

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-254/83-15(DRMS); 50-265/83-13(DRMS)

Docket No. 50-254; 50-265

License No. DPR-29; DPR-30

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

Facility Name: Quad-Cities Nuclear Generating Station, Units 1 and 2

Inspection At: Quad-Cities Site, Cordova, IL

Inspection Conducted: May 10-13, 1983

Inspectors: *W. L. Axelson*
M. Phillips
Team Leader

May 27, 1982

W. L. Axelson
T. Ploski

May 27, 1982

W. L. Axelson
W. Gloersen

May 27, 1982

W. L. Axelson
M. Smith

May 27, 1983

W. L. Axelson
W. Small

May 27, 1983

Approved By: *W. L. Axelson*
W. L. Axelson, Chief
Emergency Preparedness Section

May 27, 1983

Inspection Summary:

Inspection on May 10-13, 1983 (Reports No. 50-254/83-15(DRMS); 50-265/83-13(DRMSP))

Areas Inspected: Routine announced inspection of the Quad-Cities emergency preparedness exercise involving observations by eight NRC representatives of key functions and locations during the exercise. The inspection involved 134 inspector-hours onsite by five NRC inspectors and three consultants.

Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

NRC Observers and Areas Observed

M. Phillips, Control Room, Technical Support Center (TSC), and
Operational Support Center (OSC)
T. Ploski, Emergency Operations Facility (EOF)
W. Gloersen, Inplant Health Physics Teams and OSC
G. Stoetzel, Inplant Health Physics Teams and OSC
G. Lonergan, Radiological Environmental Monitoring Teams
M. Smith, EOF and Joint Public Information Center (JPIC)
D. Schultz, Control Room
W. Snell, TSC

Commonwealth Edison and Areas Observed

N. Kalivianakis, Station Director, TSC
R. Bax, Maintenance Director, TSC
L. Gerner, Assistant Superintendent, Administration and Support
Services, TSC
T. Tamlyn, Operations Director, TSC
J. Tietz, Technical Director, TSC
T. Kovach, Rad/Chem Director, TSC
G. Spedl, Communicator, Control Room
J. Barr, Chief Controller, Control Room, TSC, and EOF
J. Golden, Environmental Controller, EOF
J. Schnitzmeyer, Controller, TSC
R. Carsons, Controller, OSC and Inplant Health Physics Teams
R. Dwyer, Controller, TSC
W. Brenner, Lead Emergency Planner, Scott County

All of the above personnel attended the exit interview on May 11, 1983.

2. Licensee Actions on Previously Identified Items Related to Emergency Preparedness

(Closed) Open Item 254/83-10-02 and 265/83-10-02: Clarify EAL for loss of AC power in procedures and Generating Stations Emergency Plan (GSEP). Section 5.0 of the Quad-Cities Annex of the GSEP states that in the event of equipment installation or other requirements, it may be necessary to quickly change the GSEP Emergency Action Levels (EALs) at Quad-Cities Station. This may be done by first changing the Station Emergency Plan Implementing Procedures (EPIPs) on EALs and then, as soon as practical, by changing Table QCA 5-1 of the annex. The EAL addressed in this open item is number 10 in procedure QEP 200-T1, "Quad-Cities Emergency Action Levels." Revision 9 of this procedure which was issued on April 4, 1983, clarified this EAL so that it clearly indicates that loss of all offsite power to a unit or loss of all diesel generators associated with a unit is an Unusual Event. This item is considered closed.

(Closed) Open Item 254/83-10-03 and 265/83-10-03: Establish a GSEP Activations File and develop a procedure or some means to ensure that all relevant information pertaining to an emergency would be placed in that file. The inspectors determined that the GSEP coordinator at the station maintains a file labeled GSEP activations. Revision 5 of QEP 310-1 issued on March 31, 1983, includes in Section E that completed Nuclear Accident Reporting System (NARS) forms are to be forwarded to the GSEP coordinator upon termination of the event. This is also included in step F.2 of the procedure. This item is considered closed.

3. General

An exercise of the licensee's GSEP and the Quad-Cities Annex was conducted at the Quad-Cities Station on May 11, 1983, testing the integrated response of the licensee, State, and local organizations to a simulated emergency. The exercise tested the licensee's and local agencies' capability to respond to a hypothetical accident scenario resulting in a major release. Attachment 1 describes the scenario. The exercise was integrated with a test of the Clinton County (Iowa), Scott County (Iowa), Rock Island County (Illinois), and Whiteside County (Illinois) emergency plans. This was a small scale exercise for the State of Illinois and a full scale exercise for the State of Iowa.

4. General Observations

a. Procedures

This exercise was conducted in accordance with 10 CFR Part 50, Appendix E requirements using the GSEP, Quad-Cities Annex, and the EPIPs used by the Corporate Command Center (CCC), Emergency Operations Facility (EOF), and the Station.

b. Coordination

The licensee's response was coordinated, orderly, and timely. If the event had been real, the actions taken by the licensee would have been sufficient to permit the State and local authorities to take appropriate actions. This exercise was a significant improvement over last year's exercise.

c. Observers

Licensee observers monitored and critiqued this exercise along with eight NRC observers and approximately 23 Federal Emergency Management Agency (FEMA) observers. FEMA observations on the responses of the State and local governments will be provided in a separate report.

d. Critique

The licensee held a critique immediately following the exercise on May 11, 1983. The NRC critique was held at the Visitors Center following the licensee's critique. In addition, a public critique

was held on May 13, 1983, to present both the onsite and offsite findings by the NRC and FEMA representatives, respectively. During this critique, FEMA representatives stated that there were no significant deficiencies in the performance of the offsite agencies. The NRC and the licensee identified the weaknesses in their respective critiques as discussed in the exit interview.

5. Specific Observations

a. Control Room

The operators responded well to cues. They were aggressive in proposing solutions to scenario plant malfunctions. The exercise scenario tested the operators' ability to correct plant malfunctions, and provided a good technical test of operations personnel, who performed well. Although no permanent log of events, decisions, or actions taken was maintained in the Control Room, the TSC maintained a record of all requested operator actions and action completions were also logged. All initial offsite notifications were conducted in a timely manner. After being notified of the simulated injury, the Shift Engineer contacted the ambulance service, security force, and radiation chemistry staff within three minutes. A dedicated communications link between the control room and TSC was maintained at all times. Proper emergency procedures were utilized during the exercise beginning about forty-five minutes after the Unit 1 reactor scrammed. Procedures were not used to place the plant in a stable condition in the early phases of the exercise. Public Address announcements were never made during the exercise to keep people in the plant informed of changes to the emergency classification and plant status. As a result, some operators and inplant teams were not aware of the current emergency classification. Some Control Room Operators failed to wear self-reading dosimeters, and personnel dosimeters which were worn were not checked during the exercise. Although an Area Radiation Monitor (ARM) is available in the control room, no fixed or portable air particulate sampling was performed even though an airborne release in the Turbine Building was occurring. The control room ventilation system does not contain such monitoring; and, therefore, when a potential airborne condition could exist in the control room, habitability monitoring should be conducted. As a result of the leak outside containment, a site assembly and Alert were both declared at 0850. This decision was based on the potential release of material outside containment, and was a good decision.

There is a conflict between the GSEP organization and Paragraph C.31 of Administrative Procedure QAP 1300-2, especially regarding plant operations. This administrative procedure, which was last revised in 1980, states that the Shift Engineer (SE) is in complete control of all activities and operations in the control room during any transient which could lead to failure of fuel rods. The licensee's emergency organization places the Station Director in control of all activities. Although the SE is the Acting Station Director prior to arrival of the designated Station Director, during this exercise the

first message was transmitted to the designated Station Director, and therefore, the Shift Engineer never acted in this capacity. The administrative procedure should be revised to be in conformance with the GSEP organization.

b. Technical Support Center (TSC)

Activation of the TSC was orderly and timely. Command and control functions performed at the TSC were good. Administrative support and security in the TSC were good. A shift turnover was prepared and access routes to the site were determined. Site accountability was completed within 27 minutes of sounding of the assembly siren. At that time six persons, all controllers, had not yet been accounted for. In future exercises, controllers should not be considered in determining whether accountability has been completed. TSC personnel responded well to cues regarding mechanical, operational, and technical problems posed as part of the exercise. The TSC was continuously monitored for radiological habitability using a Particulate, Iodine, and Noble Gas (PING) detector and an ARM. Communications between the TSC and other emergency response facilities were handled adequately. Evacuation of nonessential personnel was conducted upon declaration of a Site Area Emergency, and had been completed by the time the EOF requested the status of site assembly. Although briefings were conducted regularly, the briefing technique could be improved by having each director give a status report rather than having the Station Director give all briefings. In this manner, the Station Director would be assured that he was aware of all activities taking place. The reactor system status board was updated in a timely manner and utilized to monitor trends of various parameters.

Forecasting was performed to determine the time at which the core would be uncovered, and the time when low pressure cooling systems would be able to restore level, but the time required to perform this activity could have been reduced if graph paper were available in the TSC. However, this information was not factored into decisions regarding what actions should be undertaken to speed up the pressure reduction and decrease the amount of time the core would be uncovered, e.g., if drawing a vacuum on the unit 1 condenser would take three hours, and low pressure cooling would have already initiated at that point, then that particular action would have been a waste of time.

Initial transmissions of release rate information to the EOF resulted in some confusion due to the units involved. This problem was quickly corrected after some discussions with EOF personnel. Plant instrumentation measures uCi/cc (concentration), where the computer program for dose assessment requests release input in uCi/sec (rate). This problem could easily be resolved by requesting both the release concentration and the flow rate in the computer program. Both of these quantities are measured at the facility, and the program could then convert the measured quantities into a release rate.

The operation of the TSC was a significant improvement over last year's exercise. The scenario was complicated, and contained sufficient technical data so that each Station Group Director was required to demonstrate his responsibilities.

c. Operational Support Center (OSC)

The OSC is the assembly area for the health physics and maintenance emergency teams, and is located in the TSC building in an adjacent room. This facility was activated in a timely manner. Radiation monitoring for the OSC is identical to that used in the TSC, since they share a common air space. Communications between the OSC Supervisor and the Maintenance Director in the TSC were handled well. The Rad/Chem Director and Health Physics Foreman worked well together and provided excellent briefings to teams prior to their departure concerning plant conditions, types of samples to take, and actions to take to minimize exposure. Past exposures of team members were reviewed for available exposure prior to sending team members into the plant. Health Physics teams and personnel were aware of their dose limits; however, personnel exposure records were not kept on the prepared log sheets that were located in the OSC locker. Instead, these records were maintained in the TSC on notebook paper. Although a status board was available in the OSC, it was never used for information such as plant status, radiation levels in plant, emergency team locations, or emergency class.

d. Emergency Operations Facility (EOF)

The permanent EOF, which is located near Morrison, Illinois, was activated in accordance with the GSEP in a timely manner. Security procedures were good, including badging and posting of guards at the entrance to the EOF. Command and control functions at the EOF were good. Briefings were held on a regular basis. Protective action recommendations and emergency classifications were discussed with Iowa and Illinois representatives and concurrence was obtained prior to their implementation. Offsite communications were handled effectively; however, the coordination of licensee field teams with State field teams was not evident. This could possibly be due to the communication problems discussed below. All emergency managers followed their procedures and performed well. Dose assessment calculations were performed rapidly and protective action recommendations were revised accordingly. The interface between the Recovery Manager and the Environmental Emergency Coordinator was good. Habitability monitoring of the EOF was begun upon activation in accordance with the procedures. Notifications were performed in a timely manner.

The forecasting of reactor vessel level and pressure was not implemented at the EOF until after it became apparent that the TSC had this information, and as a result, the EOF relied on the TSC's estimates for time of core uncover and startup of the low pressure emergency core cooling systems. Eventually one radwaste staff

member was tasked to graph this data, and graphs were later taped to the wall near the status boards.

Some confusion existed regarding the currency of the information plotted on the status boards. Proper reactor parameters, chimney monitors, and effluent data were plotted, as were current meteorological data and equipment status; however, the plotter only updated the data that changed and never plotted the status of protective action recommendations. In the future, it is suggested that the status board be divided into segments for reactor data, stack monitor and ARM data, meteorological data, and Emergency Action Level status.

e. Corporate Command Center (CCC)

Communications between the CCC, TSC, and EOF were adequate. Initial command and control during the exercise was handled well, as was the transfer of control between the EOF and CCC on the occasion when it occurred.

f. Joint Public Information Center (JPIC)

The JPIC was established at a garage adjacent to the EOF. This facility had no ventilation, no air conditioning, no heat, and no windows. The center is very poor as a location to brief the press. Even though a small number of press were present, the space was cramped. Telephones were available, but some were out of service. Repairs were being performed during the exercise. Press briefings were conducted approximately every 1 1/2 hours. No diagrams were available in the JPIC until the Emergency News Center Director drew a large diagram on a status board. This improved the explanations and the understanding of the press. The Emergency News Center Director did a good job in providing press briefings, and alleviating the concerns of the Morrison Police Commissioner's representative that showed up at the EOF as it was being activated. There is no regulatory requirement to establish and maintain a JPIC; however, both the State of Illinois and FEMA expect a well functioning JPIC in order to properly keep the media informed of the emergency.

g. Inplant Health Physics Teams

The inplant health physics teams were dispatched from the OSC. The chemistry and HP technicians were competent in their duties (surveying, exposure control, and sampling). For example, real contamination was found on the shoes of the injured person. This was removed prior to placing the victim in the ambulance. Proper respiratory and protective clothing were identified, although the aggressive use of fresh air pacs would have probably resulted in coming very close to running out of the pacs. Adherence to procedures was obvious. All technicians demonstrated a thorough knowledge of emergency duties and procedures. The teams demon-

strated adequate exposure controls; however, due to misinformation provided by the controller, sample handling of the 1300 reactor coolant sample was in error. The team had been told that radiation readings from the sample were normal, although the simulated activity of this sample was more than 100 times normal.

In most cases proper instrumentation was used, and attention was paid to operability checks; however, when the onsite survey team was dispatched to determine if any part of the release could be at ground level, they did not take an instrument capable of making open and closed window measurements. Had a "cutie pie" or similar instrument been used by taking open and closed window readings, the team could have immediately determined if a ground level plume were present. In addition, the team did not use a radio to report results to the OSC. This would have quickened the reporting of the results had the proper instrument been used.

Although good survey techniques were observed, the teams did not document their survey results on any forms. Survey results were given orally, and a note made of the reading at a particular location, but plant radiation conditions were never logged on survey forms. This problem was also identified during the May 1981 exercise.

h. Radiological Environmental Monitoring Teams

The environmental monitoring teams were assembled in a timely manner and dispatched. Team members functionally checked all instrumentation prior to departure. During this check, one instrument was found out of calibration and replaced before leaving the site. All team members were provided appropriate personnel monitoring devices; however, team members did not monitor their exposure during the exercise nor did they report their exposure to the EOF. Team members were proficient in the use of equipment and instrumentation. All team members were knowledgeable of the general location of monitoring points and were able to locate the sampling points quickly. Both teams were proficient in the collection and handling of air samples, but were unable to measure the radioiodine concentration in the field. Field teams followed good sampling and labeling techniques; however, one team was not familiar with the sampling procedures described in procedure EG-11. This team mixed soil and vegetation samples in the same container. Both teams demonstrated an ability to conduct and adequately explain the use of portable instrumentation to monitor the plume and ground contamination.

Film badges and dosimeters placed in the field were not provided with protection from weather conditions, e.g., they were not placed in waterproof plastic bags. This could result in complete damage of the film if it should rain.

The field team vehicles were readily accessible. Both vehicles used in this exercise appeared to be adequate for the terrain and weather conditions of the exercise; however, in adverse weather conditions the ability of the vehicles used (two wheel drive pickup trucks with automatic shift) should be questioned since many dirt roads were traversed. The field team vehicles were poor. The transmission failed on the vehicle used by Team number 1 at the end of the exercise and a vacuum line had to be repaired in the field. Also, under adverse weather conditions provisions should be made to protect emergency equipment and samples in the open back of the pickup trucks used.

Both teams were provided with hand held radios. The car mounted antenna brought from Dresden did not have an appropriate connector for the Quad-Cities radios and could not be used. These hand held radios were of little value once the teams were on the west side of the river. Although team members were capable of operating the radios, the radios were ineffective in communicating between the teams and the Environs Director at the EOF. The failure of the radios to transmit between the EOF and the teams severely limited the utilization of the teams during the exercise, and is best illustrated by a comment from one of the team members who stated "We are blind out here." That being the case, the direction of the teams and flow of information between the teams and the EOF suffered severely. The backup system for communications between the teams and the EOF consisted of a call-in procedure using a pay phone; however, this system was also ineffective because on most occasions the teams encountered a busy signal when trying to contact the EOF. The communications system for field team use needs to be improved to allow effective communications between the teams and the EOF. This may be accomplished by increasing the range of the radios and providing a dedicated phone number at the EOF where team members can call in. Both of these need to be accomplished if these teams are to be effectively used.

6. Exit Interview

The inspectors held an exit interview at the conclusion of the inspection with representatives denoted in Paragraph 1. The licensee agreed to address the inspectors' concerns.

Attachment: Exercise Scenario Outline

QUAD CITIES EXERCISE
MAY, 1983
SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
Initial Situation (0750 - 0800)	1	0750	Control	All	- Ground Rules (pre-published)	- Participants read Ground Rules
	2	0755	Control	C.R.	- Plant status, parameters on both units normal - Met Data: Wind Speed = 5.2 m/sec Wind Direction = 90° $\Delta T = -1.0^{\circ}$ C/100 meters	C.R. - Continue Normal Operations
Unusual Event (0800-	3	0800 0700	Control	CCC Dir	- Generic valve problem Message Issued	CCC Dir: - Pass Information to QC Station. C.R. - Declare Unusual Event. Condition 13.(1) QC Annex. - Notify: SPSD: _____ NRC: _____ - Activate: TSC as needed. - Begin Shutdown Procedure CCC Dir: - Activate CCC (If deemed necessary) - Notify: Illinois & Iowa via NARS.
	CI A-1	0800-0830	C.I.	C.R.	- 50 MWe/hr shutdown rate should be specified to match plant status data	Controller Note: - Provide information if needed: _____
	4	0803	Control	Shift Eng	- Plant Status, parameters on both units normal	All: - Continue activities.
	5	0810	Control	C.R.	- Plant Status on both units normal	All: - Continue operations: _____
	3A	0810	Contingency	CCC Dir	- (Issue only if station has not been notified of Message #3) - Inform Q.C. Station of contents of Control Message #3	ISSUED: _____ NOT ISSUED: _____
	6	0815	Control	C.R.	- During rounds a leak is heard on U-1 MSIV Room. Source of leak unknown.	CR/TSC (If activated) - Investigate leak
	7	0820	Control	C.R.	- Plant Status: Normal (shutting down both units per tech specs)	CR/TSC: - Continue Previous actions.

QUAD CITIES EXERCISE
MAY, 1983
SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	8	0830	Control	C.R.	- Plant Status: all parameters normal (shut down continuing) - Met Data: Wind Speed = 5.2 m/sec Wind Direction = 90° $\Delta T = -1.0^{\circ}\text{C}/100 \text{ meters}$	ALL: - Continue Previous actions.
	38	0830	Contingency	C.R.	- Contingency Message, Declare Unusual Event (EAL 13-1) - Send attached NARS Form (Issue only if Unusual Event has not been declared)	ISSUED: _____ NOT ISSUED: _____
	C.I. A-2	0830-0915	C.I.		- Person Injured	Controller's Note: - Ambulance and Hospital will participate.
	9	0840	Control	C.R.	- Plant Status: All parameters normal (Shutdown continuing)	All: - Continue shutdown
	10	0845	Control	C.R.	- Plant Status: U-1 Reactor Scram - (A group 1 isolation on steamline high temp caused the Scram.)	CR/TSC - Determine cause of Scram & Isolation TSC. - Request Control Rod Pattern
	11	0845	Control	C.R.	- Control Rod pattern issued. 3 Rods @ 02 all others @ 00.	CR/TSC - Assess situation
	12	0845	<i>Not Issued May 13 contains info.</i>		- Acoustic monitor Alarm on 3A relief valve.	CR/TSC - Attempt to manually open relief valves
	C.I. A-3	0845-0850	C.I.	C.R.	- 5 Relief valves on U-1 failed to open when manually tried by operator	Controller/TSC: - Provide information when operator tries to open valves
	13	0846	Control	C.R.	- Plant Status: Rx pressure 1090 psi Rx level +55 Drywell pressure 1.3 psi Reactor scram has occurred Reactor Feed pumps have tripped @ 48"	CR/TSC: - Evaluate situation
Unusual Event (cont'd)	14	0847	Control	C.R.	- Plant Status U-1 Rx Pressure 1110 psi Rx w level +55" Drywell 1.4 psi	CR/TSC: - Evaluate situation
	15	0850	Control	C.R.	- Plant Status Rx Pressure 1135 psi Rx Level +54" Drywell pressure 1.4 psi	CR/TSC: - Evaluate situation
	16	0853	Control	C.R.	- Plant Status: U-1 Rx pressure 1090 psi Rx W level + 54" Drywell pressure 1.5 psi	CR/TSC: - Evaluate situation - Determine leakage into Drywell

QUAD CITIES EXERCISE
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SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
Alert (0900-1000)	17	0900	Control		- Outboard recirc. pump seal pressure drops to 50 psi measured leak rate from seal is 75 gpm.	CR: - Evaluate situation - Declare Alert - Activate TSC (if not previously accomp.)
	18	0907	Control	C.R.	- Plant Status: Rx Pressure 1115 psi Rx W Level +53" Drywell pressure 1.5 psi Drywell leakage 75 gpm Met Data: Wind Speed = 5.2 m/sec Wind Direction = 90° $\Delta T = -1.0^{\circ}$ C/100 meters	CR: - Evaluate situation - Update TSC. TSC: - Evaluate situation - Update CCC
	19	0910	Control	C.R.	- Plant Status: Rx Pressure 1120 psi Rx W Level +53" Drywell pressure 1.5 psi Drywell leakage 75 gpm	CR: - Evaluate situation - Update TSC. TSC: - Evaluate situation - Update CCC
	20	0920	Control	C.R.	- Plant Status: Rx Pressure 1090 psi Rx W Level +52" Drywell pressure 1.6 psi	CR: - Evaluate situation - Update TSC. TSC: - Evaluate situation - Update CCC.
	17A	0930	Contin- gency	C.R./CCC	- Contingency Message Declare Alert (EAL 14-1) - Send attached NARS Form. NOTE: Issue only if Alert has not been declared by 0930.	- ISSUED - NOT ISSUED
	21	0933	Control	C.R.	- Plant Status: Rx Pressure 1110 psi Rx W Level +52" Drywell Pressure 1.6 psi Met Data: Wind Speed = 5.2 m/sec Wind Direction = 90° $\Delta T = -1.0^{\circ}$ C/100 meters	CR: - Evaluate situation. - Update TSC TSC: - Evaluate situation. - Update CCC. CCC: - Evaluate situation. - Update States as necessary
	22	0940	Control	C.R.	- Plant Status: Rx Pressure 1115 psi Rx W Level +51" Drywell pressure 1.6 psi	CR: - Evaluate situation. - Update TSC TSC: - Evaluate situation. - Update CCC. CCC: - Evaluate situation. - Update states as necessary.

QUAD CITIES EXERCISE
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PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	23	0954	Control	C.R.	- Plant Status: Rx Pressure 1115 psi Rx W Level +51" Drywell pressure 1.6 psi	CR: - Evaluate situation. - Update TSC. TSC: - Evaluate situation. - Update CCC. CCC: - Evaluate situation. - Update states as necessary.
	24	0957	Control	C.R.	- Operator reports MSIV Room interlock doors have been blown out	CR: - Evaluate situation. - Update TSC. TSC: - Evaluate situation. - Update CCC. CCC: - Evaluate situation. - Update States as necessary.
	C.I. A-4	0957	C.I.	Maint. Team H.P. teams	- Secondary containment Interlock doors blow out.	Controller: - Describe situation.
Site Emergency (1000-1200)	25	1000	Control	C.R.	- Plant Status: Rx Pressure 1115 psi Rx W Level +46" Drywell pressure 1.6 psi Met Data: Wind Speed = 5.2 m/sec Wind Direction = 90° $\Delta T = -1.0^{\circ}$ C/100 meters	CR: - Consult with TSC to recommend that 2nd Fission product barrier has been breached. TSC: - Consult with CCC to Declare Site Emergency. CCC: - Declare Site Emergency - Activate EOF - Notify States
	26	1003	Control	C.R.	- Plant Status: Rx Pressure 1115 psi Rx W Level +40" Drywell pressure 1.6 psi	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as needed.
	27	1005	Control	C.R.	- Plant Status: Rx Pressure 1113 psi Rx W Level +36" Drywell pressure 1.6 psi	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as needed.

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PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	28	1007	Control	C.R.	- Plant Status: Rx Pressure 1112 psi Rx W Level +32" Drywell pressure 1.6 psi	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as needed.
Site Emergency (cont'd)	29	1011	Control	C.R.	- Plant Status: Rx Pressure 1110 psi Rx W Level +25" Drywell pressure 1.6 psi	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Plot trends of Rx Pressure and Water Level EOF: - Evaluate situation - Update States as necessary
	C.I. A-5	1011-1030	C.I.	C.R.	- HPCI started pump discharge pressure is 100 psi	Controller Note: HPCI will not increase Reactor water level, but will help lower pressure.
	30	1015	Control	C.R.	- Plant Status: Rx Pressure 1105 psi Rx W Level +18" Drywell pressure 1.6 psi	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as necessary
	31	1018	Control	C.R.	- Plant Status: Rx Pressure 1097 psi Rx W Level +13" Drywell pressure 1.6 psi	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as necessary
	32	1022	Control	C.R.	- Plant Status: Rx Pressure 1085 psi Rx W Level +7" Drywell pressure 1.6 psi	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as necessary

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PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	33	1025	Control	C.R.	- Plant Status: Rx Pressure 1073 psi Rx W Level +2" Drywell pressure 1.6 psi	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as necessary
	25A	1030	Contingency	C.R.	- Take action to use SBLC for demin water injection & valve in CRD Return line	Controller's Note: Use only if described action has not been previously taken.
	C.I. B-1	1030	C.I.	C.R.	CRD return line valved in and SBLC pumps injecting demin water	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as necessary
	25B	1030	Contingency	TSC/EOF	- Contingency Message Declare Site Emergency (EAL - 16 B 2 & 3)	ISSUED _____ NOT ISSUED _____
	34	1031	Control	C.R.	- Plant Status: Rx Pressure 1045 psi Rx W Level - 7" Narrow Range Yarway Met Data: Wind Speed = 5.2 m/sec Wind Direction = 90° $\Delta T = -1.0^{\circ} \text{ C/100 meters}$	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as necessary
	35	1040	Control	C.R.	- Plant Status: Rx Pressure 1018 psi Rx W Level -21" Drywell pressure 1.8 psi	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as necessary
	36	1047	Control	C.R.	- Plant Status: Rx Pressure 985 psi Rx W Level -30" Drywell pressure 1.6 psi	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as necessary

QUAD CITIES EXERCISE
MAY, 1983
SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	37	1055	Control	C.R.	- Plant Status: Rx Pressure 938 psi Rx W Level -38" Drywell pressure 1.6 psi	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as necessary
	38	1100	Control	C.R.	- Plant Status: Rx Pressure 906 psi Rx W Level -45" Drywell pressure 1.6 psi	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as necessary
	39	1110	Control	C.R.	- Plant Status: Rx Pressure 845 psi Rx W Level -57" Drywell pressure 1.6 psi	CR: - Evaluate Situation - Update TSC TSC: - Evaluate Situation - Update EOF EOF: - Evaluate Situation - Update States as necessary
	39A	1110	Contingency	C.R.	- Start ECCS Pumps (Issue only if pumps have not been started)	
	40	1115	Control	C.R.	- HPCI turbine tripped on overspeed	CR: - Try to start HPCI - Evaluate situation - Update TSC TSC: - Evaluate situation - Update EOF EOF: - Evaluate situation - Update States as necessary
	C.I. B-2	1115- 1250	C.I.	C.R.	- Attempts to restart HPCI result in overspeed trips.	CR/TSC/EOF: - Evaluate situation - Send Maint Team to repair HPCI

QUAD CITIES EXERCISE
MAY, 1983
SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	41	1123	Control	C.R.	- Plant Status: Rx Pressure 790 psi Rx W Level -72" Field Zone Yarway Met Data: Wind Speed = 5.2 m/sec Wind Direction = 90° $\Delta T = -1.0^{\circ}$ C/100 meters	CR: - Evaluate situation - Update TSC TSC: - Evaluate situation - Continue graphical analysis of Rx level and Rx pressure U.S. time EOF: - Evaluate situation - Update States as necessary.
	42	1130	Control	C.R.	- Plant Status: Rx Pressure 771 psi Rx W Level -82" No significant change on other plant parameters	CR: - Evaluate situation - Update TSC TSC: - Evaluate situation - Continue graphical analysis of Rx level and Rx pressure U.S. Time. - Update EOF EOF: - Evaluate situation - Update States as necessary
<u>CONTROLLERS NOTE:</u>						
Participants may decide to declare General Emergency based on their graphical analysis of the RxW level and Rx pressure. Discussion should be allowed to proceed freely. EOF controller and CCC Controller should stop transmission of General Emergency NARS Form if transmission occurs before one and one half hours have been spent in site Emergency. Thus, the message may be transmitted as early as 1130 (not likely). State and local governments require the 1-1/2 hours in Site Emergency to be evaluated on the full range of their activities. Controllers should allow participants to proceed if Site Emergency has been in effect for 1-1/2 hours or at 1200 whichever occurs first.						
	43	1140	Control	C.R.	- Plant Status: Rx Pressure 755 psi Rx W Level -92" Drywell pressure 1.6 psi	CR: - Evaluate situation - Update TSC TSC: - Evaluate situation - Continue graphical analysis of Rx level and Rx pressure U.S. Time. - Update EOF EOF: - Evaluate situation - Update States as necessary
	C.I. B-3	1145	C.I.	Maint. Team	- (Issue when Maintenance team is investigating HPCI) Overspeed trip mechanism will have to be disassembled to determine the exact problem.	

QUAD CITIES EXERCISE
MAY, 1983
SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	44	1147	Control	C.R.	- Plant Status: Rx Pressure 740 psi Rx W Level -99" Drywell pressure 1.6 psi	CR: - Evaluate situation - Update TSC TSC: - Evaluate situation - Update EOF EOF: - Evaluate situation - Update States as necessary
	45	1155	Control	C.R.	- Plant Status: Rx Pressure 712 psi Rx W Level -108" Drywell pressure 1.6 psi	CR: - Evaluate situation - Update TSC TSC: - Evaluate situation - Update EOF EOF: - Evaluate situation - Update States as necessary
General Emergency	46	1200	Control	Maint.	- HPIC Repair problem discovered, parts needed.	Maint. Team: - Notify TSC - Request Parts. TSC: - Stores Director locates part and sends part to job site. - Maintenance Director ensures all needed tools are on job site. - Updates EOF. EOF: - Evaluate situation. - Update States as necessary.
	47	1205	Control	C.R.	- Plant Status: Rx Pressure 700 psi Rx W Level -117"	CR: - Evaluate situation. - Update TSC. TSC: - Evaluate situation. - Consult with EOF to declare General Emergency. EOF: - Evaluate situation. - Declare General Emergency. - Transmit MARS form to States (See Controllers Note 1130.)
	48	1215	Control	C.R.	- Plant Status: Rx Pressure 670 psi Rx W Level -128"	CR: - Evaluate situation. - Update TSC TSC: - Evaluate situation. - Update EOF EOF: - Evaluate situation. - Update States as necessary.

QUAD CITIES EXERCISE
MAY, 1983
SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	49	1215	Control	Stores Dir TSC	- Part for HPCI has been located and is being sent to repair crew.	TSC: - Coordinate among directors. - Update EOF.
	50	1227	Control	C.R.	- Plant Status: Rx Pressure 629 psi Rx W Level -141"	CR: - Evaluate situation - Update TSC TSC: - Evaluate situation - Update EOF EOF: - Evaluate situation - Update States as necessary
	51	1229	Control	C.R.	- Plant Status: Rx Pressure 623 psi Rx W Level -143" Arm High Rad Alarm	CR: - Evaluate situation - Update TSC TSC: - Evaluate situation - Update EOF EOF: - Evaluate situation - Update States as necessary
	52	1230	Control	Maint.	- HPCI Repairs Complete	
	53	1230	Control	CRC	- Plant Status: Chimney Monitor 9.0 E-4uCi/cc	CR: - Evaluate situation - Update TSC TSC: - Evaluate situation - Update EOF EOF: - Evaluate situation - Update States as necessary
	46A	1230	Contin- gency	TSC EOF	- Declare General Emergency - Send Attached NARS Form (Issue only if the General Emergency has not been declared.)	ISSUED _____ NOT ISSUED _____
	CI B-4	1230 1330	C.I.	C.R. TSC EOF	- If plant personnel shut off turbine building ventilation, show increase of radiation migrating to service building.	Controllers Note: Notify TSC Controller, Chief Controller H.P. Controller, C.R. Controller.
	CI B-5	1230 1445	C.I.	HP	- Dose Rates in Plant Map and Chart	

QUAD CITIES EXERCISE

MAY, 1983

SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	54	1231	Control	C.R.	- Plant Status: Chimney Monitor 5.8E-2 uCi/cc	CR: - Evaluate situation - Identify release in progress. - Update TSC TSC: - Evaluate situation - Protect Personnel in Plant. - Update EOF EOF: - Evaluate situation. - Update States. Revise Protective Action Recommendation as needed.
	55	1232	Control	C.R.	- Plant Status SPING Main Chimney 1.1 E-1 uCi/cc	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation. - Keep States informed of change to Release Rates and protective actions.
	56	1233	Control	C.R.	- Plant Status SPING Main Chimney 1.6 E-1 uCi/cc	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation. - Keep States informed of change to Release Rates and protective actions.
	57	1235	Control	C.R.	- Plant Status Rx Pressure 605 psi Rx W Level -148" (Release Rate 34 Ci/sec) Met Data: Wind Speed = 5.2 m/sec Wind Direction = 90° $\Delta T = -1.0^\circ \text{ C/100 meters}$	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation. - Keep States informed of change to Release Rates and protective actions.

QUAD CITIES EXERCISE
MAY, 1983
SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	58	1240	Control	C.R.	- Plant Status Rx Pressure 585 psi Rx W Level -153" (Release Rate 70 Ci/sec)	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation. - Keep States informed of change to Release Rates and protective actions.
	59	1245	Control	C.R.	- Plant Status Rx Pressure 570 psi Rx W Level -158" (Release Rate 106 Ci/sec) Met Data: Wind Speed = 5.2 m/sec Wind Direction = 90° $\Delta T = -1.0^\circ \text{ C/100 meters}$	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation. - Keep States informed of change to Release Rates and protective actions.
	60	1250	Control	C.R.	- Plant Status Rx Pressure 540 psi Rx W Level -163" Sping Main Chimney 1.0E° uCi/cc	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation. - Keep States informed of change to Release Rates and protective actions.
	61	1300	Control	C.R.	- Plant Status Rx Pressure 510 psi Rx W Level -167" (Release Rate 210 Ci/sec) Met Data: Wind Speed = 5.2 m/sec Wind Direction = 90° $\Delta T = -1.0^\circ \text{ C/100 meters}$	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation. - Keep States informed of change to Release Rates and protective actions.

Controllers Note: Iowa and Illinois apply the Federal Protective Action Guides with slightly different emphasis. Iowa has established evacuation to 5 miles in the affected sectors as an objective of this exercise. The information portrayed to participants shows an increasing release rate and an expanding 1REM isodose line. There is an upper limit to the release rate since the projections of Rx pressure vs. time will show that the core should be covered shortly after 1330. If the changing release rates are communicated to Iowa on a frequent basis, the objectives will be met. Contact the Chief Controller if this information is blocked in some manner.

QUAD CITIES EXERCISE

MAY, 1983

SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	62	1308	Control	C.R.	- Plant Status Rx Pressure 460 psi Rx W Level -170" (Release Rate 270 Ci/sec)	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation. - Keep States informed of change to Release Rates and protective actions.
	63	1316	Control	C.R.	- Plant Status Rx Pressure 410 psi Rx W Level -172"	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation. - Keep States informed of change to Release Rates and protective actions.
	64	1325	Control	C.R.	- Plant Status Rx Pressure 350 psi Rx W Level -175" (Release Rate 390 ci/sec)	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation. - Keep States informed of change to Release Rates and protective actions.
	65	1328	Control	C.R.	- Plant Status Rx Pressure 324 psi Rx W Level -170" Sping Main Chimney 2.9EOuCi/cc Core Spray Flow A 4100 gpm Core Spray Flow B 4100 gpm RHR Flow A 0 gpm RHR Flow B 12,000 gpm	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation. - Keep States informed of change to Release Rates and protective actions.
	66	1328: 30	Control	C.R.	- Plant Status Rx Pressure 317 psi Rx W Level -125" No change other parameters	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation.

QUAD CITIES EXERCISE
MAY, 1983
SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	67	1329	Control	C.R.	- Plant Status Rx Pressure 311 psi Rx W Level -100" No change other parameters	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation.
	68	1330	Control	C.R.	- Plant Status Rx Pressure 304 psi Rx W Level -50" No change other parameters	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate Situation.
	69	1331	Control	C.R.	- Plant Status Rx Pressure 297 psi Rx W Level -0" No change other parameters	CR: - Evaluate Situation. - Discuss securing ECCS injection with TSC. TSC: - Evaluate status of ECCS injection. - Update EOF EOF: - Evaluate situation.
	70	1332	Control	C.R.	- Plant Status Rx Pressure 290 psi Rx W Level + 50" (Release Rate 400 ci/sec)	CR: - Evaluate Situation. - Discuss securing ECCS injection with TSC. TSC: - Evaluate status of ECCS injection. - Update EOF EOF: - Evaluate situation.
	71	1333	Control	C.R.	- Plant Status Rx Pressure 283 psi Rx W Level + 100" (Release Rate 400 ci/sec)	CR: - Evaluate Situation. - Discuss securing ECCS injection with TSC. TSC: - Evaluate status of ECCS injection. - Update EOF EOF: - Evaluate situation.

QUAD CITIES EXERCISE
MAY, 1983
SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	65A	1340	Contingency	C.R.	- Contingency Message Secure ECCS injection	ISSUED _____ NOT ISSUED _____
	72	1345	Control	C.R.	- Plant Status: Rx Pressure 230 psi Rx W Level + 120" (Release Rate 400 ci/sec)	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate situation. - Update states as needed.
	73	1353	Control	C.R.	- Plant Status: Rx Pressure 195 psi Rx W Level + 119" (Release Rate 400 ci/sec)	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate situation. - Update states as needed.
	74	1402	Control	C.R.	- Plant Status: Rx Pressure 150 psi Rx W Level + 117" Met Data: Wind Speed = 5.2 m/sec Wind Direction = 90° T = -1.0°C/100 meters (Release Rate 399 ci/sec)	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate situation. - Update states as needed.
	73A	1410	Contingency	C.R.	- Contingency Message Shutdown cooling should be activated.	ISSUED _____ NOT ISSUED _____
	75	1415	Control	C.R.	- Plant Status: Rx Pressure 90 psi Rx W Level + 110" (Release Rate 374 ci/sec)	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate situation. - Update states as needed.
	76	1422	Control	C.R.	- Plant Status: Rx Pressure 65 psi Rx W Level + 106" (Release Rate 344 ci/sec)	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate situation. - Update states as needed.

QUAD CITIES EXERCISE
MAY, 1983
SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	77	1430	Control	C.R.	- Plant Status: Rx Pressure 40 psi Rx W Level + 102" Met Data: Wind Speed = 5.2 m/sec Wind Direction = 90° Δ T = -1.0°C/100 meters (Release Rate 310 ci/sec)	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate situation. - Update states as needed.
	78	1440	Control	C.R.	- Plant Status: Rx Pressure 15 psi Rx W Level + 102" (Release Rate 270 ci/sec)	CR: - Evaluate Situation. - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Evaluate situation. - Update states as needed.
Controllers Note: A 48 hour time jump has occurred. Message 79 indicates the activities in the plant over the past 48 hours. Message 80 will indicate the status as of 1500 hours 13 May 1983. This time break will be announced in all CECOs, Iowa, and Illinois Command and Control Centers and be confirmed by NARS Message from Illinois.						
	79	1444	Time Lapse	All Areas	- During the last 48 hours following events have taken place: 1) The reactor reached cold shutdown @ 1455 May 11, 1983 and is maintained in this cold condition. 2) Release Rates during Time Lapse. 3) Status of Reactor Repairs. 4) Status of clean-up operations.	All: - Read and Evaluate information. - Formulate Plans for 1500hrs 13 May. EOF: - Update States.
Recovery	80	1500	Control	C.R.	- Repair & Clean up status Release rate 390 cps	CR: - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Consult with states as needed to begin offsite recovery.

QUAD CITIES EXERCISE
MAY, 1983
SCENARIO OUTLINE

PHASE	MSG. NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS	ANTICIPATED RESULTS/COMMENTS
	81	1515	Control	C.R.	- Repair & Clean up status Release rate 385 cps	CR: - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Consult with states as needed to begin offsite recovery.
	82	1530	Control	C.R.	- Repair & Clean up status Release rate 380 cps	CR: - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Consult with states as needed to begin offsite recovery.
	83	1600	Control	C.R.	- Repair & Clean up status Release rate 380 cps	CR: - Update TSC. TSC: - Evaluate Situation. - Update EOF. EOF: - Consult with states as needed to begin offsite recovery.
			Control	All	- End Drill Message	- Controllers will conduct critique in all areas.