when a permanent EOF is built). State Radiation Health personnel, when questioned, indicated that the State Radiation Health Laboratory capability is inadequate because much of its equipment is currently inoperable. Apparently this is due to insufficient state funding, thus steps are necessary to rectify the situation. Other state support and resources met or exceeded the standards. IRAP assistance was requested in accordance with the state plan.

LOCAL:

Local capabilities to support Federal response appeared to meet standards and will improve once the Washington County EOC is completed.

RECOMMENDATION:

6. Investigate conditions at the State Radiation Health Laboratory, and strongly urge that appropriate corrective measures be taken.

D. Emergency Classification System

STATE AND LOCAL:

Both state and local governments effectively used the emergency classification system to make proper notifications, mobilize resources, and initiate appropriate protective actions.

RECOMMENDATION: NONE.

E. Notification Methods and Procedures

STATE:

Notification, mobilization, and response of state personnel was effectively accomplished. All responded promptly upon notification.

LOCAL:

Local staff was notified in a timely manner, but the informality of the instructional messages, which did not describe the condition class, suggested that all were primed for the exercise. An actual event would call for more specific description of conditions.

Local notification of the public is primarily by a few existing sirens and by emergency vehicles traveling designated routes which was simulated. However, the methods were well discussed and planned among the EOC staff following receipt of the recommendations (sectors and distances) made by the state. The capability to make such notifications using emergency vehicles was apparent.

RECOMMENDATION: (See Recommendation 28.)

F. Emergency Communications

STATE:

Overall point-to-point communications capabilities were adequate and back-up radio systems were good, but a number of specific deficiencies were identified, including:

- Overload of the limited telephone capacity at CRUSH and IAC within the EOF. However, Nebraska did demonstrate the arrangements and capabilities to augment the number of telephones in the IAC.
- Need for additional telephone service to accommodate the media at the MRC.
- Need to improve both state and local discipline during exercises to designate (by preface and close) all exercise messages with terms indicating that they are for exercise use only.
- Need to better identify individual messages.

LOCAL:

Generally a very good communications capability, including 24-hour coverage, was shown to exist. Backup radio communications were actually needed at Fremont and worked well. The Douglas County REACT Communications team reported to the Washington County EOC and provided good support, and also provided similar support to Dodge County EOC. The Washington County EOC internal communications will be improved once the EOC is completed. Some delay in communication between Washington County and the CRUSH occurred due to telephone overload, but the state radio backup worked well. A major problem appeared when the Washington County ambulance responding to the simulated injury at the FCNPP could not communicate with the FCNPP, the Omaha Fire Dispatch, or the University of Nebraska Medical Center, thus a common radio frequency appears needed.

RECOMMENDATIONS:

7. Provide additional telephone service for the CRUSH, and the MRC as indicated above.

8. Improve message identification and proper exercise designation procedures by providing date-time-group and numbers and assure proper message exercise designation during future exercises and drills.

9. Take steps to provide for communications capability (common frequencies) between Washington County emergency service vehicles and the FCNPP, and specifically medical response vehicles to also include the Omaha Fire Dispatch Center and the University of Nebraska Medical Center in Omaha.

G. Public Education and Information

STATE:

The State EOC in Lincoln did not receive copies of the press releases from the MRC. The IAC appeared to function well under somewhat crowded conditions. EBS releases were simulated but apparently would work well under actual conditions. The EOF needs to have the capability to monitor radio and TV releases.

An excellent pamphlet was developed by the OPPD and mailed to the public. However, the mailing was apparently not entirely completed prior to the exercise.

The MRC was effectively used and demonstrated a quick reaction with a "real release" to reassure the public that radio transmissions overheard were for an exercise, not an actual incident. Cooperation among the two state PIOs and the OPPD PIO at the MRC was outstanding. Rapport with the media was excellent. All MRC staff took their functions seriously and professionally. The EOC Director, Bob O'Brien provided full support to the PI effort. However, a number of improvements at the MRC appear necessary to improve its operations, including:

- Greater caution must be applied to differentiate between exercises and actual events. Copy was not always adequately labelled "Exercise Only".

- Available duplication equipment was not utilized, as a result no hard copy was provided to the media.

- At times apparent duplication of effort occurred between the states and the OPPD, when a joint news release would have sufficed.

- All news releases should be issued from the MRC, or cleared before release.

- News briefings should be more formally structured as opposed to the question-and-answer format used. The technical spokesperson generally dominated the briefings rather than supporting them.

- Rumor control arrangements were very good, but no provisions were made for publicizing the public phone number.

- Facilities were adequate, but could have been better utilized. For example, the PIO staff for OPPD and the states could use the central EOC room for preparation (in private); the adjoining communications room could be designated for NRC and the County Surveyor's office for FEMA. Also the basement warehouse space could be provided for the media work area, and finally, the legislative chamber could be used for press briefings for large groups.

- News briefings should be scheduled on a regular basis (adjusted as the emergency conditions warrant) and kept to a strict time schedule.

- Radios and TVs should be provided for all PIO agencies for monitoring purposes.

- Additional dedicated telephone service is needed for media use.

LOCAL:

Washington County EOC had no means to monitor radio and TV releases. Also, the MRC did not provide the county PIO with releases. There was some expression by the county officials that the MRC is too far away. While the Blair Central School has been designated as an alternate MRC, some (including observers) feel that it may likely become the main MRC if an actual incident occurs. The incomplete dissemination of the excellent OPPD pamphlet was evident as not all of the local officials in Blair had seen it before the exercise.

RECOMMENDATIONS:

10. Provide capability for the EOF, State, and local EOCs, and the MRC to monitor radio and TV releases.

11. Improve local-MRC interface, possibly by providing local representatives at the MRC who can maintain telephone contact with their jurisdictions.

12. Take steps to fully consider and implement, as deemed appropriate, the improvements for the MRC as observed and suggested above (observations noted under "STATE").

13. Consider the possibility of the designated alternate MRC at the Blair Central School becoming the main site for interface with the media in an actual incident, and take appropriate steps to enhance the facility for that eventuality.

H. Emergency Facilities and Equipment

STATE:

The State EOC at Lincoln has sufficient space which was well utilized. The Forward Command Post (CRUSH) was overcrowded but well utilized; however, it may prove inadequate during an actual emergency. The current FCNPP EOF space for state staff was inadequate, but probably will be adequate when the new EOF is built. The MRC facility was described under Section G.

The State Radiation Health radiological equipment was inadequate. Basic monitoring instrumentation was either not available or not available in sufficient quantity. Some of the equipment was borrowed from other state agencies, thus may not always be available in an actual emergency. Much of the needed laboratory equipment is inoperable (see Section C) indicating that field sample analysis cannot be made.

LOCAL:

Local EOC facilities at Washington County and Fremont were adequate. Improvements are underway at the Washington County EOC including construction of a communications room. Primary map displays at the Washington County were adequate and heavily used. No status board was available, but this apparently did not significantly impair emergency operations because of the tightly knit official-staff relationship. The hosting, registration and congregate care facilities in Fremont were good and appeared to be well organized.

RECOMMENDATIONS:

14. Steps should be immediately taken to provide adequate radiological equipment for the State Radiation Health teams and laboratory support, without which the accident assessment functions cannot be carried out.

15. Washington County should continue to complete its EOC facility, provide a status board, and make provision for posting of the four classifications as they occur, in order to improve on its already good performance.

I. Accident Assessment

STATE:

Accident assessment calculations were done well, but were sometimes slow as the one person making them was overloaded with related tasks, including conference calls, field team control, calls to the State EOC, etc. A second person is required at this position.

A major problem is that the field monitors lack necessary equipment. Basic monitoring instrumentation was either not available or available in insufficient quantity. Some of the equipment was borrowed from other state agencies, and therefore may not always be available for use in an actual emergency. Much needed laboratory equipment is inoperable or in need of repair. As a result, no field sample analysis can be performed. No central point was established for sample collection or record keeping.

Radiological Health teams were somewhat slow in mobilizing; this includes the merging of the state teams with the team from the Cooper power station. Communication with the field teams was good most of the time, although a few problems with blank locations occurred. It was felt that the direction and utilization of the field teams could be improved.

LOCAL:

Local jurisdictions have minimum accident assessment responsibilities in accordance with the plans.

RECOMMENDATION:

16. The Nebraska Division of Radiation Health needs to improve its operations, including providing an assistant to the primary staff person at the EOF, better direction and utilization of the field monitoring teams, and providing more rapid information to the state and local EOCs.

J. Protective Response

STATE:

Response actions were ordered promptly by the state based upon information provided by the FCNPP. The only dairy herd in the area was sheltered. However, protective actions that were recommended were not followed up by state field measurement confirmation in a timely manner - apparently waiting for the scenario times. In this exercise, protective actions for the general public were limited to sheltering.

LOCAL:

Receipt of protective response information from the state (CRUSH) appeared to be very slow. This also reflects to the general lack of current information on the overall situation provided to the local EOC. Local response for taking protective actions was carefully considered, appropriately decided upon, and well organized.

Although evacuation was not called for in the scenario for this exercise, a successful demonstration of the capability to receive and process evacuees took place in Fremont. However, a similar demonstration at Bellevue was not scheduled to take place in this exercise. The Fremont High School was opened to serve as a shelter. Several local volunteers from Fremont were processed. All procedures were demonstrated including the monitoring of evacuees for possible contamination. This procedure included provisions for disposal of contaminated clothing, taking of showers, and covering up with a white coverup wrap (supplied by the Red Cross). There was a nurse present who checked the overall health condition of each registraut.

All personnel involved appeared knowledgeable of their responsibilities and capable of carrying them out. While not observed, transportation for moving evacuees to shelters was reported to be provided by school buses (if needed to supplement the private vehicles of the evacuees). A status board showing the assignment of evacuees from the Registration Center to specific shelters was not in evidence, but the observer was told that one will be available.

RECOMMENDATIONS:

17. Provision should be made for more rapid provision of current information from the state to local EOCs, particularly for preparing for the taking of protective actions (see also Recommendation 16).

18. See Recommendation 5.

K. Radiological Exposure Control

STATE:

Potassium Iodide (KI) was made available to the field monitoring teams, but not to the aerial monitoring teams. Field team dosimetry was handled well, self-reading and permanent record dosimeters were used, dose records were kept, and periodic readings were ordered. The field monitoring teams did not consider protective actions (e.g. use of protective clothing) while monitoring, although unnecessary since the scenario did not exact a full range of protective actions. Decontamination of the field monitoring teams was not well carried out. Poor procedures were utilized and contamination would not have been effectively contained. The US 30 bridge over the Missouri River was closed successfully on the Nebraska side, but this action was not coordinated with Iowa.

LOCAL:

Dosimeters were issued at the Washington County EOC and recorded. Return recordings were not observed. Traffic control measures were well devised by the EOC staff, with each traffic control point designated and later adjusted as the situation changed. However, no emergency vehicles were dispatched to actually man traffic control points.

RECOMMENDATIONS:

19. Aerial Monitoring teams should be provided with a special kit which includes KI, protective clothing, etc. (See also Recommendation 14.)

20. Access control measures taken by one state should be carefully coordinated with the other for areas common to both.

21. Training and drills should be conducted on field team decontamination procedures.

L. Medical and Public Health Support

STATE AND LOCAL:

The exercise provided the opportunity to test procedures for the care and transport of an injured person exposed to radiation. The patient was cared for and transported from the FCNPP to the University of Nebraska Medical Center (UNMC) in Omaha. The activity was carried out successfully, but a number of significant problems were identified including:

- Lack of communications capability between the Washington County ambulance, the FCNPP, Omaha Fire Dispatch Center, and the Medical Center.
- Need for major training for personnel at the FCNPP, rescue squad, and the Medical Center for treatment of such patients.
- Some deficiency of local specialized rescue equipment for such patients.
- Local ambulance almost too small to handle such patients together with necessary attendent equipment and personnel.

Additional needs include the need for more drills - probably on a quarterly basis for patient evacuation and treatment. A protocol may need to be done or redone. Also, there is a need for a person to be trained to serve as a public health liaison staff person at the Washington County EOC.

Excellent handling of medical matters at the reception and care center demonstrated at Fremont. A nurse was in attendance.

RECOMMENDATIONS:

22. Specialized training should be provided for the FCNPP, UNMC, and local rescue personnel for handling radiation-injured patients.

23. Local rescue equipment and appropriate vehicles must be available for the caring and transportation of radiation-injured patients.

24. Special drills should be conducted, probably at least quarterly, for evacuation and treatment of radiation-injured patients.

25. Provide a trained person to serve as a public health liaison at the Washington County EOC.

M. Recovery and Reentry Planning and Post Accident Operations

STATE:

This aspect of the operation generally went well from the state level point of view. There was a resurvey of areas after the plume passed appropriate decisions were reached pertainint to relaxing of protective activities underway, and the local EOCs were advised.

When the FCNPP returned to Alert classification, they initiated the notification process again, but this is not necessary as long as appropriate state officials are informed through the EOF.

LOCAL:

Advisories to the local EOC at Washington County during this phase of the exercise seemed to lag and appeared to be incomplete. However, once the situation appeared clear, local officials carefully considered what actions to take (e.g., removing road blocks and informing the public), made decisions, and issued implementation orders.

RECOMMENDATIONS:

26. Clarification is needed of notification procedures for situations once the plant emergency is over, release is stopped, etc., as they affect state and local operations.

27. Steps should be taken to assure frequent information is passed to local EOCs during the relaxation of the protective action phase of the emergency.

N. Exercises and Drills

STATE AND LOCAL:

The scenario could have more thoroughly tested state and local capabilities. Prior knowledge of scenario events apparently caused some participants, particularly those involved in accident assessment activities, to delay necessary actions. Review of the participant questionaires confirmed speculation that many of the state and local participants knew the scenario, but that knowledge had little, if any, effect on the local play at the Washington County EOC and none in Fremont where the scenario had little relevence to the procedures demonstrated.

However, the exercise appeared to be of significant benefit to all participants based both on observations and on participant comments (oral or written response to participant questionnaires).

RECOMMENDATION: (See also Recommendations 4 and 24.)

28. Exercise scenarios should be closely guarded so that a realistic demonstration of capabilities will occur.

O. Radiological Emergency Response Training

STATE AND LOCAL:

In general, participants appeared to have been well trained and were able to carry out their duties, with the one exception dealing with medical matters noted earlier in this report. Thus, most individual participants and their emergency organizations only need additional and periodic training, to maintain their proficiency and to fine tune their response capabilities.

RECOMMENDATIONS:

(See Recommendations 21, 22, and 24 which identify specific training needs.)

P. Radiological Emergency Response Planning

STATE AND LOCAL:

Most of the participants seemed familiar with and satisfied with the existing radiological response plans, which were developed by the State Civil Defense Agency (and jointly with affected local governments). Some refinements to existing plans probably are needed based on this exercise. One specific change is necessary to reflect the utilization of supporting monitoring teams from other nuclear power facilities within the state.

RECOMMENDATION:

(See Recommendation 3 which refers to radiological emergency response planning).

V. EVALUATIONS AND RECOMMENDATIONS - IOWA

A. Assignment of Responsibility (Organization Control)

STATE:

The State EOC demonstrated a capability to mobilize for emergency in accordance with existing plans. Each organization reported, appeared knowledgeable of responsibilities, and carried out roles as the scenario required. Support by the Governor and state officials was considered adequate by exercise observers. However, it appears that there was not enough stress placed on state agency activities, as some state agency representatives at the State EOC indicated a lack of meaningful activity during the exercise. Finally, there is a need for logical emergency response - perhaps by the use of trained state employees directly assisting local government officials.

LOCAL:

The Harrison County Radiological Emergency Response Plan was incomplete (e.g., insufficient guidance on requirements to respond to developing emergency classification levels as specified in NUREG-0654). Further, the existing plans apparently had not been disseminated to responsible staff members and field elements. Therefore, knowledge concerning assigned responsibilities was limited. This detracted from the effective participation of the few Harrison County officials in this exercise. In addition to completing the basic plan, Harrison County needs detailed SOPs and implementation checklists to aid officials in assuring that appropriate actions are taken.

Early direction and control was adequate at Pottawattamie County, but was reported ineffective later in the day. The local officials reported to the EOC and were appropriately briefed as a result of the SITE EMERGENCY condition. When it became obvious that the plume would not affect Pottawattamie County, the EOC staff was told that they could leave the EOC by the Civil Defense Coordinator, and that they would be contacted later if conditions should warrant. This occurred prior to declaration of GENERAL EMERGENCY. While the scenario did not impose a large response effort upon the county, these officials were never subsequently informed of the GENERAL EMERGENCY situation which could have been a serious problem in a real incident, particularly if there had been a shift in the wind direction. The organizational control over the communications center was weak. Most actions taken were suggested and/or accomplished by the state representative on the scene. Effective coordination among local government agencies was not adequately demonstrated.

There was a good demonstration of the reception and care capabilities by the host area; Crawford County and the City of Denison. A token group of simulated evacuees were properly cared for, and the officials and workers carried out their assigned duties in accordance with existing plans.

Most of the local jurisdictions did not demonstrate a capability for 24-hour protracted operations by conducting a full shift change. Support by officials also varied among the local jurisdictions. In Harrison County, participation by elected officials probably would have enhanced the effectiveness of this exercise. Involvement by local officials in the decision-making process was generally inadequate in Pottawattamie County and non-existent in Harrison County.

RECOMMENDATIONS:

2. Local government radiological emergency response plans should be completed and improved in the light of experience in this exercise. Sufficient copies should be distributed to responsible officials (elected and assigned), including provision for training of all concerned in their assigned roles, so that appropriate measures will be taken to protect the public when necessary.

3. Additional experience and/or training drills are recommended for all emergency response personnel in order to improve direction and control procedures and increase staff familiarization with the plans and procedures.

4. In future exercises, each local jurisdiction should demonstrate a clear capability to function on a 24-hour basis for an extended time by replacing all personnel during the exercise, and by briefing all incoming personnel to bring them quickly up-to-date and provide continuity of operations.

5. Increased state support of local governments in the EPZ is required. Support should occur during both the emergency operation phase and the training and planning phases of radiological response.

B. On-Site Emergency Organization

Section B, NUREG 0654/FEMA REP-1, pertains only to licensee responsibilities for emergency response and is not included in the exercise evaluation of state and local plans.

C. Emergency Response Support and Resources

STATE:

The Iowa State EOC and other state support and resources met or exceeded the standards. Agencies responded at the State EOC in a timely manner. Most state agencies exhibited a capability to operate on a protracted basis. However, ODS did not and could not demonstrate such operations due to lack of staff. IRAP assistance was successfully requested.

LOCAL:

In Harrison County emergency response support and resources were lacking and not demonstrated.

The City of Council Bluffs (outside the 10-mile EPZ) and the private sector (primarily the utilities) were well represented in the Pottawattamie County EOC. However, that portion of the county contained in the 10-mile EPZ was not adequately represented. Conspicuously absent was the County Sheriff and representation from the County Board of Supervisors. Requested health physics support from OPPD worked well. This individual served as a temporary rad team coordinator until the designated Team Leader arrived from Iowa City.

RECOMMENDATION:

6. The ODS staff must have a capability to operate on a protracted basis. This might be accomplished through augmentation from other agencies, by increasing the ODS regular staff (also see Recommendation # 5), or a combination of these two.

7. Organizations, which can be relied upon for assistance, should be identified and included in future exercises in Harrison County.

8. Those officials responsible for the portion of Pottawattamie County within the 10-mile EPZ must be represented in the County EOC for effective decision-making.

D. Emergency Classification System

STATE:

All parties at the State EOC correctly used the emergency classification system.

LOCAL:

Knowledge of the standard emergency classification levels and relevant actions to be taken was not demonstrated in Harrison County. The terms SITE EMERGENCY and GENERAL EMERGENCY were never displayed for the information and guidance of the staff at the EOC.

Except for the Civil Defense Director of Pottawattamie County, there was no evidence of knowledge of the procedures consistent with the emergency level classification system. Staff participants were unfamiliar with the significance of the various action levels.

RECOMMENDATIONS:

9. Checklists and SOPs should be developed keyed to the emergency classification system that can be used for the familiarization of key officials, as well as in actual emergency conditions.

10. Provisions should be made for posting the emergency classifications, as they occur, in a prominent place within each local EOC.

E. Notification Methods and Procedures

STATE:

Notification, mobilization, and response of state personnel was effectively accomplished using telephones and the Iowa Warning and Alerting System (IWAS). The state staff reported to the EOC promptly with the exception of the Department of Environmental Quality (DEQ) representatives, who were an hour late.

LOCAL:

Notifications in Harrison County were routinely transmitted, but no follow-up occurred when only a few members of the emergency staff reported. The sheriff simulated alerting the public upon receipt of the notification of UNUSUAL EVENT (prematurely) apparently without coordinating with the local civil defense director, reflecting the lack of familiarity with the appropriate procedures based upon the emergency classifications.

At Pottawattamie County, public notification was not simulated: Upon questioning by observers, the director stated that he assumed this was to be accomplished by the utility or Nebraska. Notification of the emergency personnel was adequate initially, but not followed up. Prescribed written messages were used only once, toward the conclusion of the exercise, and not for timely release of information to the public.

RECOMMENDATIONS:

11. Notification, alerting, and mobilizations of official and staff, as well as the notification of the general public (simulated or actual) should be better demonstrated in future exercises.

12. In a developing radiological emergency, emphasis should be given to the importance of appropriate follow-up actions after each change in the emergency classification.

F. Emergency Communications

STATE:

Apparently the "Hot Line" between the FCNPP, and Nebraska and Iowa worked well, as did the IWAS, although there was little communication observed between State-level and County-level activities.

LOCAL:

Communications operators were not aware of the significance of the "Hot Line" in Pottawattamie County. Communications support to the radiation monitoring teams was provided by Pottawattamie County through the Sheriff's office and worked well. The console operators within the Pottawattamie County Communication Center took messages from the field teams directly, although some problems occurred due to the lack of knowledge of pertinent technical terms by the communications personnel. In the communications center, utilization of message forms and message handling procedures was inadequate and there was no message control. There was little interaction between the Civil Defense Director and the communications center. There was no inter-county communication observed.

At Harrison County there was no communication between County and the FCNPP because the "Hot Line" link has not been installed. There was also a lack of communications between the State EOC and the County EOC. As a result, the County EOC did not receive information concerning wind direction and speed, amount of radiation release, or the order to take protective action (shelter). Also, there was no coordination with Pottawattamie County or the State of Nebraska. What communications were received from the state came through Crawford County (in accordance with State-County communications systems, but not in accordance with the plans). The EOCs in both counties had insufficient telephones for conducting such emergency operations.

RECOMMENDATIONS:

13. A "Hot Line" link should be established between the FCNPP and the local governments within the plume EPZ, especially Harrison County.

14. Both Harrison and Pottawattamie Counties' communications personnel need additional training on utilization of existing systems related to nuclear power plant incidents, including familiarity with appropriate terminology associated with such incidents.

G. Public Information and Education

STATE:

The handling of public information at the state-level was adequate. A state representative was present at the MRC in Omaha. Four press releases concerning the exercise were made, and TV coverage was allowed in the EOC. Press releases were simulated on EBS which provided continuing shelter information to the public.

LOCAL:

It was reported that the excellent public information pamphlet prepared by the OPPD was distributed to all homes in the plume EPZ. Nevertheless, there was a lack of guidance to the public during the exercise and no prearrangements (e.g., canned news releases) were made.

No point of contact was established for the media in Pottawattamie County. The Director gave uncoordinated briefings over the telephone, without referring the media representatives to the MRC.

In Harrison County, guidance to the public concerning the emergency situation was lacking.

RECOMMENDATIONS:

15. Clarification of the public information interface between the State of Iowa, the local jurisdictions within the plume EPZ, and the Media Release Center (MRC) in Omaha is necessary. Since the affected population resides in the Omaha media area (local TV, radio, newspapers, etc.), it would appear that all public information releases should be focused at the MRC rather than from the State PIO at a place as distant as Des Moines.

16. Provide capability for the state and local EOCs to monitor radio and TV releases.

H. Emergency Facilities and Equipment

STATE:

The State EOC in Des Moines was adequate to conduct emergency operations. No dedicated space was allocated to the Radiation Team coordinator at the Pottawattamie County EOC. He operated from inside the communications center but with no area for maps or plotting of field data. The Radiation Team Coordinator was overloaded in attempting to direct the field team, plot data, communicate with the State EOC and the utility, and prepare dose calculations based on the field data.

LOCAL:

Both County EOCs provided marginal capability to conduct such emergency operations.

Space is designated for the Pottawattamie County EOC, but deficiencies included:

- Space undeveloped and poorly arranged
- Poor linkage between communications and operations areas
- No status boards and inadequate maps
- No telephones available for operations personnel
- No space for Rad Team Coordinator

The Harrison County EOC failed to meet minimum standards; deficiencies included:

- Insufficient operating space for the staff
- No situation board or other displays such as maps
- Weak message control
- Insufficient telephones

RECOMMENDATIONS:

17. Both Harrison and Pottawattamie Counties should provide adequate emergency operations facilities and communications to support the emergency response.

18. In addition to providing adequate facilities, both Harrison and Pottawattamie Counties should equip their EOCs with appropriate displays and train the personnel in their use. Specifically, a status board should be designed and provided for each EOC. It should provide a means to retain a record of key events and/or problems, showing at a minimum (1) the time of the event, (2) description statement, (3) where the responsibiltiy is assigned (e.g., local department or agency), and (4) time when the action is completed. Standardized maps and other displays should be developed and made a requirement (covered with Plastic for ease of change of condition).

19. An adequate dedicated position should be developed in Pottawattamie County for the Radiation Team Coordinator. Sufficient space needs to be provided for proper displays and maps to allow data plotting.

20. The Radiation Team Coordinator needs assistance to relieve him of the burden of communications so that he may concentrate on his primary task of team management and data acquisition.

I. Accident Assessment

STATE:

The State, primarily through the Department of Environmental Quality (DEQ), demonstrated an acceptable capability for providing methods, equipment, and expertise for rapid assessment of real or potential radiological hazards during this simulated incident. This included activation, notification, transportation, communications, and monitoring equipment. While the exercise objective utilizes both the University of Iowa and Iowa State radiation monitoring teams, bad weather prevented the transportation of the University of Iowa team to the exercise (via State Patrol aircraft). The Iowa State team was quickly pressed into service and a health physicist from the utility called in for support until the Team Coordinator could obtain commercial transportation from Iowa City. The transition from the utility representative to the Team Leader functioned smoothly.

There was some delay in receipt of monitoring data, which came in by conference call and hampered use of the computer by the DEQ personnel.

Local jurisdictions have a minimal role in accident assessment except to provide communications support to the field monitoring teams. However, radiological information was not provided to local jurisdictions in any form during this exercise.

RECOMMENDATIONS:

21. Procedures should be developed for providing essential radiological information to each County EOC so that the County Radiological Defense Officers, where they exist, can follow and interpret the radiological situation and be in a position to advise local officials of likely or pending decisions and explanations for protective actions.

22. The conference call system for data transmission should be examined carefully. A better system may be available for the timely transmission of monitoring data.

J. Protective Response

STATE:

During the exercise the state demonstrated a capability to make appropriate decisions regarding protective actions based on the simulated emergency described in the scenario.

LOCAL:

At Pottawattamie County, the limited protective response activities were acceptable. The only actions required, based upon the scenario, for this exercise was the closing of the water works as a result of a simulated release of material from FCNPP into the Missouri River which is the source of the local water supply. In addition to closing the water works (and monitoring the situation), a notice was provided to the public requesting water conservation.

As a result of unfamiliarity with the plans and the protective actions that should be taken under various emergency classifications, the response in Harrison County was minimal. This was compounded by the lack of essential information concerning sector population, direction of the plume, etc.

A fine demonstration of host area activities was conducted at Denison in Crawford County. A dozen people had volunteered to simulate evacuees and were processed at the Denison High School. They were met by law enforcement personnel, directed to the rear area of the parking lot where their cars were monitored for contamination, and then directed to specific parking areas. Evacuees were separated by sex, tested for contamination, then underwent appropriate decontamination measures, followed by registration and shelter assignment. All emergency personnel had been issued dosimeters and emergency protective clothing. Arrangements had been made to carry on a 24-hour operation. Credit for the fine demonstration is due to the joint activity by the County Civil Defense Director, and the Iowa State Health Department. Local participants included personnel from the Department of Social Services and the Red Cross. As a sideline, one of the evacuees simulated a heart attack and was rushed to the local hospital; another simulated radia ion poisoning.

RECOMMENDATION:

23. Both Harrison and Pottawattamie Counties need to gain additional experience through training and future exercises in order to achieve improvement in procedures and greater familiarization with plans, in order to provide effective response.

K. Radiological Exposure Control

STATE:

State-level exposure control activity was not observed.

LOCAL:

In Pottawattamie County the Sheriff's Deputies were not equipped with dosimeters and appeared to have no knowledge of exposure control matters, even though it is part of their role to accompany the radiation monitoring teams in the field to assist with communications. The scenario did not provide the need for other exposure control measures in the county. Harrison County demonstrated a total lack of knowledge of exposure control measures. The Sheriff was not aware of traffic control responsibilities. Closing of the Blair bridge by Nebraska was not coordinated with Harrison County, which caused a problem.

RECOMMENDATION:

24. All local jurisdictions should participate more fully in exposure control measures and develop required capabilities. At a minimum, the following should occur: (1) issuing dosimeters to emergency workers; (2) establishing roadblocks (although not actually impeding traffic); and (3) making preparations for the use of KI by emergency workers.

25. Access control measures taken by one state should be carefully coordinated with the other state for areas common to both.

L. Medical and Public Health Support

STATE AND LOCAL:

There was no observation of any State-level activity. County Health Directors in both Pottawattamie and Harrison Counties did not participate.

In Pottawattamie County, the Jennie Edmundson Hospital is the primary facility designated in the plan to treat personnel with radiation injuries, and the Cass County Memorial Hospital in Atlantic is the alternate facility. However, the Edmundson Hospital had no plan and did not know that they were designated. The Cass County Hospital does have a plan, but because of its size, has limited resources. It appeared that the Edmundson Hospital staff had little or no training in radiation injuries and no dedicated space to treat such patients.

RECOMMENDATIONS:

26. Appropriate plans and procedures should be developed concerning medical facilities and the interface with local governments for handling and transporting radiation-injured patients. This should involve the County Health Departments, the State Health Department, local Civil Defense Directors, and local rescue and ambulance services.

27. Future exercises should contain sufficient medical activity related to nuclear accident incidents to involve local health agencies and one or more designated local hospitals.

M. Reentry and Recovery

STATE:

State-level reentry and recovery functions appeared to be acceptable.

LOCAL:

In both Harrison and Pottawattamie Counties there was no discussion or action taken involving recovery operations. In Crawford County, existing reentry plans are adequate, but this phase of operations was not demonstrated at the reception center.

RECOMMENDATION:

28. More emphaiss should be given to reentry and recovery activities in planning and training in future exercises, and the scenario should provide for appropriate activity including, if possible, partial reentry (some areas determined clear earlier than others) as well as full reentry play.

N. Exercises and Drills

STATE AND LOCAL:

The scenario could have more thoroughly tested state and local capabilities. Prior knowledge of scenario events by some of the participants did not appear to significantly impact on the demonstration, particularly at the local level where lack of preparedness and familiarization with the plans had a much greater impact. However, it was evident that the exercise provided significant benefits to the participants, particularly the local jurisdictions where the lack of adequate preparations and response capability (except in Crawford County) was clearly demonstrated. Also the exercise objectives were not delineated for local play.

RECOMMENDATIONS:

29. A detailed review of all aspects of the exercise should be made so that participants can profit from the lessons learned, and take steps to rectify deficiencies to meet the standards. Some areas identified as needing drills include the personal safety of field employees (exposure control measures, requirements for dosimeters, and the use of KI) and review of evacuation procedures from areas such as the Desoto Bend Refuge where there is no shelter and the only protective measure is evacuation.

30. Iowa State-level agencies should provide more exercise support to local governments within the plume EPZ.

31. The scenario should be provided to the RAC for review and comment well in advance of an exercise to assure a realistic scenario that will adequately stress the participating organizations. Actions to be simulated in the exercise should be identified in advance by the state and local jurisdictions.

32. Exercise scenarios should also be closely guarded so that a realistic demonstration of capabilities will occur.

O. Radiological Emergency Response Training

STATE:

There were enough senior people at the Iowa State EOC for two shifts; however, more trained people appear needed for a longer term situation and to provide more support for the local jurisdictions.

LOCAL:

There was a noticeable lack of training in familiarity with radiological matters and emergency response plans by the officials and staff in several locations. Evidence of basic ragiological emergency response training was not shown in Harrison County, and while the Civil Defense Director of Pottawattamie County has attended training courses, there was little apparent evidence of transmittal of his knowledge to the officials and staff. Lack of participation of Health Department personnel in both counties precluded observation of their capabilities, but training needs were evident for backup medical facility personnel.

RECOMMENDATION: (See also Recommendations 3, 11, 17, 19, and 25)

33. Appropriate familiarization and skills training and support in radiological matters and the emergency response plans should be provided by the state to local officials and emergency services (police, fire, rescue, highway, etc.) personnel.

P. Radiological Emergency Response Planning

STATE AND LOCAL:

Local radiological emergency response plans are not complete, and the over-all state planning support to the local governments in the EPZ appears to need a rigorous review. There is a major need for detailed procedures or checklists at Harrison and Pottawattamie Counties, as none were in evidence during the exercise.

RECOMMENDATION:

34. Priority should be given to developing and improving radiological emergency response plans and procedures together with efforts to assure familiarity with these plans by all affected jurisdictions and emergency response personnel by conducting appropriate training and exercises.

EXERCISE REPORT

1982

FINAL REPORT

Evaluation of the Implementation of
Iowa and Nebraska State and Local
Radiological Emergency Response Plans

for the

Ft. Calhoun Nuclear Station

Exercise Conducted
September 15, 1982

Prepared by
Federal Emergency Management Agency
Region VII

I. INTRODUCTION

A. A radiological emergency exercise was conducted on September 15, 1982, to evaluate the adequacy of State and local emergency plans and response capabilities in Iowa and Nebraska in the event of an emergency at the Ft. Calhoun Nuclear Station. The plans evaluated included the Iowa Emergency Plan, the Harrison County Radiological Emergency Response Plan, the Pottawattamie County Radiological Emergency Response Plan, the Nebraska Radiological Emergency Response Plan, and the Washington County Radiological Emergency Response Plan.

The exercise was conducted jointly by Omaha Public Power District, the States of Nebraska and Iowa and associated local governments. Observations and evaluations of the exercise were performed by members of the Region VII Regional Assistance Committee, FEMA Regional staff, and qualified Federally-contracted evaluators. The following is a complete list of evaluators, their agency affiliations, and their evaluation assignments:

Evaluator	Agency	Assignment
S. Ferris	FEMA	Iowa State EOC
M. Carroll	FEMA	Pottawattamie Co. EOC
R. Leonard	FEMA	Harrison Co. EOC
S. Kinser	FEMA	Washington Co. EOC
R. Baer	NRC	Iowa Field Team
W. Brinck	EPA	Iowa RAD Coor.
J. Meyers	DOT	Iowa FCP
M. Cress	DOT	Iowa FCP
J. Nagel	ANL	Pottawattamie Co. EOC
R. Hotlzman	ANL	Washington Co. EOC
C. Saricks	ANL	EOF/IAC
L. Hoffman	INEL	Iowa Field Team
G. Kaszynski	ANL	Media Release Center
K. Lerner	ANL	Iowa State EOC

B. An exit interview was conducted with the participants at 10:00 a.m., September 16, 1982, in the Federal Building in Council Bluffs, Iowa.

Details of the evaluators' findings were presented at this exit interview. A public briefing was conducted at the same location at 2:00 p.m. the same day. At this briefing, highlights of the exercise evaluators' findings were presented by both the RAC Chairman and NRC Team Leader. State and local officials were invited to participate in the briefing; though present, they declined direct involvement.

C. This report represents the findings of the evaluators specific to the objectives identified in Attachments 1 and 2.

D. This report shall be provided to the States of Iowa and Nebraska in order that they may act on the recommendations contained herein to improve the emergency response capabilities of both State and local governments.

II. EXECUTIVE SUMMARY

The exercise of September 15, 1982, was the "second round" for both Iowa and Nebraska under the provisions of NUREG 0654/FEMA REP-1 at the Ft. Calhoun facility.

Nebraska chose to play the exercise "small scale" as defined in 10 CFR 50; they had participated "full scale" at the Cooper Nuclear Station exercise conducted in March, 1982. The limited Nebraska State and local objectives are identified in Attachment 2. No major deficiencies were identified.

Iowa State and local participation was "full scale"; all levels of government participated to the maximum possible under the provisions of the exercise objectives and the scenario. No major deficiencies were identified during the exercise.

The following examples of excellent performance were observed during the exercise.

1. Interstate coordination

2. Appropriate protective actions based on actual field measurements

3. Utilization of personnel

4. Professionalism of field monitoring teams

5. Participation of appointed and elected officials

While no major deficiencies were noted, some general areas for improvement were identified during exercise.

1. Need for greater involvement by local government in direction and control and decision making.

2. Improvement in local government operating facilities which are presently under construction in each county.

3. Both Iowa State and local plans need to be updated to include the present (demonstrated) concepts of operations.

Special comment must be made concerning the exercise scenario. The events, developed by the utility, did not sufficiently involve off-site authorities to fully demonstrate the designed off-site objectives. (e.g., no off-site radiation release was planned even though some Iowa cue cards indicated a significant release.) The detailed scenario, with sufficient information to evaluate its potential to off-site participants, was not received by the FEMA Regional Office prior to the exercise.

Despite the scenario deficiencies, State and local authorities performed well; reacting to developing events in a realistic manner in accordance with existing plans. With the exception of some areas for improvement noted in Part IV of this report, both states met the objectives that they were able to demonstrate under the scenario constraints. Both Iowa and Nebraska demonstrated that there exists a reasonable assurance that preparedness around the Ft. Calhoun facility is sufficient to protect public health and safety.

III. EVALUATION

A. IOWA

1. Emergency Operations Facilities and Resources

Objective: a. Demonstrate adequate communications between emergency response facilities and field activities.

b. Demonstrate coordinated communications with the utility by State and County authorities.

State:

Communications between the State EOC and field activities was accomplished by a conference telephone arrangement with Harrison County and Pottawattamie County. Notification of State government was accomplished by the utility using a dedicated line and commercial telephone. All systems functioned effectively with the exception of the conference line to Harrison County. This line was weak and difficult to understand, causing delays and misunderstanding of messages. The National Guard communications operators had some difficulty in understanding message content directed to the State EOC from the utility over the dedicated line. The Forward Command Post, located in Missouri Valley, had excellent communications with the respective agencies represented (National Guard, Conservation Commission and Department of Transportation and Highway Patrol) and the headquarters personnel.

Systems at the Harrison County EOC for communicating with the field team utilized a Sheriff's vehicle for radio contact with the Field Team Coordinator. Information on plant conditions was received from the facility by facsimile. The method was slow (30-45 minutes from declaration of a plant status change to receipt of the information by the Field Team Coordinator). The result was that the field team was not kept informed of current plant conditions.

County

In Harrison County, communications systems were adequate to support the operation with the dedicated line to the plant, the conference line to the State EOC and radio capability with field personnel. As indicated above, however, the conference line with the state was of poor quality. All lines were terminated at instruments located on a single table in the Sheriff's Office. The physical arrangement of the telephones resulted in overcrowding and poor utilization of available space. (see below).

In Pottawattamie County the communications with the facility and the State EOC functioned smoothly via the dedicated line and the conference telephone, respectively.

OBJECTIVE: Demonstrate the existence of adequate emergency facilities and equipment to support response efforts.

State

The State EOC has adequate space. Noise levels are reasonably low with a good working environment. Security was clearly demonstrated by limiting access to one entrance, posting of a guard, the use of sign in/out procedures, and badges for all participants.

Internal communications and displays were lacking in the following manner:

a. emergency action levels were not posted where they could be seen by participants

b. No person was assigned the task of updating the status board.

c. Sector maps of the EPZ did not have preplotted information (e.g. evacuation routes, radiological monitoring points, or population distribution).

The FCP had maps of the EPZ, but none of the pre-designated information was plotted.

County

In Harrison County the potentially adequate operations room was used sparingly due to the placement of all communications equipment downstairs in the Sheriff's Office. Space in the operations room was adequate to accommodate expected staff loads; it was well lighted and ventilated, as well. Displays and maps were lacking as follows:

a. no status board

b. emergency classification was not posted

c. maps did not indicate necessary information (e.g., evacuation routes, monitoring points, traffic control points, or population distribution).

No internal message handling procedures were used and no general briefing of participants was accomplished.

In Pottawattamie County, the EOC working space was crowded for space. Maps were displayed, but lacked the information listed above.

2. Alerting and Mobilization of Officials

OBJECTIVE: Demonstrate the capability to alert and mobilize emergency response personnel.

State

The State performed the alerting of response personnel in a timely fashion. A duty officer system and pagers to key agency personnel provides a 24-hour activation capability. The Field team arrived on the scene from Ames approximately three hours after notification (a reasonable period).

The personnel staffing the liaison positions at the Harrison and Pottawattamie County EOCs and the FCP staff were prepositioned. Thus, alerting and mobilization of these personnel was not demonstrated.

County

In Harrison County, the Sheriff notified emergency response personnel within 20 minutes. Wildlife Refuge Officers were not alerted as called for in the plan. No call list or written procedures was utilized. Staffing of the EOC was accomplished in a timely fashion.

In Pottawattamie County a cascade call system was used to notify response personnel.

3. Emergency Operations Management

No specific exercise objectives were established to meet this evaluation standard.

4. Public Alerting and Notification

OBJECTIVE: Demonstrate prompt Notification system including public alert, notification (full siren sounding), and the activation of the Emergency Broadcast System.

State/County

The Iowa Plan calls for local activation of the fixed warning system (sirens). This was accomplished in a timely manner. A message was broadcast over the EBS station at the time of siren activation. This message was the standard explanation of siren testing used during the normal testing cycle. According to the plan, informational EBS messages are formulated at the State EOC and transmitted by facsimile to local government for dissemination. This system functioned reasonable well during the exercise with one notable exception. The writing of the EBS message for the Site Area Emergency notification of the public took approximately 30 minutes. Since this message would have been the initial notification to the public at siren activation (except during this exercise), the notification time would have been excessive. Additionally, the conversion of sector designations to those understood by the public is left to local officials to include in the EBS messages. This would add considerable delay to the broadcast of messages unless pre-defined conversions are provided in operating procedures (no such pre-definition has occurred).

Since a primary area of concern during the exercise was the Wilson Island/DeSoto Bend region, transient population in this remote area presented a problem for timely notification. The plans call for individual contact by park officers. Upon questioning, these officers stated that timely notification would be impossible without an aircraft fitted with PA capabilities.

5. Public and Media Relations

OBJECTIVE: a. Participate in the OPPD media release center.

b. Demonstrate the ability to develop and issue applicable press releases.

State

The Iowa representative at the media release center (MRC) in Omaha functioned well with the representatives from the State of Nebraska and OPPD. The information utilized by the Iowa PIO was sent via FAX from Des Moines. The only information available for use in his spokesperson role at the MRC was contained in the release itself. Because of the limited participation by the press, no questions on operations were asked of him. However, more detailed knowledge should be given to the spokesperson on the overall extent of operations in Iowa for presentation to the media.

6. Accident Assessment

OBJECTIVES: a. Demonstrate the capability of local and state radiological control staffs to monitor environmental conditions and make appropriate recommendations to EOC decision makers.

b. Demonstrate initiation, direction and control of radiological monitoring teams.

c. Demonstrate plume tracking techniques by the radiological monitoring teams, including equipment operation, radiological measurements, environmental sampling and data reporting.

d. Demonstrate dose assessment, dose projection and protective action methodology.

State

Because of a lack of transportation, only one field team was available (from Iowa State University). The limited number made effective tracking of the plume impossible. However, this capability has been adequately demonstrated at previous exercise.

Whole body cloud gamma readings were accurate and communicated and recorded in proper units. No generator was available to operate the air pump; therefore the capability to measure radioiodine in the field was lacking. Technique, as described in field procedures, was analyzed by the evaluator and changes recommended directly to the State.

Calculations of dose projections from the field team coordinator were accomplished in a professional and timely fashion.

No observed integration of information by the State and utility field teams was observed.

7. Actions to Protect the Public

OBJECTIVE: a. Demonstrate the capability to formulate and execute measures to protect the public.

b. Demonstrate the capability of local jurisdictions to control access to areas potentially affected by off-site releases.

State

While the utility did not recommend protective actions, the State identified, evaluated and recommended evacuation of the population. The utility insisted that no release ever occurred, however, cue cards for the Iowa field team clearly indicated high radioiodine concentrations. The field readings were accurately reported and correct dose projections made from those readings. Despite the utility's insistence that no release had occurred, the state made the appropriate protective action decision under the circumstances. The decision was coordinated with Nebraska prior to its simulated implementation.

There were no actions taken once the decision had been made, however. The evacuation instructions were formulated for public dissemination in the State EOC and transmitted to the County EOC where they stopped. Reception areas were not alerted for the expected influx of evacuees nor was any public notification simulated.

Protective actions for the ingestion pathway that should have been mandatory and automatic from the plan were not implemented even with the high radioiodine content of the release measured in the field. No shift to stored feed or sampling of food products was observed.

Sheriff's vehicles were observed at the traffic control points in Harrison and Pottawattamie Counties.

8. Health, Medical and Exposure Control

No exercise objectives were directed toward this element, however, certain actions were observed as part of the evaluation of the ACCIDENT ASSESSMENT elements. The following are general observations of shortcomings:

a. The field monitoring teams had both self-reading and permanent record dosimetry. However, they did not read them regularly (the plan is lacking in this respect).

b. KI was available for use by the field team only. The plan calls for its use by all emergency workers. The KI was in crystal form. Team members were unaware of the proper dosage and the bottle was undated.

9. Recovery and Reentry Operations

OBJECTIVE: Demonstrate de-escalation from the various emergency classifications.

State/County

The only observed activity was a termination message to EBS and activity by the field team coordinator to order soil and vegetation samples for reentry determinations. Since the scenario did not call for de-escalation, no off-site actions could be evaluated. Local officials received the EBS "close out" message and dismissed participants. No discussion of the relaxation of protective measures was accomplished.

10. Relevance of the Exercise Experience

The State and local participants demonstrated their capabilities as best as could be expected under the handicap of an inadequate scenario. Without the mistake on the field team cue card, the demonstration of many of the objectives of the exercise would not have been possible. As scenario events progressed very slowly, local officials grew bored and some terminated their involvement prematurely.

B. NEBRASKA

1. Emergency Operations Facilities and Resources

OBJECTIVE: a. To test State and local communications.

b. To test local communications and coordination with all involved agencies.

c. To demonstrate activation of the local Emergency Operating Center.

State/County

Communications at State and local EOCs and the CRUSH were adequate to keep all parties informed of the developing situation or the need to implement protective actions. This exercise demonstrated improved telephone conference and facsimile capabilities over previous events.

The Information Authentication Center (IAC), located in the EOF, had only one telephone line available for State personnel. This caused delays in the transmission of situation reports to local government.

FAX messages were improperly numbered (unnumbered or out of sequence). This led to some confusion among staff members on the currency of information.

As identified in the July, 1981 exercise report, the dual use of MRC telephones restricts the use of the communications systems. The emergency numbers are merely extensions of routine office numbers in the remainder of the building, which allows routine business calls to be routed to the MRC facility.

The Washington County EOC is presently under development. Full staffing, resulting from an actual emergency, would tax the facility as it presently exists, but this would be alleviated with the final phase of construction.

2. Alerting and Mobilization of Officials

OBJECTIVE: a. To demonstrate state capability to deploy the State Field Command Post to include local and long-range communications.

b. Demonstrate local capability for initial notification receipt and alerting of key personnel.

State/County

The deployment of the Field Command Post (CRUSH) was accomplished in a timely manner. Other notifications at the State and County levels were observed by the Federal evaluators. State notification to Federal response organizations occurred as described in the State plan and were accomplished on a timely manner. The Nuclear Accident Report forms were not always completed properly, e.g., no plant classification status, improper indication of release status and non-sequential numbering of messages.

The FCP was not notified by the plant or the State EOC of the Site Area Emergency. Likewise, they did not receive a General Emergency notification.

3. Emergency Operations Management

No specific exercise objectives were established to test this evaluation standard. Generally, however, organizations (both State and local) functioned efficiently within the scope of the limited scenario. Support by local officials was good (elected representatives from both county government and the City of Blair). Because of their level of participation, there was only a limited opportunity for local officials to demonstrate their knowledge of planning responsibilities.

4. Public Alerting and Notification

OBJECTIVE: a. To demonstrate the plume exposure pathway warning system and the state and local governments ability to activate it.

b. To test mechanism for dissemination of public warning through the EBS System.

State/County

Upon the declaration of the Site Area Emergency by the plant, local government activated the siren warning system and the EBS station (KFAB) was notified. While no actual broadcast was made the ability to activate the system in a timely manner was demonstrated.

5. Public and Media Relations

OBJECTIVES: a. To demonstrate the state's ability to brief the media accurately and expeditiously as to emergency status and information.

b. To demonstrate State Civil Defense support for the IAC and MRC.

c. Local demonstration of coordination of public information activities.

State

Little coordination of actual releases to the public was accomplished among the PIOs. Only information sharing occurred. Generally each PIO prepared a separate release for each situation.

The plant PIO continually referred to herself as the "designated spokesperson for the MRC." This violates the principle in the State plan that a government official shall speak for government operations.

County

Local government officials stated that a radio should be available in the EOC to monitor EBS and other media broadcasts. Because no local representative was present at the IAC, the local PIO was to determine physical boundaries for the media release and transmit the information to the IAC. The lack of adequate telephone lines into the IAC made contact for information verification difficult.

6. Accident Assessment

No radiological monitoring activities or accident assessment functions were demonstrated during the exercise.

7. Actions to Protect the Public

Protective actions were recommended by the State after consultation with the plant and the State of Iowa. Conflicting reports on release status resulted in some confusion, but off-site officials took the conservation approach and ordered appropriate protective measures.

8. Health, Medical and Exposure Control

Dosimetry was provided to the Washington County staff only after the declaration of the General Emergency condition. Once issued no regular reading of the instruments was conducted.

9. Recovery and Reentry Operations

This aspects of emergency operations was not tested during the exercise.

10. Relevance of the Exercise Experience

The state and local participants demonstrated their capabilities as described in the exercise objectives as well as possible under the limited handicap of an inadequate scenario.

IV. MAJOR DEFICIENCIES

No major deficiencies in plan implementation were observed during this exercise.

V. RECOMMENDATIONS FOR IMPROVEMENT

A. IOWA State/County

1. Communications operators at all government levels should be trained on the use of reporting forms and terminology appropriate to REP emergency response.

2. Field personnel must be kept appraised of changing plant conditions and status in order to accomplish necessary personnel protection.

3. Current emergency classification information should be posted in EOCs in a highly visible location.

4. Maps and displays in EOCs should have pre-plotted data showing evacuation routes, radiological monitoring points and population distribution. Status boards should be kept current.

5. Telephones in the Harrison County EOC should be relocated to the second floor to better utilize available operational space.

6. The formulation of the initial EBS public information message should be the responsibility of local government. This and other time sensitive notifications could be more quickly formulated by local government utilizing the pre-written format in the plan. State involvement would be accomplished, if necessary, through the telephone conference.

7. An adequate method of notifying transients in the Wilson Island/DeSoto Bend recreational areas should be developed to provide timely alert and notification. An aircraft fitted with PA capabilities may be necessary to fulfill this item.

8. The Iowa spokesperson should be given more detailed information concerning Iowa's response than is contained in the media releases themselves. This position requires detailed knowledge of events and actions to adequately respond to media inquiries.

9. A minimum of two field monitoring teams are required to track the plume. (see attached 4 for a detailed technique for such monitoring.)

10. A generator to operate the field monitoring team air pump is needed.

11. Closer sharing of field team data between the utility and the Iowa Field Team Coordinator would facilitate accident assessment.

12. With the high iodine concentrations detected by the field monitoring team, automatic provisions of the plan for protecting the ingestion pathway should have been implemented.

13. Pre-defined boundaries for physically describing the affected area of the EPZ would facilitate more rapid release of information to the public.

14. Only operating concepts identified in the plans should be utilized during the exercise.

B. NEBRASKA State/County

1. Additional telephone lines are needed at the IAC.

2. Messages and Accident Report forms should be carefully numbered sequentially to avoid confusion on the currency of information and plant status.

3. The CRUSH should be notified by the facility or the State EOC of changes in plant status or emergency classification.

4. All spokespersons/PIOs should carefully coordinate the content of releases. Preferably, a single release representing all jurisdictions would be developed.

5. The presence of a local government representative in the IAC would expedite the development of EBS messages and media releases, e.g., determination of physical boundaries for the protective actions.

6. Pre-defined boundaries for describing the physical area affected by the accident would facilitate rapid dissemination of information to the public.

ATTACHMENT 1

IOWA STATE OBJECTIVES

Ft. Calhoun Nuclear Station
Omaha Public Power District
Exercise

GENERAL OBJECTIVES

Activation and Mobilization

1. Demonstrate the capability to alert and mobilize emergency response personnel.

Protective Action Response

1. Demonstrate decision-making support from appropriate elected or appointed public officials.
2. Demonstrate the capability to formulate and execute measures to protect the public.
3. Demonstrate the capability of local jurisdictions to control access to areas potentially affected by off-site releases.
4. Demonstrate the capability of local and State radiological control staffs to monitor environmental conditions and make appropriate recommendations to EOC decision makers.

LOGISTICAL SUPPORT AND EXTENDED CAPABILITIES

1. Demonstrate adequate communications between emergency response facilities and field activities.
2. Demonstrate the existence of adequate emergency facilities and equipment to support response efforts.

SPECIFIC OFF-SITE EMERGENCY RESPONSE ORGANIZATIONS (City/County/State)

1. Prompt notification system:
   (a) Public alert, notification, and information, including full siren sounding.
   (b) Activate the Emergency Broadcast System.
2. Initiation, direction, and control of radiological monitoring teams.
3. Plume tracking techniques by the radiological monitoring teams, including equipment operation, radiological measurements, environmental sampling, and data reporting.
4. Initial notification and follow-up status information for recovery organization personnel and off-site authorities.
5. Coordinated communication with off-site authorities - State and County.
6. Dose assessment, dose projection, and protective action methodology.
7. Participation in the OPPD media release center.
8. Press release development and applicable press release issuances.
9. Coordination of off-site radiological monitoring activities.
10. De-escalation from the various emergency classifications and emergency termination decisions.

ATTACHMENT 2

STATE of NEBRASKA
MILITARY DEPARTMENT
STATE CIVIL DEFENSE AGENCY
1300 Military Road
Lincoln, Nebraska 68508
(402)471-3241

Hon. Charles Thone
Governor

Major General Edward C. Binder
Director

Francis A. Laden
Assistant Director

24 August 1982

SCENARIO

FORT CALHOUN NUCLEAR POWER PLANT
TEXT EXERCISE

15 September 1982

I. INTRODUCTION

The licensing procedures of the Nuclear Regulatory Commission(NRC) require the Fort Calhoun Station to hold an annual emergency exercise. This exercise must simulate an emergency resulting in an offsite radiological release requiring response by offsite authorities. The State of Nebraska also has to demonstrate that significant features of State and local emergency response plans and operations are adequate to cope with an emergency situation.

The definition of an exercise includes mobilization of State and local resources adequate to verify the integrated capability and a major portion of the basic elements of the State and local plans to respond to an accident scenario requiring response (NUREG 0654 FEMA REP 1 Rev 1).

Iowa State and local governments will also be tested by means of locally prepared scenarios and objectives based on the broad framework provided by the Plant scenario.

Initial observer briefings will be held at 1300 hours on 14 September 1982 in the Conference Room of the Omaha Public Power District(OPPD) Electric Operations Building at 43rd Street and Leavenworth in downtown Omaha. This will be a combined session for Federal inspectors observing internal plant operations plus the State observers who will be checking offsite emergency operations. A critique for participants and observers will be held in the same location on 16 September 1982 at 1300 hours.

II. OBJECTIVES OF THE EXERCISE

1. Test the Fort Calhoun Nuclear Power Plant Emergency Plan.

2. The following Nebraska State support capabilities as listed in the State Response Plan will be tested.

   a. To demonstrate State capability to deploy the State Field Command Post to include local and long-range communications.

   b. To demonstrate State capabilities to notify other State, local, Federal and private agencies of incident classification and other significant changed conditions.

   c. To demonstrate State ability to brief media accurately and expeditiously as to emergency status and information.

   d. To demonstrate effectiveness of plume exposure pathway warning system and State and local governments ability to activate it.

   e. To demonstrate State CD support for Information Authentication Center(IAC) and Media Release Center(MRC).

   f. To test State and local communications.

   g. To test mechanisms for dissemination of public warning through the EBS system.

3. The following Nebraska local support capabilities as listed in appropriate local plans will be tested:

   a. Initial notification receipt and alerting of key people.

   b. Communications and coordination with all involved agencies.

   c. Activation of local Emergency Operating Center(EOC).

   d. Coordination of local public information activities. Includes preparations for notification of the public with actual notification being simulated.

   e. Provision of fire and rescue support as required by plant.

   f. Transport and reception of simulated radiation casualties.

4. Iowa objectives will be developed as part of the Iowa scenario.

III. FORT CALHOUN EXERCISE

This exercise will begin when the plant notifies the Nebraska State Patrol that they have experienced an equipment malfunction which has released radioactive gas which is in excess of Technical Specification limits from the auxiliary building. (NOTIFICATION OF UNUSUAL EVENT) A personal injury accident will occur to a worker involved with isolating the malfunctioning equipment.

Later, a failed fuel monitor will indicate a fuel failure greater than 1%. This will require an "ALERT" Classification.

A SITE AREA EMERGENCY classification will be announced when the reactor coolant leakage rate exceeds the available charging pumps make-up capacity.

Escalation to a GENERAL EMERGENCY will occur after the following series of events have been experienced. First, reactor coolant system pressure will drop dramatically indicating a large break LOCA. Second, when emergency power is required one diesel generator will not start. Finally, offsite power will be lost. These events lead to a potential core melt condition.

Sometime after declaration of a GENERAL EMERGENCY, a gaseous radioactive release will leak from the containment structure to the environment. This release will consist of noble gases and iodine gas. Radiological monitoring teams will be dispatched to both onsite and offsite areas to identify the plume and to verify dose/concentration projections and projected plume behavior. Protective action recommendations will be determined and coordinated with offsite agencies.

Meanwhile, plant status will improve with the initiation of long-term core cooling. When plant is in a stable condition, the emergency classification will be de-escalated. The exercise will be terminated when offsite agencies have relaxed protective actions.

IV. CONCEPT OF EXERCISE

1. State Field Command Post will be sent to the Plant EOF once ALERT has been declared. Use of BLUEBIRD and State aircraft will be simulated.

2. IAC at the EOF and the MRC at the Omaha/Douglas County EOC will be activated. When local sirens are sounded, IAC/MRC will issue immediate public information releases.

3. State EOC will be partially activated. Agency notifications and follow-up transmission of exercise information will be accomplished. Department of Health representative will be at the State EOC. All other Agency involvement will be simulated.

4. Washington County EOC will be activated on a limited basis for the duration of the exercise. Full activation will take place from 1130 to 1500 hours. Local outdoor warning sirens for Plume EPZ will be sounded.

5. State observer assignments:

   a. Plant EOF
   b. State Field Command Post
   c. Washington County EOC
   d. State EOC

6. State observers will attend meetings listed in Section I above.

NRC

Attachment 3

SCENARIO DESCRIPTION, OBJECTIVES, & SCENARIO

FORT CALHOUN STATION
1982 EMERGENCY EXERCISE SCOPE
SCENARIO DESCRIPTION

The 1982 annual emergency exercise at the Fort Calhoun Station will involve an inadvertent release of gaseous radioactivity from the auxiliary building, a rapid increase in the failed fuel monitor reading, and a large break LOCA, concurrent with a loss-of-offsite power. This sequence of events will eventually result in a "General Emergency" classification, after sequentially attaining the other three emergency action levels. This sequence of events will also result in the mobilization of the complete Emergency Response and Recovery Organization.

The exercise will commence with the reactor operating at 100% power, with one charging pump and one high pressure safety injection pump removed from service for maintenance. Between midnight and 6:00 a.m., there will be a release of radioactive gas, due to equipment malfunction, from the auxiliary building to the environment which will be in excess of the Technical Specification limits. As required by the Fort Calhoun Station Radiological Emergency Response Plan and the Emergency Plan Implementing Procedures, the "Notification of Unusual Event" emergency classification will be declared and all necessary notifications and actions will be taken. A personnel injury will occur while attempting to isolate the malfunctioned equipment and will be treated accordingly. Exercise Objectives 1, 4, 5, 9, 10, 11, 12, 13, and 20 of Attachment 2 will be addressed by this emergency classification.

Approximately one hour after the "Notification of Unusual Event" classification is declared, the emergency exercise will escalate to the "Alert" category, due to the failed fuel monitor indicating greater than a 1% fuel failure. All necessary notifications and actions associated with this classification will be taken. This emergency action level will address Exercise Objectives 1, 2, 9, 10, and 11 of Attachment 2.

Approximately two hours into the event, a fire will be indicated in the old maintenance shop by the fire detector alarm, the fire will be visually verified, and the Fort Calhoun Station fire brigade will be activated. This event will address Exercise Objective 3 of Attachment 2.

During the period of two to four hours into the emergency, primary system parameters will indicate progressively higher leakage rates from the reactor coolant system. Approximately four hours into the emergency, the reactor coolant leakage rate will exceed the available charging pumps make-up capacity and the emergency will escalate to the "Site Area Emergency" classification. All necessary notifications and actions associated with this classification will be taken. After the "Site Area Emergency" is declared and before the reactor is tripped, the reactor coolant system pressure will drop dramatically, indicating a large break LOCA. The reactor will shut down as a result of the reactor protective system and the engineered safeguards will initiate emergency core cooling and emergency AC power. One diesel generator will not start.

Approximately ten minutes after definite indication of the large break LOCA, offsite AC power will be lost. Because of the loss of offsite power, the loss of one diesel generator, the unavailability of one high pressure safety injection pump and one charging pump, and the indication of a large break LOCA, a "General Emergency" will then be declared due to the potential for core melt conditions.

An operator will be dispatched to the diesel generator room to evaluate and determine the reason for the malfunction of the diesel generator. Testing and repair of the disabled diesel generator will be planned and initiated. This action will demonstrate Exercise Objective 6 of Attachment 2.

The gaseous fission product activity will be released to the environment at a containment leak rate of 0.2 percent of the free volume of containment per twenty-four hours. It is anticipated that a significant number of fuel rods in the core will rupture and release fission products to the containment atmosphere. Of the radioactivity released to containment, 100% of the noble gases and 25% of the iodine gases will be available for release to the environment.

Radiological monitoring teams will be dispatched to both onsite and offsite areas to track the plume of released activity and to verify dose/concentration projections and projected plume behavior. Specific exercise objectives of Attachment 2 demonstrated by this sequence are items 1, 2, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18.

After the "General Emergency" classification is declared and all required notifications are completed and immediate actions taken, long term core cooling will be initiated. The monitoring teams will continue with the plume tracking and monitoring. The post-accident sampling system (PASS), if fully operational, will be operated to provide pertinent information to the Recovery Organization during recovery planning. Output data from the PASS will also be used by the Technical Support Center staff to quantify core damage. Operation of the PASS will demonstrate Exercise Objective 7 of Attachment 2.

At the time the plant is considered to be in a stable condition, the emergency classification will be de-escalated based upon the discretion of the Recovery Organization and offsite support agencies. The emergency exercise will then be terminated. This action will demonstrate Exercise Objective 19 of Attachment 2. This scenario should provide for the demonstration of all Exercise Objectives as detailed in Attachment 2.

~~Attachment 2~~

FORT CALHOUN STATION
1982 EMERGENCY EXERCISE OBJECTIVES
DESCRIPTION OF PERFORMANCE GOALS

The scenario was prepared in a manner to demonstrate specific pre-planned objectives. The following twenty (20) objectives have been incorporated into the 1982 emergency exercise for the Fort Calhoun Station and should be demonstrated:

1. A capability to initiate the appropriate emergency classification and commence necessary actions consistent with equipment status and instrument parameters.

2. Notification methods of emergency response personnel and augmentation of the on-shift personnel.

3. Fire brigade activation, practices, and communication.

4. Initiation, direction, and control of radiological monitor teams.

5. Plume tracking techniques by the radiological monitor teams, including equipment operation, radiological measurements, environmental sampling, and data reporting.

6. The initiation, direction, and completion of damage control and emergency repair capabilities by the onsite emergency organization.

7. Operation of the reactor coolant post-accident sampling system, if fully operational, by the onsite emergency organization group.

8. Simulated evacuation of personnel from the site, including proper instruction to ensure evacuation to a safe offsite assembly area.

9. Initial notification and follow-up status information for recovery organization personnel and offsite authorities.

10. Coordinated communication between the control room, Operations Support Center, Technical Support Center, and Emergency Operations Facility.

11. Coordinated communication with offsite authorities.

12. Dose assessment, dose projection, and protective action methodology.

13. Engineering evaluations of station conditions and proposed corrective action directives.

14. Public alert, notification, and information, including full siren sounding.

15. Activation and operation of the Media Release Center.

16. Press release development and applicable press release issuances.

17. Accountability of personnel within the owner controlled area.

18. Coordination of offsite radiological monitoring activities.

19. De-escalation from the various emergency classifications and emergency termination decisions.

20. Rescue of injured personnel, transport to medical facility, and radiological treatment.

Fort Calhoun Station Unit No. 1
1982 EMERGENCY EXERCISE
Detailed Scenario

ox. e Min)	EVENT DESCRIPTION	ANTICIPATED ACTION
0	Waste Gas Header Rupture in the gas compressor room.	
	Control Room Operator Cue Card	
	Annunciator Alarm	
	'Waste Disposal System Malfunction'	Notify Auxiliary Building Operator of alarm. Continue normal operational functions.
	Auxiliary Building Operator Cue Card	
	Annunciator Alarm on AI-100	
	'Standby Gas Decay Tank Operating'	
	You enter Room 16 to isolate gas decay tank WD-29C and route flow to tank WD-29B. After closing valve WD-160 to isolate the tank, the line ruptures downstream (tank side) of check valve WD-161. Shrapnel from the ruptured line strikes you on the front of your right shoulder, cutting you and knocking you down. You fall and strike your head and are disoriented for approximately 2 minutes. You make your way out of the room and report the situtation to the control room. The rupture cannot be isolated.	After the injured operator has reported the situation to the control room, the Rescue Squad should be summoned and someone sent to assist the injured operator. These actions will demonstrate objective number 20.
03	Control Room Operator Cue Card	
	Annunciator Alarm	Check radiation monitor panel.
	'Main Stack Gross Rad/Iodine High Radiation'	
	Radiation Monitor Alarm	

Fort Calhoun Station Unit No. 1
1982 Emergency Exercise
Detailed Scenario

Initial Conditions:

1. Operation at 100% (1500 MWth) for 240 Effective Full Power Days.

2. Presently at 100%

3. 161Kv offsite AC power feedline is out of service and is projected to be out of service until approximately noon.

4. Equipment Status: HPSI pump SI-2C, out for service

   Charging pump CH-1A, out for service

   Auxiliary Building Ventilation Fans running: 3 exhaust
   2 supply

5. Weather Conditions: Wind Speed = 2 mph
   Wind Direction = 300°
   10 meter Temp. = 13°C (55°F)

'RM-062 Alert'

RM-061 = 500 cpm

RM-062 = 2700 cpm

RM-052 = 1200 cpm

RM-060 = 140 cpm

RM-078 = 2 mr/hr

RM-076 = 1 mr/hr

---

06 Control Room Operator Cue Card

Radiation Monitor Alarm

'RM-062 High'

'RM-078 Alert'

RM-061 = 1100 cpm

RM-062 = 3000 cpm

RM-052 = 1500 cpm

RM-060 = 200 cpm

RM-078 = 4 mr/hr

RM-076 = 2 mr/hr

Declare a Notification of Unusual Event Emergency per EPIP-OSC-1, Item IV.1.b.1). Activate the Emergency Plan per EPIP-OSC-2. Respond to the Unusual Event classification per EPIP-OSC-3.

Annunciator Alarm

'Ventilation Isolation Command'

Respond per EP-11, High Radioactivity.

Special Control Room Operator Cue Card

If an operator attempts to shutdown the ventilation exhaust fans, the indicator lights will show that fans VA-40A and VA-40B have stopped. Operation of the switch for VA-40C will not give a Green light. The ammeter for VA-40C will indicate that the fan is running.

This sequence will demonstrate objective numbers 1, 2, and 9.

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12 Control Room Operator Cue Card

Radiation Monitor Alarms if the ventilation system exhaust fans are running.

'RM-060 Alert'

'RM-061 Alert'

Initial Dose Assessment per EPIP-OSC-11 should begin in the OSC. Assessment of the impact of venting the Auxiliary Building to the atmosphere in an authorized controlled manner should also begin. The necessity of repairing the damaged vent header should be assessed.

'RM-052 Alert'

'RM-076 Alert'

RM-052 = 8600 cpm

RM-060 = 275 cpm

RM-062 = 12,000 cpm

RM-061 = 2300 cpm

RM-078 = 5 mr/hr

RM-076 = 3 mr/hr

These actions will demonstrate objectives numbered 11, 12 and 13.

Any initiation of vent header repair will demonstrate objective number 6.

Control Room Operator Cue Card

No change in Primary System Parameters.

T_{HOT} and T_{COLD} are normal.

Pressurizer Level = 62%

VCT Level = 92%

RM-076 thru RM-079 = 6 mr/hr

RM-080 = 0.5 mr/hr

RM-081 = 1.0 mr/hr

RM-082 = 1.5 mr/hr

RM-083 = 0.2 mr/hr

RM-084 = 1.0 mr/hr

RM-085 thru RM-089 = normal background

RM-070 thru RM-075 = normal background

RM-091A/B = normal background

NOTE

When the Auxiliary Building Ventilation Exhaust fans have been shutdown, the stack monitor readings will decrease to background over a period of an hour.

Control Room Operator Cue Card

No change in Primary System Parameters. All levels and pressures are normal.

ARM Readings

RM-070 thru RM-075 = normal background

Dose Assessment is continuing at the OSC per EPIP-OSC-11.

RM-091A/B = normal background

RM-078 = 6 mr/hr

RM-084 = 2 mr/hr

RM-088 = 0.75 mr/hr

RM-089 = 0.2 mr/hr

:0 Control Room Operator Cue Card

Annunciator Alarm

'Reactor Coolant Gamma Activity High'

Respond per EP-23, Reactor Coolant System High Activity, which requires RC sampling and analysis.

Note: RC sampling and anlaysis will require approximately 1 hour.

Radiation Monitor Alarm

'RR-214 PRM-1 High'

'RR-214 PRM-2 Alert'

Declare Alert Emergency per EPIP-OSC-1, Item IV.2.a.2), Respond per EPIP-OSC-4.

Sound Nuclear Emergency Alarm to evacuate all non-essential personnel.

Incore detector 30 alarm then reset

Area Radiation Monitor readings are stable

Primary System levels temperatures and pressures are normal.

Stack PRMs read normal background.

Response to these alarms should demonstrate objectives 1, 2, 7, 9, 11 and 13.

:36 Control Room Operator Cue Card

Incore detector 26 alarm then reset

:45 Control Room Operator Cue Card

No change in RR-214 PRM-1 & 2 readings or Primary System parameters.

:00 Control Room Operator Cue Card

RR-214 PRM-1 & 2 readings are stable.
No changes in Primary System parameters.

Area Radiation Monitor (ARM) Readings:

RM-076 thru RM-079 = 4 mr/hr

RM-080 thru RM-084 = 3 mr/hr

RM-085 thru RM-088 = 2 mr/hr

RM-089 = normal background

RM-091A/B = normal background

RM-070 thru RM-075 = normal background

Stack PRMs read normal background

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30 Control Room Operator Cue Card

RR-214 PRM-1 reading has gone off scale high

RR-214 PRM-2 has returned to normal

Initial Levels

Pressurizer Level = 62%

VCT Level = 92%

ARM Readings:

RM-070 thru RM-075 = normal background

RM-076 thru RM-084 = 3.5 mr/hr

RM-085 thru RM-088 = 3 mr/hr

RM-089 = 0.2 mr/hr

RM-091A/B = normal background

Stack PRMs read normal background

---

00 Control Room Operator Cue Card

Pressurizer Level Indicators L-101X/Y read 61.5%

Pressurizer Pressure Indicators P-103 X/Y read 2100 psia.

Primary System Temperatures are normal

VCT Level = 91%

ARM Readings

RM-070 = 151 mr/hr

RM-074 = 101 mr/hr

RM-091A = normal

RM-078 = 3.5 mr/hr

RM-084 = 3.5 mr/hr

RM-088 = 3.5 mr/hr

RM-089 = 0.2 mr/hr

Stack PRMs read normal background

Cue Card to Chemist

RC Activity is as indicated on the computer printout of the isotopic analysis.

Chemists should notify the Control Room that RC activity is normal

Initiate electrical check of monitors to determine the cause of the alarms.

---

06 Control Room Operator Cue Card

VCT Level = 90.5%

Pressurizer Level = 61%

Pressurizer Pressure = 2100 psi

Letdown Flow = 36 gpm

NOTE

If the operators request a leak rate, the following information should be provided: Primary System leak rate is 1.5 gpm at this time.

---

18 Control Room Operator Cue Card

Pressurizer Level = 60.8%

Pressurizer Pressure = 2100 psi

VCT Level = 90%

Letdown Flow = 36 gpm

RM-050/051 = 5.5 E+04 cpm/4.0E+04 cpm (Containment position)

RM-070/074 = 151/101 mr/hr

NOTE

If the operators request a leak rate, the following information should be provided: Leak Rate at this time is 2 gpm if determination was started at time 3.0 hours.

Respond per EP-28, Reactor Cooling Leak

---

30 Control Room Operator Cue Card

Pressurizer Level = 60%

Pressurizer Pressure = 2099 psi

Primary System Temperatures are normal

VCT Level = 87.5%

Letdown Flow = 26 gpm

Containment humidity is above normal

ARM Readings

RM-070 = 152 mr/hr

Observe system behavior.

If the operators request a leak rate, the following information should be provided: Leak Rate is 3.5 gpm at this time.

RM-074 = 102 mr/hr

RM-091A = off scale low

RM-078 = 3.4 mr/hr

RM-084 = 3.4 mr/hr

RM-088 = 3.4 mr/hr

RM-089 = 0.2 mr/hr

Stack Monitors read normal background.

Auxiliary Building Operator Cue Card

Containment Sump Level Alarm on AI-100

Sump Level = 21" (90%)

2

Control Room Operator Cue Card

Pressurizer Level = 59%

Pressurizer Pressure = 2097 psia

VCT Level = 83%

Containment humidity is increasing

Observe system behavior.

If the operators request a leak rate, the following information should be provided: Leak Rate is 4.25 gpm at this time.

54

Control Room Operator Cue Card

Charging Pump CH-1C start

VCT Level = 76%

Letdown Flow = 26 gpm

Pressurizer Pressure = 2095 psi

If the operators request a Leak Rate, the following information should be provided: RCS Leak Rate is 6.5 gpm at this time.

00

Control Room Operator Cue Card

Fire Alarm in Service Building

Pressurizer Level = 61% and rising

Primary System Temperatures are normal

VCT Level = 66%

Letdown Flow = 36 gpm

Pressurizer Pressure = 2100 psi

RM-050/051 = 9.0E+04 cpm/4.4E+04 cpm

RM-070/074 = 325 mr/hr/150 mr/hr

Respond to fire alarm per EP-10.

If the operators request a leak rate, the following information should be provided: RCS Leak Rate is 7.5 gpm at this time.

Cue Card for Operator Investigating Alarm

Oil Fire in area of Auxiliary Boiler.

Activate Fire Brigade

Actions in response to the fire alarm will demonstrate objective number 3.

Control Room Operator Cue Card

Charging Pump CH-1C auto start

Pressurizer Level = 58%

Pressurizer Pressure = 2095 psi

RM-050/051 = 9.5E+04/4.9E+04 cpm

VCT Level = 60%

RM-070/074 = 500/200 mr/hr

If the operators request a leak rate, the following information should be provided: RCS Leak Rate is 12 gpm at this time.

Control Room Operator Cue Card

'VCT Low Level Alarm'

CH-11A Level = 86%

Pressurizer Level = 61.5%

Pressurizer Pressure = 2100 psi

VCT Level = 49%

Make up to VCT from Concentrated Boric Acid Tank CH-11A

Control Room Operator Cue Card

Pressurizer Level = 58%

Pressurizer Pressure = 2093 psi

Primary Systems Temperatures are normal

VCT Level = 90%

CH-11A = 65%

RM-050/051 9.7E+04/4.8E+04 cpm

Charging Pump CH-1C auto start

RM-070/074 = 500/200 mr/hr

If the operators request a leak rate, the following information should be provided: RCS Leak Rate is 25 gpm at this time.

Stop VCT makeup after VCT Level exceeds 90%.

Control Room Operator Cue Card

Pressurizer Pressure = 2085 psi

Pressurizer Level per L-101X/Y = 60% and rising slowly.

VCT Level = 54% and dropping fast

CH-11A Level is decreasing

If the operators request a leak rate, the following information should be provided: RCS Leak Rate is 33 gpm at this time.

Cue Card to the Fire Brigade Leader

Fire near Auxiliary Boiler has been extinguished.	Initiate clean up of the area of the fire.

18	Control Room Operator Cue Card	Check: 1) VCT Level and boric acid batching system.
	Annunciator Alarm	
	'VCT Level Hi-Lo'	Make up to VCT from CH-11A.
	VCT Level = 51.7%	If the operators request a leak rate, the following information should be provided: RCS Leak Rate is 40 gpm at this time.
	CH-11A Level = 65%	
	Pressurizer Level is steady at 61%.	Declare Site Area Emergency per EPIP-OSC-1, Item IV.3.a.. Respond per EPIP-OSC-5. Dose Assessment per EPIP-EOF-6 should begin if not in progress.

DO	Control Room Operator Cue Card	If an operator asks for a leak rate, provide the following information: RCS Leak Rate is 55 gpm at this time.
	Annunciator Alarm: 'TM/Low Pressure Channel Pretrip.'	Early Warning System sounded.
	Primary System Temperatures are normal	
	Pressurizer Pressure = 1984 psi	If VCT make up has been initiated, the VCT level equals 65%. If VCT make up has not been initiated, the VCT level equals 30% and is decreasing rapidly at 2.5% per minute.
	Pressurizer Level = 54.5%	
	RM-050/051 = 1.5E+05/7.5E+04 cpm	
	RM-070/074 = 1000/450 mr/hr	CH-11A Level = 40% if making up to VCT
	Wind speed change from 2.0 mph to 6.5 mph.	CH-11A Level = 65% if <u>not</u> making up to VCT
		Response to these actions will demonstrate objectives numbered 1, 2, 4, 5, 9, 10, 11, 12, 13, 14 and 18.

9	Control Room Operator Cue Card	
	Annunciator Alarm	
	'TM/Low Pressure Channel Trip'	Respond per EP-1 and find:
	'Pressurizer Safety Injection Signal Lo-Lo Press'	1) All CEA's are on the bottom 2) Turbine isolation valves closed 3) Generator breakers are open
	'Reactor Trip'	
	'Safety Injection Command'	Check: 1) Pressurizer pressure and level, 2) SI pumps start, 3) Diesel Generators start and come up to speed.

'Turbine Trip'

'Diesel Auto Start Demand'

Pressurizer Pressure = 1585 psi

Pressurizer Level = 38%

Primary System Temperatures are slowly decreasing

SI Pumps running

Diesels are at speed and synchronized

VCT Level = 25% if make up not in progress

60% if make up is in progress

If an operator asks, Transformer T-1 is available to backfeed offsite power.

Activate the Media Release Center and prepare a public information broadcast.

This action will demonstrate objective numbers 15 and 16.

Control Room Operator Cue Card

Pressurizer Level and Pressure drop from 35% and 1495 psi to 0% and 100 psi in a period of 17 seconds.

Containment Pressure increase from 1 psig to 48 psig in a period of 20 seconds.

'Containment Pressure High Signal'

Containment Spray Command

Containment ARM's:

RM-070/074 = 1.0E+04/5.0E+03 mr/hr

RM-091A/B = off scale low

RM-050/051 High Alarms

RM-050/051 = 1.0E+06/6.0E+05 cpm

RM-078 = 3.1 mr/hr

RM-084 = 3.1 mr/hr

RM-088 = 3.1 mr/hr

RM-061/062 = 100/50 cpm

Containment Sump Level = 100%

Containment Sump Pumps are running.

Large LOCA is indicated.

Respond per EP-5.

Control Room Operator Cue Card

SIRWT Level = 60%

Special Contingency Cue Card for the Control Room Operator

If the operator is backfeeding through

RCS Pressure = 25 psia

Pressurizer Level = 0%

RM-070/074 = 2.2E+05/9.3E+04 mr/hr

RM-050/051 = >10^6 cpm (off scale)

RM-091A/B = 90 R/hr

RM-061/062 = 100/50 cpm

Containment Pressure = 17 psig

T-1, initiate the following sequence with a cue card:

1) Breakers 3451-4/5 Tripped

2) Transformer T-1 winding temp. high

3) Transformer T-1 Oil Level Lo Oil Temp. High

4) Transformer T-1 Cooler Failure

5) Loss of offsite power is indicated

Control Room Operator Cue Card

Diesel #2 Annunciator Alarm

'Diesel Trouble'

Annunciator Alarm

'4160V Bus 1A4 Low Voltage'

'Recirculation Actuation Signal'

RM-050/051 = >10^6 cpm (off scale)

RM-070/074 = 1.0E+06/5.0E+05 mr/hr

RM-091A/B = 4.9E+2 R/hr

RM-061/062 = 100/50 cpm

Containment Pressure = 15 psig

Declare General Emergency per EPIP-OSC-1, Item IV.4.a, b, and c. Respond per EPIP-OSC-6

Issue news release regarding escalation of the emergency class to General Emergency.

These actions will demonstrate objective numbers 1, 9, 10, 11, 13, 14, 15 and 16.

Control Room Operator Cue Card

Primary System Temperature = 350°F

Primary System Pressure = 24 psia

Containment Pressure = 14 psig

Containment Sump Level = 100%

Containment Sump Post Accident Level = 245" on LIC-384.

RM-050/051 = off scale high

RM-070/074 = 5.0E+06 mr/hr

RM-091A/B = 5.0E+03 R/hr

RM-061/062 = 100/50 cpm

Offsite Radiological Monitoring is in progress

The Primary System is stable and Long Term Core Cooling Procedures are being implemented per EP-SB.

Dose Assessment projections are in progress to reflect current conditions inside containment.

Protective Actions for the general public will be recommended based upon Dose Assessment projections.

These actions will demonstrate objective numbers 4, 5, 10, 11, 12, 14, 16 and 18.

Control Room Operator Cue Card

Primary System Pressure = 24 psia

Primary System Temperature = 320°F

Containment Pressure = 12 psig

RM-050/051 = off scale high

RM-070/074 = 7.5E+06 mr/hr

RM-091A/B = 7.4E+03 R/hr

RM-061/062 = 100/50 cpm

Wind direction change from 300° to 320°

#1 Nebraska Aircraft Radiological Survey start.

Control Room Operator Cue Card

RCS Temperature equals 300°F.

Containment Pressure = 10 psig

RCS Pressure = 24 psia

RM-050/051 = off scale high

RM-070/074 = >10^7 mr/hr (off scale)

RM-091A/B = 1.0E+04 R/hr

RM-061/062 = 100/50 cpm

Radiological Monitoring is continuing.

Recovery Organization assessment and planning are in progress.

These actions are a continuing demonstration of objective numbers 5, 9, 10, 11, 12, 13 and 18.

Control Room Operator Cue Card

RCS Temperature = 280°F

RCS Pressure = 22 psia

Containment Pressure = 5 psig

RM-070/074 = 1.0E+07 mr/hr

RM-091A/B = 9.5E+03 R/mr

RM-050/051 = off scale high

RM-061/062 = 100/50 cpm

Shutdown Cooling System is on line.

Control Room Operator Cue Card

RCS Temperature = 260°F

RCS Pressure = 20 psia

Notify EOF that release conditions have been terminated.

Containment Pressure = 0 psig

RM-050/051 = off scale high

RM-070/074 = 1.0E+07 mr/hr

RM-091A/B = 9.5E+03 R/hr

RM-061/062 = 100/50 cpm

Recovery Organization activities continue to demonstrate objective numbers 6, 9, 10, 11, 12 and 13.

:0 Control Room Operator Cue Card

RCS Temperature = 240°F

Containment Pressure = 0 psig.

RCS Pressure = 15 psia

RM-050/051 = off scale high

RM-070/074 = 9.8E+06 mr/hr

RM-091A/B = 9.4E+03 R/hr

RM-061/062 = 100/50 cpm

Recovery Organization Activities continue.

Issue news release regarding "emergency" status change.

Radiological Monitoring Activities continue.

These actions will demonstrate objective numbers 6, 13, 18 and 19.

Recovery Manager Cue Card

De-escalate to Site Area Emergency if the situation warrants this action.

:0 Control Room Operator Cue Card

Primary System is stable and cooling down.

#2 Aircraft Radiological Survey start.

)0 Control Room Operator Cue Card

Primary System is stable and cooling down.

Results of #2 aircraft survey and ground surveys indicate radiation readings have returned to normal in the EPZ.

Recovery Manager Cue Card

Terminate the exercise when all objectives have been met.

Issue news release regarding termination of the "emergency".

ATTACHMENT 4

EXXON NUCLEAR IDAHO COMPANY, Inc.

P.O. Box 2800
IDAHO FALLS, IDAHO 83401

October 8, 1982

Recommendations for Monitoring Teams
LGH-23-82

Steve Ferris
Federal Emergency Management Agency
911 Walnut Street
Kansas City, MO 64106

Reference: 1. U.S. Nuclear Regulatory Commission and Federal Emergency Management Agency, NUREG-0654, FEMA-REP-1, Rev.1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, (November 1980).

2. U.S. Federal Emergency Management Agency, FEMA-REP-2, Guidance on Offsite Emergency Radioation Measurement Systems Phase I - Airborne Release, (September 1980).

Dear Mr. Ferris:

Questions have been raised by some of the State and local governments on determining the adequate number of field monitoring teams necessary to verify a plume resulting from a nuclear incident. Planning Standards I-7, I-8, and I-11 in NUREG 0654[1] address requirements for organization and composition of field teams and plume monitoring capability. However, NUREG 0654 does not provide specific guidance on the number of teams or their mode of deployment and operation to adequately monitor the plume. These concerns are addressed in FEMA-REP-2.[2] These recommendations in FEMA-REP-2 suggest 8-16 two-man teams for each site with 100% replacement every 12 hours. This many teams may not be necessary if instructions for monitoring a plume are detailed in the emergency plan.

The recommendations for one approach for monitoring a plume are:

1. The minimum number of monitoring teams required to monitor a plume is two. This number is adequate only if an acceptable method (see example below) of deploying teams is described in detail in the emergency plan.

2. The two team minimum is for a 12 hour shift, i.e. four teams for 24 hour coverage.

3. Communications should be coordinated between the utility offsite monitoring teams and State and/or local monitoring teams, if the minimum number is used. This will maximize the amount of information about the plume and reduce any duplication of effort.

A method to monitor the plume and verify dose projections is diagramed below. Teams should be simultaneously sent into the plume from opposite directions, initially near the reactor site. Teams should report instrument readings as they proceed into the projected plume. If the readings indicate that doses are at or above the turn back value, they should return to the edge of the plume, move farther away from the site, and repeat the procedure. The objective of the monitoring should be to define the plume edges and to determine doses at the plume centerline. To aid this process several monitoring tracks, at various distances with predetermined sampling points, should be established in the plan. Based on the projections, the monitoring teams should enter the track at locations outside the plume and proceed toward plume centerline. The tracks should be arranged as symmetrically as possible considering roads and other constraints. The most valuable data is then taken at as nearly the same time as possible by both teams. This will allow the field team coordinator to map and define the plume and verify that doses are those projected by the utility. It is important that this individual be aware of the likely uncertainties in the projections so that he can effectively evaluate the field monitoring data.

The number of teams required is dependent on the method used to monitor the plume. Finally, if a detailed description of plume verification is not provided in the emergency plan, then the 8-16 teams should be used as described in the guidance in FEMA-REP-2.

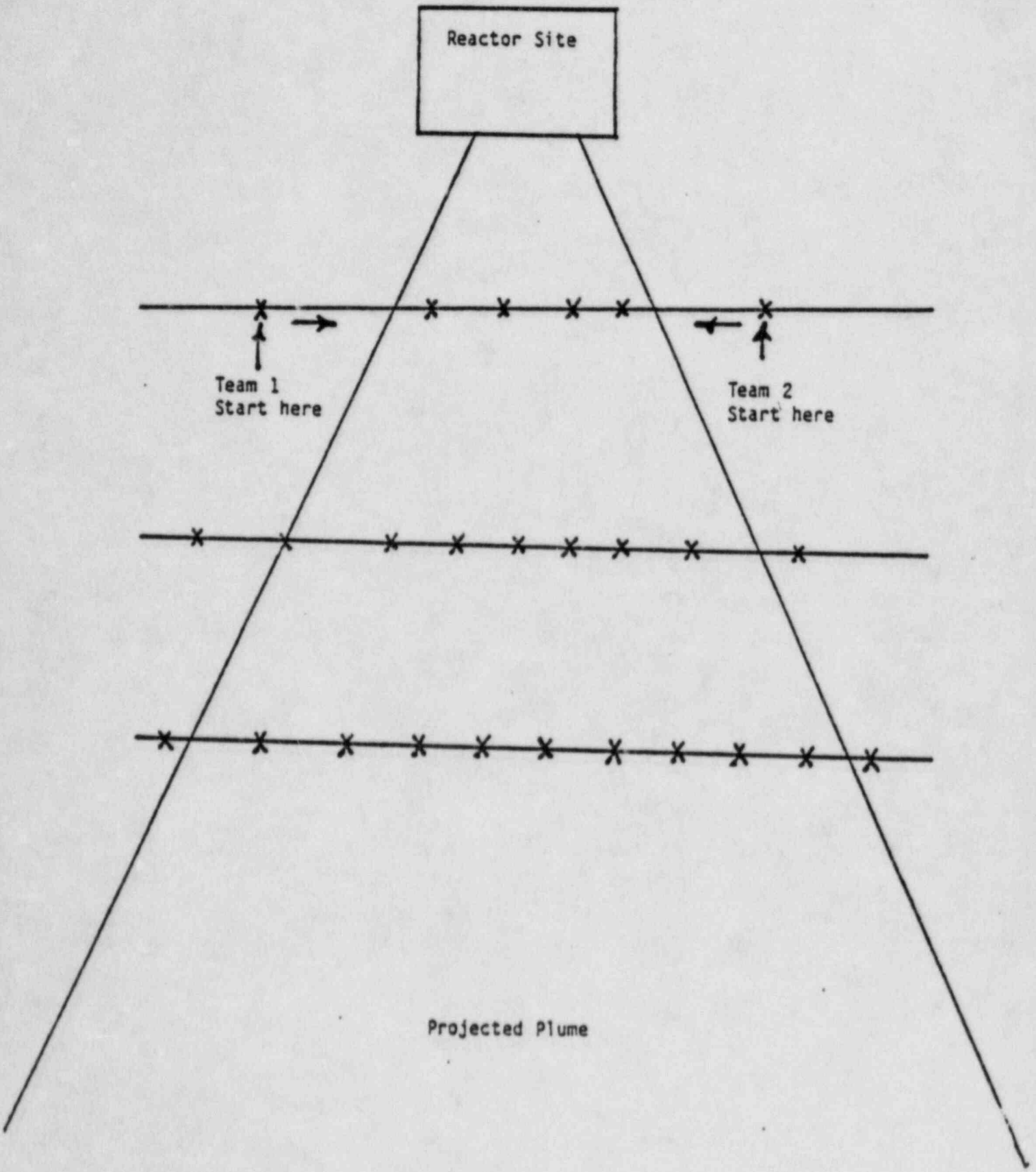
I hope you find this imformation useful.

Sincerely yours,

L. G. Hoffman

jr

cc: W. Brink - EPA
C. Siebentritt - FEMA
M. Stangler - FEMA


Reactor Site
Team 1
Start here
Team 2
Start here
Projected Plume

EXERCISE EVALUATION OF THE IMPLEMENTATION OF STATE AND LOCAL RADIOLOGICAL EMERGENCY RESPONSE PLANS

FOR THE

FORT CALHOUN NUCLEAR STATION

Blair, Washington County, Nebraska
Omaha Public Power District, Licensee

EXERCISE CONDUCTED
December 6-7, 1983

PARTICIPANTS:

State of Iowa
County of Harrison
County of Pottawattamie

State of Nebraska
County of Dodge
County of Washington

(All jurisdictions with inhalation pathway responsibilities participated)

prepared by

Federal Emergency Management Agency
Region VII

March 15, 1984

CONTENTS

ABBREVIATIONS AND ACRONYMS

BLUEBIRD	Nebraska State Patrol Mobile Emergency Communications Center
CD	Civil Defense
CRUSH	Nebraska Civil Defense Portable Operations Center
EARO	Emergency Assessment and Recovery Operations
EBS	Emergency Broadcast System
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPZ	Emergency Planning Zone
FAA	Federal Aviation Administration
FCNPS	Fort Calhoun Nuclear Power Station
FCP	Field Command Post
HCEOC	Harrison County Emergency Operations Center
IAC	Information Authentication Center
ISEOC	Iowa State Emergency Operations Center
KI	Potassium Iodide
LOCA	Loss of Coolant Accident
MRC	Media Release Center
NUREG-0654	Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants (NUREG-0654/FEMA-REP-1, Rev. 1)
ODS	Office of Disaster Services
OPPD	Omaha Public Power District
PCEOC	Pottawattamie County Emergency Operations Center
PIO	Public Information Officer
RAC	Regional Assistance Committee
SOP	Standard Operating Procedure
TLD	Thermoluminescent Dosimeter

EXERCISE SUMMARY

NEBRASKA OPERATIONS

The State EOC was an excellent facility and activation and staffing occurred in a timely manner. The exercise indicated that a need to review the state plan may be necessary with regard to identification of minimum staffing needs and documentation of the State EOC interaction with the Field Command Post (FCP). Management of the State EOC was good and communications functioned well. Timely coordination of communications existed between the State EOC, the FCP and Washington County; this corrected an earlier identified deficiency. Dose assessment and protective action recommendations were overall well coordinated between the State EOC, the FCP and CRUSH. However, Iowa and Nebraska needed to coordinate decision making for implementing consistent protective actions on either side of the Missouri River boundary. Protective action instructions were effectively conveyed to the public; familiar geographical boundaries would be more understandable in descriptions to the public.

The CRUSH mobile unit performed well as a communication link. Dose calculations performed at CRUSH were performed acceptably. However, delays in receipt of data from the utility made independent dose calculations too late for useful state decision making. In one instance, incorrect data was transmitted to the state by the utility resulting in dose projections that were significantly different than the utility's. No apparent attempt was made at CRUSH or the State EOC to resolve this data discrepancy. Radiological exposure control was good except demonstration of the availability of permanent record dosimeters was needed. Also, the predetermined conditions for use of radioprotective drugs by emergency workers need to be reviewed. Scenario source term data were not compatible with the plume measurement source term data provided to the field teams. Also, this data was not in the proper form.

The Bluebird communications facility functioned as planned and no communications or message interpretation problems were identified. Overall, decision making, message flow, and management were well demonstrated and no deficiencies or areas for improvement were identified.

The two field monitoring teams (Nebraska State Team and the Cooper Nuclear Power Station Team) were activated promptly. Neither team was briefed on plant or meteorological conditions nor were they kept informed of these conditions throughout the exercise. Communications equipment functioned well between both the field teams and CRUSH. The Nebraska team was well-equipped, however, one counter did not work. The Cooper team was also suitably equipped except one radiation monitoring instrument was not operational. Charcoal cartridges were not available for air sampling. Technical operations were generally performed well by both field teams. Additional training will improve use of some instruments and some field procedures need to be clarified

in the plan or SOPs. Both teams had adequate dosimetry and displayed generally good knowledge in radiological exposure control procedures. Overall, it was indicated that the field teams were not used as effectively as they could have been to track the plume. Samples from additional monitoring points would be useful to create worthwhile field team exercises.

Activities at the Dana College Coliseum decontamination center were primarily simulated and considered to be acceptable. Additional state health physics personnel may be needed for extended operations. A full demonstration of decontamination capabilities should be carried out in a future exercise.

The University of Nebraska Medical Center performed professionally and had excellent facilities to care for the injured-contaminated (simulated) individual that was brought to the medical center by the Blair Rescue Squad. On the other hand, adequate communications, protective equipment, and training are needed for the Blair Rescue Squad.

Nebraska County Operations

Emergency operations management, communications equipment and staffing, public alerting and notification, and facilities were good at the Washington County EOC. Additional training and review of plan procedures are needed in the notification of staff and conveying correct emergency classification level information. Several special issues regarding school evacuations and needs of the mobility-impaired were identified and need to be resolved. Direct-read dosimeters were available in satisfactory numbers. However, permanent record dosimeters were not available and a review of procedures for reading dosimeters is suggested.

Operations in Dodge County consisted of exercising the County EOC and a decontamination center. The Dodge County EOC was an acceptable facility for emergency response operations. Emergency operations management, appropriate public notification activities, and radiological exposure control were all effectively carried out. The Dodge County relocation center also performed well in registering, monitoring, decontaminating, and providing congregate care of evacuees. Overall, some review of procedures would help to refine some of the already acceptable activities demonstrated at the two Dodge County sites during the exercise.

IOWA OPERATIONS

The Iowa State EOC was well-managed and decision-making procedures followed those prescribed in the plan. Alert and notification of the EOC staff was done promptly. Participation by state and volunteer agencies was good, but three agencies identified in the plan did not participate. All EOC staff displayed adequate training and knowledge. Facilities at the EOC were satisfactory, although not all of the recommended visual aids were posted.

Further, the state and OPPD should agree on a common map designating and identifying radiological monitoring sites. Protective action recommendations for the plume and ingestion pathways were made. Provisions for the prompt broadcast of EBS messages following siren activation requires improvement. Dose assessment functions were effectively carried out. However, the decision to administer KI to emergency workers in the field was made late and was not justified by projected doses made at the forward command post.

Field monitoring teams were mobilized promptly from Iowa City and Ames. The teams were well-equipped, however one team had no power supply for their air sampler. Procedures for collecting air samples had been modified to correct deficiencies identified in prior exercises. More training is required for members of the field monitoring teams in determining the need for decontamination of emergency personnel, supplies, and equipment. The Blue team also requires training in the proper collection procedures for, and determination of radioiodine concentrations in the field.

Coordination of the field radiological monitoring teams was done from the forward command post located at the Harrison County EOC. The team coordinator managed the operation well, but was handicapped by inadequate communications to the field, conflicting maps of the locations of field monitoring sites, and the lack of an administrative interface with the county EOC. The latter was most evident in poor message handling and plant condition briefings.

The Missouri Valley Hospital has recently been added as a resource hospital for accepting radiologically contaminated persons with injuries. For this exercise, the simulated injured person was diverted to the University of Nebraska Medical Center. No medical support activities were observed. Hospital personnel were familiar with the appropriate procedures, but needed experience because they have not been exercised. Further, the hospital did not have adequate radiological monitoring instruments.

Iowa County Operations

The Harrison County EOC was activated promptly. However, several persons with no emergency responsibility under the current plan were also called in. In general, the staff displayed adequate knowledge and training. Round-the-clock staffing capability was demonstrated. Command and control functions were not effectively demonstrated since the Office of Disaster Services (ODS) representative officially in charge was occupied with communication functions. The EOC facilities were generally adequate and all recommended visual aids were posted. All efforts put forth by the EOC to alert the public was done promptly and well. Traffic control points were effectively implemented. The county needs to learn the locations of mobility-impaired persons and develop procedures for their prompt evacuation.

The Pottawattamie County EOC's primary function was public notification. As such, the entire EOC was not activated. All key managerial staff were on duty and were well-trained for their assigned duties. The director of communications was effectively in charge. The facilities were adequate and the center could support extended operations. However, no maps or displays indicating evacuation routes, relocation centers, access control points or population distribution were present. Communications equipment functioned well. The EOC responded to a greater degree than was expected under the exercise scenario. Traffic control points were activated, route-alerting was simulated, and an omission in the state plan regarding the number of residences in the 2-mile EPZ was identified. However, this strong performance in the field brought out the need for extensive training in the use of dosimeters and provisions for the use of potassium iodide.

COMBINED STATE FUNCTIONS

The EOF was promptly and adequately staffed with key personnel. However, no support staff were available to relieve officials of routine telephone calls and to properly handle messages. The Iowa representatives need training in their duties. Space and equipment for EOF staff were very limited. The room was overcrowded and no displays or maps of required information were available. Additional training is recommended in management and decision-making responsibilities, emphasizing familiarization with procedures in the plan.

Activation of the information authentication center (IAC) was promptly demonstrated by PIOs from the utility, Nebraska Civil Defense, and the NRC. The state of Iowa was not represented at the IAC. The facilities at the IAC were adequate. The IAC was also well-equipped with communications equipment. Periodic briefings were held at the IAC throughout the day. On occasion, the content of emergency messages transmitted to the media release center were found to be erroneous or in conflict with instructions contained in the public information brochure.

The media release center (MRC) was effectively activated by representatives from the utility and each of the states. The facilities at the MRC were adequate, however, maps and displays to facilitate dissemination of information were small and generally inadequate. Communications equipment were sufficient and operated well. Media kits providing reporters with background information were available. The participants were well-trained and knowledgable. Media briefing sessions were conducted and a technical liaison from the utility was present to answer technical questions. The rumor control lines were activated and the operators were well-trained. Rumor control operators were also kept up to date through continuous interaction with the MRC staff.

1 INTRODUCTION

1.1 EXERCISE BACKGROUND

A radiological emergency exercise was conducted on December 7, 1983, to evaluate the adequacy of state and local emergency plans and response capabilities in States of Iowa and Nebraska in the event of an emergency at the Fort Calhoun Nuclear Station located near Blair, Nebraska. The plans evaluated included the Radiological Emergency Response Plans for Nuclear Power Plant Incidents of, respectively, the state of Nebraska and Washington County (NE), and the Nuclear Incident Reception Plans of Dodge and Sarpy Counties (NE). Also evaluated were the Iowa Emergency Plan, the Harrison County (IA) Radiological Contingency Plan, and the Pottawattamie County (IA) Radiological Emergency Plan. The current Harrison and Pottawattamie County plans are not in compliance with NUREG-0654, II criteria and therefore are inadequate as emergency plans. The state of Iowa has assumed responsibility for emergency management and has adapted the Compensatory Measures Plan to Chapter 12 of the State Plan. The Compensatory Measures Plan will provide guidance to the counties until the appropriate county plans are finalized.

The exercise was conducted jointly by the Omaha Public Power District and the States of Iowa and Nebraska (and associated local governments). All relevant jurisdictions in the States of Iowa and Nebraska participated, except for two counties with reception and care responsibilities (Crawford County, IA and Sarpy County, NE) that were not exercised in those locations. However, the Sarpy County EOC was activated (for communications purposes only), and was not observed during the exercise.

An exit interview was conducted with the participants at 10:00 a.m., December 8, 1983, in the Douglas County EOC in Omaha, Nebraska. Details of the evaluators findings were presented at this exit interview. A public briefing was conducted following the exit interview at 3:00 p.m. in Room B-14 of the Federal Building in Council Bluffs, Iowa. At this briefing, highlights of the exercise evaluators' findings were presented by both the RAC Chairman and the NRC Team Leader. State and local officials were invited to participate in the briefing.

This report represents the findings of the evaluators specific to the objectives identified in Sec. 1.4. While various problem areas may be identified as needing corrective attention, the principal focus of the report is on the success of the participating agencies in accomplishing these objectives and in establishing whether past deficiencies have been corrected. Because this was the first exercise conducted under revised state and local plans for several jurisdictions in both Iowa and Nebraska, it serves as a baseline against which to determine whether, over the course of time, offsite response organizations will have fulfilled all 35 "core objectives" identified by FEMA Headquarters.

This report shall be provided to the States of Iowa and Nebraska in order they it may act on the recommendations contained herein to improve the emergency response capabilities of both State and local governments. Sixty days from the date of receipt of this document, State and local governments should submit to the Regional Director, FEMA VII, their comments on the report and any proposal for remedial action concerning the problems identified in Sec. 3 of this document.

1.2 EXERCISE EVALUATORS

Observations and evaluations of the exercise were performed by members of the Region VII Regional Assistance Committee, FEMA Regional staff and qualified Federally employed and contracted evaluators. The following is a complete list of evaluators, their agency affiliations, and their evaluation assignments:

Evaluator	Agency	Assignment
M. Carroll	FEMA[1]	Iowa FCP (at Harrison Co. Sheriff's Dept.)
B. Brinck	EPA[2]	Iowa FCP (Rad Team Ops.)
E. Jenkins	FEMA	EOF
G. Jacobson	FDA[3]	Iowa State EOC
K. Waller	FEMA	Iowa State EOC
J. Opelka	ANL[4]	Blair Rescue Squad/UNMC Radiation Center
R. Honkus	INEL[5]	Iowa Field Team
W. Biedenfeld	HHS[6]	Iowa Field Team
B. Salmonson	INEL	Iowa Field Team
P. Stahlschmidt	FEMA	Media Release Center
S. Kinser	FEMA	Pottawattamie Co. Sheriff's Dept.
L. Wilborn	NRC[7]	EOF - Iowa Operations (North Omaha Station)
D. Nevitt	USDA[8]	Nebraska State EOC
S. Kouba	DOE[9]	Nebraska State EOC
R. Leonard	FEMA	Washington County EOC
T. Hogan	FEMA	Washington Co. EOC
B. Scott	FEMA	Dodge Co. EOC
G. McClure	FEMA	Nebraska EOF/LAC
M. Browne	DOT[10]	Nebraska EOF/LAC
J. Keller	INEL	Nebraska State FCP (Accident Assessment)
L. Wilborn	NRC	Iowa EOF North Omaha Station
J. Meyers	DOT	Nebraska State FCP (Police)
C. Herzenberg	ANL	Nebraska Field Team
N. Chipman	INEL	NPPD Field Team (Cooper N5)

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[1] FEMA Federal Emergency Management Agency

[2] EPA Environmental Protection Agency

	OBJECTIVE	RELEVANT NUREG-0654 CRITERIA
1)	INITIATE AND DEMONSTRATE the notification and warning activities of the appropriate action levels continuing throughout escalation and de-escalation, including recovery and reentry time.	E.2, E.5-E.7
2)	INITIATE AND DEMONSTRATE the public information/ education activities at the appropriate emergency action level, continuing throughout escalation and deescalation.	E.5, E.7, G.3.a, G.4, (all)
3)	ACTIVATE AND DEMONSTRATE radiological monitoring off-site with proper interface between State and monitoring teams and readiness to request federal assistance if necessary.	C.1.b, C.3, I.8, I.9, I.11
4)	PERFORM one assessment and make subsequent protective action guide recommendations.	I.10, J.9
5)	ACTIVATE AND DEMONSTRATE functions of the fixed Iowa forward control post.	E.2, E.6, H.3, H.4
6)	ACTIVATE AND DEMONSTRATE telephone coordination and implement hardcopy data transmission for public information and radiological data purposes during the exercise.	E.7, F (all)
7)	ACTIVATE Iowa State EOC with operational and decision-making functionaries.	A.1.d, E.2, H.3, H.4
8)	ACTIVATE AND DEMONSTRATE, as appropriate, bi-state coordination on radiological data collection and analysis; recommendations and implementations of protective actions; and dissemination of warning and public information.	A.3, E.5-E.7, F.1.b, G.4 (all), H.12, I.7, I.10, J.9, J.10 (all)

The State of Nebraska, in a communication to FEMA VII dated 19 September 1983, reported the intention of affected state and local government(s) in Nebraska to test (demonstrate) the following support capabilities at the December 7, 1983 emergency response exercise for the Fort Calhoun Nuclear Station.

[3]FDA Food and Drug Administration

[4]ANL Argonne National Laboratory

[5]INEL Idaho National Engineering Laboratory

[6]HHS U.S. Department of Health and Human Services

[7]NRC Nuclear Regulatory Commission

[8]USDA U.S. Department of Agriculture

[9]DOE U.S. Department of Energy

[10]DOT U.S. Department of Transportation

1.3 EVALUATION CRITERIA

The exercise evaluations presented in Sec. 2 are based on applicable planning standards and evaluation criteria set forth in Section II of NUREG-0654/FEMA-REP-1, Rev. 1 (November, 1980). Following the overview narrative for each jurisdiction, deficiencies are presented with accompanying recommendations. Deficiencies can be presented in two categories. The first category includes those deficiencies that would cause a finding that off-site emergency preparedness was not adequate to provide reasonable assurance that appropriate measures can and will be taken to protect the health and safety of the public living near the site in a radiological emergency. These are "Class A" deficiencies that lead to a negative finding. A negative finding must be based on at least one deficiency of this type. There were no deficiencies in this category at this exercise of the Fort Calhoun Nuclear Power Station.

The second category includes "Class B" deficiencies where demonstrated (and observed) performance during the exercise was considered faulty and corrective actions are considered necessary, but other factors indicate that reasonable assurance could be given that, in the event of a real radiological emergency, appropriate measures can and will be taken to protect the health and safety of the public.

1.4 EXERCISE OBJECTIVES

The State of Iowa, in a communication to FEMA Region VII dated August 19, 1983, identified the following formal objectives for the state, to be accomplished at the December 7, 1983 emergency response exercise for the Fort Calhoun Nuclear Station.

STATE RESPONSE	RELEVANT NUREG-0654 CRITERIA
1) Deployment and operation of the State Field Command Post to include local and long-range communications.	E.2, F.1 (all), H.4
2) Notification and follow-up contacts with State, Federal and private agencies having responsibilities under the Nebraska Plan.	A.1 (all), A.3, E.1, F.1 (all)
3) Demonstration of reaction times and supporting resources estimates for key state and selected federal agencies.	C.1.b, C.1.c, E.2
4) State field radiological monitoring activities field health hazard assessment, and coordination of protective action recommendations with Governor's Authorized Representative and State EOC - to include State aerial radiological monitoring to roughly define the parameters of the airborne plume.	I.8, I.10, I.11, J.9, J.10.m
5) Assumption of operational status and functioning of State EOC as well as coordination with agencies and field elements, including interstate coordination between State EOCs.	A.3, E.2, F.1.b, H.4
6) State EOC coordination of simulated federal technical and non-technical support under the National Radiological Emergency Preparedness Plan (NREPP), including message flow and simulated support by NRC, DOE and FEMA.	C.1.b, C.4, F.1.c
7) State CD support for the jointly operated Information Authentication Center (IAC) and Media Release Center (MRC).	E.5, E.7, G.3.a, G.4 (all)
8) Agricultural agency response, as coordinated by the USDA State Emergency Board acting in conjunction with the State Department of Agriculture, to support the protective measures determined by the State Health Department.	A.2.a, A.3, C.1.b, J.11

LOCAL RESPONSE	RELEVANT NUREG-0654 CRITERIA
1) Initial notification receipt and alerting of key people.	E.1, E.2
2) Communications and coordination with all involved agencies.	A.1.b, A.3, F (all), G.4 (all)
3) Activation of local Emergency Operating Centers (EOCs).	E.2, E.6, H.3, H.4
4) Practice of coordinated access control and security by selected law enforcement agencies.	J.10.j
5) Increased readiness measures for potential operation of a relocation center, including possible testing of facilities and locations at alternate sites.	H.4, J.10.h, J.12
6) Decontamination station operation, including evaluation of facilities and locations to be considered as alternate sites.	H.4, K.5.b
7) Coordination of public information activities, including preparations for notification of the public with actual notification being simulated.	F.5-E.7, G.3.a, G.4 (all)
8) Provision of fire and rescue support as required by plant.	A.2.a, A.3, (B.9)
9) Transport and reception of simulated radiation casualties.	A.2.a, (B.9), L.1, L.4

1.5 EXERCISE SCENARIO

Initial conditions included a severe ice storm in progress in the EPZ, which knocked out power in two major transmission lines. There was a major power outage in the Blair area. The plant was operating at full power along a third unaffected 345 KV transmission line because the ice storm had caused a grid emergency. Unknown to anyone, damage to a steam pressure vent valve leading from containment had opened a hole in the valve allowing air to pass into the vent line. An explosion of the UF_6 storage area subsequent to receipt of a threatening telephone call initiated a notification of UNUSUAL EVENT on the night of December 6. After turning over the investigation of the

incident to the Washington County Sheriff's Department, the UNUSUAL EVENT was to have been terminated.

At 6:00 a.m. the following morning, a seized rotor led to a pressure "spike" followed by short-term failure of the steam bypass valves. Although most valves reseat properly, the still unknown leak in the damaged vent valve resulted in increasing radiation activity in containment. This led to a "puff" release sometime after 6:30 a.m., causing declaration of an ALERT. Following failure of offsite power to the plant, radioactive leakage continued increasing, and led to declaration of SITE AREA EMERGENCY sometime after 9:10 a.m. During this time period, a plant technician sustained a heart attack while drawing a sample of primary coolant, resulting in his (simulated) contamination and need for offsite decontamination/ambulance transport. Also, the plant sustained a small break LOCA which, coupled with failure of all onsite a.c. power due to a piston seizure in the diesel generator, precipitated declaration of a GENERAL EMERGENCY at approximately 11:00 a.m. on December 7. Release of radioactive gases to the environment terminated at about 2:00 p.m. following discovery and plugging of a steam line leak upstream of the defective valve, with subsequent downgrading of the event leading to exercise termination by about 4:30.

Table 1 shows the timeline for notification and receipt of information concerning changes in emergency classification levels at each of the offsite facilities activated for this exercise.

Table 1 Selected Events, Times, Locations

	Nebraska State EOC	Iowa State EOC	MRC	EOF	IAC	Washington County, Ne.	Dodge County, Ne.	Harrison County, Ia.	Pottawattamie County, Ia.
Alert	6:24	6:20	6:27	N.O.	6:20	6:47	N.O.	7:26	7:45
Notification	N.O.	6:20	N.O.	6:30	6:55	6:53	6:24	7:29	8:41
EOC Activated	N.O.	8:00	8:05	9:20	N.O.	N.O.	N.O.	11:10	not activated
EOC Staffed	8:49	8:30	10:02	9:00	8:36	8:10	9:42	11:08	8:00
Site Area Emergency	9:25	9:26	9:27	9:27	9:27	9:28	9:32	9:26	9:31
Sirens	N.O.	9:35	N.O.	9:27	N.O.	9:33	9:42	9:26	9:34
Shelter Message	11:09	9:35	11:25	10:45	N.O.	11:17	N.O.	11:25	11:10
Evacuate 2 mi	11:43	11:25	11:25	N.O.	N.O.	11:45	N.O.	11:25	11:12
Evacuate 5 mi	12:45	N.O.	1:21	12:45	N.O.	N.O.	N.O.	12:59	12:42
Evacuate 10 mi	1:05	12:38	N.O.	1:33	N.O.	N.O.	N.O.	2:08	12:59
Gen. Emergency	11:09	11:11	11:09	11:09	11:10	11:10	11:09	11:05	11:12
Sirens	N.O.	11:12	N.O.	N.O.	N.O.	N.O.	N.O.	11:09	9:34
EBS Broadcast	N.O.	10:05	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.
Downgrade	N.O.	N.O.	4:55	4:20	N.O.	N.O.	N.O.	N.O.	4:29

N.O. - not observed.

1.6 MILESTONES FOR EXERCISE OBJECTIVES AND CRITIQUES

Indicated below are milestones for exercise observations and critiques with scheduled and actual completion dates.

Activity	Scheduled	Actual	Comment
State and licensee jointly submit exercise objectives to FEMA and NRC regional offices	Sept. 23	Sept. 19	IA, NE
FEMA and NRC regional offices discuss and meet with licensee/state as necessary and prepare response	Oct. 7	Oct. 18	
State and licensee scenario developers submit exercise scenario to FEMA and NRC regions for review	Oct. 24	Oct. 24	Inadequate scenario detail for emission and met data
FEMA and NRC regions notify state and licensee of scenario acceptability	Nov. 2		Informally discussed
FEMA and NRC regions develop specific post exercise critique schedule with the state and advise FEMA and NRC headquarters	Nov. 7	Nov. 30	Informally discussed earlier; letter sent (11/30)
RAC chairman and NRC team leader meet to develop observer action plan	Nov. 22		Informally discussed
Meeting in the exercise area, of all federal observers both onsite and offsite to finalize assignments, and give instructions	Dec. 6	Dec. 6	
Exercise	Dec. 6 & 7	Dec. 6 & 7	
FEMA and RAC observers caucus to collate observations. NRC observers also caucus to collate observations.	Dec. 7	Dec. 7	
RAC chairman and NRC team leader meet, as soon after their respective caucuses as practical, to coordinate federal participation in critique	Dec. 8	Dec. 8	
Joint RAC/NRC critique	Dec. 8	Dec. 8	

1.7 STATE AND LOCAL RESOURCES

Indicated below is a list of organizations which planned to participate in the exercise.

Omaha Public Power District

Federal Government

1. Nuclear Regulatory Commission, Region III

State of Iowa

1. Iowa Office of Disaster Services
2. Iowa State Department of Health
3. Iowa National Guard
4. Iowa Department of Public Safety (Iowa Highway Patrol)
5. Iowa Department of Water, Air & Waste Management
6. Iowa Department of Transportation
7. University Hygienic Laboratory
8. Office of the Governor, State of Iowa
9. Office of the Attorney General, State of Iowa
10. Iowa Department of Social Services
11. Iowa Department of Agriculture
12. Iowa Commission on Aging
13. Iowa Conservation Commission
14. Iowa Commerce Commission

Counties

1. Harrison/Pottawattamie County Municipal Civil Defense and Disaster Services
2. Harrison/Pottawattamie County Health Departments
3. Harrison/Pottawattamie County Sheriff's Departments
4. Harrison/Pottawattamie County Highway Engineering Departments
5. Harrison/Pottawattamie County Red Cross
6. Harrison/Pottawattamie County Board of Supervisors

State of Nebraska

1. Office of the Governor
2. Civil Defense Agency
3. Department of Health

4. State Patrol
5. Department of Aeronautics
6. Commission on Aging
7. Department of Agriculture
8. University of Nebraska
9. Department of Economic Development
10. Department of Education
11. Educational Television Commission
12. State Fire Marshall
13. Game and Parks Commission
14. National Guard
15. Commission on Indian Affairs
16. Department of Insurance
17. Department of Public Institutions
18. Department of Public Welfare
19. Department of Roads
20. Department of Veterans Affairs
21. Department of Environmental Control

Nebraska Counties

1. Washington County Civil Defense
2. Washington County Sheriff
3. Washington County Chairman of Commissioners
4. City of Blair: Mayor and City Administrator
5. Washington County Chamber of Commerce
6. Douglas and Dodge County REACT
7. Blair Rescue Squad
8. Douglas County Civil Defense
9. Douglas County Fire Department
10. Douglas County Board
11. Douglas County Sheriff
12. Dodge County Civil Defense
13. City of Fremont Police Department
14. City of Fremont Civil Defense
15. City of Fremont Fire Department

Volunteer Agencies

American Red Cross
Salvation Army

2 EXERCISE EVALUATION

This section presents the exercise evaluation grouped by State and county. For each jurisdiction, there is an overview section, a list of deficiencies, and NUREG-0654 Criteria Element-by-Element (Planning Standard) review. Planning standards are designated by letters, corresponding to the NUREG-0654 letter designations. The evaluation includes only those planning standards which are appropriate for off-site emergency response activities. The evaluation criteria are fully described in Sec. 1.3 of this report. However, it should be reiterated that there were no deficiencies that would lead to a negative finding at this exercise of the Fort Calhoun Nuclear Power Station. All deficiencies observed are in the second category. This category includes deficiencies, with accompanying recommendations, where demonstrated (and observed) performance during the exercise was considered faulty and corrective actions are considered necessary, but other factors indicate that reasonable assurance could be given that, in a real radiological emergency, appropriate measures can and will be taken to protect the health and safety of the public.

2.1 NEBRASKA OPERATIONS

2.1.1 State EOC

Overview

The State EOC was activated and staffed in a timely manner according to established internal procedures. However, in a few cases the written call up list was not up to date. A representative of the State Police, Department of Games and Parks, Department of Agriculture, Department of Health, Civil Defense, and the American Red Cross were present as well as a logging clerk. A capability for 24-hour staffing was demonstrated by the presentation of a roster for two shift operation. These shifts have been used and found to be adequate during natural disaster emergencies and corrects a previously identified deficiency. The exercise indicated that actions taken by the State of Nebraska were adequate to protect the health and safety of the public. However, the State plan fails to adequately describe the minimum staff necessary to operate the EOC. Also, the state plan does not indicate how the State EOC interacts with the field command post (FCP) in making dose assessment calculations and protective action recommendations.

Management of the State EOC was good. The operations officer utilized the public address system to keep EOC staff informed. The staff was involved in decision making and this was accomplished in an effective manner. Several copies of the plan were available. The operations officer informed the county

EOCs of emergency classification status changes immediately upon receipt from the utility. Security measures were not provided at the entrances to the EOC.

The facilities at the State EOC were excellent. The EOC can be operated on a continuous basis through the use of a backup generator, bunks, showers, and a kitchen. Displays were adequate and a clearly visible status board was kept up to date. The plume EPZ map was divided into sectors as specified in NUREG-0654. An overlay system was used to identify sheltering and evacuation areas and to display meteorological conditions.

Communications consisted of telephone, civil defense national radio systems, and a high speed telecopier; there were no difficulties with the communications equipment during the exercise. Ham radio operators were also available, if required. Conferencing was also available between the EOCs in Nebraska and Iowa, the media release center and the EOF. There was timely coordination between the State EOC, the FCP, and the Washington County EOC. This demonstration corrects a previously identified deficiency.

Dose assessment and protective action recommendations were coordinated between EOC, the FCP, and CRUSH. The FCP served as the central point for the receipt and analysis of radiological monitoring data received from field teams dispatched by the State. The majority of all detailed calculations related to dose assessment were performed in the FCP. The radiological health representative in the State EOC checked calculations using simple empirical graphs and/or equations. In most cases, data provided by the utility, and in some cases, existing weather and road conditions, were used to make plume pathway protective action decisions. Ingestion pathway decisions were made in a similar manner.

Due to the small amount of radioiodine released, only emergency workers within the plume EPZ were advised to take KI.

Protective action recommendations made by Nebraska and Iowa could cause confusion between Nebraska and Iowa residences if the two states independently recommend different protective actions. This particular problem was demonstrated during the exercise when, at the same time in the exercise, the State of Iowa was recommending evacuation of population and the State of Nebraska was recommending only placing livestock on stored feed. This problem becomes more significant when the population on both sides of the Missouri River are listening to the same Emergency Broadcast Station (EBS) for instructions. Residences of Nebraska and Iowa would benefit if the two states would define an equivalent basis and decision chain for making protective actions relative to siren activation, sheltering, evacuation, etc.

Local Civil Defense personnel actions to activate the siren systems were initiated by a utility recommendation that was relayed to the local level by the State EOC. This same recommendation initiated actions to notify the area EBS station. Following the test signal made by the EBS station, an announcement was conveyed relating to the Fort Calhoun exercise. The EBS

message was made in less than 15 minutes after receiving the initial utility's recommendation. Protective action instructions to the public were prepared as a joint venture by the State EOC and the FCP. Instructions made by the state, in most cases, used NUREG-0654 sector designations rather than geographical boundaries which would be more familiar to local residents.

The county has responsibility for evacuation and access control with assistance from various state agencies. During the exercise, the state patrol assisted with access control points and representatives at the EOC were available to monitor traffic flow using aircraft. The FAA was notified by the Department of Aeronautics to restrict air space and the Coast Guard was notified to blockade water traffic on the Missouri River.

Dairy farms were instructed to go on stored feed at the Alert stage as a precautionary measure. Listings and maps of dairy farms, food processing plants, and produce crop farms were available. In addition, updated statistical data on crops could be made available. An underground water supply in the involved area precluded any necessity for water supply protective actions.

The states' media activities were implemented at the media release center (MRC) and the information authentication center (IAC). The IAC was located at the EOF and a State PIO was stationed there. Press releases were telefaxed to the State EOC.

The exercise objectives did not include recovery and reentry functions. Therefore, Nebraska's demonstration of this activity was extremely limited. Actions taken at the State EOC were made in response to input from state field operations.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed at the State EOC during this exercise.

Deficiencies and Recommendations

1. Deficiency: The written State plan fails to adequately describe the minimum number of personnel to operate the EOC and how the State EOC interacts with the Field Command Post personnel in making dose assessment calculations and protective action decisions (NUREG-0654, II, A.1.b, A.2.a).

   Recommendation: It would be beneficial if the State plan was clarified in order to allow maximum flexibility of existing conditions and available state resources.

2. Deficiency: A potential problem between the radiological health decision makers in Nebraska and Iowa exists in how protective actions recommendations are made for sectors adjacent to and overlapping the Missouri River.

   Recommendation: When the plume travels across the Missouri River, residents of Iowa and Nebraska would benefit if the two states would define an equivalent basis and decision chain for making protective actions relative to siren activation, sheltering, evacuation, etc.

3. Deficiency: Protective action instructions to the public were provided using NUREG-0654 sector designations rather than familiar geographical boundaries.

   Recommendation: Use of familiar geographical boundaries in describing areas affected by protective actions and recommendations would be more clearly understandable to local residents.

2.1.2 State Civil Defense Portable Operations Center - CRUSH

Overview

The CRUSH is a mobile van that primarily performs a communication function for the various response organizations. It provides the main communications link between the field command post and the state EOC. CRUSH has capability for communications with local governments and the EOF. The mobile unit also provides an operational area for the Governor's representatives and an area for staff to perform dose assessment calculations.

The communications equipment was excellent and well-trained personnel performed all of the necessary communication activities. Telephone connections and AC power were provided and a backup power generator was available. The radio equipment included several frequencies. A repeater was available on the frequency used by the field monitoring teams, thus "dead" spots were eliminated. Additional hand-held radios were also available if needed.

The dose calculations were performed at CRUSH in an acceptable manner following procedures recommended by EPA. The calculations were made in a timely fashion after the data was received from the utility by CRUSH. Delays of up to 45 minutes in receiving the utility data were encountered. Thus, independent dose calculations by the state were too late for useful decision making. On one occasion, incorrect data was supplied to CRUSH from the utility, thus state dose projections were significantly different from the

utility. No apparent attempt was made to resolve this data discrepancy problem. Also, because the projected plume track as not plotted, inefficient use of the field monitoring teams was evident.

The staff at CRUSH and one of the field teams were issued simulated TLDs. The use of simulated TLDs created concerns as to whether a sufficient number of TLDs were actually available when clearly an insufficient number of simulated TLDs were distributed. Direct-read dosimeters were available and KI was administered to the field monitoring teams. The order for the use of KI came late in the emergency phase. If KI was to be used, it should have been administered 1 to 2 hours earlier and should have been based on a source term sufficiently high to warrant such use.

Significant problems were encountered with the scenario data. The source terms used during the exercise were not compatible with the plume measurement data provided to the field teams. In addition, information provided to the field teams was not in the proper form; the information provided was not field data, the data consisted of calculations derived from field data.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative were observed at CRUSH during this exercise.

Deficiencies and Recommendations

1. Deficiency: Delays of up to 45 minutes were encountered in the receipt of utility data at CRUSH. On one occasion incorrect data was supplied to CRUSH from the utility, resulting in state dose projections that were significantly different from the utility's. No apparent attempt was made by the state to resolve this data discrepancy (NUREG-0654, II, I.8, I.10).

   Recommendation: The cause of the delays in receipt of data needs to be identified and a remedy implemented. Additional training and/or a review of procedures in verifying accuracy of utility data is needed.

2. Deficiency: The lack of sufficient simulated TLDs raises concerns as to whether a sufficient number of TLDs could actually be made available in a real emergency (NUREG-0654, II, K.3.a).

Recommendation: The use of simulated TLDs as a means to display capability is not recommended. It is suggested that permanent-record dosimetry availability be demonstrated in future exercises.

3. Deficiency: The order for the use of KI occurred late in the exercise; KI should have been administered 1 to 2 hours earlier and should have been based on source terms sufficiently high to warrant its use (NUREG-0654, II, J.10.f).

   Recommendation: The predetermined conditions under which decisions are made to administer radioprotective drugs to off-site emergency workers should be reviewed.

4. Deficiency: The source terms used during the exercise were not compatible with the field data provided. Also, field data supplied to the field teams were not in the proper form; the data provided were calculations derived from field data (NUREG-0654, II.I).

   Recommendation: Assure that source terms used during the exercise are compatible with the field data provided and make provisions to ensure that field data supplied to field teams are in the proper form. The final scenario should be provided to FEMA to review for completeness and accuracy at least 45 days prior to the exercise.

2.1.3 State Patrol Mobile Communications Facility - Bluebird

Overview

The Bluebird unit is part of the State Field Command Post complex and provides alternate communications for CRUSH as well as support for law enforcement operations in the plume EPZ. Bluebird maintains radio or mobile telephone contact with CRUSH. This operation was performed as planned and no communications or message interpretation problems were identified. All appropriate maps and SOPs were available and the Bluebird team demonstrated effective knowledge of operating procedures. The Bluebird team simulated many activities, including refueling patrol autos, the Bluebird bus, and power generators. Twenty-four hour staffing of the Bluebird bus and patrol officers was evident and an individual was being trained during the exercise to add future staffing flexibility and depth. Overall, decision making, message flow and management were well demonstrated and no deficiencies were identified.

2.1.4 Field Monitoring Teams

Two teams were involved in field monitoring in Nebraska. An overview and deficiencies and recommendations are provided below for each team from the state of Nebraska and from the Cooper Nuclear Power Station.

2.1.4.1 Nebraska Team

Overview

The early phases of field team mobilization seem to have been conducted expeditiously. Team member were notified from a written call list, which included home and work telephone numbers and a listing of backup personnel. Team members arrived at the EOF from Lincoln in 1.5 hours. A 4-wheel drive vehicle with equipment packed was ready for rapid deployment. However, before deployment the team was not briefed on current plant or meteorological conditions. Communications between the Nebraska field team and CRUSH were established immediately by use of UHF and VHF radios. This communications link was maintained throughout the exercise and generally functioned well.

The Nebraska field team was well-equipped. The four-wheel drive was suitable for most terrain but experienced an electrical problem which required that it be jump started whenever the engine was turned off. The field team had a checklist for equipment which was contained in the vehicle. According to team members the equipment had been calibrated in March or April, 1983. Radiation monitoring equipment included a hand-held 0-2000 mR/hr survey meter, a 0-50R/hr full range ionization chamber instrument, and a sodium iodide scintillation counter with multichannel analyzer, which was not functional. Air sampling equipment operated on power from the vehicle and both charcoal and silver zeolite cartridges were available. Additional sampling equipment included a soil or snow sampling shovel, plastic collection bags, containers, writing materials, identification labels, and plastic jugs for water and milk samples.

Field team technical operations were performed reasonably well. The team did not perform calculations in the field. Instrument readings were transmitted by radio to the health physicist at CRUSH who was to perform the calculations. The team was generally familiar with the area being monitored. The team had their G-M counter activated and the battery checked, but did not use a radioactive source for on-the-spot calibration. Team members used the instruments correctly to obtain ground and air readings. An air sample was collected using equipment in the vehicle. The team also drove to a stationary air sampler near the plant and simulated a cartridge change. A snow sample was collected and placed in a plastic bag rather than in a leakproof container. Overall, the team members were reasonably well acquainted with their equipment, but some minor confusion in operation of the instruments occurred. The team had not had an adequate opportunity to become

familiar with their sodium iodide gamma spectrometry system prior to the exercise.

Radiological exposure control equipment was good. Each team member had both a mid-range (0-20 R) and a high range (0-100 R) dosimeter; these dosimeters were read and recorded with acceptable frequency. A survey meter was kept operating in the vehicle to provide a continuous indication of counting rate, thus providing an indication if they were moving into the plume. A charger for the dosimeters was available. Film badges were available but TLDs were simulated. Simulated KI was taken when instructions from CRUSH indicated to do so. Additional equipment available included anti-contamination suits, boots, gloves, and air tanks with respirators. There was indication of a need to familiarize the team members with maximum dose allowed without authorization and what procedures should be carried out if an excess dose was received.

Overall, the scenario did not well utilize or effectively test the Nebraska field team. Instrument readings were taken from only one monitoring point. This was not a field team inadequacy, the team performed well as directed. However, the field team was not directed properly to obtain useful plume information. Furthermore, a controller with cue cards was not assigned to the field team, thus, the only source of exercise data was an incomplete listing of whole body dose rate and iodine concentration that was available to the federal observer.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed for the Nebraska field radiological monitoring team.

Deficiencies and Recommendations

1. Deficiency: Before deployment, the field team was not briefed on current plant or meteorological conditions (NUREG-0654,II.F.).

   Recommendation: Briefing of the field team prior to deployment would better enable the team to respond to radiological conditions as they change.

2. Deficiency: The sodium iodide scintillation counter was not fully functional and was not used during the exercise. The field vehicle experienced an electrical starting problem. Also, equipment available to the team was not consistent with the plan (NUREG-0654,II.H.10).

Recommendation: The causes of any instrument malfunctions should be identified and remedial actions taken to ensure that this instrument and all equipment, including vehicles, are working properly; field teams should have adequate opportunity to become fully familiar with new equipment prior to an exercise. The plan or equipment available needs to be adjusted to reflect consistency.

3. Deficiency: A snow sample was placed in a plastic bag rather than a properly sealed container to prevent its loss by leakage.

   Recommendation: A review of procedures and equipment needs for snow sampling is suggested.

4. Deficiency: Low range dosimeters were not available and familiarization was not evident with regard to maximum dose allowed without authorization, and what procedures should be implemented if an excess dose was received (NUREG-0654, II, K.3.a, K.5.a).

   Recommendation: Low-range dosimeters are needed for field team members. Also, additional training is needed on understanding maximum doses allowed without authorization and procedures to be implemented if an excess dose is received.

5. Deficiency: The Nebraska field team was not directed properly to obtain useful plume information (NUREG-0654, II.I.8).

   Recommendation: Samples from additional monitoring points are needed to obtain useful information on the plume. A controller needs to be assigned to the field teams to input essential data that will allow complete and worthwhile field team exercising.

2.1.4.2 Cooper Nuclear Power Station Team

Overview

The field monitoring team consisted of professional staff from the Cooper Nuclear Power Station. The team was notified at about 7:30 a.m., was dispatched from the Cooper Station at approximately 8:00 a.m. and arrived at the EOF at 9:40 a.m. Prior to their deployment the field team was not briefed

on plant or meteorological conditions nor were they kept informed of these conditions throughout the exercise.

The Cooper field team communicated with CRUSH by radio. The radio and antenna were installed in their vehicle upon their arrival at their deployment point. A hand-held portable radio was available, but the field team did not obtain one. Overall, communications were very good with no dead spots noted. However, when the field team went to the decontamination center they were not in communication with CRUSH for about 20 minutes.

The field vehicle was adequate for the team members and equipment and was suitable for all expected terrain and weather conditions. Radiation monitoring instruments were available. All appropriate air sampling equipment was available except for charcoal cartridges. Plastic bags, writing materials, and identification labels were available for soil and water sampling. Equipment was not available for taking water or milk samples.

The field team completed an operational check of the equipment; batteries were installed and instruments were source-checked. A large map clearly indicated color-coded predetermined sampling points. Access to the sample locations was good. However, because sampling occurred at only two monitoring points and these were not in the plume, the monitoring team was not used effectively for tracking the plume. The team took ground readings at the two monitoring points and recorded them on a form. An air sample was taken and the calibration curve on the air pump was used to determine the time to take a 5 ft^3 air sample. Silver zeolite cartridges were available in the kit; a blank cartridge was used for the exercise. Counting (simulated) outside the plume was done with an Eberline E-140 with an HP210 pancake head. Conversion from mR/hr to µCi/cc was accomplished using a chart and interpolating between table values. This method was not described in the plan.

The Cooper monitoring team had anti-contamination clothing and full-face respirators with charcoal cartridges. The team members were issued KI (simulated), however, it was administered too late in the exercise. Only low-range (0-1 R) dosimeters were available; mid- to high-range dosimeters were not available. Overall, the monitoring team was thoroughly trained in the use of dosimetry equipment.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed for the field radiological monitoring team from the Cooper Nuclear Power Station.

Deficiencies and Recommendations

1. Deficiency: Prior to field team deployment, the Cooper team was not briefed on plant or meteorological conditions nor was the team kept informed of these conditions throughout the exercise. The team also was not in communication with CRUSH while it was at the decontamination center (NUREG-0654, II.F).

   Recommendation: Field teams should be briefed on plant conditions prior to deployment and communications should be maintained throughout the exercise.

2. Deficiency: The Cooper field team did not have charcoal cartridges for air sampling. Equipment was not available for water and milk sampling. The team also did not acquire a hand-held portable radio (NUREG-0654, II. H.7,10).

   Recommendation: Monitoring and communication equipment should be available to accomplish the assigned field monitoring responsibilities of the Cooper team.

3. Deficiency: Conversions from mR/hr to µCi/cc was accomplished using a chart and interpolating between table values; this method was not in the plan (NUREG-0654, II. I.7).

   Recommendation: Review the plan or procedures regarding this activity and make changes and/or revisions as appropriate.

4. Deficiency: Only low-range (0-1 R) dosimeters were available. Permanent record devices were simulated (NUREG-0654, II, K.3.a).

   Recommendation: Provide the field team with mid- and high-range dosimetry. Availability and use of permanent record devices should be demonstrated in a future exercise.

5. Deficiency: The monitoring team was not used effectively for tracking the plume because only two non-plume monitoring points were sampled (NUREG-0654, II, I.8).

   Recommendation: Samples from additional monitoring points within the plume need to be taken to effectively track the plume. The plan should be reviewed to assure proper use and management of the field teams.

2.1.5 Radiological Laboratory

Overview

The radiological laboratory did not actually participate in the exercise, but laboratory operations were reviewed prior to the exercise at the request of the state. The radiological laboratory equipment was sufficient to perform the sample analyses. Equipment included a multichannel analyzer, a TLD reader, an alpha and beta counter, a liquid scintillation spectrometer, and semi-conducter detectors. The TLD system was not operational. Except for a liquid scintillation system, no other backup equipment were present. Equipment was calibrated using EPA quality control standards.

The staff consists of one part-time chemist plus a consultant on call. Two additional chemists are available with minimal radiochemistry training for back up. One additional trained and experienced individual would be desirable to provide two shifts of two persons each. The staff training was adequate, but participation in drills or exercises would provide needed experience.

A commercial telephone was available to communicate with the EOF. Communication between the laboratory and the field monitoring teams could be relayed through the EOF.

Procedures for identification and quantitative measurement of gamma-emitting radioisotopes using the multichannel analyzer were discussed. No technical operations were observed at the radiological laboratory during this exercise so that performance was not demonstrated. Overall, considerable improvements have been made since the previous observation.

Deficiencies That Would Lead to a Negative Finding

There were no deficiencies that would lead to a negative finding observed at the radiological laboratory during this exercise.

Deficiencies and Recommendations

1. Deficiency: The radiological laboratory should be able to demonstrate a capability to function over a prolonged period (NUREG-0654, II, A.4).

   Recommendation: One additional trained and experienced individual would be desirable to provide two shifts of two persons each.

2. Deficiency: Backup equipment for analyzing media samples were not present (NUREG-0654, II, H.10).

   Recommendation: Provisions and arrangement for backup equipment should be made. Sufficient analytical equipment may be available through the use of backup laboratories.

3. Deficiency: No technical operations were observed at the radiological laboratory during this exercise (NUREG-0654, II, N.2.d).

   Recommendation: The exercise should include analysis of sample media and a demonstration of communications and record keeping.

2.1.6 Dana College Coliseum Decontamination Center

Overview

The Dana College Coliseum was used as the decontamination center because the primary site, the Blair High School, was not available for use. The operation of the center was simulated. Evacuee monitoring points were identified, sufficient monitoring equipment was available and pathways for contaminated and non-contaminated persons were shown. Methods were described for decontamination and shower facilities were available. Provisions for disposing of contaminated waste and for temporary replacement clothing were evident. Decontamination of vehicles was not demonstrated. It was indicated that in warm weather, a parking lot would be used for decontamination and that an indoor bay at the fire station would be used in winter.

Deficiencies That Would Lead to a Negative Finding

No deficiencies were observed at the decontamination center that would lead to a negative finding.

Deficiencies and Recommendations

1. Deficiency: The availability of State health physics personnel over an extended period of time was not demonstrated (NUREG-0654, II, K.3.a).

   Recommendation: State health physics personnel should be assigned to provide 24-hour capability.

2. Deficiency: Activities presented at the decontamination facility were simulated.

   Recommendation: A demonstration of decontamination center capabilities should be carried out in a future exercise.

2.1.7 University of Nebraska Medical Center and the Blair Rescue Squad

Overview

The Blair Rescue Squad provided ambulance service for the transfer of an injured-contaminated (simulated) individual from the plant to the University of Nebraska Medical Center (UNMC). Appropriate radio communications between the ambulance service and the hospital were not evident. The ambulance service personnel were also not provided with appropriate protective equipment, dosimeters, and radiation monitoring equipment. The ambulance crew was also not trained in radiological activities.

The utility informed the UNMC that the Blair Rescue Squad would be transporting an individual to the hospital. The hospital was fully prepared and facilities were excellent to handle injured-contaminated individuals. Several medical doctors and health (radiation) physicists were present and properly attired. Procedures for dealing with injured-contaminated persons were thoroughly demonstrated. Contaminated areas were isolated from non-contaminated areas and equipment was available for analysis of smears, whole body (internal) measurements, and thyroid scans. Overall, the health activities and professional performance at the hospital were excellent.

Deficiencies That Would Lead to a Negative Finding

There were no deficiencies that would lead to a negative finding observed at the University of Nebraska Medical Center.

Deficiencies and Recommendations

1. Deficiency: The Blair Ambulance Crew was not provided with radiation monitoring equipment, dosimetry, protective clothing, adequate communications, and radiation training (NUREG-0654, II, L.).

Recommendation: All appropriate equipment should be provided to rescue squads and ambulance services involved in the transport of injured-contaminated individuals. Training is also needed in all aspects of radiation control.

2.2 NEBRASKA COUNTY OPERATIONS

2.2.1 Washington County

Overview

The Washington County EOC had adequate furniture, space, lighting and telephones to carry out the assigned emergency response functions. Backup power was available and is tested monthly. The emergency classification level was posted and a status board was available; however, the status board was not kept updated. Appropriate maps were either posted or available in planning documents.

The Nebraska State Patrol notified the County Sheriff dispatcher of the Alert classification. The dispatcher conveyed this information to the County CD Director. The CD Director understood the message to be an Unusual Event rather than an Alert. Thus, a delay in staff activation occurred. All appropriate organizations were represented at the EOC. In general all staff displayed good training and knowledge in their respective emergency response functions. It was indicated that 24-hour staffing would require backup support for the CD Director and the County PIO.

Emergency operations management was effectively carried out by the CD Director with coordination with the state liaison to the EOC and the County Sheriff. Appropriate staff were involved in decision making. Plans, written procedures and checklists were available, logs were kept, and internal message handling was efficient. Security measures for control of access to the EOC were good.

The Washington County EOC was properly equipped and demonstrated good communications capabilities. All appropriate primary and backup communications links were available and used effectively. It was not totally clear as to the degree to which the HAM and REACT volunteer organizations would be utilized in an actual emergency.

The EOC staff, in coordination with the county communications center (County Sheriff Dispatch) demonstrated good capability to alert the public on a timely basis. Public alerting included siren activation and transmission of an initial message to the EBS station, and overall activation of the system within 15 minutes of the receipt of the Site Area Emergency declaration.

Further instructions in response to the need for protective actions following the General Emergency declaration were formulated and released by the information authentication center and the media release center. The County EOC provided descriptions of areas affected by protective actions by landmarks that were understandable to the public.

Special evacuation issues were identified and related to the availability of buses for school evacuations, communications between the school superintendent and the EOC, the alerting and availability of bus drivers, and expectations of evacuation of school children by parents rather than by buses. A system was not inplace for the identification of noninstitutionalized mobility-impaired individuals or provisions for their transportation. Similarly, procedures have not been established for notifying institutions and acquiring necessary means of transportation for individuals included therein.

The County appeared to have an adequate supply of mid-range dosimeters. Permanent record dosimeters were not available. Instructions were issued along with the self-reading dosimeters that indicated reading and reporting of dosimeters by the field personnel on an hourly basis. These readings were reported to the Blair Police Chief or the County Sheriff.

Reentry activities were adequately addressed following receipt of recommendations and directions from the State.

Deficiencies That Would Lead to a Negative Finding

There were no deficiencies that would lead to a negative finding at the Washington County EOC.

Deficiencies and Recommendations

1. Deficiency: A misunderstanding of the emergency classification existed between the County Sheriff Dispatcher and the CD Director. This caused a delay in staff notification and activation (NUREG-0654, II, D.3,4).

   Recommendation: Additional training in notification procedures and a review of verification procedures is suggested.

2. Deficiency: It was not clear to what extent the HAM and REACT volunteer radio operators would be available at the EOC in the event of an actual emergency (NUREG-0654, II, A.2.a).

Recommendation: The county plan should include a description of the extent that these volunteer organizations will participate in an actual emergency. Appropriate letters of agreement would help to define the extent of availability.

3. Deficiency: Special issues relating to the evacuation of schools and the mobility-impaired have not been adequately addressed (NUREG-0654, II, J.10.c, J.10.d).

   Recommendation: Procedures which need to be defined for the evacuation of schools include: the extent to which buses will be used, coordination and communication between the EOC and the school superintendents, alerting and availability of bus drivers, and expectations of parents picking their children up at the schools. Activities which need to be addressed in the evacuation of mobility-impaired include a system for the identification of noninstitutionalized individuals. Provision for their evacuation plus notification of institutions, is needed.

4. Deficiency Low-range (0-200 mR) and permanent record dosimeters were not available. Dosimeters were read on an hourly basis, this is not frequent enough under certain circumstances (NUREG-0654, II, K.3.a).

   Recommendation: Low-range, direct-read and permanent record dosimeters are needed. The interval between readings of the dosimeters is dependent upon the dose rate to which the workers are exposed. An interval of 15 minutes or even more frequent could be required in high radiation fields (greater than 1 R/h). Changes to instructions provided with dosimeters should be considered.

2.2.2 Dodge County

Overview

Dodge County activated the County EOC and a relocation center. These two operations were performed separately, with the relocation/congregate care/decontamination activities taking place apart from the EOC and at a site alternate to the principal location.

The Dodge County EOC had sufficient furniture, space, and lighting for emergency operations. Portable equipment would be brought in to support

extended operations. Noise was controlled and backup power was available and demonstrated. The emergency classification level was clearly visible and posted at the status board. The status board was kept up to date and all appropriate maps were posted or available. The communications system was exceptional with at least one person on duty at all times.

Emergency operations management was handled by the emergency coordinator. All messages received prompt responses. Staff briefings were held periodically and appropriate staff were involved in decision making. Security provisions were also evident. Overall, the staff displayed excellent training and knowledge from demonstrating activation and staffing procedures to performing emergency response activities throughout the exercise.

Sirens and EBS messages were carried out (simulated) in a timely manner. Several subsequent EBS messages were provided; these were coordinated with the LAC (simulated) and messages were monitored over the radio.

The Police Chief (also the County CD Director) coordinated radiological exposure control activities and performed the duties commendably. Low- and mid-range dosimeters were available in sufficient quantities. The availability of permanent record dosimeters was not observed.

Activities at the Dodge County relocation center included registering, monitoring, decontaminating, and congregate care of evacuees. The center was opened by 11:00 a.m. with the Red Cross and volunteer personnel handling registration operations. A police officer and two communication operators were also on duty. Police directed incoming automobiles to an area where they would be monitored. Two individuals checked evacuees as they entered the registration building. Evacuees were then directed to the registration area where the registration coordinator and volunteers processed the evacuees. The individuals performed well, however, registration cards were not forwarded with evacuees when they proceeded to the congregate care area. This was corrected immediately when evacuees arrived at the congregate care area. A call back to the registration area confirmed that evacuees had been registered. Overall, the registration and congregate care functions were carried out effectively and accommodations for medical and congregate care were sufficient.

Proper procedures were used to check evacuees and vehicles for contamination. The outer clothing, including shoes as well as exposed hair and skin were well checked on each evacuee. Two showers were available and additional portable showers were also available. Any contaminated clothing or materials would be placed in a sealed container. All areas of automobiles potentially in contact with radiation (tires, air filters, pedals, and exterior surfaces) would be checked and decontaminated if necessary using fire hoses for exterior surfaces and interior areas would be cleaned. This process would be repeated if necessary. Wastewater would flow into the sewer system and would not be disposed of in streams or into the groundwater.

Overall, activities were performed well at the Dodge County EOC and the relocation center. Procedures were generally adequate and equipment appeared to be satisfactory. It is suggested that some additional training, in the form of a refresher course or an exercise review session, be conducted to refine the already acceptable procedures demonstrated during the exercise.

Deficiencies That Would Lead to a Negative Finding

There were no deficiencies that would lead to a negative finding observed at the Dodge County EOC.

2.3 IOWA STATE OPERATIONS

2.3.1 State EOC

Overview

Alert and notification of the Iowa State EOC (ISEOC) was done promptly. The Fort Calhoun Nuclear Power Station (FCNPS) contacted the state public radio initially, who in turn notified the ISEOC. The communication network is continuously monitored. Notification to activate the ISEOC was received at 0620 hours. Staff mobilization procedures were demonstrated using an up-to-date, written call list. The Alert notification was initiated during the period when some staff members were enroute to work. As a result, notification was not complete until the participants arrived at work. The center was staffed and operational within 2 hours of the initial notification. A total of 10 agencies were represented at the ISEOC. Three agencies identified in the plan were not represented during the exercise: the American Red Cross, the Iowa Department of Aging, and the Iowa Department of Water, Air, and Waste Management.

All ISEOC staff displayed adequate training and knowledge. Round-the-clock staffing was demonstrated using shift changes for the Departments of Commerce, Agriculture, and Conservation. One representative was prepositioned at the EOF to function as liaison with the ISEOC and to act as a public information officer (PIO).

The ISEOC was well-managed and decision-making procedures followed those described in the plan. The ISEOC staff and all agency personnel functioned well as an integrated unit.

Facilities at the ISEOC were satisfactory. With kitchen, sleeping, shower, and emergency backup power facilities, the ISEOC can function over extended periods. The status board was clearly visible to all participants and kept up to date. Other displays, including maps of the plume EPZ,

evacuation routes, access control points, and radiological monitoring sites, were posted. However, different identification of radiological monitoring sites by the utility and state led to some confusion. Maps of population density by evacuation area, and relocation centers were not posted.

Installation of speaker phones for the operations staff and radiological monitoring teams greatly enhanced the telephone communications and overall coordination. In general, all communications systems identified in the plan were operational and functioned well. A telefax linking the media release center (MRC) and the ISEOC was slow. However, the utility installed a dedicated telefax line from the EOF to the ISEOC which produced timely and high quality copies.

Dose assessment functions were effectively carried out. Expected doses were derived from plant release data and field readings. Field data were reported promptly. Dose calculations were performed by hand and using simulation models. The plume was correctly defined and plotted on a map. Periodic estimates of total population exposure were made.

Protective action recommendations for the plume and ingestion pathways were made. All pertinent factors were considered in making these recommendations including plant status, evacuation times, and meteorology. The protective action recommendations were promptly reviewed and updated as conditions changed. The recommendations were not well-coordinated between Iowa and Nebraska. Emergency public instructions were developed in the ISEOC. Prescripted Emergency Broadcast System (EBS) messages were clear and appropriate to the situation. To avoid confusion, Iowa issued protective action orders using well-known, local landmarks rather than just sectors.

The ISEOC played a primary role in public alerting when the Site Area Emergency was declared at 0926. Formal and informal briefings were conducted regarding the appropriate protective action recommendations. Iowa also discussed current developments with Nebraska officials. Iowa elected to recommend via EBS in-house sheltering. The siren system was activated at 0935, but the EBS message broadcast was delayed until 1005.

The decision was made to order evacuation of the 2-mile radius at 1112. The highway patrol notified all families individually by dispatching a patrol car to conduct the house-to-house notification. Only 26 people were affected within the 2-mile EPZ and everyone was contacted within 20 minutes. An EBS message was also prepared. At 1238, evacuation was ordered for the 10-mile EPZ. This increased the number of affected residents to 384, requiring evacuation to the relocation center. The location of mobility-impaired and special needs persons was known and checked. The highway patrol did an excellent job in conducting the evacuation and the control of access points. No problems were encountered with these activities.

Current information was available for dairy farms, food processing plants, water supply intakes, and detailed crop information. Recommendations

were prepared regarding ingestion pathway protective actions. The few cattle located within the 10-mile EPZ were to be sheltered and placed on stored feed. Representatives from the state Department of Agriculture were knowledgable of the plan and were well-integrated into the EOC staff. Although agricultural play was limited, the representative volunteered briefings to the observers. He demonstrated accurate and enthusiastic responses to alternative situations requiring his involvement.

The decision to order potassium iodide (KI) for the radiological monitoring team was based on projected radioiodine releases and consistent with the plan. There was not an adequate supply of KI for other emergency workers, however. The EOF was contacted for additional KI for members of the highway patrol. The utility did not know if they had sufficient amounts at first, but quickly located and made available the amount requested. Personnel were adequately protected, but sufficient KI should be on hand according to the plan. The Iowa National Guard prepositioned KI nearby in the event troops were required to go into the area later. The state health official did an excellent job in decision making regarding reentry. The ISEOC thoroughly discussed the FCNPS recommendation to conduct recovery operations, despite no downgrade from the General Emergency classification level. As a result, Iowa delayed reentry and recovery activities until official dose readings were received confirming that the area was safe to reenter.

Deficiencies That Would Lead to a Negative Finding

There were no deficiencies that would lead to a negative finding observed at the ISEOC.

Deficiencies and Recommendations

1. Deficiency: All organizations having emergency responsibilities and identified in the plan did not participate in the exercise (NUREG-0654, II, N.1.b).

   Recommendation: Each organization shall establish procedures for alerting, notifying, and mobilizing emergency response personnel.

2. Deficiency: The siren system was activated at 0935, but the EBS message broadcast was delayed until 1005 (NUREG-0654, II, E.5,6).

   Recommendation: Procedures need to be developed to ensure prompt broadcast of EBS messages following siren activation.

3. Deficiency: Maps or displays of population density by evacuation area, and relocation centers were not posted (NUREG-0654, II, J.10.a,b).

   Recommendation: Maps showing population distribution around the nuclear facility by evacuation areas, and maps showing relocation centers in host areas should be prepared and posted.

4. Deficiency: The current state plan was discovered to be in error identifying the number of families residing within the 2-mile EPZ in Pottawattamie County (NUREG-0654, II, J.10.b).

   Recommendation: The plan should be updated to indicate the correct number of families residing within each emergency planning zone.

5. Deficiency: Designations for the same radiological monitoring site differed between the utility and the state. The difference apparently created some confusion (NUREG-0654, II, J.10.a).

   Recommendation: The utility and the state should use a common designater for radiological monitoring sites.

6. Deficiency: An adequate supply of KI was not present for all emergency workers (NUREG-0654, II, J.10.e).

   Recommendation: Provisions for the use of radioprotective drugs, including adequate quantities, storage, and means of distribution, particularly for emergency workers must be made.

7. Deficiency: No direct contact was made with the PCEOC after 1248 hours on the open line. The line remained operational, but no one confirmed the county's presence during this critical period of the exercise (NUREG-0654, II, Appendix 3, 2.b).

   Recommendation: It is suggested that procedures for communications checks (e.g., a roll call) be developed to assure communications operation and receipt of messages.

8. Deficiency: The recommendation to administer KI was not based on the appropriate guidelines or justified based on the dose projections made by the field team coordinator. Further, the recommendation was made too late (NUREG-0654, II, J.10.e,f).

Recommendation: Closer coordination is required between the ISEOC and the forward command post. The ISEOC should involve the forward command post in decision making and recommendations.

2.3.2 Field Monitoring Activities

Overview

Field monitoring teams were mobilized from Iowa City and Ames. Additional staff were placed on standby to provide 24-hour capability. The team from Iowa City had traveled part way the previous day, but the Ames team traveled in real time. Upon notification each team mobilized and arrived at the Harrison County EOC promptly. The teams were fully equipped and ready for dispatch upon arrival. The teams were briefed on plant status and meteorology prior to deployment. However, after deployment, no further briefings were provided.

The teams (designated as Blue and Green) were well-equipped with the materials identified in the plan. Both teams had high- and low-range detectors and air sampling equipment. All equipment had been calibrated in October. Backup supplies and equipment were adequate. Procedures for collecting air samples had been modified to correct deficiencies identified in prior exercises.

The Blue team needed more training in emergency response and monitoring procedures. The Blue team members were not certain as to proper collection procedures and calculation of radioiodine concentrations in the field. Their iodine monitoring procedures had inadvertently been left with the Green team. Further, their air sampler operated only on AC, rendering it unavailable for use. A power supply for the AC-driven air pump needs to be procured.

The Green team was well-trained in their responsibilities and functions and performed them well. It is important to note that equipment and procedures used by the two teams are different. If Ames personnel were to be used on the Iowa City team, or vice-versa, cross training on equipment and procedures would be necessary.

The communication link to the field teams was indirect through the state police escort accompanying the team. No dead spots were encountered and the system functioned marginally. A direct communication link with the ISEOC would have been more convenient and effective. It was apparent that not all the team members were equally trained in the use of the hand-held field radios.

Dosimeters, including direct-reading and permanent record, were worn by all team members. Team members were aware of the procedures and adhered to them. However, additional emphasis should be placed on the regular reading and recording of dosimeter values. Adequate supplies of protective clothing and equipment were contained in the team kits. Team members knew the procedures for administering KI when directed to do so by the ISEOC. It was apparent during the exercise that the teams require more training in procedures for determining the need and means for decontamination of emergency personnel, supplies, equipment, and waste disposal.

Deficiencies That Would Lead to a Negative Finding

There were no deficiencies that would lead to a negative finding observed during the field monitoring activities.

Deficiencies and Recommendations

1. Deficiency: The Blue team was not certain of the proper collection procedures for, and calculations of radioiodine concentrations in the field. The written procedures had been misplaced (NUREG-0654, II. I.8, N.2.d, O.4.c).

   Recommendation: The Blue team requires more training in emergency response and radiological monitoring procedures. A check, prior to deployment, for all equipment and procedural manuals should be verified on a checklist.

2. Deficiency: The Blue team's air sampling equipment was non-operable because no power supply for the air pump was available (NUREG-0654, II. H.11, I.8).

   Recommendation: The plan should specify and identify the requirement for an air sampler power supply in the checklist.

3. Deficiency: Following deployment, the radiological monitoring teams were not provided with periodic updates of plant status and meteorology (NUREG-0654, II. F).

   Recommendation: The field team coordinator should transmit periodic updates of the plant status and current meteorological conditions to the radiological monitoring teams.

4. Deficiency: The radiological monitoring teams were not familiar with the equipment or procedures used by the other teams (NUREG-0654, II. I.8, 9, 11).

   Recommendation: Additional training is recommended to familiarize radiological field monitoring team members with the different equipment and procedures in use.

5. Deficiency: All members of the field teams did not demonstrate adequate proficiency with hand-held field radios (NUREG-0654, II. F.1.d, N.2.a).

   Recommendation: Further training in the use of field radio equipment is recommended for radiological monitoring team members.

6. Deficiency: Radiological field monitoring team personnel did not regularly read and record dose values from their personal dosimeters (NUREG-0654, II. K.3.b).

   Recommendation: Procedures to ensure that dosimeters are read at appropriate frequencies and dose records are maintained should be established.

7. Deficiency: Radiological field monitoring teams were not proficient in determining the need and means for decontamination of emergency personnel, supplies, equipment, and contaminated waste disposal (NUREG-0654, II. K.5.a,b).

   Recommendation: Field teams require additional training in the areas of determining the need and means for decontamination of emergency personnel, supplies, and equipment, and for disposal of contaminated wastes.

2.3.3 Forward Command Post-Radiation Team Operations

Overview

Coordination of the radiological field monitoring teams was done from the forward command post located at the Harrison County EOC (HCEOC). Response time of the team coordinator and the field teams was excellent. The field teams were dispatched from Iowa City and Ames. Additional staff were placed on standby. The field team coordinator, identified in the plan, managed his teams well. However, aside from a briefing upon deployment of the teams to the field, no other briefings were provided. The required self-reading and

permanent record dosimeters were available and provided to the field teams and other emergency response personnel. Records were made of the dosimeter readings. An adequate supply of potassium iodide (KI) was on hand. The team coordinator had a current copy of the plan and written procedures and checklists were effectively used. Messages were loosely recorded and were not generally distributed. Clerical support for the team coordinator would be desirable.

The team coordinator occupied a small room adjacent to, but separate from the HCEOC. Overall, the facilities for the team coordinator were minimal, but adequate. Interaction with the rest of the HCEOC was limited as the coordinator had to continually monitor the telephone. The status board and emergency classification level in the HCEOC were not visible to the coordinator. Information was generally received late as the team coordinator did not appear to be part of the flow of information within the HCEOC. The coordinator's role in the overall management structure may not be well-enough defined to provide a smooth interface with the rest of the operation.

Visual aids were lacking except for maps identifying the plume EPZ and the radiological monitoring points. Prelocated monitoring points were on a map used by the team coordinator and prepared by the state. Another map prepared by the utility indicated a different set of points. Some confusion arose because both maps used similar numbering systems, but points with the same designations were as far as nine miles apart. It is strongly recommended that a single map be prepared indicating and identifying all necessary points in a consistent manner.

The team coordinator received information from the utility and the ISEOC by telephone. Communications to the field teams was indirect and clumsy via telephone intercom to the sheriff's dispatcher, then to the state patrol radio system to a patrol car with a team member in it. A monitor (receive only) was difficult to understand and was located some distance from the team leader's position. This system is inadequate since it is vulnerable to the propogation of error and precludes lengthy briefings and updates. Overall, communication equipment and procedures for field team coordination requires upgrading.

Dose assessment was performed using plant release data and field readings. Field monitoring teams were promptly directed to the various field monitoring locations. The plume was correctly defined and all information was transmitted to the ISEOC. Calculations were made rapidly and checked using both hand calculations and programmable calculators. However, it was not obvious that the data were used in decision making.

Protective action recommendations were made for plume and ingestion pathway hazards at the ISEOC. The recommendations were reviewed and updated as conditions changed. The recommendations were not coordinated between the states at this location. Potassium iodide (KI) was recommended for emergency workers in the field, but not based on the appropriate guidelines. The use of

KI was not justified based on the dose projections made by the team coordinator. Further, the recommendation was made late and plant releases and air concentrations had declined by the time the radioprotective drug would have been used. The team coordinator had arranged for the necessary monitoring and sampling to provide data upon which recommendations could be based.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed in field team coordination or dose assessment functions during this exercise.

Deficiencies and Recommendations

1. Deficiency: Message handling and distribution were inadequate, resulting in the team coordinator not being current on the latest developments (NUREG-0654, II, A.3).

   Recommendation: The importance and function of the field team coordinator should be clearly defined in the plan. Although the coordination of field teams is a state function, the interface with the HCEOC should be clarified. The field team coordinator should have adequate administrative authority to perform his function. Clerical support for the team coordinator would be desirable.

2. Deficiency: Visual aids were lacking except for maps of the plume EPZ and radiological monitoring sites. Maps of radiological monitoring sites were inconsistent in the location and identification of the sites (NUREG-0654, II, J.10.a).

   Recommendation: The necessary visual aids and maps should be developed and posted in the dose assessment area. Further, the states nad the utility should agree on a common map of radiological monitoring sites and identifiers for those sites.

3. Deficiency: Communication with the radiological monitoring teams was not adequate (NUREG-0654, II, F.1.d, I.8).

   Recommendation: A direct form of communication between the field coordinator and the field monitoring teams should be established through upgraded equipment.

2.3.4 Medical Support

Overview

The Missouri Valley Hospital has recently been added as a resource hospital for accepting radiologically contaminated persons with injuries. For this exercise, a radiologically contaminated and injured person was to be sent to Missouri Valley Hospital. However, this person was diverted instead to the University of Nebraska Medical Center. As such, no medical support activities were observed. It was apparent that the hospital lacked survey equipment. A member of the radiological monitoring field team brought necessary equipment to the hospital.

Hospital personnel were interested in participating in the exercise and discussed procedures and injuries with the observer. Personnel appeared familiar with the appropriate procedures, but lacked experience because they have not been exercised.

It is recommended that the state of Iowa consider developing some form of triage methodology based on the level of contamination (if measurable) for contaminated individuals. In addition, a specific communication channel or system could be identified for use when contaminated individuals are not being transported by ambulance.

Deficiencies and Recommendations

1. Deficiency: The Missouri Valley Hospital did not have adequate radiological monitoring instruments (NUREG-0654, II, L.1,3).

   Recommendation: Missouri Valley Hospital should acquire appropriate instruments to be able to radiologically monitor contaminated persons.

2. Deficiency: A practiced procedure for admitting radiologically contaminated, injured persons was not evident at the Missouri Valley Hospital (NUREG-0654, II, N.2.c).

   Recommendation: Procedures should be developed and demonstrated for the treatment of radiologically contaminated victims at the Missouri Valley Hospital. Additional training of hospital staff may be necessary. Mercy Hospital in Cedar Rapids has a videotape of procedures which might prove useful. The staging of a medical drill would test procedures currently described.

2.4 IOWA COUNTY OPERATIONS

2.4.1 Harrison County EOC

Overview

The Harrison County EOC (HCEOC) was activated promptly. The call initiating activation was received from the utility at approximately 0730. The notification was verified and staff mobilization procedures were demonstrated. A call-up system was in place to contact staff members at any hour of the day. Notification of key staff members was actually conducted in Des Moines for this exercise. An up-to-date version of the state plan was not present at the HCEOC. Some confusion resulted when individuals with no current emergency responsibilities were notified and reported to the HCEOC. The HCEOC was fully staffed by approximately 1110 when the radiological monitoring teams arrived from Ames and Iowa City. In general, the staff displayed adequate knowledge and training for this exercise. Round-the-clock staffing capability was demonstrated through the presentation of a duty roster and double staffing.

The Civil Defense Director and the deputy sheriff were in charge of the HCEOC, initially. When the county commissioners arrived, they were fully briefed. Representatives from the Iowa Department of Transportation, State Police, and National Guard were briefed upon arrival and performed their assigned duties well. The CD Director and deputy sheriff relinquished their responsibilities to the state representatives, but leadership at the HCEOC was never clearly demonstrated. The Iowa ODS representative was officially in charge, but was primarily occupied with communication functions. The CD Director remained available for information concerning county matters, but his function was constrained by the plan.

The deputy sheriff kept everyone briefed with periodic updates. Message logs were maintained, but no distribution of messages was observed. Changes in emergency classification levels were announced and posted on the status board. The status board, in this case, was a blackboard. When it was filled, updates written on legal-sized sheets were attached to it. Often information was received out of sequence and back-fitted onto the board. As a result, confusion arose regarding the effective time versus time of receipt of messages. An improved status board and message handling procedures would be desirable at the HCEOC.

The HCEOC facilities were generally adequate, although space could be more efficiently used. The center could support extended operations by utilizing the jail's bunk, shower, and kitchen facilities located downstairs. Backup power was available for the jail facilities and radio room, only. Maps and displays of the plume EPZ, evacuation routes, relocation centers, access

control points, radiological monitoring points, and population by evacuation area were all posted.

Primary and backup communications with the ISEOC, PCEOC, contiguous states, licensee, and EOF were all operational and functioned well. Due to the lack of a telefax device, no hard copies of EBS messages, press releases, or other protective action messages were available. Although the HCEOC was informed of the content of current messages, a telefax would ensure consistency of content and enhance broader dissemination of information.

The HCEOC was responsible for sounding the siren alert system. The siren was sounded promptly, but in addition individual families were contacted by telephone. Further, a police officer was dispatched to perform route-alerting. All efforts put forth by the HCEOC to alert the public were well done. For this exercise, a very small population was affected. But, if an additional sector had been affected, greater reliance would have been placed on the siren systems and EBS broadcasts.

Activation of traffic control points were promptly ordered and estimates of expected traffic volume were made. Appropriate resources for removing stalled or wrecked cars were available, as well as supplies of salt and sand for potentially icy roads. According to EOC staff, the plan resources are adequate to handle all traffic and access control functions simultaneously. Since DOT, the National Guard, and state police are all involved in maintaining access control points and roadblocks, it is important that each is aware of consistent protective action decisions.

The HCEOC staff were not aware of the locations of mobility-impaired and special needs persons. A house-to-house search was discussed and it was suggested that the Harrison County van be used if the situation arose to evacuate such persons. Harrison County should compile a list of mobility-impaired and special needs persons. A letter of agreement might also be needed to use the county van.

Only high-range (0-200 R) dosimeters were available at the HCEOC. The supply of dosimeters, chargers, and record cards was more than adequate. Appropriate instructions were issued with the dosimeters, but the only person to use one was the sheriff's deputy who was to perform the house-to-house search. According to the plan, local equipment would not be used. The radiological monitoring team leader was aware of proper procedures concerning the use of KI and decontamination. The National Guard wanted to offer their services in future exercises or actual events to assist with radiological monitoring. They have sufficient equipment and trained staff. The National Guard could also provide a valuable backup to enhance extended operations and to reduce extended, personal exposure.

Only one press inquiry was received before the MRC was activated. The CD Director briefed the individual on the exercise, the emergency classification levels, and HCEOC responsibilities. The status board and other maps

and displays were also explained. The individual was informed of the location of the MRC in Omaha and indicated that it was being activated. Training is advised for the HCEOC spokesperson since some erroneous statements regarding agency responsibilities were made.

Deficiencies That Would Lead to a Negative Finding —

There were no deficiencies that would lead to a negative finding observed at the HCEOC.

Deficiencies and Recommendations

1. Deficiency: Command and control of the HCEOC was not effectively demonstrated. The ODS representative officially in charge was occupied with communication functions (NUREG-0654, II, A.2.a).

   Recommendation: The HCEOC should designate a deputy to manage the EOC during times when he is unavailible.

2. Deficiency: The HCEOC provided a press briefing during the exercise. The spokesperson was not adequately trained regarding contact with the press and specific agency responsibilities (NUREG-0654, II, G.3.a, 4.a).

   Recommendation: The HCEOC should designate the points of contact and physical locations for use by the news media during an emergency and in compliance with the plan. Further, a spokesperson should be designated and trained to interact with the media.

3. Deficiency: The HCEOC staff were not aware of the locations of mobility-impaired and special needs persons (NUREG-0654, II, J.10.d).

   Recommendation: The HCEOC should compile a list of mobility-impaired and special needs persons. Provisions should be developed for the protection or evacuation of these persons during a radiological emergency.

4. Deficiency: Only high-range (0-200 R) dosimeters were available for emergency workers (NUREG-0654, II, K.3.a).

   Recommendation: Low-range (0-200 mR) pocket dosimeters and TLDs should be available for emergency workers who enter radiation fields.

5. Deficiency: A copy of the current state plan was not available. Confusion in personnel and responsibility resulted (NUREG-0654, II, A.2.a).

   Recommendation: A copy of the current state plan should be maintained in the HCEOC. Key staff members should be thoroughly familiar with their respective responsibilities.

6. Deficiency: The HCEOC status board was not adequate. The board was too small to post the necessary plant status information.

   Recommendation: The HCEOC should design a status board which will identify the current emergency classification level; include effective times for protective action decisions; and a brief description of protective actions in effect.

7. Deficiency: Some personnel reported to the HCEOC when they had no emergency responsibilities. Apparently the call list in use is no longer up to date (NUREG-0654, II, A.2.a).

   Recommendation: An up-to-date call list identifying persons with emergency responsibilities consistent with the current plan should be prepared.

8. Deficiency: Hard copies of the content of EBS messages, press releases, and protective action recommendations were not available at the HCEOC because there was no telefax machine.

   Recommendation: The procurement of a telefax link with the MRC and the ISEOC would enhance the consistent dissemination of emergency-related information to the HCEOC staff.

2.4.2 Pottawattamie County EOC

Overview

The Pottawattamie County EOC (PCEOC) was located at the Pottawattamie County sheriff's department. The PCEOC was not fully activated for this exercise. The primary functions of the PCEOC were (1) notification and alerting of key staff and (2) public notification and warning activities. The

organizations present at the PCEOC included the county CD Director, communications director, sheriff's department, and the Iowa State Police. Except for the Iowa State Police, all participants were on duty by 0800 hours. The PCEOC has a direct communication link with the utility which is monitored round-the-clock. A sheriff's dispatcher has a call-up list and procedures to notify PCEOC staff at any hour of the day. Except for the CD Director and communications director, a 24-hour staffing capability was demonstrated. All participants demonstrated adequate training and knowledge of their assigned duties.

The director of communications was in charge of the PCEOC, however, this is not clearly indicated in the plan. Appropriate staff were involved in decision making. Access was controlled to the communications area. Complete message logs were maintained. A copy of the current plan was available for reference, but the staff did not have written procedures or checklists.

Facilities at the PCEOC were adequate and the center could support extended operations with existing sleeping, shower, and kitchen facilities. The emergency classification level was posted on the status board and a map of the plume EPZ and associated sectors was displayed. However, no maps or displays were posted indicating evacuation routes, relocation centers, access control points, radiological monitoring points, or population density by evacuation area.

Communication equipment included landlines to the ISEOC, MRC, licensee, contiguous states, and local EOCs. An open conference line linked the PCEOC with the ISEOC, MRC, and HCEOC. No direct contact was made with the PCEOC after 1248 hrs on the open line. The line remained operational, but no one confirmed the county's presence during this critical period of the exercise. It is suggested that procedures for communications checks be developed. Other communications equipment included the sheriff's department radio network. No direct communication's capability with the EOF were observed.

Existing agreements require only that the Pottawattamie County sheriff activate the siren warning system. This was accomplished promptly when directed by the ISEOC. When the decision ordering the evacuation of the 2-mile EPZ was given, the PCEOC brought to the ISEOC's attention that four families would be involved, identifying an error in the plan. The PCEOC followed up with simulated telephone notification of the affected families. When notified to evacuate to five miles, actual calls to five off-duty sheriff's deputies were promptly made, simulating dispatch to the field. The PCEOC staff was aware of the location of mobility impaired persons, should their evacuation be necessary.

The PCEOC promptly activated traffic control points when ordered to do so. The county dispatched eight sheriff's deputies to help with the evacuation. This response was apparently under existing county procedures, separate from the radiological emergency plan. According to PCEOC staff, sufficient personnel and vehicles were available to cover all traffic and

access control functions simultaneously. In addition, necessary materials and equipment were available to keep evacuation routes clear in the event of bad weather or to remove stalled or wrecked vehicles.

Further announcements received over the ISEOC open line extended the evacuation to the 10-mile EPZ and indicated that KI was being distributed to the state patrol officers working in the field. The sheriff's department had no information regarding the administration of KI. The sheriff's deputies were equipped with personal dosimeters, but apparently were not trained to read them. Observer inquiries revealed that dosimeter readings were to be made and recorded when the deputies returned from the field. No periodic readings were taken and no apparent knowledge of KI usage was demonstrated.

Deficiencies that would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed at the PCEOC.

Deficiencies and Recommendations

1. Deficiency: The director of communications was in charge of the PCEOC, but this role was not clearly in the plan (NUREG-0654, II. A.2.a).

   Recommendation: The PCEOC should specify the function and responsibility for key individuals by title for command and control.

2. Deficiency: The PCEOC staff did not have specific written procedures or checklist for their respective assigned duties (NUREG-0654, II. A.1.b).

   Recommendation: The PCEOC should develop written procedures or checklists to aid the emergency response staff in effectively performing their duties.

3. Deficiency: No maps or displays were posted indicating evacuation routes, relocation centers, access control points, radiological monitoring points, or population density by evacuation area (NUREG-0654, II. J.10.a,b).

   Recommendation: The PCEOC should develop maps or displays identifying evacuation, preselected radiological sampling and monitoring points, relocation centers in host areas, and population distribution around the nuclear facility by evacuation area.

4. Deficiency: No direct communications capability with the EOF was observed (NUREG-0654, II. F.1.d).

   Recommendation: Provision for communications between the licensee's near-site EOF and the PCEOC should be made.

5. Deficiency: The Pottawattamie County Sheriff's Department had no knowledge or procedures regarding the administration of KI (NUREG-0654, II. J.10.e, f).

   Recommendation: Provisions for the use of radioprotective drugs, particularly for emergency workers should be made, including quantities, storage, means of distribution, and the predetermined conditions under which such drugs may be used by emergency workers.

6. Deficiency: The Pottawattamie County Sheriff's deputies were not trained in the use or periodic reading and recording of personal dosimeters (NUREG-0654, II. K.3.b).

   Recommendation: The PCEOC should ensure that dosimeters are read at appropriate frequencies and provide for maintaining dose records for emergency workers.

2.5 COMBINED STATE OPERATIONS

2.5.1 Emergency Operations Facility

Overview

The notice to activate the emergency operations facility (EOF) was received at approximately 0630 hours via the Nebraska Highway Patrol dispatcher. Nebraska personnel, the mobile state civil defense operations center (CRUSH), and the state patrol mobile communications center (BLUEBIRD) all arrived at the EOF within two hours. Nebraska personnel tested their radio and telephone equipment, made necessary adjustments, and activated BLUEBIRD. The EOF was declared fully operational by 0920. Overall, the activation of the EOF was consistent with the plan, ahead of schedule, and professionally accomplished.

Nebraska provided adequate staffing at the EOF for the functions of operations, communications, information authentication, and health physics. A governor's representative was also present. Each staff member was well-trained and knowledgeable of their respective functions. However, the lack of clerical support to record and handle messages created a variety of

problems. The message log was poorly maintained and replies to requests for information were sometimes overlooked, or lacked sufficient content. Each staff member was forced to record and handle messages in addition to their regular duties.

The command and control functions of decision making and providing protective action recommendations were sometimes inconsistent with the plan. Such inconsistencies in decision making were observed on at least two occasions when: (1) the order to issue KI to emergency workers was made at approximately 1330 hrs, and (2) an order was given to reduce protective actions while the emergency classification level of the plant remained at General Emergency (between 1415 and 1510 hrs). In the first case, it was not clear whether the decision was made at the EOF or the EOC, since there had been no such discussion observed at the EOF prior to the decision. In the second case, the decision was overridden and delayed. In each case, the decision making and protective action recommendations were not made according to the procedures specified in the plan. The record of protective action recommendations indicates nine actions were recommended or implemented. Some were implemented prior to EOF recommendation. The remainder were recommended in compliance with the plan.

Space and equipment for EOF personnel were set aside, but were limited. No visual aids were displayed and maps identifying EPZ sectors and evacuation routes were not present. The facility was normally an office and did not have adequate wall space for maps. As a result, the staff procured a map and spread it on the floor. Communications facilities were adequate and functioned well. The utility provided telephones and the state activated radio equipment to communicate the state and local EOCs, and with BLUEBIRD and CRUSH. A dedicated line was provided to communicate with the state radiation health team. Capability for conference calls was possible on the dedicated line and a telephone line between the EOF, Lincoln, and the Nebraska Civil Defense.

Dose assessment calculations and some protective action recommendations were made in the utility's emergency assessment and recovery operations (EARO) room and at CRUSH. The dose assessment procedures were not observed in the EOF. The health physicist was required to commute constantly between EARO and the EOF in performing his duties. During much of the exercise, the health physicist was in EARO, coordinating with the utility monitoring teams. In the EOF, he coordinated with the state and local governments and recommended protective actions. CRUSH duplicated the work of the EOF staff. The use of CRUSH strained the limited staff resources at the EOF and generated additional message traffic.

Iowa met exercise objectives by demonstrating the capability to mobilize representatives to coordinate and support emergency response efforts at the EOF. Generally, one Iowa representative would be dispatched to the EOF, but for this exercise two were present. Iowa maintains a file of individuals that may be contacted at any hour of the day to staff the EOF.

The Iowa staff did not display or demonstrate adequate knowledge or training in the functions they were to perform at the EOF. Messages were not consistently logged and frequently no one was available to respond to the phone. As a result, the representatives were not well-informed of information applicable to directing and controlling response functions.

The space available in the EOF for Iowa operations appeared adequate. Accommodations were reasonably comfortable with low noise levels. The only communications equipment for the Iowa representative was a commercial telephone. No backup communications were available.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed at the EOF during this exercise.

Deficiencies and Recommendations

1. Deficiency: Decision making and recommendations for protective actions were not always made according to the procedures specified in the plan (NUREG-0654, II. A.2.a).

   Recommendation: Additional training is necessary in management and decision making responsibilities. Familiarization with the procedures in the plan should be emphasized.

2. Deficiency: The EOF was too small to be used effectively (NUREG-0654, II, H).

   Recommendation: Adequate emergency facilities and equipment to support the emergency should be provided. The single office should be expanded.

3. Deficiency: Maps or displays indicating population distribution, sampling points, EPZ sectors, and relocation centers were absent (NUREG-0654, II, J.10.a,b).

   Recommendation: Maps or displays indicating evacuation routes, evacuation areas, radiological sampling and monitoring points, relocation centers, and population distributions should be developed and posted.

4. Deficiency: No support staff were available to assist the emergency response personnel with message receipt or handling (NUREG-0654, II. A.4).

Recommendation: Arrangements should be made to have sufficient support staff at the EOF to relieve officials of routine telephone calls and to properly handle messages.

5. Deficiency: The Iowa representatives were not sufficiently trained to perform their function well. Message logging and handling was incomplete and telephones were sometimes left unanswered (NUREG-0654, II., A.2.a, O.5).

Recommendation: Additional training should be provided for the EOF representatives to ensure they are knowledgeable in their duties.

6. Deficiency: Communications equipment was not adequate for the Iowa representatives (NUREG-0654, II., F.1.d).

Recommendation: The Iowa representatives should be provided with reliable primary and backup means of communication between the EOF and state and local EOCs and radiological monitoring teams.

2.5.2 Information Authentication Center

Overview

Public information officers (PIOs) from the utility, Nebraska Civil Defense, and the NRC were located at the EOF and operated the information authentication center (IAC). The state of Iowa was not represented at the IAC. The IAC has no direct contact with the media and releases information directly to the media release center (MRC) in accordance with the plan.

Activation of the IAC was promptly and effectively demonstrated. Key personnel were contacted through telephone pagers. When alerted, these individuals contact the rest of the staff. The IAC can be contacted at any hour of the day, and demonstrated a 24-hour staffing capability using double shifts. A full staffing capability was demonstrated at this exercise. The PIOs were all competent technically, and worked well as a unit.

The facilities at the IAC were adequate in terms of space, furniture, lighting, and communications equipment. Acoustics within the IAC were good. Maps and displays were available for reference. Only one manual typewriter was available in the IAC for utility staff. Nebraska representatives prepared and disseminated messages in longhand. The NRC brought portable word processing and telefax equipment for their use.

Commercial telephones were the primary communication links between the IAC and the state and local EOCs and the EOF. A telefax was used to transmit releases to the MRC. In addition, a 2-way radio was used to communicate with CRUSH. Overall, the IAC was well-equipped for communications functions.

Five major briefings were provided by the IAC. The briefings were accurate, complete, and understandable. The PIOs effectively exchanged and coordinated information to be released.

The Nebraska Civil Defense used prescripted emergency public messages but the PIO of the utility and the NRC representative drafted their own messages as situations arose. The messages were generally clear and understandable. However, on several occasions the content of the messages were found by the MRC to be erroneous or confusing. For example, in one message instructions for evacuation were provided when in fact, sheltering was the recommended protective action. In other cases, information in the messages was inconsistent with information contained in the public information brochure. In Nebraska releases, sectors for protective actions were identified, as illustrated in the brochure, but referral to the brochure was not made. At least two releases made by the NRC were not expected by the MRC, indicating a breakdown in coordination.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed at the IAC during this exercise.

Deficiencies and Recommendations

1. Deficiency: On occasion, the content of messages released by the IAC were found to be erroneous or confusing (NUREG-0654, II, E.4.1, E.5-7).

   Recommendation: Provisions should be made for more careful authentication of the content of messages released to the media and the public.

2. Deficiency: The content of some messages released to the media was not clear and consistent with information contained in the public information brochure. Further, the brochure was not indicated as a source of information (NUREG-0654, II, E.6,7; G.1).

Recommendation: Provisions should be made to ensure protective action recommendations provided in the public information brochure and media releases are consistent. When protective action recommendations include EPZ identifiers, the message should (1) refer the public to a source where the sector boundaries are defined (e.g., the brochure), or (2) include the sector boundaries, identified clearly by geographic landmarks, in the messages, or (3) both.

2.5.3 Media Release Center

Overview

The media release center (MRC), located in the Omaha/Douglas County Civic Center was serving both Nebraska and Iowa, was promptly activated by representatives from the utility and each of the states. Each organization provided two PIOs. The MRC was fully operational by 0805 hrs. A regular notification system to activate the MRC at any hour of the day was demonstrated. The call up list identifies first and second shift personnel. The utility demonstrated a shift change while Nebraska provide a two-shift roster. Iowa's capability for demonstrating a shift change was limited since only two persons are available. In general, the PIOs demonstrated adequate training and knowledge of their assigned duties.

The MRC had adequate space, furniture, lighting, and typewriters. Additional equipment included a telefax (linked to the IAC) and a photocopy machine. Backup power was available at the MRC. Maps and displays to facilitate dissemination of information were small and generally inadequate. However, a letter of agreement with Nebraska indicates larger maps and wall charts will be installed in the near future. It was not known if the new visual aids will also cover the appropriate areas in Iowa. The PIOs were provided with a private conference area. Approximately 25-30 reporters could be accommodated in the MRC, but an additional capacity of 300 could be handled in the legislative chambers on another floor.

Communications equipment at the MRC were adequate and operated well. The utility had a dedicated line to the EOF. Iowa and Nebraska each used commercial telephones. Iowa maintained an open line to the state and local EOCs and the EOF. Secondary communication links in the form of a telefax were demonstrated to each state EOC and the EOF. Conferencing capability was possible between the MRC and the state and local EOCs and the EOF. Telephone lines and jacks were provided for reporters. Reporters would have been required to bring their own telephone unit to use the lines.

Media kits were available containing general background information on nuclear plants, the utility and the local area. These briefings were

conducted, but no media representatives were present. The PIOs held pre-briefing meetings to ensure coordinating. However, the NRC issued two news releases with no advance notice or coordination with the MRC. No indication of the source or location of the release was made (refer to Sec. 2.5.2). The media briefings were generally accurate and complete. A technical liaison from the utility was present to clarify technical matters. Hard copies of media briefings would have been posted and made available had any media representatives attended. Radio broadcasts were not monitored in the MRC because radio reception was poor within the building. As a result, the MRC was unable to keep track of information the public was actually receiving. No system was identified to rectify errors in information received by the public.

Public instructions were drafted at the IAC and transmitted to the MRC (refer to Sec. 2.5.2). Overall, the quality of public instruction and news releases was not adequate. The messages were generally too brief and contained errors on several occasions. Protective action areas were accurately described in terms of familiar boundaries and landmarks for Iowa, but only by EPZ sectors for Nebraska. Nowhere were the boundaries of the sectors defined, and no reference was made to the public information brochure which illustrates the sectors. Instructions provided for sheltering in Nebraska inadvertently and incorrectively gave vacuation measures instead. This error was never caught or corrected. The public information brochure was never referenced in the briefings, and no instructions for its use or acquisition were made.

The Emergency Broadcast System (EBS) and other electronic media were notified to broadcast the emergency instructions. The timing of public instruction was delayed and not well-coordinated with the public alerting process (refer to Sec. 2.3.1).

Two operators and four telephone lines were activated for rumor control functions during the exercise. Rumor control has the capability to handle 10 telephone lines simultaneously. The operators were well-prepared to answer questions as they were kept continually up to date through briefings. The rumor control number was publicized only once in an EBS message prepared by the utility. The states and the utility neglected to mention rumor control in their briefings. Two calls were received by rumor control providing valuable exercise feedback. These calls indicated that the sirens were weak in one area, however, this information was never passed on to the states or the EOF.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed at the MRC during this exercise.

Deficiencies and Recommendations

1. Deficiency: Maps and displays to facilitate dissemination of information at the MRC were small and generally inadequate. Agreements have been reached with Nebraska to upgrade the MRC visual aids. It was not clear if the new visuals would include the affected portions of Iowa (NUREG-0654, II, G).

   Recommendation: The new visual aids for the MRC should depict the entire planning area surrounding the Fort Calhoun facility, including affected portions of Iowa.

2. Deficiency: EBS broadcasts should be monitored in the MRC to evaluate the accuracy of the information the public is receiving. Procedures to correct erroneous information were not developed (NUREG-0654, II, E.4.1, G.2.c).

   Recommendation: Installation of an antenna would enhance radio reception and allow for the monitoring of EBS messages. Procedures should be developed to correct erroneous broadcasts.

3. Deficiency: Overall, the quality of public instruction and news releases was inadequate (see also Sec. 2.5.2) (NUREG-0654, II, E.5,7, G.4.b).

   Recommendation: More training in the authentication and quality of public information is suggested. Procedures for coordinating and reviewing the contents of public instructions are needed.

4. Deficiency: The timing of public instruction was delayed and not well-coordinated with the public alerting process (see also Sec. 2.3.1) (NUREG-0654, II, E.6; Appendix 3, B.2.a, B.3).

   Recommendation: Procedures to expedite the broadcast of the EBS messages, closely following the activation of the alerting signal are needed.

3 SCHEDULE FOR CORRECTING DEFICIENCIES: December 6-7, 1983, EXERCISE

Section 2 of this report lists deficiencies based on the findings and recommendations of federal observers at the radiological emergency preparedness exercise for the Fort Calhoun Nuclear Power Station held on December 6-7, 1983. These evaluations are based on the applicable planning standards and evaluation criteria set forth in (NUREG-0654-FEMA-1, Rev. 1 (Nov. 1980) and objectives for the exercise agreed upon by the state, FEMA, and the RAC.

The Regional Director of FEMA is responsible for certifying to the FEMA Associate Director, State and Local Programs and Support, Washington, D.C., that any deficiencies that require corrective actions have been corrected and that such corrections have been incorporated into the plans as appropriate.

FEMA requests that both the state and local jurisdictions submit a schedule of actions they have taken or intend to take to correct these deficiencies. FEMA recommends that a detailed plan, including dates of completion for scheduling and implementing recommendations, be provided if corrective actions cannot be instituted immediately.

No deficiencies were observed at the state or county level that would cause a finding that off-site emergency preparedness was not adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public living in the vicinity of the site in the event of a radiological emergency.

Other deficiencies observed at the December 6-7, 1983, exercise for the FCNPS require that a schedule of corrective actions be developed. These other deficiencies are summarized in the following table.

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
A.1.b, A.2.a	Nebraska State EOC 1. The written State plan fails to adequately describe the minimum number of personnel to operate the EOC and how the State EOC interacts with the Field Command Post personnel in making dose assessment calculations and protective action decisions. It would be beneficial if the State plan was clarified in order to allow maximum flexibility of existing conditions and available state resources.					
NR	2. A potential problem between the radiological health decision makers in Nebraska and Iowa exists in how protective actions recommendations are made for sectors adjacent to and overlapping the Missouri River. When the plume travels across the Missouri River, residents of Iowa and Nebraska would benefit if the two states would define an equivalent basis and decision chain for making protective actions relative to siren activation, sheltering, evacuation, etc.					

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NR	3. Protective action instructions to the public were provided using NUREG-0654 sector designations rather than familiar geographical boundaries. Use of familiar geographical boundaries in describing areas affected by protective actions and recommendations would be more clearly understandable to local residents.					
	State Civil Defense Portable Operations Center - CROSH					
I.8, I.10	4. Delays of up to 45 minutes were encountered in the receipt of utility data at CROSH. On one occasion incorrect data was supplied to CROSH from the utility, resulting in state dose projections that were significantly different from the utility's. No apparent attempt was made by the state to resolve this data discrepancy. The cause of the delays in receipt of data needs to be identified and a remedy implemented. Additional training and/or a review of procedures in verifying accuracy of utility data is needed.					

FT. CALHOUN NUCLEAR POWER STATION EXERCISE-REMEDIAL ACTIONS
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K.3.a	5. The lack of sufficient simulated TLDs raises concerns as to whether a sufficient number of TLDs could actually be made available in a real emergency. The use of simulated TLDs as a means to display capability is not recommended. It is suggested that permanent-record dosimetry availability be demonstrated in future exercises.					
J.10.f	6. The order for the use of KI occurred late in the exercise; KI should have been administered 1 to 2 hours earlier and should have been based on source terms sufficiently high to warrant its use. The predetermined conditions under which decisions are made to administer radioprotective drugs to offsite emergency workers should be reviewed.					

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I	7. The source terms used during the exercise were not compatible with the field data provided. Also, field data supplied to the field teams were not in the proper form; the data provided were calculations derived from field data. Assure that source terms used during the exercise are compatible with the field data provided and make provisions to ensure that field data supplied to field teams are in the proper form. The finalized scenario should be provided to FEMA for review with respect to completeness and accuracy at least 45 days prior to the exercise.					
	Nebraska Radiological Monitoring Team					
F	8. Before deployment, the field team was not briefed on current plant or meteorological conditions. Briefing of the field team prior to deployment would better enable the team to respond to radiological conditions as they change.					

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H.10	9. The sodium iodide scintillation counter was not fully functional and was not used during the exercise. The field vehicle experienced an electrical starting problem. Also, equipment available to the team was not consistent with the plan. The causes of any instrument malfunctions should be identified and remedial actions taken to ensure that this instrument and all equipment, including vehicles, are working properly; and field teams should have adequate opportunity to become fully familiar with new equipment prior to an exercise. The plan or equipment available needs to be adjusted to reflect consistency.					
NR	10. A snow sample was placed in a plastic bag rather than a properly sealed container to prevent its loss by leakage. A review of procedures and equipment needs for snow sampling is suggested.					

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K.3.a, K.5.a	11. Low range dosimeters were not available and familiarization was not evident with regard to maximum dose allowed without authorization, and what procedures should be implemented if an excess dose was received. Low-range dosimeters are needed for field team members. Also, additional training is needed on understanding maximum doses allowed without authorization and procedures to be implemented if an excess dose is received.					
I.8	12. The Nebraska field team was not directed properly to obtain useful pluse information. Samples from Additional monitoring points are needed to obtain useful information on the plume. A controller needs to be assigned to the field teams to input essential data that will allow complete and worthwhile field team exercising.					

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	Cooper NPS Radiological Monitoring Team					
F	3. Prior to field team deployment, the Cooper team was not briefed on plant or meteorological conditions nor was the team kept informed of these conditions throughout the exercise. The team also was not in communication with CRUSH while it was at the decontamination center. Field teams should be briefed on plant conditions prior to deployment and communications maintained throughout the exercise.					
H.7,10	14. The Cooper field team did not have charcoal cartridges for air sampling. Equipment was not available for water and milk sampling. The team also did not acquire a hand-held portable radio. Monitoring and communication equipment should be available to accomplish the assigned field monitoring responsibilities of the Cooper team.					
I.7	15. Conversions from mR/hr to μCi/cc was accomplished using a chart and interpolating between table values; this method was not in the plan. Review the plan or procedures regarding this activity and make changes and/or revisions as appropriate.					

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K.3.a	16. Only low-range (0-1 R) dosimeters were available. Permanent record devices were simulated. Provide the field team with mid- and high-range dosimetry. Availability and use of permanent record devices should be demonstrated in a future exercise.					
I.8	17. The monitoring team was not used effectively for tracking the plume because only two non-plume monitoring points were sampled. Samples from additional monitoring points within the plume need to be taken to effectively track the plume. The plan should be reviewed to assure proper use and management of the field teams.					
	Radiological Laboratory					
A.4	18. The radiological laboratory should be able to demonstrate a capability to function over a prolonged period. One additional trained and experienced individual would be desirable to provide two shifts of two persons each.					

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H.10	19. Backup equipment for analyzing media samples were not present. Provisions and arrangement for backup equipment should be made. Sufficient analytical equipment may be available through the use of backup laboratories.					
N.2.d	20. No technical operations were observed at the radiological laboratory during this exercise. The exercise should include analysis of sample media and a demonstration of communications and record keeping.					
	Dana College Coliseum Decontamination Center					
K.3.a	21. The availability of State health physics personnel over an extended period of time was not demonstrated. State health physics personnel should be assigned to provide 24-hour capability.					
NR	22. Activities presented at the decontamination facility were simulated. A demonstration of decontamination center capabilities should be carried out in a future exercise.					

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	University of Nebraska Medical Center and the Blair Rescue Squad					
I.	23. The Blair Ambulance Crew was not provided with radiation monitoring equipment, dosimetry, protective clothing, adequate communications, and radiation training. All appropriate equipment should be provided to rescue squads and ambulance services involved in the transport of injured-contaminated individuals. Training is also needed in all aspects of radiation control.					
	Washington County					
D.1, 4	24. A misunderstanding of the emergency classification existed between the County Sheriff Dispatcher and the CD Director. This caused a delay in staff notification and activation. Additional training in notification procedures and a review of verification procedures is suggested.					

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A.2.a	25. It was not clear to what extent the HAM and REACT volunteer radio operators would be available at the EOC in the event of an actual emergency. The county plan should include a description of the extent that these volunteer organizations will participate in an actual emergency. Appropriate letters of agreement would help to define the extent of availability.					
J.10.c, J.10.d	26. Special issues relating to the evacuation of schools and the mobility-impaired have not been adequately addressed. Procedures which need to be defined for the evacuation of schools include: the extent to which buses will be used, coordination and communication between the EOC and the school superintendents, alerting and availability of bus drivers, and expectations of parents picking their children up at the schools. Activities which need to be addressed in the evacuation of mobility-impaired include a system for the identification of non-institutionalized individuals. Provision for their evacuation plus notification of institutions, is needed.					

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K.3.a	27. Low-range (0-200 mR) and permanent record dosimeters were not available. Dosimeters were read on an hourly basis, this is not frequent enough under certain circumstances. Low-range, direct-read and permanent record dosimeters are needed. The interval between readings of the dosimeters is dependent upon the dose rate to which the workers are exposed. An interval of 15 minutes or even more frequent could be required in high radiation fields (greater than 1 R/h). Changes to instructions provided with dosimeters should be considered.					
	Iowa State EOC					
N.1.b	28. All organizations having emergency responsibilities and identified in the plan did not participate in the exercise. Each organization shall establish procedures for alerting, notifying, and mobilizing emergency response personnel.					

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E.5, 6	29. The siren system was activated at 0935, but the EBS message broadcast was delayed until 1005. Procedures need to be developed to ensure prompt broadcast of EBS messages following siren activation.					
J.10.a, J.10.b	30. Maps or displays of population density by evacuation area, and relocation centers were not posted. Maps showing population distribution around the nuclear facility by evacuation areas, and maps showing relocation centers in host areas should be prepared and posted.					
J.10.b	31. The current state plan was discovered to be in error identifying the number of families residing within the 2-mile EPZ in Pottawattamie County. The plan should be updated to indicate the correct number of families residing within each emergency planning zone.					
J.10.a	32. Designations for the same radiological monitoring site differed between the utility and the state. The difference apparently created some confusion. The utility and the state should use a common designater for radiological monitoring sites.					

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J.10.e	33. An adequate supply of KI was not present for all emergency workers. Provisions for the use of radioprotective drugs, including adequate quantities, storage, and means of distribution, particularly for emergency workers must be made.					
App.3, 2.b	34. No direct contact was made with the PCEOC after 1248 hours on the open line. The line remained operational, but no one confirmed the county's presence during this critical period of the exercise. It is suggested that procedures for communications checks (e.g., a roll call) be developed to assure communications operation and receipt of messages.					
J.10.e, J.10.f	35 The recommendation to administer KI was not based on the appropriate guidelines or justified based on the dose projections made by the field team coordinator. Further, the recommendation was made too late. Closer coordination is required between the ISEOC and the forward command post. The ISEOC should involve the forward command post in decision making and recommendations.					

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	Field Monitoring Activities					
I.8, N.2.d, O.4.c	36. The Blue team was not certain of the proper collection procedures for, and calculations of radioiodine concentrations in the field. The written procedures had been misplaced. The Blue team requires more training in emergency response and radiological monitoring procedures. A check, prior to deployment, for all equipment and procedural manuals should be verified on a checklist.					
H.11, I.8	37. The Blue team's air sampling equipment was nonoperable because no power supply for the air pump was available. The plan should specify and identify the requirement for an air sampler power supply in the checklist.					
F	38. Following deployment, the radiological monitoring teams were not provided with periodic updates of plant status and meteorology. The field team coordinator should provide periodic updates of plant status and meteorology to field teams.					

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I.8, I.9, I.11	39. The radiological monitoring teams were not familiar with the equipment or procedures used by the other teams. Additional training is recommended to familiarize radiological field monitoring team members with the different equipment and procedures in use.					
F.1.d, N.2.a	40. All members of the field teams did not demonstrate adequate proficiency with hand-held field radios. Further training in the use of field radio equipment is recommended for radiological monitoring team members.					
K.3.b	41. Radiological field monitoring team personnel did not regularly read and record dose values from their personal dosimeters. Procedures to ensure that dosimeters are read at appropriate frequencies and dose records are maintained should be established.					

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K.5.a, K.5.b	42. Radiological field monitoring teams were not proficient in determining the need and means for decontamination of emergency personnel, supplies, equipment, and contaminated waste disposal. Field teams require additional training in the areas of determining the need and means for decontamination of emergency personnel, supplies, and equipment, and for disposal of contaminated wastes.					
	Forward Command Post-Radiation Team Operations					
A.3	43. Message handling and distribution were inadequate, resulting in the team coordinator not being current on the latest developments. The importance and function of the field team coordinator should be clearly defined in the plan. Although the coordination of field teams is a state function, the interface with the HCEOC should be clarified. The field team coordinator should have adequate administrative authority to perform his function. Clerical support for the team coordinator would be desirable.					

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J.10.a	44. Visual aids were lacking except for maps of the plume EPZ and radiological monitoring sites. Maps of radiological monitoring sites were inconsistent in the location and identification of the sites. The necessary visual aids and maps should be developed and posted in the dose assessment area. Further, the states and the utility should agree on a common map of radiological monitoring sites and identifiers for those sites.						
F.1.d, I.8	45. Communication with the radiological monitoring teams was not adequate. A direct form of communication between the field coordinator and the field monitoring teams should be established through upgraded equipment.						
	Medical Support						
L.1,3	46. The Missouri Valley Hospital did not have adequate radiological monitoring instruments. Missouri Valley Hospital should acquire appropriate instruments to be able to radiologically monitor contaminated persons.						

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N.2.c	47. A practiced procedure for admitting radiologically contaminated, injured persons was not evident at the Missouri Valley Hospital. Procedures should be developed and demonstrated for the treatment of radiologically contaminated victims at the Missouri Valley Hospital. Additional training of hospital staff may be necessary. Mercy Hospital in Cedar Rapids has a videotape of procedures which might prove useful. The staging of a medical drill would test procedures currently described.					
	Harrison County EOC					
A.2.a	48. Command and control of the HCEOC was not effectively demonstrated. The ODS representative officially in charge was occupied with communication functions. The HCEOC should designate a deputy to manage the EOC during times when he is unavailable.					

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G.3.a, G.4.a	49. The HCEOC provided a press briefing during the exercise. The spokesperson was not adequately trained regarding contact with the press and specific agency responsibilities. The HCEOC should designate the points of contact and physical locations for use by the news media during an emergency and in compliance with the plan. Further, a spokesperson should be designated and trained to interact with the media.					
J.10.d	50. The HCEOC staff were not aware of the locations of mobility-impaired and special needs persons. The HCEOC should compile a list of mobility-impaired and special needs persons. Provisions should be developed for the protection or evacuation of these persons during a radiological emergency.					
K.3.a	51. Only high-range (0-200 R) dosimeters were available for emergency workers. Low-range (0-200 mR) pocket dosimeters and TLDs should be available for emergency workers who enter radiation fields.					

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A.2.a	52. A copy of the current state plan was not available. Confusion in personnel and responsibility resulted. A copy of the current plan should be maintained in the HCEOC. Key staff members should be thoroughly familiar with their respective responsibilities.					
NR	53. The HCEOC status board was not adequate. The board was too small to post the necessary plant status information. The HCEOC should design a status board which will identify the current emergency classification level; include effective times for protective action decisions; and a brief description of protective actions in effect.					
A.2.a	54. Some personnel reported to the HCEOC when they had no emergency responsibilities. Apparently the call list in use is no longer up to date. An up-to-date call list identifying persons with emergency responsibilities consistent with the current plan should be prepared.					

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Nr	55. Hard copies of the content of EBS messages, press releases, and protective action recommendations were not available at the HCEOC because there was no telefax machine. The procurement of a telefax link with the NRC and the ISEOC would enhance the consistent dissemination of emergency-related information to the HCEOC staff.					
	Pottawattamie County EOC					
A.2.a	56. The director of communications was in charge of the PCEOC, but this role was not clearly in the plan. The PCEOC should specify the function and responsibility for key individuals by title for command and control.					
A.1.b	57. The PCEOC staff did not have specific written procedures or checklist for their respective assigned duties. The PCEOC should develop written procedures or checklists to aid the emergency response staff in effectively performing their duties.					

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J.10.a, J.10.b	58. No maps or displays were posted indicating evacuation routes, relocation centers, access control points, radiological monitoring points, or population density by evacuation area. The PCEOC should develop maps or displays identifying evacuation, preselected radiological sampling and monitoring points, relocation centers in host areas, and population distribution around the nuclear facility by evacuation area.					
F.1.d	59. No direct communications capability with the EOF was observed. Provision for communications between the licensee's near-site EOF and the PCEOC should be made.					
J.10.e, J.10.f	60. The Pottawattamie County Sheriff's Department had no knowledge or procedures regarding the administration of KI. Provisions for the use of radioprotective drugs, particularly for emergency workers should be made, including quantities, storage, means of distribution, and the predetermined conditions under which such drugs may be used by emergency workers.					

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K.3.b	61. The Pottawattamie County Sheriff's deputies were not trained in the use or periodic reading and recording of personal dosimeters. The PCEOC should ensure that dosimeters are read at appropriate frequencies and provide for maintaining dose records for emergency workers.					
	Emergency Operations Facility					
A.2.a	62. Decision making and recommendations for protective actions were not always made according to the procedures specified in the plan. Additional training is necessary in management and decision making responsibilities. Familiarization with the procedures in the plan should be emphasized.					
H	63. The EOF was too small to be used effectively. Adequate emergency facilities and equipment to support the emergency should be provided. The single office should be expanded.					

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J.10.a, J.10.b	64. Maps or displays indicating population distribution, sampling points, EPZ sectors, and relocation centers were absent. Maps or displays indicating evacuation routes, evacuation areas, radiological sampling and monitoring points, relocation centers, and population distributions should be developed and posted.					
A.4	65. No support staff were available to assist the emergency response personnel with message receipt or handling. Arrangements should be made to have sufficient support staff at the EOF to relieve officials of routine telephone calls and to properly handle messages.					
A.2.a, G.5	66. The Iowa representatives were not sufficiently trained to perform their function well. Message logging and handling was incomplete and telephones were sometimes left unanswered. Additional training should be provided for the EOF representatives to ensure they are knowledgeable in their duties.					

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F.1.d	67. Communications equipment was not adequate for the Iowa representatives. The Iowa representatives should be provided with reliable primary and backup means of communication between the EOF and state and local EOCs and radiological monitoring teams.					
	Information Authentication Center					
E.4.1, E.5-7	68. On occasion, the content of messages released by the IAC were found to be erroneous or confusing. Provisions should be made for more careful authentication of the content of messages released to the media and the public.					

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E.6, E.7, G.1	69. The content of some messages released to the media was not clear and consistent with information contained in the public information brochure. Further, the brochure was not indicated as a source of information. Provisions should be made to ensure protective action recommendations provided in the public information brochure and media releases are consistent. When protective action recommendations include EPZ identifiers, the message should (1) refer the public to a source where the sector boundaries are defined (e.g., the brochure), or (2) include the sector boundaries, identified clearly by geographic landmarks, in the messages, or (3) both.					

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	Media Release Center					
G	70. Maps and displays to facilitate dissemination of information at the MRC were small and generally inadequate. Agreements have been reached with Nebraska to upgrade the MRC visual aids. It was not clear if the new visuals would include the affected portions of Iowa. The new visual aids for the MRC should depict the entire planning area surrounding the Fort Calhoun facility, including affected portions of Iowa.					
E.4.1, G.2.c	71. EBS broadcasts should be monitored in the MRC to evaluate the accuracy of the information the public is receiving. Procedures to correct erroneous information were not developed. Installation of an antenna would enhance radio reception and allow for the monitoring of EBS messages. Procedures should be developed to correct erroneous broadcasts.					

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E.5,7, G.4.b	72. Overall, the quality of public instruction and news releases was inadequate (see also Sec. 2.5.2) More training in the authentication and quality of public information is suggested. Procedures for coordinating and reviewing the contents of public instructions are needed.					
E.6; App.3, B.2.a, B.3	73. The timing of public instruction was delayed and not well-coordinated with the public alerting process (see also Sec. 2.3.1). Procedures to expedite the broadcast of the EBS messages, closely following the activation of the alerting signal are needed.					

REGIONAL DIRECTOR'S EVALUATION

I. INTRODUCTION

A. Area Description

1. Facility and Surroundings

The Fort Calhoun Nuclear Power Station (FCNPS) has one pressurized water reactor. The facility is located near Blair, Nebraska on the western bank of the Missouri River in a predominantly rural area. It is owned and operated by the Omaha Public Power District of Omaha, Nebraska.

2. Governments within the 10-mile Emergency Planning Zone

The 10-mile emergency planning zone (EPZ) is split by the Missouri River and includes parts of Nebraska and Iowa. In Nebraska, the towns of Blair, Kennard, and Fort Calhoun in Washington County and Fremont in Dodge County are located within the EPZ. In Iowa, there are no towns located within the 10-mile EPZ. Portions of Pottawattamie and Harrison counties are within the 10-mile EPZ.

3. Governments within the 50-mile Emergency Planning Zone

The 50-mile ingestion emergency planning zone includes portions of eastern Nebraska and western Iowa. All or part of the following 10 counties in Nebraska are within 50 miles of the station: Burt, Cuming, Thurston, Dodge, Washington, Saunders, Douglas, Lancaster, Cass, and Sarpy. In Iowa, all or part

of the following 10 counties are within 50 miles of the station: Pottawattamie, Woodbury, Mills, Montgomery, Fremont, Harrison, Shelby, Cass, Monona, and Crawford.

4. Special Circumstances and Considerations

a) Two states are within both the plume and ingestion pathway exposure EPZ;

b) The segment of the Missouri River in the EPZ carries commercial waterborne traffic and is a prime area for recreational boating and fishing;

c) The majority of the land in the plume exposure EPZ is used for cash grain production.

B. Emergency Planning Authority and Organization

1. The authority for the Nebraska Radiological Emergency Response Plan is contained in the Reissued Revised Statutes of Nebraska of 1943 as follows: Chapter 23, Interlocal Cooperation Act; Chapter 70, Definitions of Public Power District; Chapter 71, Radiation Control Act; Chapter 81, Nebraska Disaster and Civil Defense Act, as amended; Chapter 85, Regional Radiation Health Center; and Chapter 84, Vital Resources Emergencies. Pursuant to state statute, the Nebraska Civil Defense Agency has the lead responsibility for the plan, full notification authority and a partial implementation mandate to protect the health and safety of the populations. Other Nebraska State agencies assist in accident incident response. The Nebraska Department of Health provides radiological monitoring, recommends protective actions, and

monitors public water systems. The University of Nebraska provides radiological monitoring and laboratory support. The Nebraska State Patrol provides traffic control, back-up law enforcement, support for emergency response activities in the ingestion pathway EPZ, and communication support. The Department of Aeronautics provides state aircraft resources. The Department of Agriculture provides agricultural field support for monitoring, recommends actions to prevent food product contamination and collects land use data. The Department of Roads provides manpower and equipment to support operations. The Department of Welfare arranges for emergency services for evacuees. The Nebraska National Guard provides needed manpower to other state agencies. Most state agencies participate to some degree, with a common objective to protect the public health and safety.

2. The authority for the Iowa Emergency Plan is contained in the Constitution of the State of Iowa, Amendment of 1952, Section 19, Gubernatorial Succession, and in the Code of Iowa as follows: Disaster Services and in the Public Disorders, Chapter 29C, Code, 1975, as amended; Contingent Fund use for State losses or governmental subdivisions disaster aid. Pursuant to state statute, the Iowa Office of Disaster Services has the lead responsibility for the plan, full notification authority, and a partial implementation mandate to protect the safety and health of the population. Other Iowa State agencies assist in accident/incident response. The Iowa Department of Health provides and acts as clearing house for technical information and recommends protection actions. The University of Iowa, University Hygienic Laboratory directs radiological monitoring. The Iowa Department of Water, Air, and Waste Management controls public water supplies. The Iowa Highway Patrol provides field team support. The Department of Transportation controls road, rail, and

air traffic. The Secretary of Agriculture controls food distribution. The Iowa National Guard provides needed manpower to other state agencies. The Commissioner of Social Services and the Red Cross provide assistance with the many needs of emergency workers and evacuated citizens. Most state agencies participate to some degree, with a common objective to protect the public health and safety.

C. History and Status of Planning and Preparedness

1. Plan Development

a. The State of Nebraska Radiological Emergency Response Plan for Nuclear Power Plant incidents (NRERP) provides for the means for state and local government emergency response in Nebraska. The plan currently in effect is dated April 15, 1983 and supersedes one dated March 1, 1982. NRERP is a basic plan for state emergency operations and control and outlines functional responsibilities at the state level. The general state plan is supported by two site-specific radiological emergency response plans for Dodge County and Washington County, and a reception and care plan for Sarpy County. Each of the county plans was revised in Dec., 1982.

b. The Iowa Emergency Plan (IEP) outlines the radiological emergency response in the State of Iowa. The plan currently in effect is dated March 1983. IEP encompasses a basic plan for state emergency operations and control and outlines functional responsibilities at the state level. The current Harrison and Pottawattamie County Plans are not in compliance with NUREG-0654/FEMA-REP-1, Rev. 1, criteria and therefore are

inadequate as emergency plans. The State of Iowa has assumed responsibility for emergency management and has adapted the Compensatory Measures Plan to Chapter 12 of the State Plan. The Compensatory Measures Plan will provide guidance to the counties until the appropriate county plans are finalized.

2. Public Meetings

A public meeting concerning the NRERP and county plans was held in Blair, Nebraska on August 4, 1981. A public meeting concerning the IEP was held in Council Bluffs, Iowa on February 29, 1984. A list of those attending and a transcript of these meetings is appended as Tabs to this report.

3. Exercises

Three exercises in Nebraska and Iowa have been conducted to evaluate the adequacy of state and local emergency plans and response capabilities in the event of an emergency at FCNPS. The first two exercises involving both states following publication of NUREG-0654, FEMA-REP-1, Rev. 1 were held on July 22, 1981, and Sept. 15, 1982. The exercises were evaluated by observers from the Federal Emergency Management Agency (FEMA) Region VII, other Federal agencies represented on the Region VII Regional Assistance Committee (RAC), and qualified Federal contractors. Public critiques of the exercises were held on July 23, 1981, and Sept. 16, 1982, in Blair, Nebraska and Council Bluffs, Iowa, respectively. The most recent joint exercise was conducted on Dec. 7, 1983. Members of the Region VII RAC, FEMA Region VII staff, and Federally-contracted evaluators observed the exercise. A public critique of the exercise

was held on December 8, 1983 in Council Bluffs, Iowa. It was the consensus of the Federal evaluators that no major deficiencies were identified although other deficiencies which require a schedule of corrective actions were noted. The scenarios and final reports for these three exercises are appended to this report.

D. Documenting Evidence Available for Examination

1. "State of Nebraska Radiological Emergency Response Plan for Nuclear Power Plant Incidents," April 15, 1983.
2. "Radiological Emergency Response Plan for Nuclear Power Plant Incidents for Dodge County," December 1983.
3. "Radiological Emergency Response Plan for Nuclear Power Plant Incidents for Washington County," December 1983.
4. RAC reviews of State of Nebraska and Washington and Dodge County plans, March 9, 1984.
5. State of Nebraska's response to RAC plan review, April 25, 1984.
6. FEMA Region VII response to Nebraska's suggested schedule of corrections to state and county plans, May 8, 1984.
7. "The Iowa Emergency Plan Book II: Nuclear Power Plant Emergency Response," March 1983.
8. RAC reviews of State of Iowa RERP: November 4, 1983 and April 24, 1984.
9. Letters from State of Iowa Office of Disaster Services to the Regional Director of FEMA Region VII responding to plan deficiencies as noted in RAC reviews: December 2, 1983; February 8, 1984; March 9, 1984; and March 23, 1984 and exercise deficiencies: April 27, 1984.
10. Final exercise reports of July 22, 1981, September 15, 1982, and December 7, 1983 exercises.

11. Transcript on the public meeting for Nebraska, site-specific to Ft. Calhoun Nuclear Station, August 4, 1981.

12. Transcript on the hearing for the Iowa state radiological emergency response plan, site-specific to Ft. Calhoun Nuclear Facility, February 29, 1984.

II. EVALUATION OF PLANS AND EXERCISES

A. Assignment of Responsibility (Organizational Control)

1. State of Nebraska

The state plan does not show the minimum number of people needed to staff the EOC, nor how the EOC interacts with the Field Command Post.[1]

The radiological laboratory should be able to demonstrate a capability to function over a prolonged period.[2]

2. Washington County, Nebraska

It was not clear to what extent the HAM and REACT volunteer radio operators would be available in the event of an actual emergency.[3]

Letters of agreement are not included in the county plan but have been promised for inclusion in the second quarter calendar year 1985 plan revisions.[4] See State of Nebraska's response to RAC plan review, April 25, 1984.

3. Dodge County, Nebraska

No deficiencies.

4. State of Iowa

During the 1983 exercise, the compensatory plan staff assigned to the Pottawattamie County EOC (PCEOC) did not have specific written procedures or checklists for their respective duties.[5]

The Iowa State Plan needs to address the state's responsibility in the following areas: actual evacuation of a contaminated area, security in contaminated areas, fire services/decontamination, search and rescue operations, initial traffic control and communications, reporting of incidents to the Office of Disaster Services (ODS), providing emergency medical services, determining social service needs and notifying state social services, assisting Department of Water, Air, and Waste Management in decontamination, assisting in gathering samples in support of University Hygenic Laboratory (UHL), keeping routes open in poor weather and winter conditions, assisting the State Department of Agriculture in disseminating emergency response information to farmers, maintaining dose records of county/local emergency workers and volunteers, and making local distribution of KI.[6] The State of Iowa has since responded to FEMA clarifying the state's responsibility in letters dated December 2, 1983, February 8, 1984, and April 27, 1984. The response has been determined to be sufficient, but should be included in the plan.

During the 1983 exercise, the ODS representative officially in charge of the Harrison Co. EOC (HCEOC) was occupied with communications between the HCEOC, the EOF, and the ISEOC and was unable to demonstrate command and control at the County EOC level.[7] Key staff did not possess a copy of the current state plan, resulting in confusion among them concerning their

responsibilities.[8] Finally, some personal reported to the HCEOC who no longer had any emergency responsibilities under the compensating measures plan apparently as a result of the use of an out-dated call list.[9]

It was noted during the 1983 exercise that the leadership role of the director of communications at the PCEOC was not clearly delineated in the plan.[10]

The Iowa State Plan needs letters of agreement between the state and agencies/support organizations providing resources to the response effort.[11] Subsequently, Iowa has sent adequate documentation to FEMA in a letter dated February 8, 1984 and will include this information in a subsequent plan revision.

During the 1983 exercise, it was noted that message handling and distribution at the Forward Command Post were inadequate, resulting in the field team coordinator not being current on the latest developments.[12]

5. Combined State Operations

It was noted during the 1983 exercise that the Iowa representatives at the EOF were not sufficiently trained to perform their function well. Message logging and handling were incomplete and telephones were sometimes left unanswered.[13] There did not appear to be any support staff to handle these functions.[14] Also at the EOF, decision making and recommendations for protective actions were not always made according to the procedures specified in the plan.[15]

B. On-site Emergency Organization (Not Relevant to State and County Functions)

C. Emergency Response Support and Resources

1. State of Nebraska

The state plan does not list the resources for supporting the Federal response teams. However, the state has not yet been informed of what resources the Federal response teams need as FEMA is currently compiling such a list.[16] See State of Nebraska's response to RAC plan review, April 25, 1984.

2. Washington County, Nebraska

The county plan states that letters of agreement are on file. They should be included in the plan. The state has promised that the appropriate letters will be included in the second quarter calendar year 1985 update of the county plans.[17] See State of Nebraska's response to RAC plan review, April 25, 1984.

3. Dodge County, Nebraska

No deficiencies.

4. State of Iowa

In the plan, EPA is expected to provide laboratory assistance. The assistance noted is not that described in the Federal Radiological Monitoring and Assessment Plan. FEMA is currently compiling a list of resources for all agencies.[18]

Letters of agreement and a signature sheet listing agencies/individuals providing emergency assistance are missing from the plan.[19] Subsequently, the state has provided FEMA with appropriate documentation in letters dated December 2, 1983 and February 8, 1984 and will include this information in a subsequent plan revision.

Information is needed in the plan on laboratory analysis capabilities and response times.[20]

D. Emergency Classification System

1. State of Nebraska

No deficiencies.

2. Washington County, Nebraska

A misunderstanding of the emergency classification existed between the County Sheriff Dispatcher and the CD Director. This caused a delay in staff notification and activation.[21]

3. Dodge County, Nebraska

No deficiencies.

4. State of Iowa

There are no procedures in the plan which details the actions each state agency to take at each of the established emergency action levels (EAL). It is not clear whether or not state agencies have a phased step-up in readiness conditions in response to increasingly severe stages in EAL.[22]

E. Notification Methods and Procedures

1. State of Nebraska

No deficiencies.

2. Washington County, Nebraska

No deficiencies.

3. Dodge County, Nebraska

No deficiencies.

4. State of Iowa

The state plan does not tie alert notification to EAL. It is also not clear at which point all state agencies and nongovernmental organizations are notified.[23]

The state plan has no established procedures for alerting, notifying, and mobilizing emergency response personnel.[24]

During the 1982 and 1983 exercises the timing of public instruction was delayed and not well-coordinated with the public alerting sirens.[25] Also, the state plan fails to discuss the estimated time required for notifying and providing prompt instructions to the public within the plume exposure pathway.[26]

5. Combined State Operations

On occasion, the content of messages released by the Information Authentication Center and the Media Release Center (MRC) during the 1983 exercise were found to be erroneous or confusing.[27] Furthermore, the content of the messages released was not always consistent with information contained in the public information brochure.[28]

F. Emergency Communications

1. State of Nebraska

Before deployment, the Nebraska field team was not briefed on current plant or meteorological conditions.[29]

Prior to field team deployment, the field team provided to the State by the Cooper Nuclear Station was not briefed on plant or meteorological conditions nor was the team kept informed of these conditions throughout. The team also was not in communication with the mobile State Field Command Post (CRUSH),

located adjacent to the EOF, while the team was at the decontamination center.[30]

2. Washington County, Nebraska

No deficiencies.

3. Dodge County, Nebraska

No deficiencies.

4. State of Iowa

During the 1982 and 1983 exercises, it was noted that the communication link to the field monitoring teams was indirect, through the state police escort accompanying them. This system was very inconvenient and only functioned marginally.[31] Field team members were not equally proficient with hand-held field radios.[32] Prior to deployment, the teams were briefed on plant status and meteorology, however, no further updates were provided following deployment.[33]

During the 1983 exercise, it was observed that no direct communications link existed between the Pottawattamie County EOC and the EOF.[34] Also, the communications at the EOF used by the Iowa representatives to contact the state and local EOCs and the radiological monitoring teams were not adequate.[35]

The state plan does not ensure that there is a coordinated communication link for mobile medical support facilities. Furthermore, the plan also does not discuss the communications link with fixed medical facilities.[36]

G. Public Education and Information

1. State of Nebraska

No deficiencies.

2. Washington County, Nebraska

No deficiencies.

3. Dodge County, Nebraska

No deficiencies.

4. State of Iowa

The state plan identifies points of contact for use by the news media, but further clarification is needed as to the location, staffing, and function of the Media Release Center.[37]

During the 1983 exercises, the Harrison County EOC provided an initial press briefing prior to activation of the Media Release Center (MRC). The spokesperson referred the press to the MRC and was very familiar with the

equipment to be used for monitoring and the State's current role in thie plan. However, some refresher training is needed to familiarize the spokesperson with new agency names and responsibilities.[38]

5. Combined State Operations

During the 1983 exercise, it was observed that maps and displays to facilitate dissemination of information at the MRC were small and generally inadequate. Agreements have been reached with Nebraska to upgrade the MRC visual aids. It was not clear if the new visuals would include the affected portions of Iowa.[39]

H. Emergency Facilities and Equipment

1. State of Nebraska

The sodium iodide scintillation counter with multichannel analyzer was not functional and was not used during the 1983 exercise. The four-wheel drive field vehicle was suitable for most terrain but experienced an electrical problem which required that it be jump-started whenever the engine was turned off. The Nebraska field team was well-equipped although the equipment available was not consistent with the plan.

The field team from the Cooper Nuclear Power Station did not have charcoal cartridges for air sampling. The team also did not acquire a hand-held portable radio.[41]

Backup equipment for analyzing media samples was not present.[42]

2. Washington County, Nebraska

No deficiencies.

3. Dodge County, Nebraska

No deficiencies.

4. State of Iowa

Procedures should be provided in the plan to assure timely activation and staffing of the state EOC, the Forward Command Post, the county EOCs, and the Media Release Center. These procedures should specify at what emergency action level the EOC goes on full operational status and estimate the time it takes to mobilize personnel.[43]

The list of radiological monitoring equipment to be used by the Iowa Highway Patrol (IHP) is inconsistent in the plan. The equipment list for the IHP is not consistent with what is specified in the plan. Also, telephone numbers for the EPA are incorrect.[44]

5. Combined State Operations

During the 1983 exercise space and equipment for EOF personnel were set aside, but were limited. No visual aids or maps identifying EPZ sectors and evacuation routes were displayed.[45]

I. Accident Assessment

1. State of Nebraska

During the 1983 exercise, delays of up to 45 minutes were encountered in the receipt of utility data at CRUSH. Thus, independent dose calculations by the state were too late for useful decision making. On one occasion incorrect data was supplied to CRUSH from the utility resulting in state dose projections that were significantly different from the utility's. No apparent attempt was made by the state to resolve this data discrepancy as another check in a system of checks and balances.[46]

The source terms used during the 1983 exercise was not compatible with the field data provided. Also, field data supplied to the field teams were not in the proper form; the data provided were calculations derived from the field data.[47]

Conversion from mR/hr to Ci/cc was accomplished using a chart and interpolating between table values; this method was not in the plan.[48]

The Nebraska field team was not properly directed to obtain useful plume information.[49] The Cooper Nuclear Power Station monitoring team was not used effectively for tracking the plume because only two plume monitoring points were sampled.[50]

2. Washington County, Nebraska

No deficiencies.

3. Dodge County, Nebraska

No deficiencies.

4. State of Iowa

An appendix referred to in the state plan listing the members of the radiological response team is missing. Also, the state plan states the field data will be collected at the county EOC level. Since the state is taking compensating measures for county activities they should address how this function will now be handled by the state in their Ft. Calhoun site-specific plan.

More detail is needed in the state plan concerning alert notification and activation of radiological monitoring teams; specifically with regards to transportation arrangements of the teams to the site and provisions for radiological monitoring activities in the 4-6 hours before the teams are expected to arrive.[52]

During the 1983 exercise, one of the radiological monitoring teams was not certain of the proper collection procedures for, and calculations of, radioiodine concentrations in the field. The written procedures had been misplaced. Furthermore, the team's air sampling equipment was nonoperable because no power supply for the air pump was available.[53] Finally, because equipment and procedures used by each of the two field monitoring teams are different, it may be helpful for all personnel to be proficient in using the equipment and procedures of both teams.[54]

There is inadequate detail in the state plan on the methodology for relating measured decontamination levels to dose rates for radionuclide exposure in terms of PAGs. The necessary reference material is in the plan but procedures are needed to apply the reference material.[55]

J. Protective Response

1. State of Nebraska

The state plans make no reference to the requirement that monitoring of individuals should be accomplished within 12 hours of arrival at the relocation center. Changes have been promised in the first quarter of calendar year 1985.[56] See State of Nebraska's response to RAC plan review, April 25, 1984.

The authorization for the administration of KI during the 1983 exercise was not based on the appropriate guidelines or consistent with the plan. The use of KI was not justified by dose projections and was not observed until air concentrations were actually declining.[57]

2. Washington County, Nebraska

Special issues relating to the evacuation of schools and the mobility impaired have not been adequately addressed.[58]

3. Dodge County, Nebraska

No deficiencies.

4. State of Iowa

The state plan should reference the FDAs current PAGs as well as listing the county contacts (including phone numbers) in the 50-mile ingestion pathway EPZ.[59] During the 1983 exercise, it was observed that maps or displays of population density by evacuation area and relocation centers were not posted at the state EOC.[60] Also, at the Pottawattamie County EOC during the 1982 and 1983 exercises no maps or displays were posted indicating evacuation routes, relocation centers, access control points, radiological monitoring points, or population density by evacuation area.[61]

Some confusion was noted during the 1983 exercise at the state EOC and the forward command post because designations for the same radiological monitoring site differed between the utility and the state.[62]

Also during the 1983 exercise, it was discovered that the current state plan has not been updated to indicate the correct number of families residing within the 2-mile EPZ in Pottawattamie County.[63]

In the state plan, provisions for transportation of handicapped people at risk in Pottawattamie County need to be made in the event of an evacuation.[64] Also, during the 1983 exercise, the Harrison County EOC staff was unaware of the locations of mobility-impaired and special-needs people.[65]

The Ft. Calhoun site-specific plan does not discuss storage and distribution of KI. The state plan only states that this is a county function, but includes no specific details.[66] This lack of planning was evident at the 1983 exercise since

the supply of KI at the state EOC was not adequate to cover all emergency workers.[67] Also, the Pottawattamie County Sheriff's Department had no knowledge of procedures regarding the administration of KI.[68] In addition, the recommendation to administer KI was not based on the appropriate guidelines or justified based on the dose projections made by the field team coordinator. Furthermore, the recommendation was made too late.[69]

The state plan does not identify nor provide for potential impediments (e.g., seasonal impassibility of roads, etc.) to the use of evacuation routes.[70]

The state plan does not include the basis for choosing appropriate protective actions.[71]

The state plan is deficient in addressing procedures for estimating contamination dose consequences. The maps required for this are missing. Also, a list of food and milk processors should be included in the plan.[72]

There is no reference in the state plan to the contamination monitoring of evacuees at relocation centers.[73]

5. Combined State Operations

During the 1983 exercise it was observed at the EOF that maps or displays indicating population distribution, sampling points, EPZ sectors, and relocation centers were absent.[74]

K. Radiological Exposure Control

1. State of Nebraska

The state and local plans should improve dosimetry and dose records procedures. Corrections are to be finished in first quarter calendar year 1985.[75] See State of Nebraska's response to RAC plan review, April 25, 1984.

During the 1983 exercise, the staff at the CRUSH and one of the field teams were issued an insufficient number of simulated TLDs which raised concerns as to whether a sufficient number of real TLDs could actually be made available in a real emergency. The question is whether the number of emergency workers have been identified and the corresponding number of TLDs made available.[76]

Low range dosimeters were not available for the Nebraska field team and familiarization was not evident with regard to maximum dose allowed without authorization, and what procedures should be implemented if an excess dose was received.[77]

Only low range dosimeters (0-1 R) were available for the Cooper field team. Permanent record devices were simulated.[78]

2. Washington County, Nebraska

Low range (0-200 mR) and permanent record dosimeters were not available. Dosimeters were read on an hourly basis; this is not frequent enough under certain circumstances.[80]

3. Dodge County, Nebraska

No deficiencies.

4. State of Iowa

Confusion in the state plan exists regarding who will maintain dose records for emergency workers. The state plan states this function will be handled by the county health department, but under the compensatory plan, the county health departments are not part of the operation.[81]

During the 1983 exercise, only high-range dosimeters (0-200 R) were available at the Harrison County EOC for emergency workers.[82] Also, neither the radiological monitoring team personnel nor the Pottawattamie County Sheriff's deputies regularly read and recorded dose values from their personal dosimeters. This observation was also made at the 1982 exercise.[83]

The state plan needs to establish a decision chain for authorizing emergency workers to incur exposures in excess of the EPA general public PAGs.[84] The state has subsequently responded to this deficiency in letters to FEMA of March 23, 1984 and February 8, 1984 citing a future plan change to correct this deficiency.

The section of the state plan addressing action levels for determining the need for decontamination references Table 6 on p. F-2-8, which is missing from the plan.[85] Also, during the 1983 exercise, the radiological field monitoring teams were not proficient in determining the need and means for decontamination of emergency personnel, supplies, equipment, and contaminated waste disposal.[86]

L. Medical and Public Health Support

1. State of Nebraska

The Blair ambulance crew was not provided with radiation monitoring equipment, dosimetry, protective clothing, adequate communications, and radiation training.[87]

2. Washington County, Nebraska

No deficiencies.

3. Dodge County, Nebraska

No deficiencies.

4. State of Iowa

Arrangements need to be made by the state to provide for local and backup hospital and medical services having the capability for evaluation of radiation exposure and uptake.[88] Recently, Iowa has made arrangements with Mercy Hospital in Council Bluffs to handle contaminated victims. A team of individuals from the Iowa State Department of Health will perform monitoring of individuals at the site of an accident or at reception centers. The IHP will also provide transportation of victims. The details are explained in a letter to FEMA from the State of Iowa dated March 23, 1984.

During the 1983 exercise, it was observed that the Missouri Valley Hospital did not have adequate radiological monitoring instruments.[89]

M. Recovery and Reentry Planning and Post-Accident Operations

1. State of Nebraska

No deficiencies.

2. Washington County, Nebraska

No deficiencies.

3. Dodge County, Nebraska

No deficiencies.

4. State of Iowa

Reentry procedures in the state plan should be expanded to specify means for informing members of the response organizations that a recovery operation is to be initiated, or notifying them of any changes in organization structure which may occur.[90]

A method for periodically estimating total population exposure should be addressed in the plan.[91]

N. Exercises and Drills

1. State of Nebraska

No deficiencies.

2. Washington County, Nebraska

No deficiencies.

3. Dodge County, Nebraska

No deficiencies.

4. State of Iowa

In the state plan, it is difficult to ascertain the degree of involvement of the counties from the letters of agreement. The plans should include anticipated involvement of local organizations and personnel.[92] The state has subsequently responded to this deficiency in letters to FEMA of February 8, 1984 and March 9, 1984 and this response has been determined to be adequate.

During the 1983 exercise, several agencies having emergency responsibilities as identified in the plan did not participate.[93]

More information is needed in the plan concerning how the required communication drills will be accomplished.[94] Also, more information concerning the conduct of medical emergency drills should be included.[95]

O. Radiological Emergency Response Training

1. State of Nebraska

No deficiencies.

2. Washington County, Nebraska and

3. Dodge County, Nebraska

Neither plan makes reference to the annual retraining of personnel with emergency response responsibilities. Corrections have been promised in the first quarter of calendar year 1985.[96] See State of Nebraska's response to RAC plan review, April 25, 1984.

4. State of Iowa

No deficiencies.

P. Responsibility for the Planning Effort

1. State of Nebraska

No deficiencies.

2. Washington County, Nebraska and

3. Dodge County, Nebraska

Neither plan states that they will annually certify the currency of the plans. Corrections have been promised in the first quarter of calendar year 1985.[97] See State of Nebraska's response to RAC plan review, April 25, 1984.

Neither plan provides for dating and marking of individual pages to indicate changes. Corrections have been promised in the first quarter of calendar year 1985.[98] See State of Nebraska's response to RAC plan review, April 25, 1984.

4. State of Iowa

The plan indicates that the individual in each organization who has overall authority for radiological emergency response/planning is the one indicated on the sign-off sheet, which was missing. Subsequently, the state has sent a copy of the sign-off sheet in a letter to FEMA dated December 2, 1983.[99]

The state plan needs a detailed listing of standard operating procedures, support plans, etc., from other organizations and agencies. Furthermore, these support plans need to be reviewed by FEMA and coordinated with the state plan.[100]

EVALUATION REFERENCE MATRIX

Reference Number	Nebraska RAC Review	Iowa RAC Review	Exercise Report	Applicable RERP	NUREG-0654 Criteria
1			1983, p. 14	Nebraska State	II.A.1.b; A.2.a
2			1983, p. 23	Nebraska State	II.A.4
3			1983, p. 27	Washington Cty	II.A.2.a
4	3/9/84, p. 1			Washington Cty	II.A.3
5			1983, p. 45	Iowa State	II.A.1.b
6		11/4/83, p. 2		Iowa State	II.A.2.a
7			1983, p. 42	Iowa State	II.A.2.a
8			1983, p. 43	Iowa State	II.A.2.a
9			1983, p. 43	Iowa State	II.A.2.a
10			1983, p. 45	Iowa State	II.A.2.a
11		11/4/83, p. 3 4/23/84, p. 1		Iowa State	II.A.3
12			1983, p. 38	Iowa State	II.A.3
13			1983, p. 49	Iowa State	II.A.2.a
14			1983, p. 48	Iowa State	II.A.4
15			1983, p. 48	Iowa State	II.A.2.a
16	3/9/84, p. 1			Nebraska State	II.C.1.c
17	3/9/84, p. 1			Washington Cty	II.C.4
18		11/4/83, p. 3 4/23/84, p. 1		Iowa State	II.C.1.c
19		11/4/83, p. 3		Iowa State	II.C.4
20		11/4/83, p.3 4/23/84, p.1		Iowa State	II.C.3
21			1983, p. 27	Washington Cty	II.D.3;D.4

EVALUATION REFERENCE MATRIX (Cont'd)

Reference Number	Nebraska RAC Review	Iowa RAC Review	Exercise Report	Applicable RERP	NUREG-0654 Criteria
22		11/4/83, p. 4 4/23/84, p. 1		Iowa State	II.D.4
23		11/4/83, p. 4 4/23/84, p. 1		Iowa State	II.E.1
24		11/4/83, p. 4 4/23/84, p. 1		Iowa State	II.E.2
25			1982, p. 6 1983, pp. 32,53	Iowa State	II.E.5;E.6
26		11/4/83, p. 4 4/23/84, p. 2		Iowa State	II.E.6
27			1983, pp. 50,53	Iowa State	II.E.5;E.7
28			1983, p. 50	Iowa State	II.E.6;E.7
29			1983, p. 19	Nebraska State	II.F.1
30			1983, p. 22	Nebraska State	II.F
31			1983, p. 38	Iowa State	II.F.1.d
32			1983, p. 38	Iowa State	II.F.1.d
33			1983, p. 35	Iowa State	II.F
34			1983, p. 46	Iowa State	II.F.1.d
35			1983, p. 49	Iowa State	II.F.1.d
36		11/4/83, p. 5 4/23/84, p. 2		Iowa State	II.F.2
37		11/4/83, p. 5 4/23/84, p. 2		Iowa State	II.G.3.a
38			1983, p. 42	Iowa State	II.G.3.a; G.4.a
39			1983, p. 53	Iowa State	II.G
40			1983, p. 19	Nebraska State	II.H.10

EVALUATION REFERENCE MATRIX (Cont'd)

Reference Number	Nebraska RAC Review	Iowa RAC Review	Exercise Report	Applicable RERP	NUREG-0654 Criteria
41			1983, p. 22	Nebraska State	II.H.7;H.10
42			1983, p. 24	Nebraska State	II.H.10
43		11/4/83, p. 5 4/23/84, p. 2		Iowa State	II.H.4
44		11/4/83, p. 5 4/23/84, p. 2		Iowa State	II.H.7
45			1983, p. 48	Iowa State	II.H
46			1983, p. 16	Nebraska State	II.I.8;I.10
47			1983, p. 17	Nebraska State	II.I.1
48			1983, p. 22	Nebraska State	II.I.7
49			1983, p. 20	Nebraska State	II.I.8
50			1983, p. 22	Nebraska State	II.I.8
51		11/4/83, p. 6 4/23/84, p. 2		Iowa State	II.I.7
52		11/4/83, p. 7 4/23/84, p. 3		Iowa State	II.I.8
53			1983, p. 35	Iowa State	II.I.8
54			1983, p. 36	Iowa State	II.I.8;I.9; I.11
55		11/4/83, p. 8		Iowa State	II.I.10
56	3/9/84, p. 1			Nebraska State	II.J.12
57			1983, p. 17	Nebraska State	II.J.10.f
58			1983, p. 28	Washington Cty	II.J.10.d
59		11/4/83, p. 8 4/23/84, p. 3		Iowa State	II.J.9
60			1983, p. 33	Iowa State	II.J.10.b

EVALUATION REFERENCE MATRIX (Cont'd)

Reference Number	Nebraska RAC Review	Iowa RAC Review	Exercise Report	Applicable RERP	NUREG-0654 Criteria
61			1982, p. 5 1983, p. 45	Iowa State	II.J.10.a J.10.b
62			1983, pp. 33,38	Iowa State	II.J.10.a
63			1983, p. 33	Iowa State	II.J.10.b
64		11/4/83, p. 8 4/23/84, p. 3		Iowa State	II.J.10.d
65			1983, p. 33	Iowa State	II.J.10.d
66		11/4/83, p. 8 4/23/84, p. 3		Iowa State	II.J.10.e
67			1983, p. 33	Iowa State	II.J.10.e
68			1983, p. 46	Iowa State	II.J.10.f
69			1983, p. 33	Iowa State	II.J.10.e; J.10.f
70		11/4/83, p. 8 4/23/84, p. 3		Iowa State	II.J.10.k
71		11/4/83, p. 8 4/23/84, p. 3		Iowa State	II.J.10.m
72		11/4/83, p. 9 4/23/84, p. 3		Iowa State	II.J.11
73		11/4/83, p. 9 4/23/84, p. 3		Iowa State	II.J.12
74			1983, p. 48	Iowa State	II.J.10.a; J.10.b
75	3/9/84, p. 2			Nebraska State	II.K.3.b
76			1983, p. 16	Nebraska State	II.K.3.a
77			1983, p. 20	Nebraska State	II.K.3.a K.5.a
78			1983, p. 22	Nebraska State	II.K.3.a

EVALUATION REFERENCE MATRIX (Cont'd)

Reference Number	Nebraska RAC Review	Iowa RAC Review	Exercise Report	Applicable RERP	NUREG-0654 Criteria
79			1983, p. 24	Nebraska State	II.K.3.a
80			1983, p. 28	Nebraska State	II.K.3.a
81		11/4/83, p. 9 4/23/84		Iowa State	II.K.3.a
82			1983, p. 42	Iowa State	II.K.3.a
83			1982, p. 9 1983, pp. 36,46	Iowa State	II.K.3.b
84		11/4/83, p. 9 4/23/84, pp. 13, 15-17		Iowa State	II.K.4
85		11/4/83, p. 9 4/23/84, p. 3		Iowa State	II.K.5.a
86			1983, p. 36	Iowa State	II.K.5.a; K.5.b
87			1983, p. 25	Nebraska State	II.L
88		11/4/83, pp. 31, 33		Iowa State	II.L.1; L.3; L.4
89			1983, p. 39	Iowa State	II.L.1; L.3
90		11/4/83, p. 10 4/23/84, p. 3		Iowa State	II.M.3
91		11/4/83, p. 10 4/23/84, p. 3		Iowa State	II.M.4
92		11/4/83, p. 11 4/23/84, p. 4		Iowa State	II.N.1.b
93			1983, p. 32	Iowa State	II.N.1.b
94		11/4/83, p. 11 4/23/84, p. 3		Iowa State	II.N.2.a
95		11/4/83, p. 11 4/23/84, p. 4		Iowa State	II.N.2.c

EVALUATION REFERENCE MATRIX (Cont'd)

Reference Number	Nebraska RAC Review	Iowa RAC Review	Exercise Report	Applicable RERP	NUREG-0654 Criteria
96	3/9/84, p. 2			Nebraska State	II.O.5
97	3/9/84, p. 2			Nebraska State	II.P.4
98	3/9/84, p. 2			Nebraska State	II.P.5
99		11/4/83, p. 11 4/23/84, p. 4		Iowa State	II.P.2
100		11/4/83, p. 11 4/23/84, p. 4		Iowa State	II.P.6

III. REGIONAL DIRECTOR'S SUMMARY

On the basis of the information presented in the foregoing evaluation, I am of the opinion that the State of Nebraska, Dodge County, and Washington County and the State of Iowa, Harrison County and Pottawattamie County are prepared to protect the population within the 10-mile EPZ in the event of a radiological accident at the Ft. Calhoun Nuclear Power Station. In the November 4, 1983 RAC review of the State of Iowa plan, several class A deficiencies were noted. However, the State of Iowa has since responded satisfactorily to each of these deficiencies. There were no class A deficiencies noted in the State of Nebraska, Dodge County or Washington County plans. However, of the areas for improvement noted in these findings, none merit priority attention, but correction of the areas noted will improve the plans and the emergency response capability.

Federal Emergency Management Agency
Region VII 911 Walnut Street Kansas City, Missouri 64106

MAR 9 1984

Major General James Carmona
Adjutant General and Director for
Nebraska Civil Defense Agency
National Guard Center
1300 Military Road
Lincoln, Nebraska 68508

Dear General Carmona:

It has come to our attention that while we were attempting to obtain a joint (Nebraska/Iowa) 350 package for the Fort Calhoun Station, we neglected to return the Regional Assistance Committee (RAC) Review to you for your comments and schedule of corrections. This is inexcusable on our part. We realize that deadlines must be established and adhered to by all parties. We are reviewing our records to ensure that this never happens again.

Since the State Plan is generic for both the Cooper Nuclear Station and the Fort Calhoun Station, your comments stand on record for the State.

Enclosed is the list of deficiencies and areas for improvement the RAC has identified for the Nebraska local plans for Fort Calhoun. Please review these and respond with a letter indicating a schedule of corrections, if possible, by May 1, 1984.

If you should have any questions concerning these items or the schedule of corrections, feel free to contact Eric Jenkins at (816) 374-2161, or (FTS) 758-2161.

Sincerely,

Patrick J. Breheny
Regional Direcor
FEMA - Region VII

Enclosure

N&TH:CarrollbjM 3/8/84 2161 Begley Carroll

RAC Review

Fort Calhoun
Nebraska State and Local Radiological
Emergency Response Plans

FORMAL REVIEW

A.2.a	The State Plan has no table or key individuals by title.
A.3	The Washington County Plan's letters of agreement are for plan approval only. Actual letters of agreement between city/county and response organizations are missing. Is the hospital fully committed to responding during an accident? What is its capacity? Can it undertake normal emergencies, too?
C.1.c	The State and Local Plans do not address the required inventories and resources for the support of Federal response teams. Although the Federal teams have not stated their requirements, this remains a deficiency until cooperative resolutions occur.
C.4	County Plan states that the agreements are on file only - they are not in the documents. The Plan does not show local agreements with anyone.
E.5	The County Plans include sample EBS messages but they do not state whether the State or local governments will alert EBS and the text does not mention EBS activation. Washington County Plan (p. 9, not referenced) notes that if immediate sheltering or evacuation is required the plant may notify both the Washington County Sheriff's Department and the EBS.
E.6	Neither the State nor the Local Plans make any reference to the time required for notifying and providing prompt instructions to the public within the plume exposure pathway EPZ.
G.1	The special needs of the handicapped are not included in plans for annual dissemination of information.
G.4.c	IAC is established to minimize rumors, and a hot line is established initially to deal with rumors. It is not clear if the hot line will assume a message taking role with PIO follow-up during a news release or what the situation is.
J.9	The references to FDA's PAGs for accidental radioactive contamination of human food and animal feed and recommendations for potassium iodide usage need to be updated.
J.10.c	The reference in the Local Plans is not geared to meeting the needs of the transient population.
J.12	The State and County Plans make no reference to the requirement that monitoring of individuals should be accomplished within twelve hours of arrival at the relocation center.

K.3.b	State and Local Plans should improve dosimetry and dose records procedures.
K.4	In Neither the State nor the Local Plan is a chain of command established for authorizing exposures in excess of EPA PAGs.
K.5.b	Tables reflecting equipment and supply inventories should be included Table 1, Annex F, Attachment 7, to be published during First Quarter 1984 should resolve this.
L.4	The Local Plan does not state that they are capable of transporting contaminated patients effectively. It is not clear how the transportation would be coordinated.
N.2.c	The Dodge County Relocation Plan addresses this issue in order to meet the requirements. The others do not.
O.5	The Local Plan makes no reference to the annual retraining of personnel with emergency response responsibilities.
P.4	Local Plans do not state that they will annually certify the currency of the plan.
P.5	The Local Plans do not provide for dating and marking of individual pages to indicate changes.
P.8	The Local Plans do have a table of contents but did not have a current cross reference. This would have made the review much easier. An older cross reference was used which often gave approximate reference points. Suggest that cross references sheets also be dated to correspond with submission and updates.

FORT CALHOUN NUCLEAR STATION
IOWA STATE AND LOCAL COMPENSATORY
EMERGENCY RESPONSE PLANS

INTERIM FORMAL REVIEW

11/4/83

A.1.b. Although the State Plan is adequate, the compensatory (Chapter XII) is weak in addressing how the local governments will interface with the State. Even though the plan has been written to function as though there were no local governments, the fact is, that there is one. Letters of Agreement have been signed between the State and the County Boards of Supervisors, Sheriffs and communications. Each of the parties to the Agreements has become signatory to providing assistance to the State, as requested. What assistance can they provide? What staff resources and material resources are available? You can't request what isn't there. If support is requested, what is the system, who do you ask, where are the resources, in what quantity? What is the relationship of the locals to the total effort?

A.1.c. The State Plan provides adequate diagrams indicating interrelationships at the State level. Is the chart provided for the locals a communications schematic or does it also indicate relationships and command and control?

*A.2.a. Class A Deficiency

The Generic Stat plan has addressed those areas which needed to be addressed at the State level. Page VI-31 of the State plan assigns responsibilities to local governments. Since the State is assuming the local role in response, it would be reasonable to expect that the state will make provisions for conducting these activities or will coordinate with other action agencies who will in a letter of Agreement, indicate that they will perform the functions to an acceptable level. Either Letters of Agreement or provisions in the State Plan are required for these areas:

- Actual Evacuation of the Contaminated Area.
- Security of Contaminated Areas
- Fire Services/Decontamination
- Search and Rescue Operations
- Initial traffic control and communications
- Reporting of incidents to ODS
- Providing Emergency Medical Services
- Determine Social Services needs and notify State Social Services
- Assist DEQ in decontamination
- Assist in gathering samples in support of UHL
- Keeping routes open in poor weather and winter conditions
- Assist State Department of Agriculture in public dissemination of response to farmers.
- Maintain does records of County/local Emergency Workers and volunteers.
- Make local distribution of KI (Page VI-6)

A.3. Due to the fact that the State has assumed the role of primary responders, many more agreements will be necessary between the State and those Agencies/Activities which will be providing resources to the response effort. Those areas of Local/Municipal responsibilities identified in A.2.a. above will, in many cases, require Letters of Agreement to insure availability and adequacy of resources.

C.1.c. The EPA is expected to provide laboratory assistance. The assistance noted is not that described in the Federal Radiological Monitoring and Assessment Plan. Support facilities for use by Federal agencies are not described.

C.3. Information is needed on laboratory analysis capabilities and response times.

*C.4. Class A Deficiency From the State Plan, it is not possible to determine who can be relied upon. Agreements are present with the County Boards of Supervisors, County Sheriffs and Communications, but what about other volunteer organizations and State Agencies. Without a signature page, it is not possible ascertain whether or not adequate coordination with those other State Agencies involved has been accomplished.

D.4. There is no description in the majority of State response assignments which ties the response to the established Emergency Action Levels. It is not clear whether or not other state agencies have a phased step-up in readiness conditions in response to increasingly severe stages in Emergency Action Levels.

E.1. The State Plan does not tie alert notification to emergency action levels. At what point is the decision made to notify other state agencies and non-governmental response organizations? The UHL is erroneously shown for follow-up notification.

E.2. There are no established procedures for alerting, notifying and mobilizing emergency response personnel.

E.6. Reference to Chapter VII, 1-4 should be deleted. It has nothing to do with Fort Calhoun. Page XII-2 states that at "Site Emergency, the Sheriff's Department's 24-hour communications centers will automatically activate the siren system." Are the Sheriffs' Departments thoroughly briefed? Have the Sheriffs' Departments acknowledged their role in the notification process? It would be best to get such acknowledgement in writing. The plan fails to discuss the estimated time required for notifying and providing prompt instructions to the public within the plume exposure pathway.

F.2. The State plan does not ensure that there is a coordinated communication link for mobile medical support facilities. The plan further does not discuss the communication link with fixed medical facilities unless the reader infers that communications is accomplished by telephone based on the fact that the listing of hospitals includes a telephone number.

G.3.a. Points of contact have been identified. There are, however, no physical locations designated for the use of the news media. Page VIII-2 discusses the JPIC for news conferences, but surely is not the physical location designated for the news media to set up. If it is, then a great deal of amplification is required in order that use of the JPIC is clear.

H.4. No procedures are provided to assure the timely activation and staffing of the State EOC, Forward Command Post, County EOC's or JPIC. At what point are they named? Are they manned all at once or are they manned incrementally as the situation deteriorates and readiness levels increase? At what Emergency Action level does the EOC go on full operational status? What is the time estimated for alert notification to operational status?

H.7. On paper, the plan is extremely inadequate. However, it is known that the local governments have some capability even if the plan does not address it. Chapter XII of the plan is not adequate to substitute for local plans. Equipment lists reveal some inconsistencies; Page VI-18 indicates the Iowa Highway Patrol will

have the following equipment: two officers from each of the fourteen posts to have complete civil defense survey meter kits. Each of the 28 officers will have 1 CDV-138 and 1 CDV-730 dosimeter. Each of the fourteen posts will have one dosimeter charger. The resource list, however, (Chapter V, app. C) indicates that the Iowa Highway Patrol will have 6984 CDV-742 dosimeters and 280 CDV-759 chargers. What is correct? The table on Page XII-T3-32 reflects an incorrect number for EPA, the correct number 816/374-6525 during working hours and 913/236-3778 during off-duty hours.

*H.10. Class A Deficiency

This area is a problem which is inherent in a State Compensatory Plan. There are no provisions for regular inspections, inventories and operational checks for equipment at the County/municipal level. Although there is agreement with the Board of Supervisors that they will make equipment available as requested, there is no way of insuring that the equipment will be accessible or if accessible, whether it will function properly. It will be necessary to identify equipment which may be required from local sources, and make adequate provisions for its availability and maintenance.

*H.11. Class A Deficiency

An exhaustive listing of Radiological monitoring equipment has been provided, but nothing can be determined of the status of emergency kits for protective equipment, communications equipment and emergency supplies. This ties directly in with comments from H.10. Local equipment will very likely be required. A Letter of

Agreement with the Board of Supervisors to support the State response means nothing unless it is known what resources the county can provide in support. These resources need to be included in emergency kit lists with the State Resources lists, and availability and maintenance of that equipment and supporting materials, along with qualified operators must be agreed to and established in written agreement.

I.7. Reference V-1 refers to an appendix (that could be found) containing a list of radiological response team members. V-6 indicates field data will be collected at the County EOC. This does not track with Chapter XII. The Highway Patrol monitoring equipment is not shown in the Resource list. The plan does not provide for the use of Duane Arnold Energy Center equipment, is it available for use?

I.8. The plan gives inadequate details for alert notifications and activation of teams. Details of transportation to the site are deficient. The plan indicates only one radio equipped vehicle for communications. Who provides it? One car is insufficient to support a minimum of two radiological teams. What are the provisions for coverage before the arrival of the teams which is estimated as four to six hours?

I.10. Inadequate detail is available on methodology for relating measured decontamination levels to dose rates for radionuclide exposure in terms of PAG's. Although necessary reference material is included in the plan, the procedures needed to apply the reference material are missing.

J.9. FDA current PAG's should be referenced and county contacts in the 50-mile radius should be listed with phone numbers.

J.10.d. The Plan basically assumes that handicapped persons will be moved by family members, friends, etc. if they are not institutionalized. What happens when that person who would normally do that is at work, on vacation, or indisposed for any other reason? What is the contingency plan for movement of these handicapped persons?

J.10.e. The Generic State Plan makes counties responsible for distribution of KI, however, Chapter XIII does not discuss how this will occur now that a compensatory plan is effect.

J.10.k. The State plan totally ignores identification of and means for dealing with potential impediments (e.g. Seasonal impassability of roads) to use of evacuation routes, and contingency measures.

J.10.m. The plan does not include the basis for choosing appropriate protective actions.

J.11. A list of food processors and milk processors should be included in the plan. The plan is deficient in addressing procedures for estimating contamination dose consequences. The maps required have not been included in the plan.

J.12. Although reception/registration procedures are discussed, there is no reference to all to monitoring of evacuees. Obviously, therefore, there is no reference to monitoring all registrants within a twelve hour period.

*K.3.a. Class A Deficiency — Confusion exists as to who will maintain Dose records for Emergency workers. The plan says it will be the County Health Department, but under the compensatory plan, the Health Department isn't part of the operation. Who is accomplishing this task?

*K.3.b. Class A Deficiency — The Letters of Agreement with County Boards of Supervisors, Sheriffs and communicators lead to the assumption that there will be County Emergency Workers. Who will read their dose meters at appropriate frequencies and who will maintain dose records?

*K.4. Class A Deficiency — The decision chain for authorizing emergency workers to incur exposures in excess of the EPA PAG's is not a clear cut one. This must be clearly established.

K.5.a. Table 6, Page F-2-8 reference on VI-11 is missing.

K.5.b. Means for decontamination are only minimally outlined. Methodology for estimating or measuring internal contamination is missing.

*L.1. Class A Deficiency Organization have not made arrangements for local and backup hospital and medical services having the capability for evaluation of radiation exposure and uptake.

*L.3. Class A Deficiency The hospital list appearing in the plan seems to identify every hospital or medical facility in the area. There appears to be no attention given to special radiological capabilities, i.e. trained personnel and ability to radiologically monitor contaminated personnel.

*L.4. Class A Deficiency The Plan totally ignores arrangements for transporting victims of radiological accidents to medical support facilities.

M.3. Reentry procedures need to be expanded in order that reentry will be as clearly implemented as evacuation. No system was indicated in the plan for informing members of response organizations that recovery operations are to be initiated, or notifying them of any changes in organization structure which may occur.

M.4. Estimates of exposure is not addressed in referenced material.

N.1.b. There is no way to ascertain the degree of involvement of the counties from the letters of agreement. Plans should include anticipated involvement of local organizations and personnel.

N.2.a. The intent should be to describe how communications drills will be accomplished, not simply restate criteria. How can the State ensure communications drills will occur at the local level?

N.2.c. This area has been ignored in the plan. Medical emergency drills are important and must be a part of the plan.

P.2. The plan indicates that the individual in each organization who has overall authority for radiological Emergency response/planning is the one indicated on the sign off sheet. There is no sign off sheet!

P.4. The plan needs to also address certification and recertification.

P.6. References are very weak. Where are references to SOP's, support plans, etc., from other organizations and agencies? Are the counties going to implement their basic emergency plan? How about Red Cross response plan, etc. These need to be reviewed, coordinated with, and referenced by the State Plan.

FORT CALHOUN NUCLEAR STATION
IOWA STATE AND LOCAL COMPENSATORY
EMERGENCY RESPONSE PLANS

Current status of deficiencies (4/23/84)

A.1.b. Although the State Plan is adequate, the compensatory (Chapter XII) is weak in addressing how the local governments will interface with the State. Even though the plan has been written to function as though there were no local governments, the fact is, that there is one. Letters of Agreement have been signed between the State and the County Board of Supervisors, Sheriffs and communications. Each of the parties to the Agreements has become signatory to providing assistance to the State, as requested. What assistance can they provide? What staff resources and material resources are available? You can't request what isn't there. If support is requested, what is the system, who do you ask, where are the resources, in what quantity? What is the relationship of the locals to the total effort?

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C.1.c. The EPA is expected to provide laboratory assistance. The assistance noted is not that described in the Federal Radiological Monitoring and Assessment Plan. Support facilities for use by Federal agencies are not described.

C.3. Information is needed on laboratory analysis capabilities and response times.

D.4. There is no description in the majority of State response assignments which tie the response to the established Emergency Action Levels. It is not clear whether or not other state agencies have a phased step-up in readiness conditions in response to increasingly severe stages in Emergency Action Levels.

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FORT CALHOUN NUCLEAR STATION
IOWA STATE AND LOCAL COMPENSATORY
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N.2.a. The intent should be to describe how communications drills will be accomplished, not simply restate criteria. How can the State ensure communications drills will occur at the local level?

N.2.c. This area has been ignored in the plan. Medical emergency drills are important and must be a part of the plan.

P.2. The plan indicates that the individual in each organization who has overall authority for radiological Emergency response/planning is the one indicated on the sign off sheet. There is no sign off sheet!

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P.6. References are very weak. Where are references to SOP's, support plans, etc., from other organizations and agencies? Are the counties going to implement their basic emergency plan? How about Red Cross response plans, etc. These need to be reviewed, coordinated with, and referenced by the State Plan.