

SEP 19 1988

In Reply Refer To:
Docket: 50-285/88-20

Omaha Public Power District
ATTN: Kenneth J. Morris, Division Manager
Nuclear Operations
1623 Harney Street
Omaha, Nebraska 68102

Gentlemen:

Thank you for your letter of August 24, 1988, in response to our letter and Inspection Report 50-285/88-20 dated July 21, 1988. We have reviewed your reply and find it responsive to the concerns raised in our report. We will review the implementation of your corrective actions during a future inspection to determine that full compliance has been achieved and will be maintained.

Sincerely,

Original Signed By
A. B. Beach

L. J. Callan, Director
Division of Reactor Projects

cc:
Fort Calhoun Station
ATTN: W. G. Gates, Manager
P.O. Box 399
Fort Calhoun, Nebraska 68023

Harry H. Voigt, Esq.
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Nebraska Radiation Control Program Director

bcc: (see next page)

RIV:SEPS:RPB
NMTerc/slr
9/12/88

C:SEPS:RPB
RJEverett
9/12/88

C:RPB
BMurray
9/12/88

C:DRP/B
TFWesterman
9/13/88

D:RP
LJCallan
9/15/88

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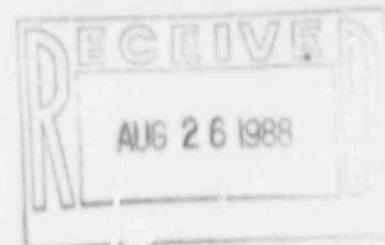
IE-35

bcc to DMB (IE-35)

bcc distrib. by RIV, with letter dated August 24, 1988:

R. D. Martin, RA
Resident Inspector
Lisa Shea, RM/ALF
RPB-DRSS
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Omaha Public Power District
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402/536-4000



August 24, 1988
LIC-88-726

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, DC 20555

References: 1. Docket No. 50-285
2. Letter from NRC (L. J. Callan) to OP&D (K. J. Morris) dated July 21, 1988.

Gentlemen:

SUBJECT: Response to Inspection Report 50-285/88-20

Omaha Public Power District (OPPD) received the subject inspection report on implementation of the emergency plan and procedures during the annual emergency response exercise. The report identified fifteen deficiencies. As a result of this inspection a management meeting was held in Arlington, Texas, on July 28, 1988.

Please find attached OPPD's response to and schedule for correction of the deficiencies as Attachment 1, and copies of the slides and discussion presented at the July 28, 1988 meeting as Attachment 2.

If you have any questions concerning this matter, please contact us.

A handwritten signature in cursive script, appearing to read "KJ Morris".

K. J. Morris
Division Manager
Nuclear Operations

KJM/jb

Attachments

c: LeBoeuf, Lamb, Leiby & MacRae
1333 New Hampshire Ave., N.W.
Washington, DC 20036

R. D. Martin, NRC Regional Administrator
P. D. Milano, NRC Project Manager
P. H. Harrell, NRC Senior Resident Inspector

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ATTACHMENT 1
RESPONSE TO THE DEFICIENCIES

In addition to responding to the specific deficiencies cited in the inspection report, it is important to address the overall programmatic problems and the resulting corrective actions taken or planned by OPPD to address them.

OPPD recognizes that the Emergency Preparedness Program did not demonstrate improved capabilities over previous performances. The exercise scenario was designed to be very difficult so that shortcomings of the program could be identified and corrected. The majority of the deficiencies cited in the report were identified by OPPD during the evaluation of the drill. In addition, an internal critique conducted by OPPD has identified some generic weaknesses and corrective actions have begun to address these items. A list of these items was submitted in a letter to the NRC (LIC-88-575) on July 19, 1988. Several have already been corrected and successfully retested.

The causes of the deficiencies can be attributed to inadequate procedures, training, or equipment, as presented on the following table.

To address these concerns, OPPD has set forth both short term corrective actions, as presented in response to the specific deficiencies, and the following longer term actions to address the programmatic concerns:

- The Emergency Planning department, in coordination with other plant departments, will identify and initiate a surveillance program for equipment used by various departments for emergency recovery.
- Emergency Preparedness training will be evaluated and upgraded to a performance based program. Expected completion for this upgrade is June 30, 1990.
- The Emergency Plan Implementing Procedures will be evaluated and appropriately upgraded. The scheduled completion for this major task is June 30, 1990.

Along with these program enhancements, an extensive evaluation of emergency staffing will be conducted to improve the assignment of the emergency duties of personnel to conform more closely to their regular job functions. OPPD believes that these actions, along with the specific actions taken to address the deficiencies, will provide a more proficient, effective Emergency Preparedness Program.

FORT CALHOUN STATION
1988 EXERCISE DEFICIENCIES

<u>NRC DEFICIENCY</u>	<u>OPPD IDENTIFIED</u>	<u>ROOT CAUSE</u>
8820-01	X	PROCEDURE
8820-02	X	TRAINING
8820-03	X	EQUIPMENT/DESIGN/HUMAN
8820-04		PROCEDURE
8820-05	X	PROCEDURE
8820-06		TRAINING/HUMAN
8820-07	X	PROCEDURE/SCENARIO
8820-08	X	HUMAN/PROCEDURE
8820-09	X	PROCEDURE
8820-10	X	PROCEDURE
8820-11	SECONDARY	PROCEDURE/TRAINING
8820-12	SECONDARY	PROCEDURE
8820-13	SECONDARY	EQUIPMENT/TRAINING
8820-14	X	PROCEDURE
8820-15	SECONDARY	SCENARIO
STAFFING OF EMERGENCY FACILITIES	X	PROCEDURE/TRAINING
RECOVERY MODE OPERATING PROCEDURE	X	PROCEDURE
DEPOSITION DOSE PROJECTION PROCEDURE	X	PROCEDURE
HARRISON COUNTY ANS INITIATION	X	EQUIPMENT/PROCEDURE

Item 8820-01

The site director (SD) (the shift supervisor in the control room) did not recognize existing plant conditions demanding an Alert classification existing at 7:15 a.m. until prompted at 7:35 a.m. by a contingency message. This is a deficiency (285/8820-01).

REASON FOR THE DEFICIENCY:

The Alert Classification was based on a definition for a loss or challenge to one fission product barrier. However, definitions of fission product barriers are not clearly defined in Chart 1.1 found in EPIP-OSC-1, used by the Site Directors for classification. The Site Director evaluated the choice between Notification of Unusual Event (NOUE) and Alert and in his judgement determined the NOUE was the proper classification because of being within the Limiting Condition of Operation for the containment purge valves. He reasoned that since the Technical Specifications allowed continued operation, containment integrity had not been breached. The root cause of this deficiency is lack of clarity and clear direction in Procedure EPIP-OSC-1.

ACTIONS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED:

Since the exercise, additional training has been provided for the Site Directors in the form of a training workbook with examples requiring classification of several emergency conditions. These workbooks were distributed July 21, 1988. Quarterly Table Top Drills were initiated in January 1988 and will continue through 1988. The third session is scheduled to begin in September. This frequency will continue for the remainder of 1988 and a retraining frequency greater than annually will continue for the future training program. OPPD believed that classification work books were the most effective method to promptly provide a review and stimulate discussion regarding classification of accident conditions to responsible Site Directors.

The Site Director who performed during the exercise has reviewed the classification criteria and understands the basis for declaring the ALERT under the postulated accident conditions. The Emergency Action Level (EAL) Chart OSC-1.1 was evaluated again. It was determined that the chart provides correct classification criteria, but does not provide sufficient detail for situations requiring classification based on the three barrier definitions.

Given this weakness, a statement is being added to the procedure stating, "Whenever the initiating conditions are not sufficiently defined to absolutely distinguish between either the Notification of Unusual Event or Alert emergency classification in a controlled time period, then an Alert classification should be declared." A training hot-line was issued August 9, 1988 as an interim method of training responsible Emergency Managers on the statement recognizing this situation for a classification higher than the Alert classification that is already in procedure EPIP-OSC-1.

ACTIONS WHICH WILL BE TAKEN:

The EAL's will be revised into a form outlining Conditions, Emergency Classification, Criteria, and Related EAL's. The revised method will utilize a separate page for each emergency condition similar to a method being used by other utilities. This method clarifies the definition and simplifies the classification process for the Site Director for initial classification during the initial stages of an emergency.

Development of the EAL revisions to EPIP-OSC-1 will be completed by December 31, 1988. Training of the six shift rotations and follow-up testing on the procedure will be completed by April 30, 1989. During the July 28, 1988, meeting, a completion date of March 31, 1989 was projected; however, upon further investigation it was determined that additional time would be required.

Item 820-02

There were five instances of failure to follow notification procedures as follows:

- The communicator in the control room did not complete the 7:20 a.m. Notification of Unusual Event (NOUE) message form correctly, i.e., did not indicate in the "Remarks" block that an exercise was taking place, and did not complete the "Report Received by" for the state of Nebraska Emergency Operations Center.
- The above message did not show wind speed, wind direction, affected sectors and recommended protective action recommendations for the radioactive release in progress.
- While the release of radioactivity to the environment was going on during the NOUE, the shift supervisor (who was acting as the site director) instructed the control room communicator to tell officers of the states of Nebraska and Iowa there was no current dose assessment at the time, and did not provide information about the current release.
- At 7:42 a.m., the control room staff did not prepare a Notification Message according to written procedures for the Alert declaration.
- The TSC staff, during the 8:10 a.m. update report to offsite authorities, did not reflect the radioactive release in progress. At that time, the stack release rate was more than Technical Specification requirements.

This is a repeat deficiency (285/8820-02).

REASON FOR THE DEFICIENCY:

Previous training of facility Communicators was classroom training with little actual performance. Individuals were trained on the procedure and then tested on their comprehension of the procedure. Practical experience is gained during subsequent drills and exercises. Hands-on experience of performance of these procedures has been limited. Training was not conducted in the control room to avoid distracting the operating shift.

It should be noted that during the exercise, contrary to the Inspection Report, the stack release never exceeded Technical Specification limits or limits found in Appendix B of 10 CFR 20. The postulated leak rate from containment was only 18,000 cc/min and the stack dilution flow was 60,000 ft³/min. This did not result in a significant releases from the Auxiliary Building stack. The data sheets from the scenario show only a random change in background activity as would be expected from normal counting statistics. The root cause of this deficiency is that the annual training provided to facility Communicators is not performance based.

ACTIONS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED:

- (a) A Performance Evaluation Checklist (PEC) was developed which requires each trainee to physically perform important steps required by the procedure as part of their requirements for passing the training. The Facility Communicator during the exercise was reinstructed on performing offsite notifications. The PEC was utilized during this training.
- (b) A training memo has been issued, as an interim training measure, to facility communicators reinstructing them to follow EPIP-OSC-2, "Notification & Activation for Offsite Notification", completely until the communicators have been trained and evaluated against the requirements of the PEC.
- (c) A duplicate Rolm 240 conference telephone, identical to the unit in the control room has been procured and used for demonstration training. This telephone is used as a training tool, so that the control room is not interrupted during training sessions.

The above measures have been taken to make facility Communicators aware of the procedure and OPPD believes that more performance based training will improve their performance. The facility communicator during the exercise can perform correctly, based on performing steps required by the PEC.

ACTIONS WHICH WILL BE TAKEN:

The PEC requirements are being incorporated into existing annual training requirements for control room communicators beginning in August 1988 and should be completed during normal shift rotation by October 27, 1988. The intent is to move toward performance based training conforming to the INPO accreditation, not only for communicators, but all emergency response positions.

The Emergency Preparedness Training Program will be evaluated and upgraded accordingly to a performance based program. The scheduled completion date is expected to be June 30, 1990.

Item 8820-03

The reliability of the primary communication link of the Control Room (CR) with the other Emergency Response Facilities (ERF) was questionable. The telephone system with conference capabilities was interrupted several times during the exercise. This interruption was caused by the inadvertent removal of the handset from its closed position.

This is a deficiency (285/8820-03).

REASON FOR THE DEFICIENCY:

1. Four of the eight telephone trunks tying Fort Calhoun Station to the EOF failed due to a blown fuse, and were taken out of service by the Northwestern Bell Telephone Company at approximately 1:45 p.m. for 10-15 minutes. This left only four trunks available for incoming and outgoing calls between facilities in the early afternoon. The result was an overloading of the telephone system and reduction of communication capabilities during this time period.
2. An individual in the Control Room, who was not a communicator, lifted the hand set to listen and to provide additional information. However, when the hand set was replaced in the cradle, the circuit was broken, and the conference in progress was reinitiated.

The cause of this deficiency can be categorized into equipment failures, poor design and human error.

ACTIONS THAT WHICH BEEN TAKEN AND RESULTS ACHIEVED:

1. A software change to the Fort Calhoun telephone system was completed on June 24, 1988. This change automatically switches calls to other additional trunks when they become unavailable. This arrangement utilizes available trunks through the Huntel (Blair) and OPPD telephone system, thus increasing the number of trunks available from 8 to 26.
2. The individual listening on the hand set has been counseled, realizes the poor result of his actions and understands this caused the problem with conferencing.

The telephone system is better configured to accommodate reliable communications between emergency response facilities.

ACTIONS WHICH WILL BE TAKEN:

A digital microwave system linking Fort Calhoun, the Electric Building, North Omaha Power Station, and the EOF is expected to be in operation by September 30, 1988. This will increase the availability and reliability of the OPPD telephone system.

OPPD will have small signs made and placed on conference phones indicating not to lift receiver while in conference. Scheduled completion is September 30, 1988. This is a change from the September 4, 1988, date presented at the meeting due to this task being larger than originally anticipated.

Item 8820-04

The control room staff did not follow Procedure AOP-21, "Reactor Coolant System High Activity," and as a consequence did not start reactor shutdown until 7:54 a.m., 12 minutes after the Alert declaration.

This is a deficiency (285/8820-04).

REASON FOR THE DEFICIENCY:

Interviews with the exercise operating crew and the OPPD Exercise Controller indicate the staff did review procedure AOP-21 when the reactor coolant system high activity condition occurred.

1. They realized at the time the reactor coolant activity exceeded Technical Specifications.
2. The operators failed to follow the procedure in that they left letdown flow at a minimum due to the leak rate being greater than one charging pump capacity.
3. The plant staff was proceeding with a rapid, but controlled, shutdown.
4. The emergency implementing procedures were already in effect.

The procedure was quickly reviewed by the operating crew and it was determined that all the corrective measures were already in place. Technical Specifications require plant shutdown within 6 hours. The root cause of the deficiency was lack of clear guidance in the procedure.

ACTIONS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED:

After reviewing procedure AOP-21, it was concluded that Step 3 should provide the operators more guidance for conditions such as large leak rates in the reactor coolant system.

ACTIONS WHICH WILL BE TAKEN:

A technical evaluation of procedure AOP-21 will be completed to determine if an improved abnormal operating procedure is necessary when high reactor coolant activities are present with reactor coolant leak rates less than those requiring implementation of EOP-3 (Loss of Coolant Accident). This evaluation and possible revision to the procedure will be completed by September 30, 1988.

Control room personnel did not advise plant personnel of adverse radiological conditions in containment. When the Alert was declared, the control room staff announced it on the Gaitronics system without explaining the reasons for the emergency classification. The NRC inspector noted that the written procedure was inadequate because it did not instruct the shift supervisor on how long to sound the siren, how to inform personnel of hazards, and how to instruct personnel to evacuate hazardous areas.

This is a deficiency (285/8820-05).

REASON FOR THE DEFICIENCY:

Procedure EPIP-OSC-2 contained general instructions to be made during plant evacuation, but did not have a specific standard notification messages for the various evacuation routes which may be required based on the risk to personnel and wind direction. The procedure did not contain a standard message guiding the control room operators to provide station personnel a warning message prior to or while evacuating the hazardous area.

ACTIONS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED:

Procedure EPIP-OSC-2 was revised to include standard notification messages to be read by Control Room Operators over the public address system. When an evacuation drill was conducted on July 6, 1988, these standard messages were used. The announcements made during the July 6, 1988 drill were very effective as demonstrated by rapid evacuation and the 25 minute accountability completion. These actions are documented, and were observed by the NRC resident inspector.

ACTIONS WHICH WILL BE TAKEN:

OPPD will conduct evacuation drills every six months until consistent proficiency is demonstrated.

Procedures EPIP-OSC-2 and EPIP-OSC-14 will be revised to include advising personnel of adverse plant conditions along with any releases in progress. These procedures will also be revised to include the duration of sounding the Nuclear Emergency Alarms. These revisions will be completed by September 30, 1988.

Item 8820-06

Information flow was deficient because critical plant conditions were not promptly communicated to the TSC. Reactor coolant radiochemistry sample results showed a large increase in radioactivity at 6 a.m., but the chemist did not communicate results to the TSC until 8 a.m. The site director at the TSC recognized the need for improved communications, and requested at 9:10 a.m. that an additional communication link be established with the control room.

This is a repeat deficiency (285/8820-06).

REASON FOR THE DEFICIENCY:

An interview with the Control Room Evaluator and Shift Chemist indicated the High Reactor Coolant Activity cue card was passed to the Control Room Staff at 07:15. However, the information was placed on the control room desk and the staff did not immediately act on it. The Operations Support Manager approximately 30-45 minutes later recognized the increased activity and the information was passed to the Shift Chemist in the Control Room, who in turn quickly passed the information to the HP/Chem Supervisor. Concurrently, the Operations Support Manager passed the same information to the Site Director.

An extra telephone is stored in the Control Room specifically for the purpose of providing additional communication, if it becomes necessary. Therefore, the Site Director, realizing that additional communication was necessary, appropriately requested the use of the additional line. The root cause of this deficiency was human error, due to inadequate training.

ACTIONS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED:

A memo instructing laboratory personnel to pass results of analyses to the HP/Chem Supervisor as soon as possible was distributed to Chemistry personnel.

Control Room orders were issued to emphasize the importance of processing technical information to appropriate support groups.

ACTIONS WHICH WILL BE TAKEN:

The above measures have been taken to make Radiological, Chemical and system information more readily available to technical support groups. Personnel will continue to be instructed on proper communications.

The effectiveness of these measures will be tested in future drills. The next large scale drill is scheduled for December 1988.

The following findings indicated that the TSC staff was not effective in their evaluation of plant conditions and in providing technical support to operations:

- The Technical Support Staff (TSS) did not promptly differentiate between the reactor coolant leak rate through the pressurizer to the containment atmosphere and the primary to secondary leak in the steam generator. As a consequence, the TSS did not recognize that it was the steam generator safety valve failure which caused Room 81 to be filled with steam.
- At 9:17 a.m., the TSS could not determine the location and extent of the steam generator tube rupture in spite of existing plant conditions.
- At 9:22 a.m., the TSS erroneously concluded that there was a steam generator tube rupture and a steam line break.
- At 9:25 a.m., the TSS was unable to give any information to the SD at the TSC when he asked the status of the steam generator. This occurred after the SD received a report from the onsite monitoring team informing him that the facade of the containment had blown off. The TSS should have been aware that the location of the steam generator's safety relief valves was such that a steam release could cause the containment facade to be blown off.
- At 9:32 a.m., the TSS confirmed that there was no increase in containment sump level nor containment pressure. However, they did not notice significant increases in the main steam line radiation monitor readings while the containment radiation monitors remained relatively constant. The TSS had not recognized that a large release of radioactivity to the environment was taking place.
- The TSS's lack of understanding of plant conditions during the release delayed input data (e.g., mass flow rate) required to perform dose assessment calculations. The staff did not complete the first mass flow calculation until 9:38 a.m., that is 38 minutes after plant conditions indicated that the steam generator tube rupture and failure of a safety valve had occurred. At that time the steam generator was losing about 800 gallons per minute.

The above is a deficiency (285/8820-07).

REASON FOR THE DEFICIENCY:

OPPD believes an effective technical support function was demonstrated based on discussions with scenario developers, OPPD TSS observers, and players from groups supported by the TSS during the exercise, as well as the TSS and Site Director (SD) log book entries. Throughout the day, the TSS effectively provided support to various groups as evidenced by these examples:

1. Recommendations to the OSC and SD on EOP utilization and operators actions;
2. Evaluation of cooldown rate, natural circulation conditions, fuel failures; and
3. Initiation of procedure changes and safety evaluations for off-normal conditions.

However, improvement in the performance of the Technical Support Staff is required. This deficiency is the result of two primary factors:

- A. The lack of timeliness of the determination of release rates was caused by a lack of prepared guidance materials which are immediately available for use during an event. Examples of this are:
 - 1) The release rate through the failed safety valve was determined promptly by the TSS after it was requested to do so by the dose assessment group. However, the leak rate determination required that information be retrieved from plant system files, evaluated and the leak determined from engineering principles. This process prevented immediate determination of the safety valve release rate.
 - 2) The release rate through the failed steam generator tube, or tubes, was also derived from data and engineering principles during the exercise. This prevented immediate assessment of the extent of the steam generator tube rupture.
- B. Information provided by the scenario on plant transient conditions was in some cases incomplete and inconsistent. This resulted in TSS actions, evaluations, and discussions which were perceived by the evaluator as ineffective. Examples include:
 - 1) Evaluation of the reactor coolant leak through the pressurizer was attempted prior to 7:00 a.m.; however, the scenario did not provide data on pressurizer safety valve sonic detector or tail pipe temperature which would be the immediate indications of a pressurizer leak. Sump levels and quench tank data level or temperature also showed no change in conditions to allow an evaluation of leak rate to differentiate between leak paths from the pressurizer.

Further, simultaneous evaluation of three simultaneous accidents; a pressurizer leak, a steam generator tube rupture and an uncontrolled heat extraction, was a difficult situation which hampered clear differentiation by the TSS.

Throughout the steam generator release, the TSS continued monitoring the status of the pressurizer to containment release as a prudent measure.

- 2) When information was received by the TSS that a loud noise was heard from a direction south of the control room and steam was coming from Room 81, the immediate conclusion was that an uncontrolled heat extraction and a release due to an unknown failure was in progress.

There was not immediate information available to eliminate all other steam piping in Room 81 as a steam source and only focus on a safety valve failure until observations from Room 81 were reported to the TSS.

- 3) Experienced individuals within the TSS, who had been present in the plant during previous safety valve actuations, knew the configuration in relationship of the facade to safety valves, and were aware of potential effects on the facade of safety valve lifting.
- 4) Information that the blowout panel pieces were on the floor of Room 81 was not immediately available to the TSS. Without this information the TSS was initially lead to conclude that a steam line break was in progress, which is the design basis for bursting out the blowout panels. Safety valve tail pipes exhaust through the roof and would have to be broken or disconnected in order for the safety valve exhaust to be in Room 81. This was not perceived by the TSS as realistic.

EOP response to an uncontrolled heat extraction is the same whether the heat extraction is a steam line break or a steam generator safety valve failure. The root causes of this deficiency are:

- 1) The lack of prepared guidance materials for immediate use to determine leak rates during emergencies.
- 2) Scenario information during the transient was sometimes incomplete and inconsistent.

ACTIONS WHICH HAVE BEEN TAKEN:

Planning is in progress to develop guidance materials to determine flow rates through the various leak pathways for a wide range of plant conditions and transients. Procedure EPIP-EOF-6 was revised pending approval by the PRC with flow curves in support of this objective. Calculation of downwind doses can be performed based on maximum steam flow versus steam pressure in the system. This will provide a method to calculate downwind doses if the relief valves malfunction and stick open for a period of time.

ACTIONS WHICH WILL BE TAKEN:

The following actions will be completed prior to the 1989 Annual Exercise:

- 1) Emergency Response Organization positions, as well as TSS positions and incumbent experience, will be evaluated and if appropriate restructured by October 1, 1988 to better utilize OPPD technical experience.

- 2) Guidance materials will be developed to facilitate determination of flow rates through the various leak pathways for a wide range of plant conditions and transients by December 31, 1989.
- 3) Prior to the next exercise, the 1989 scenario will be independently reviewed for technical details and consistency of information important and significant to the TSS to allow demonstration of the TSS effectiveness and capability. These measures will be completed by June 1, 1989.

After its installation, the Fort Calhoun Station training simulator will be utilized to verify technical consistency of exercise information.

While the site director was coordinating and directing the emergency organization from the TSC, the recovery manager at the EOF made an inadequate appropriation of responsibilities. The recovery manager took over Dose Assessment and Offsite Monitoring Team functions. This was a source of confusion for the TSC dose assessment staff.

This is a deficiency (285/8820-08).

REASON FOR THE DEFICIENCY:

While in the ALERT classification, the dose assessment team in the TSC had the official responsibility of radiological measurements and decisions. The dose assessment team in the EOF was staffed and ready, monitoring the progress of the measurements and evaluations. When the TSC experienced difficulty with the dose assessment computer, the Emergency Coordinator suggested to the HP Chemistry Supervisor, that the plant revert to manual methods and allow the EOF staff to operate the EAGLE computer software. Miscommunication between the two facilities as to who officially had the responsibility caused confusion and was contrary to the responsibility transfer in the Emergency Plan which states complete transfer of all emergency responsibility from the Site Director to the Recovery Manager occurs at one specific time. The Emergency Coordinator also misinterpreted the Recovery Manager's statement at this time, "let's go with it" to mean immediately rather than the projection of 9:00 as the time for transfer of authority. The root cause of this deficiency is personnel error and the failure to implement the intent of the procedure.

ACTIONS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED:

The three Emergency Coordinators have reviewed their position specific procedure and confirmed dose assessment operation and offsite monitor team control by them is not authorized until the responsibility of the emergency has been transferred to the Recovery Manager. The review was completed July 26, 1988.

The review indicated that the procedure should establish the requirement more firmly. This review has made the supervision of dose assessment and offsite monitor team control aware of the improper appropriation of responsibility and informed them that individual responsibilities should not be fragmented. These measures informed them that all dose evaluation responsibilities should be assumed as one unit when the transfer of authority is officially completed.

ACTIONS WHICH WILL BE TAKEN:

Section B of the Emergency Plan, the Recovery Manager procedure, EPIP-RR-10, the Emergency Coordinator procedure, EPIP-RR-24, and the Responsibility Transition procedure, EPIP-EOF-14 will be reviewed and revised to describe the transition of responsibility more firmly and clearly. It is expected that the procedures will be reviewed, revised and reissued by October 31, 1988.

Item 8820-09

The dose assessor in the TSC made several inappropriate entries which resulted in inaccurate offsite dose projections. The estimated time of release duration at 9:10 a.m. was about one hour. Instead, the dose assessor entered a release duration of 8 hours. In addition, he erroneously entered containment stack and condenser as the release location. The main steam isolation valves were shut making the condenser not applicable.

This is a deficiency (285/8820-09).

REASON FOR THE DEFICIENCY:

OPPD believes that some inappropriate entries were made during dose assessment efforts due to the limitations of the EAGLE code for accepting and processing inputs.

In the exercise scenario, one main steam safety valve malfunctioned and remained open at pressures where the valve should normally be closed. There were no emergency procedures in place which addressed this particular situation and maximum flow rate out of ten steam safety valves had to be assumed. Input of this maximum flow rate into the EAGLE program resulted in overly conservative offsite dose projections. However, since the containment purge valves were still leaking and containment had a leak rate, stack and containment releases would be appropriate as part of the summation of downwind exposures. The input menus for the dose assessment program are divided into three main categories: (1) Auxiliary Building stack, (2) Condenser/Main Steam, and (3) Containment leak rate. Therefore, using Option (2) Condenser/Main Steam release condition was appropriate. This menu is divided into two submenus containing condenser and main steam release points. The final calculation would result in a summation of downwind exposure from all release paths.

Interviews with the exercise TSC dose assessors indicate an 8 hour release period was initially passed to them from the control room. The eight hour release duration was used in one assessment with the 0845 monitor data (28 cpm for RM-064). This entry resulted in only background exposures downwind. This assessment was never officially issued since exposures were only background. Subsequent to this one data entry, either one hour or four hour duration were used for the remaining assessments. The root cause of this deficiency is that procedures EPIP-EOF-6 and OI-PAP-8 did not contain provisions for determining mass steam flows if valves open or remain open after steam pressure falls below the pressure setpoint.

ACTIONS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED:

A procedure change to Emergency Plan Implementing Procedure EOF-6, "On-site/Offsite Dose Assessment," Section C, and Operating Instruction OI-PAP-8 have been submitted for PRC approval. These procedure changes provide a method to calculate a flow rate to the environment in the event a main steam safety is opened below its particular set pressure.

Inputting a more accurate flow rate into the EAGLE program will result in more accurate and realistic dose projections and Protective Action Recommendations for offsite locations.

ACTIONS WHICH WILL BE TAKEN:

Procedure EPIP-EOF-6 will be revised directing the TSC Dose Assessment Operators to obtain the estimated duration of release from the Technical Support Supervisor. This revision will be completed by November 30, 1988.

Instructions will be revised in the Technical Support Supervisor procedure, EPIP-RR-14, to provide estimated duration of release information to the Dose Assessment Operator. The revision will be completed by November 30, 1988.

Item 8820-10

The Recovery Manager did not classify the General Emergency until about 44 minutes after the conditions warranting the classification were in place, and 33 minutes after dose assessment results supported a General Emergency classification.

This is a deficiency (285/8820-i0).

REASON FOR THE DEFICIENCY:

The first indication of the steam generator tube rupture occurred at 9:01 a.m. The NRC team had recently arrived and the Recovery Manager was presenting a facility briefing and did not immediately receive the plant data. However, the assessment of plant events was completed and allowed the correct upgrade to Site Area Emergency at 9:15 a.m. Dose assessment results for site boundary exposure, the important guide to a General Emergency, were not available at this time. Dose assessment personnel collected radiological data at 9:10 a.m. for a 9:15 a.m. analysis. Due to an unmeasured release path, the release flow rate was not readily available. A prolonged evaluation concerning use of the procedure default value and a calculated value occurred with the decision finally made to use the default number. At 9:29 a.m. the dose assessment results were printed and presented to the Recovery Manager. After discussion with the Site Director, the Recovery Manager upgraded to a General Emergency at 9:44 a.m. The dose assessment results were available to the Recovery Manager for 15 minutes when the discussion was completed. Basic reasons for the delay were that (1) the dose assessment computer was in use for a previous assessment at 9:00 a.m. and not cleared to assess this important data increase, (2) the procedure did not provide clear direction to determine a precise flow rate when the release flow rate is from an unmeasured path, and (3) participants did not place sufficient emphasis on completing this requirement within the allowed time restriction. The root cause of this deficiency is procedural weaknesses.

ACTIONS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED:

A procedure change to Section B of EPIP-EOF-6, "Onsite/Offsite Dose Assessment," was submitted on July 25, 1988, for PRC approval. This change directs dose assessment personnel to abort insignificant dose assessment data being processed on the computer when new data indicating rapid increases are available for more timely and valuable dose assessment information. This will eliminate delays caused by automatic 15 minute data processing.

Procedure changes have also been submitted to the Plant Review Committee to improve the method for obtaining release flow rates from unmeasured paths. The method is discussed in deficiency 8820-09.

Dose assessment personnel have been reinstructed by memorandum to emphasize completing dose assessment as quickly as possible to allow issuance of protective action recommendations within 15 minutes of the recognized event.

The measures discussed above have been taken to make dose assessment and the responsible emergency managers aware that emergency classifications, dose assessments and protective action recommendations are required within 15 minutes of the recognized event. The effectiveness will be measured at future drills.

ACTIONS WHICH WILL BE TAKEN:

The actions in progress are believed to be sufficient to correct the problem. The revised procedures will be approved and issued by October 31, 1988.

In addition, EPIP-EOF-6 will be reevaluated in its entirety to ensure the procedure provides consistent and accurate dose assessment instructions. The procedure will be revised by March 31, 1989 if appropriate.

Briefings and debriefing of in-plant repair teams dispatched from the OSC were inadequate. The radiation protection technicians did not provide in-plant teams with information mandated by Procedure EPIP-OSC-9, "Emergency Repairs, Corrective Actions, and Damage Control." Briefers did not provide repair teams with diagrams, procedures, floor plans, nor give specific instructions on how to perform complex tasks.

This is a repeat deficiency (285/8820-11).

REASON FOR THE DEFICIENCY:

The procedures for Monitor Coordinators - Basic Responsibilities are not specific for providing briefings of teams re-entering evacuated plant areas. There was a lack of coordination between the Monitor Coordinator and the Maintenance Supervisor in preparing maintenance for emergency repair. The root causes of this deficiency are (1) the lack of a single governing procedure providing guidance and reference to applicable requirements for certain situations; (2) lack of performance based training for Monitor Coordinator, Repair/Re-entry, and rescue teams with regard to emergency conditions, and (3) failure to identify the deficiency and initiate corrective action during previous damage control drills.

ACTIONS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED:

A review of procedures EPIP-OSC-9, "Emergency Repairs, Corrective Actions and Damage Control," and EPIP-RR-3, "Re-entry into Evacuated Areas," was conducted with the present personnel assigned to the Monitor Coordinator position. The importance of ensuring the requirements of these procedures are met prior to dispatching repair/rescue crews was stressed. A new draft procedure EPIP-OSC-20, "Radiation Protection Guidelines - Emergency Condition," was also reviewed with the Monitor Coordinators. This procedure provides them with a single procedure for developing pre-job briefings and referencing of other applicable procedures. These measures have been taken to make the Monitor Coordinators more aware of these procedures and their use during an emergency situation.

ACTIONS WHICH WILL BE TAKEN:

A new procedure, EPIP-OSC-20, "Radiation Protection Guidelines - Emergency Conditions," is currently being developed to provide instruction to appropriate emergency personnel and will be issued by August 31, 1988. Individual specific procedures will reference EPIP-OSC-20 for guidelines to consider during Emergency Conditions. In addition, a specific Monitor Coordinator procedure will be developed with an operational checklist. The Maintenance Supervisor procedure, EPIP-RR-21, will also be revised to contain a checklist. Both procedures will direct use of EPIP-OSC-9 and EPIP-OSC-20. The revision to procedure EPIP-RR-21 will be completed by December 31, 1988. A new Monitor Coordinator procedure will be completed by December 31, 1988.

The procedure EPIP-OSC-20 includes guidance for pre-job briefings as well as guidance for personnel monitoring, Contamination and Air-Sampling surveys, Respiratory Protection, Radiation, and for the Control Point Determination and Shielding Calculations.

OPPD believes the general health physics deficiency is correct, and has initiated an extensive Radiation Protection Improvement Program for all station health physics personnel. Specific areas identified in past exercises have been corrected, showing a positive improvement towards a total resolution of the inadequate station health physics practices deficiency.

OPPD will continue Semi-Annual Health Physics drills and include scenarios which increase the use of re-entry teams as part of the drill. Damage control drill frequency will be increased to quarterly until sufficient proficiency is demonstrated. These drills will contain more difficult radiological/ maintenance problems and involve larger teams. Procedure EPIP-OSC-20 will be completed by August 31, 1988, and issued with subsequent training of all appropriate personnel by March 31, 1989. This new procedure will also include an official Operation Support Center Log to better document HP activities within the plant.

Item 8820-12

The OSC staff did not have a method to maintain continuous personnel accountability of in-plant teams.

This is a deficiency (285/8820-12).

REASON FOR THE DEFICIENCY:

This deficiency is related to item 8820-11. The procedure for recording and tracking emergency worker exposures, EPIP-EOF-11, Dosimetry & Records, provides general instruction to emergency team members but does not specifically describe the method for maintaining continuous accountability. The root cause of the deficiency is inadequate emergency health physics procedures.

ACTIONS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED:

A section of new draft procedure EPIP-OSC-20, "Radiation Protection Guidelines - Emergency Conditions," is devoted exclusively to personnel dosimetry and exposure control. Monitor Coordinators have been briefed on the draft of EPIP-OSC-20 and the revised Operations Support Center Log.

The Monitor Coordinators were briefed as outlined in Item 8820-11 of the importance and proposed method for documenting exposure histories and ensuring accountability of Re-entry Teams.

The revised OSC log provides a methodology for tracking and maintaining Re-entry Team exposure and work locations.

ACTIONS WHICH WILL BE TAKEN:

Procedure EPIP-OSC-20 will be submitted to the Plant Review Committee by August 31, 1988. Training will be provided to appropriate personnel by March 31, 1989. The ability to account for and maintain exposure histories for In-plant Team personnel will be demonstrated and tested during subsequent drills and the 1989 Annual Exercise.

OPPD will evaluate the Radiological Emergency Response Plan and the Emergency Implementing Procedures and upgrade as needed. The completion date is expected to be June 30, 1990. During the upgrade of these procedures, Emergency Health Physics related procedures will be consolidated together for easier reference.

Item 8820-13

The rescue team was not well equipped and their practices were poor in the areas of radiation protection and first-aid (e.g., cross-contaminated accident victim, areas adjacent to Room 81, and waited about 5 minutes before taken vital signs or giving shock treatment). In addition, a member of the medical team was not trained in First-Aid Multi-Media nor decontamination practices. Only one steam suit was available and the internal face shield was damaged. The other rescue team member entered the room where a steam leak was going on without a steam suit. The licensee did not have a communication device to be used while wearing the steam suit.

This is a deficiency (285/8820-13).

REASON FOR THE DEFICIENCY:

1. The rescue team members were poorly prepared and did not have adequate supplies to cope with this emergency in a steam atmosphere.
2. Voice amplification equipment for Self Contained Breathing Apparatus (SCBA) is judged by the OPPD Health Physics program to be ineffective and is currently not part of the respiratory protection program at Fort Calhoun Station. The root causes of this deficiency are (1) lack of adequate rescue equipment which subsequently caused personnel errors and (2) inadequate training being demonstrated by the individual not officially assigned rescue team duties.

ACTIONS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED:

1. Additional first-aid equipment and 4 steam suits are being procured. A member of the health physics staff with EMT qualifications is coordinating its implementation.

The formal first-aid training program is being transferred to the Nuclear Operations Division and will include dedicated staff personnel.

Communication equipment while wearing a SCBA and steam suit is being investigated.
2. The Emergency Planning and Radiation Protection departments have contacted the manufacturer of our respiratory equipment for samples and demonstration of voice amplification equipment. OPPD is currently evaluating state-of-the-art amplification for use with our SCBA.
3. Additional rescue equipment is being evaluated and procured.

ACTIONS WHICH WILL BE TAKEN:

1. The Emergency Planning Department will add basic contamination control practices and frisking techniques to the rescue squad monitor and re-entry team training modules by March 31, 1989.

OPPD will implement and practice improved first-aid abilities during drills and demonstrate for the 1989 Emergency Exercise.

2. OPPD will complete evaluation of equipment and procure, if acceptable, voice communication equipment for SCBA's by December 31, 1988.
3. OPPD will evaluate a method for surveillance of personnel protective equipment necessary for responding to radiological emergencies by June 30, 1989.

The licensee did not perform personnel accountability during the site evacuation within the 30-minute guidelines of NUREG-0654. The evacuation alarm sounded at 7:39 a.m. The licensee could not complete accountability until 8:18 a.m.

The above is a deficiency (285/8820-14).

REASON FOR THE DEFICIENCY:

Personnel on site failed to evacuate immediately when the Nuclear Emergency Alarm was sounded. The initial sounding of the alarm was terminated by the Control Room in one minute, rather than the normal two minutes. The announcement following the sounding of the alarm was not clear in content nor distinct in tone, and personnel were unsure what they should do and where they should go. When the Site Director realized the evacuation process was not proceeding as planned, he reinitiated the alarm. However, 10 minutes had already passed, and only 20 minutes remained to complete the accountability. The root cause of this deficiency was a lack of clear and complete guidance in Procedure EPIP-OSC-2, regarding announcements to station personnel.

ACTIONS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED:

A standard notification message was added to EPIP-OSC-2 which is used by the Site Director to inform personnel of proper evacuation routes.

An evacuation/accountability drill was conducted on July 6, 1988 using the revised EPIP-OSC-2 procedure. Accountability was completed in 25 minutes. This accountability drill was observed by the NRC Resident Inspector.

ACTIONS WHICH WILL BE TAKEN:

A modification to the Plant Nuclear Emergency Alarm System is currently in the preliminary design stage. This change will increase the coverage area of the plant and ensure plant areas meet the requirements of ANSI-N2.3, 1979, "Immediate Evacuation Signal Used in Industrial Installation." This modification will also improve evacuation notification to those persons outside of the Security area, such as the temporary trailers.

OPPD will increase drill frequency and conduct evacuation/accountability drills every six months. The next drill will be held in December 1988.

The NRC inspector noted that since the last exercise, the licensee has devoted substantial resources to the development of an adequate scenario. For the most part, the scenario developed for the observed annual exercise was technically sound and challenging to the players; however, the NRC inspector found some scenario incongruences during the exercise which detracted from the realism and free play of the exercise. Some examples follow:

- Some controllers prompted players and did not provide data that would normally be accessible to the players under actual accident conditions.
- At 8:50 a.m. (10 minutes before the scenario major event of a steam generator tube rupture), the controller in the control room noted that the initial conditions of the scenario did not include a slight increase in radioactivity in the B steam generator. He gave this information directly to the players, prompting them to vital scenario information that would not have been readily accessible to them at that time.
- The scenario did not provide information to the TSC staff that would be accessible to them during normal operations. For example, the maintenance manager was not told by the scenario or by the controllers that maintenance work was being planned on leaking containment purge valves. As a consequence, he was forced to dispatch a team to lean about the valve status.
- The scenario did not anticipate plant conditions that would result from control room operators' actions under Emergency Operations Procedures and Recovery Procedures. For example, the TSS directed isolation of the steam generator in question. After this isolation, there should be no pressure differential within the primary system. Scenario data, however, showed a large pressure differential between the primary system and the steam generator.
- Data on instrument readings presented to the TSC staff was ambiguous because various range could be implied. This caused artificial delays and hesitations that would not have existed under more realistic conditions.

The above is a repeat deficiency (285/8820-15).

REASON FOR THE DEFICIENCY:

Initial conditions contained in the narrative summary were omitted from the initial conditions cue card passed to the Site Director in the Control Room. This error resulted in the prompt by the Controller.

After evaluating the source code used to model the accident, it was determined the cause of steam generator pressures remaining higher than expected, was the way the model was developed. A requirement of the Emergency Operating Procedure EOP-4 is to drain the additional coolant to the radioactive waste system. However, the model utilized did not have the ability to route the

additional volume to waste. Therefore, the scenario developers elected to reduce the volume by opening an additional safety valve. The model only considered this as a loss of energy and, therefore, the energy and mass equation did not balance and the steam generator pressures did not respond as expected. In retrospect, steam generator pressures should have been an input parameter to force the model to create data more appropriate for this scenario.

The Scenario Development Group placed emphasis on preparing detailed radiological and operator parameters, so previous deficiencies could be eliminated. However, by focusing on these areas, they failed to provide a sufficient evaluation of important parameters used by the Technical Support Staff.

The root cause of the deficiency was that the algorithm used to model the accident was not adequate for the postulated conditions. The developer failed to include all of the initial conditions necessary to brief plant staff. The technical review of the final scenario was inadequate.

ACTIONS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED:

It has been identified that insufficient resources were devoted to scenario development and testing. Corrective actions will be taken prior to development of the next exercise scenario. Results of actions taken will be demonstrated for the 1989 Annual Exercise.

ACTIONS TO BE TAKEN:

OPPD will organize the Scenario Development Group earlier than previous years and assure that some members of the organization are dedicated to scenario development. For 1989 additional contractor support will be used to assist the group. Scenario development will be assigned by September 1, 1988 and be completed by June 1, 1989.

OPPD will use the CE simulator to verify the scenario, especially technical data, prior to using it for the 1989 annual exercise. The Emergency Exercise Development/Execution procedure EPT-10 will be reviewed and upgraded as needed by January 31, 1989.

ATTACHMENT 2
SLIDES AND DISCUSSION PRESENTED
AT JULY 28, 1988 MEETING

EMERGENCY PLANNING

JULY 28, 1983

OPENING REMARKS

K. J. Morris/
S. K. Gambhir

Background Information

F. F. Franco

Individual Deficiencies

F. F. Franco

- Reason for Deficient
- Root Cause
- Immediate Actions Taken/Results Achieved
- Corrective Actions Planned/Future Upgrades

Summary/Conclusions

F. F. Franco

- Generic Aspects/Ramifications
- Safety Significance

CLOSING REMARKS

K. J. Morris/
S. K. Gambhir

Opening Remarks - S. K. Gambhir

Let me first go through the agenda.

Fred Franco will be making most of the presentations. About 435 people participated in this exercise. During the 1988 Fort Calnoun Station Emergency exercise Fred was not a player, but served as Chairman of Scenario development group.

For this exercise we had established some very high standards and the Scenario was developed to fully challenge and exercise our staff. I believe we succeeded in pointing out the weak areas. Results of your inspection and our own critique has pointed out several deficiencies and some programmatic weaknesses.

Over the last few weeks we have carefully evaluated these deficiencies, analyzed root causes and generic implications.

As you will notice from Fred's presentation, we have already initiated several short term corrective actions and plan to carry out some major programmatic improvements. It is our goal to demonstrate to you that the program with short term corrective actions is adequate to ensure proper response in case of an emergency and we are confident that the changes that we are proposing will bring some lasting improvements.

Without further ado I will turn this over to Fred.

Discussion - Fred Franco

Today I intend to address three topics:

1. The Preparation of the Scenario before the Annual Exercise.
2. The Reasons for and Corrective Actions which will occur to correct and prevent recurrence of the deficiencies identified by the NRC during the exercise.
3. Summarize those root causes which have been identified in the analyses of individual deficiencies and corrective actions to their generic aspects.

During the 1988 Fort Calhoun Station Emergency Exercise I was not a player, but served as Chairman of the Scenario Development Group. The Group established specific goals such as providing an opportunity to demonstrate response to previous weaknesses. Another goal was to present a difficult, but accurate and reasonably realistic scenario to seriously challenge OPPD response personnel. I, as Manager, want a strong Emergency Response program so we set out and prepared a difficult scenario to really test our people and sort out weaknesses to correct as a means to strengthen the program. As part of the verification of the scenario, it was tested at the CE simulator where licensed operations personnel are annually trained and reviewed by control room operators who were not participants for the exercise. Several changes and improvements were made in the scenario as a result of these checks, and it was concluded that the scenario would satisfy the intended goal.

During the preface remarks to the NRC inspection team during the exercise briefing on June 21, 1988, the day before the exercise, several interesting and prophetic observations were made to them.

It was reported to them that the primary objective of the State of Nebraska was to demonstrate the six year plume ingestion pathway actions. In order to provide a realistic setting for this, the plant and utility malfunctions would be compressed into the morning so that the State would have the full afternoon to properly perform for FEMA evaluators. During the briefing it was pointed out that two prompt contingency messages were incorporated into the cue cards because timing the two classifications desired in the morning action to get the needed responses and time jump, which were critical to the time line, were very difficult to determine. This difficulty had been identified during the simulator and operator review.

The scenario writers and I accepted the very difficult classification and dose assessment problem presented to the participants as a trade off to allow sufficient time for the State plume exposure pathway demonstration. As a result we identified more deficient actions from the responders than we expected based on observing previous drills. However, we really believe this exercise experience was very beneficial for our Emergency Planning Program by emphasizing to us a better realization that problems do exist in the program and we will initiate the necessary improvements. There were also many very good performances by the 435 OPPD participants. Twenty-three of the twenty-six planned objectives were met and it was satisfying to have Mr. Martin, your Director of Site Operations, recognize the difficulty of the scenario.

I would next like to discuss each deficiency. Rather than analyzing each one in numerical sequence, I intend, with your concurrence, to present the deficiencies by grouping of subjects.

This grouping of subjects is by my definition and has no other basis.

1. Classification and Notification/Assessment
2. Classification and Notification/Assessment
3. Communication
4. Technical Actions
5. Evacuation and Accountability
6. Communication
7. Technical Actions
8. Classification and Notification/Assessment
9. Classification and Notification/Assessment
10. Classification and Notification/Assessment
11. HP/Rescue Practices
12. HP/Rescue Practices
13. HP, Rescue Practices
14. Evacuation Accountability
15. Technical Actions

Slide Presentation

Classification & Assessments: Nos. 1, 2, 8, 9, & 10

Communication: Nos. 3 & 6

Technical Actions: Nos. 4, 7, & 15

Evacuation & Accountability: Nos. 5 & 14

HP/Rescue Practices: Nos. 11, 12, 13

Deficiency

8820-01

REASON FOR DEFICIENCY

Chart used for classification does not clearly define a challenge to a fission product barrier.

The Shift Supervisor judged the NOUE to be the proper classification.

ACTIONS THAT HAVE BEEN TAKEN

Training workbooks have been distributed to all Site Directors providing them a scenario to classify. Feedback to proper classification will be provided at the end of each month.

Procedure EPIP-OSC-1 "Emergency Classification" has been revised.

RESULTS

The Site Director performing during the exercise was provided feedback and understands the basis for classifying the initial accident as an ALERT emergency.

Procedure EPIP-OSC-1 was submitted to the Procedure Review Committee for approval.

ACTION THAT WILL BE TAKEN

The classification procedure, EPIP-OSC-1, will be revised in a more organized fashion; delineating each Emergency Condition, Criteria and Related Emergency Action Classification.

The final completion will be March 31, 1989.

DEFICIENCY

8820-02

REASON FOR DEFICIENCY

Training of facility communicators is not performance based. Only hands-on experience is gained during drills and exercises. NOTE: Stack releases were never in excess on Technical Specifications or 10CFR20 limits.

ACTIONS THAT HAVE BEEN TAKEN

A Performance Evaluation Checklist (PEC) was developed requiring instructor evaluated steps be completed while individual is performing the task. The exercise communicator was evaluated against these requirements on 7/23/88. Facility communicators are scheduled to begin this training memo August 2, 1988. Training memo was sent to all facility communicators.

RESULTS

The exercise Control Room Communicator was retrained against the requirements of the PEC.

Steps have been taken to make communicators more aware of the procedures.

ACTION THAT WILL BE TAKEN

Facility Communicators have been scheduled to begin training against the requirement of the PEC on August 2, 1988 and is expected to be completed by October 27, 1988.

8820-03

REASON FOR DEFICIENCY

Problems with switching equipment at the telephone company caused a fuse to blow. This resulted in a reduction in communications for 10-15 minutes. An individual picked up the telephone receiver to listen to information being passed. This caused the circuit to be broken.

ACTIONS THAT HAVE BEEN TAKEN

OPPD telephone system software was changed on June 24, 1988 which automatically switches calls to different trunks when they become unavailable.

Individual picking up the telephone in the Control Room is aware that hanging it up breaks the circuit.

RESULTS

The telephone system is configured to accommodate reliable communications between Emergency Response Facilities.

ACTION THAT WILL BE TAKEN

A digital microwave system linking Fort Calhoun to the EOF is scheduled to be completed prior to the outage (September 4, 1988).

REASON FOR DEFICIENCY

Interviews with exercise operating crew and the OPPD Exercise Controller indicate the staff did review procedure AOP-21 "Reactor Coolant System High Activity."

ACTIONS THAT HAVE BEEN TAKEN

A review of the procedure indicates certain steps require evaluation.

RESULTS

Initial evaluation was completed and indicates a more thorough technical review must be done.

ACTION THAT WILL BE TAKEN

Complete a technical evaluation of procedure AOP-21 to determine an improved method of reacting to High Reactor Coolant Activity.

Operators were not deficient in following the procedure, but procedure AOP-21 will be upgraded as a result of the observation.

REASON FOR DEFICIENCY

Procedure EPIP-OSC-2 did not contain specific standard notification messages, to be announced over the public address system warning personnel of any special conditions.

ACTIONS THAT HAVE BEEN TAKEN

Procedure EPIP-OSC-2 was revised to include a standard notification message to be read by Control Room Operators over the public address system.

An evacuation drill was conducted on July 6, 1988 using these new announcements.

RESULTS

The announcements were very effective as demonstrated by rapid evacuation and twenty-five minute accountability. These actions are documented.

The results achieved by the drill are the same as those in Item 14.

ACTION THAT WILL BE TAKEN

Continue to conduct accountability drills.

Deficiency

8820-06

REASON FOR DEFICIENCY

Personnel failed to relay critical information to the Technical Support Staff in a timely manner.

Communication flow between facilities and groups ties closely to Item 3.

ACTIONS THAT HAVE BEEN TAKEN

Control Room orders were issued to emphasize the importance of processing technical data to support groups. A memo instructing laboratory personnel to pass results of analyses to the HP/Chemistry Supervisor as soon as possible has been distributed.

RESULTS

The effectiveness of these actions will be tested in future drills.

ACTION THAT WILL BE TAKEN

Complete computer information link between facilities. Implement new procedures, assign and train personnel by December 31, 1989.

Personnel will continue to be instructed on proper communications.

Measures have been taken to make Radiological, Chemical and Systems Information available to support groups.

Deficiency

8820-07

REASON FOR DEFICIENCY

Lack of prepared guidance materials for timely determination of release rates.

Scenario information on transients was sometimes incomplete and inconsistent.

ACTIONS THAT HAVE BEEN TAKEN

A procedure change to EPIP-EOF-6 was submitted pending approval providing a method for calculating steam flow out of safety valves at pressures < 1000 psia.

RESULTS

Results of completed and future corrective actions will be measured in the next drill.

ACTION THAT WILL BE TAKEN

TSS generic guidance materials will be developed for leak rate determinations. An independent technical review of the scenario will be complete prior to future exercises.

TSS will more fully utilize personnel with operations and simulator experience.

Deficiency

8820-08

REASON FOR DEFICIENCY

The Emergency coordinator inappropriately directed the dose assessment personnel to take over the dose assessment function prior to official transfer of Emergency responsibilities.

ACTIONS THAT HAVE BEEN TAKEN

The three Emergency Coordinators were retrained by reviewing their specific procedure requirements.

RESULTS

Measures have been taken to make the Emergency Coordinator (resp. for dose assessment) and off site monitor teams aware of proper transfer of responsibilities.

ACTION THAT WILL BE TAKEN

Section B of the Emergency Plan, the Recovery Manager procedure, EPIP-RR-10, the Emergency Coordinator Procedure EPIP-EOF-24, and the Responsibility transition procedure, EPIP-EOF-14 will be revised.

Deficiency

8820- 09

REASON FOR DEFICIENCY

The Dose Assessment Operators made an inappropriate entry into the Dose Assessment program causing overly conservative estimates of downwind exposures.

ACTIONS THAT HAVE BEEN TAKEN

The Procedures EPIP-EOF-6 and OI-PAP-8 were revised, pending PRC approval, adding flow curves to determine mass steam flows at pressures below < 1000 psia.

RESULTS

This chart will provide for more accurate estimates of downwind exposure. The effectiveness of these measures will be evaluated in future drills.

ACTION THAT WILL BE TAKEN

The actions that have been taken at this time are believed to be sufficient to correct the problem.

Deficiency

8820-10

REASON FOR DEFICIENCY

The Emergency Coordinator failed to follow the transition procedure EPIP-EOF-14. Dose Assessment operators failed to immediately use the default parameters.

ACTIONS THAT HAVE BEEN TAKEN

Dose assessment supervisors have been retrained on their specific procedures. A procedure change to EPIP-EOF-6 with flow curves have been submitted to PRC.

RESULTS

The assessment personnel have been reinstructed by memorandum to emphasize completing dose assessment as quickly as possible so PAR's are issued within 15 minutes.

ACTION THAT WILL BE TAKEN

The actions have been taken are believed to be sufficient to correct the problem.

Deficiency
8820-11 and 8820-12

REASON FOR DEFICIENCY

The procedure for Monitor Coordinators - Basic Responsibilities, are not specific for providing briefings to teams reentering evacuated areas of the plant. Deficiencies 8820-11 and 8820-12 are closely related and, therefore, reasons for deficiencies are closely related.

ACTIONS THAT HAVE BEEN TAKEN

The use of proper entry procedures, EPIP-OSC-9 and EPIP-RR-3, and a draft of a new procedure, EPIP-OCC-20, was reviewed with the Monitor Coordinators.

RESULTS

Monitor Coordinators were provided additional training on procedures and would be expected to use these procedures during an emergency situation.

ACTION THAT WILL BE TAKEN

A new procedure, EPIP-OSC-20, "Radiation Protection Guidelines - Emergency Conditions," is currently being developed to provide a more organized method of referencing appropriate procedures required for briefing, preparing and tracking reentry teams.

REASON FOR DEFICIENCY

The Rescue Team members were poorly prepared and did not have adequate supplies to cope with this emergency in a steam atmosphere. Voice amplification equipment is currently not part of the Fort Calhoun Station Respiratory Protection Program.

ACTIONS THAT HAVE BEEN TAKEN

1. Four steam suits are being procured
2. Formal first aid training is being transferred to Nuclear Operations
3. Emergency Preparedness and Radiation Protection have contacted vendors for samples of SCBA communication equipment

RESULTS

Additional first aid equipment is being procured. The results of these actions will be demonstrated in future drills.

ACTION THAT WILL BE TAKEN

Emergency Preparedness will add basic contamination control and frisking practices to the reentry team member training.

REASON FOR DEFICIENCY

Personnel failed to immediately evacuate when the Nuclear Emergency Alarm sounded.

ACTIONS THAT HAVE BEEN TAKEN

Standard notification messages were added to procedure EPIP-OSC-2.

RESULTS

An accountability drill was conducted and evacuation with accountabilities was achieved in twenty-five minutes.

ACTION THAT WILL BE TAKEN

Conduct additional accountability drills. Modify Nuclear Emergency Alarm System to improve the coverage area offsite.

Deficiency

8820-15

REASON FOR DEFICIENCY

- 1) The complexity of the scenario was not adequately addressed.
- 2) We did not dedicate enough resources.
- 3) Inadequate planning of developing the technical data required for the scenario.

ACTIONS THAT HAVE BEEN TAKEN

Urgent corrective actions- not required at this time.

RESULTS

None at this time.

ACTION THAT WILL BE TAKEN

- 1) The scenario development group will be organized 9/1/88.
- 2) Dedicated resources including contract help will be devoted to scenario development.
- 3) The scenario will be tested using the CE simulator and indepth technical review.

FORT CALHOUN STATION
1988 EXERCISE DEFICIENCIES

<u>NRC DEFICIENCY</u>	<u>OPPD IDENTIFIED</u>	<u>ROOT CAUSE</u>
8820-01	X	PROCEDURE
8820-02	X	TRAINING
8820-03	X	EQUIPMENT/DESIGN/HUMAN
8820-04		PROCEDURE
8820-05	X	PROCEDURE
8820-06		TRAINING/HUMAN
8820-07	X	PROCEDURE/SCENARIO
8820-08	X	HUMAN/PROCEDURE
8820-09	X	PROCEDURE
8820-10	X	PROCEDURE
8820-11	SECONDARY	PROCEDURE/TRAINING
8820-12	SECONDARY	PROCEDURE
8820-13	SECONDARY	EQUIPMENT/TRAINING
8820-14	X	PROCEDURE
8820-15	SECONDARY	SCENARIO
STAFFING OF EMERGENCY FACILITIES	X	PROCEDURE/TRAINING
RECOVERY MODE OPERATING PROCEDURE	X	PROCEDURE
DEPOSITION DOSE PROJECTION PROCEDURE	X	PROCEDURE
HARRISON COUNTY ANS INITIATION	X	EQUIPMENT/PROCEDURE

OPPD agrees with the NRC that the Fort Calhoun Station Emergency Preparedness program did not demonstrate improved capabilities from previous performances. The deficiencies here identified either have been corrected in a short term fix or will be improved by actions requiring additional effort.

Our internal critique identified approximately 75 weaknesses and corrective actions have begun on these items as well. One item from the exercise review is that OPPD has made improving the method and procedures for coordinating with the NRC during the recovery operations mode an important improvement task. These deficiencies identified by OPPD during its internal critique will receive attention comparable to the NRC identified deficiencies.

We believe the number of deficiencies resulted because there were some generic weaknesses within the program which we had not fully recognized, and that the very difficult situations designed into the exercise test served its purpose by identifying them. With this basic knowledge we are scrutinizing the total program and plan to strengthen our emergency response effectiveness accordingly.

Therefore, in order to accomplish this improvement while resolving the specific deficiency corrections, OPPD will review the individual components of Emergency Planning to identify generic weaknesses.

First, prior to reassignment of personnel to emergency positions on October 1, 1988, an extensive evaluation of emergency staffing will be conducted to improve the assignment of emergency duties of personnel to more closely reflect their regular functions. The basis is established in the new OPPD organization which was effective July 1, 1988.

The following improvement is a major task commitment. The Emergency Preparedness Training program does not presently conform in structure with all other training programs at Fort Calhoun Station. The District will evaluate Emergency Preparedness Training and upgrade to a performance based program. Completion date is expected to be June 30, 1990.

Next, the Emergency Plan Implementing Procedures (EPIP's) will be evaluated and improved as needed. Our schedule will be submitted in our formal response to the inspection report.

To address equipment, the Emergency Planning Department will evaluate and coordinate a project to identify and place into a surveillance program important personnel protective equipment for responding to radiological emergencies. A schedule will be submitted in our formal response to the inspection report.

In closing, OPPD believes that the present program is able to perform sufficient onsite and offsite emergency functions. It is our commitment to correct the identified problems. We will also evaluate and initiate other improvements as needed to prevent degradation, to demonstrate proficiency and to maintain effective responsibilities of our emergency preparedness program.

Closing Remarks - S. K. Gambhir

In your opening remarks you asked us to address the following four items:

1. Individual items and responses
2. Look at the collective nature of these deficiencies
3. Kind of conclusions we have drawn
4. Reason for repeat deficiencies

In our presentations so far, we have addressed each of the above items except item 4. We have discussed this at length and we believe the reason is the band-aid approach that we were using earlier. The commitments that we have made today are aimed at fixing root cause of the problems. Some of you might know that we are in the process of implementing recommendations from Stone and Webster's appraisal. The objective is to improve our overall performance. The emergency preparedness goes beyond one department and the improved performance in other areas is bound to improve our performance in this area.

Our goal is to achieve a SALP rating of one in the very near future and we will be working hard to achieve this goal.

We will continue to monitor the program through drills and plan to provide you with a status report prior to the next exercise.

I thank you for your time and we will be glad to answer any questions.