

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-254/82-14(DEPOS); 50-265/82-16(DEPOS)

Docket Nos. 50-254; 50-265

Licenses 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: August 23-25, September 3 and 9, 1982

Inspectors: *M. P. Phillips* 9/29/82

*M. J. Smith* 9/29/82

Approved By: *J. L. Axelson for* 9/29/82  
W. L. Axelson, Chief  
Emergency Preparedness Section

*M. Schumacher for* 9/29/82  
C. J. Paperiello, Chief  
Emergency Preparedness and  
Program Support Branch

Inspection Summary

Inspection on August 23-25, September 3 and 9, 1982 (Reports No. 50-254/82-14(DEPOS); 50-265/82-16(DEPOS))

Areas Inspected: Routine, announced inspection of the Quad-Cities Nuclear Station emergency preparedness exercise involving observations by eight NRC representatives of key functions and locations during the exercise; licensee action on previously identified items related to emergency preparedness; and review of interim FEMA findings related to the state of offsite preparedness. The inspection involved 138 inspector-hours onsite by four NRC inspectors and five consultants. The management meeting involved 24 man-hours by eight NRC personnel.

Results: No items of noncompliance or deviations were identified; however, several deficiencies related to the state of offsite preparedness were identified.

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DETAILS

1. Persons Contacted

a. Emergency Preparedness Exercise

NRC Observers and Areas Observed

- N. Chrissotimos, Control Room
- \*C. Paperiello, Emergency Operations Facility (EOF)
- \*M. Phillips, Technical Support Center (TSC)
- \*G. Bethke, TSC
- \*J. Mann, Radiation Environmental Monitoring Team
- \*M. Smith, Joint Public Information Center (JPIC) and EOF
- \*G. Martin, Operational Support Center (OSC) and Inplant/Onsite Health Physics Teams
- \*W. Thomas, OSC and Inplant/Onsite Health Physics Teams

Commonwealth Edison and Areas Observed

- \*B. Stephenson, Recovery Manager, EOF
- \*N. Kalivianakis, Station Director, TSC
- \*J. Golden, Environmental Emergency Coordinator, EOF
- \*R. Flessner, Lead Controller, TSC
- \*W. Brenner, Lead Emergency Planner
- \*J. Barr, Controller, EOF
- \*T. Kovach, Rad/Chem Director, TSC
- \*R. Bax, Maintenance Director, TSC
- \*T. Tamlyn, Operations Director, TSC
- \*G. Tietz, Technical Director, TSC
- \*R. Carsons, Environs Director, EOF (GSEP Coordinator)
  - J. Schnitzmeyer, Controller, Control Room and TSC
  - C. Nellis, Controller, TSC
  - D. Reece, Controller, EOF

\*Denotes those attending the exit interview on August 24, 1982.

b. Enforcement Conference Held on September 9, 1982

NRC Attendees

- J. Keppler, Regional Administrator
- J. Hind, Director, Division of Emergency Preparedness and Operational Support
- C. Paperiello, Chief, Emergency Preparedness and Program Support Branch
- W. Axelson, Chief, Emergency Preparedness Section
- M. Phillips, Emergency Planning Specialist
- W. Schultz, Enforcement Coordinator
- N. Chrissotimos, Senior Resident Inspector
- J. Grobe, Project Inspector

Licensee Attendees

- C. Reed, Vice President
- L. DelGeorge, Director, Nuclear Licensing
- D. Galle, Division Vice President, Nuclear Stations
- G. Wagner, Technical Services Manager
- L. Gerner, Assistant Superintendent (QC), Administration and Support Services
- R. Flessner, Supervisor, Radioecology and Emergency Planning

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

(Closed) Confirmation of Action Letter (CAL) Item 254/82-02-05; 265/82-02-05: QEP 360-3 must clearly indicate that a site evacuation will be conducted for any Site Area or General Emergency unless radiological conditions prohibit. QEP 360-3 (Revision 2) has been revised in Section E.1 to state as follows: An assembly and evacuation of onsite non-essential personnel should be initiated for a Site Area Emergency or General Emergency unless radiological conditions prohibit. This item is considered closed.

(Closed) CAL Item 254/82-02-06; 265/82-02-06: Prepare a procedure for station augmentation such that capabilities defined in Table B-1 of NUREG-0654, Revision 1 can be met. QEP 310-T1 (Revision 5), QEP 310-T3 (Revision 4) and QEP 320-1 (Revision 5) were revised to outline the station augmentation program. These procedures outline the augmentation scheme, identify individuals capable of serving in the emergency positions described in Table B-1 of NUREG-0654, Revision 1, and priorities are developed to facilitate achieving acceptable staff augmentation within 30 minutes. This item is considered closed.

(Closed) CAL Item 254/82-02-07; 265/82-02-07: The Corporate Command Center (CCC) Director's call list must have priorities developed such that a Recovery Manager will be at the nearsite EOF within 60 minutes of determining that the EOF must be activated. On January 27, 1982, a memo from Mr. F. Palmer was sent to all qualified CCC Directors and Recovery Managers and included a Recovery Manager matrix for notification based on the plant where the incident occurred. The goal of the memo and enclosed matrix is to have a Recovery Manager at the nearsite EOF within one hour of notification of a Site Area or General Emergency. The matrix includes at least three names per plant for business hours and four to five names per plant for non-business hours. This item is considered closed.

(Closed) CAL Item 254/82-02-08; 265/82-02-08: Incorporate the revised protective action recommendations table into the GSEP and appropriate station QEPs. Revision 3 of the GSEP and QEP 350-T1 were both issued and include the revised protective action recommendations table. This item is considered closed.

(Closed) CAL Item 254/82-02-10; 265/82-02-10: The appropriate QEP procedures must describe the provisions and time required for notifying personnel outside the protected area but within the owner controlled

area that they should evacuate the area. Section F.4 of QEP 360-3 (Revision 2) states "when a site evacuation is imminent, the Security Director notifies by phone or dispatches a security guard to notify those personnel in buildings outside the protected area (Visitor Center, Warehouses, Wastewater Plant, Sewage Treatment Plant, and Training Building). These personnel should evacuate the site as soon as possible using the prescribed route to the designated relocation center." This item is considered closed.

3. General

An exercise of the licensee's Generating Stations Emergency Plan (GSEP) and the Quad-Cities Annex was conducted at the Quad-Cities Station on August 24, 1982, testing the integrated responses 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 noble gas 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) Plans. This was a small scale exercise with regards to the participation of both the States of Iowa and Illinois.

4. General Observations

a. Procedures

This exercise was conducted in accordance with 10 CFR 50, Appendix E requirements using the GSEP, Quad-Cities Annex and the Emergency Plan Implementing Procedures used by the Emergency Operations Facility (EOF) and 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.

c. Observers

Licensee observers monitored and critiqued this exercise along with eight NRC observers and approximately twenty-four Federal Emergency Management Agency (FEMA) observers. The interim FEMA observations are further discussed in Section 7 of this report.

d. Critique

The licensee held a critique immediately following the exercise on August 24, 1982. The NRC critique was held at the EOF after the licensee's critique. In addition, a public critique was held on August 25, 1982, to present both the onsite and offsite findings by NRC and FEMA representatives respectively. FEMA interim findings are discussed in Section 7 of this report.

5. Areas Requiring Additional Attention

Problems identified by the NRC observers and discussed during the exit interview included: (1) failure to evacuate non-essential personnel after the declaration of a Site Area Emergency; (2) last minute changes, technical inadequacies, and lack of sufficient operational data in the exercise scenario; (3) failure of offsite teams to utilize procedures; and (4) delay in transmission of emergency status to offsite agencies.

6. Specific Observations

a. Control Room (CR)

The operators responded well to cues, and made proper and timely notifications. Information on plant conditions was routinely passed to the TSC in a timely manner. The exercise scenario did not test the operators' ability to correct plant malfunctions, and as a result, control room actions were limited to initial notifications and the providing of plant status update information to the TSC when it was given to control room personnel by the exercise controllers. Operator response actions are tested during the NRC licensing examinations. The limited action of this group of emergency response personnel as a result of the scenario is discussed further in Section 6.i of this report.

b. Technical Support Center (TSC)

Activation and staffing of the TSC was orderly and timely. Command and Control functions performed at the TSC were very good, as was the turnover of Station Director responsibilities. Security in the TSC was excellent. Monitoring of the TSC for radiological habitability was performed in the room housing the ventilation system for the TSC using an Eberline PING-2, which measures airborne radioactivity. This instrument was not activated until five minutes after the simulated release began. Information regarding plant status was quickly transmitted from the Control Room to the TSC, and on most occasions this was done utilizing a speaker phone which allowed all TSC occupants to get the information simultaneously. On few occasions when this system was not used, the Station Director provided a verbal plant status update. The Rad/Chem Director demonstrated excellent ALARA considerations by attempting to obtain ARM readings rather than dispatching personnel to take radiation surveys when personnel did not need to enter the area; however, the TSC did not contain overlay maps for posting ARM readings or survey data, and the ARM readings provided to the TSC were in error due to poor scenario preplanning. Problems involving the scenario are discussed in more detail in Section 5.i of this report. When sample results were transmitted to the TSC, they did not always include the time the sample was collected. On one occasion some minor confusion arose regarding whether the iodine and noble gas results were for the emergency action level recently entered. This confusion was subsequently corrected by the Rad/Chem Director.

Dose assessments at various distances from the site were calculated on the SYFA computer and the Rad/Chem Director applied the results to the Recommended Protective Action Table; however, the initial calculations performed at the TSC were in error, and were not corrected until TSC results were found to be inconsistent with EOF results. The cause of these early erroneous calculations was due to the sloppy use of the program. Scenario data was provided in miles per hour, but the computer prompted the user to input meters per second. The appropriate conversion was not performed by the SYFA user, nor was it caught on review by the Rad/Chem Director. A similar calculational error resulted when the minus sign was left off of a differential temperature measurement transmitted to the EOF. Additional attention should be placed on the units and sign involved in all actions performed during an emergency.

Site assembly was conducted when the Site Area Emergency was declared, and accountability was completed in a timely manner; however, non-essential personnel were not identified, and site evacuation was not conducted for several hours. This item is discussed further in Section 5.h of this report. Communications between TSC personnel and appropriate counterpart individuals in the EOF, Control Room, and OSC was satisfactory. Plant parameters and other pertinent plant information was adequately displayed on a status board such that overall trends in any parameter could be quickly determined.

c. Emergency Operations Facility (EOF)

The temporary EOF, which is located in the visitors center, was activated in accordance with the GSEP and declared fully operable approximately seventy-nine minutes after the Site Area Emergency declaration. The procedure for activation of the EOF was posted in the facility. Command and control functions at the EOF appeared to be adequate. Periodic briefings of the EOF personnel were performed. Security at the EOF was adequate. The interface between the senior managers at the EOF and the TSC was good. Although good coordination with the States of Iowa and Illinois was apparent regarding offsite dose projections, it was not clear that data was being shared between the State teams and the licensee teams (e.g., the licensee sent data to the State, but it did not appear that data from State teams came back to the licensee).

The Environmental/Emergency Coordinator did a good job of calculating potential offsite results based on containment dome monitor readings. However, the potential iodine source term was ignored, despite the fact that the dome monitor reading had increased from 600 R/hr to 65,000 R/hr, which corresponds to 0.2% noble gas and 0.2% of iodines released in containment. An increased reading of this magnitude would require fuel cladding failures and containment failure appeared imminent; however, no iodine calculations were performed. When the NRC observer brought this to the attention of the EOF Controller, a contingency message providing the revised iodine concentrations in the containment

based on the 65,000 R/hr dome monitor reading was given to the Environmental/Emergency Coordinator. When the licensee performed dose calculations using these numbers, the evacuation range became so large that the controller immediately decided that this was an administrative error in the scenario. If iodine concentration is greater than 1 part in 4000, it is the controlling isotope for protective action recommendations, especially with a potential containment failure (rupture) with no iodine removal mechanism likely. A realistic default iodine percentage or known curie content must be used for dose projections when fuel cladding failure has occurred. Cladding failure should be obvious when containment radiation levels approach 65, 000 R/hr.

The EOF staff did an excellent job in recommending evacuation based on trending analysis of containment conditions; however, no assessment was made of public evacuation time necessary to substantially complete an evacuation. Table 6.3-1 of the GSEP states that evacuation is the recommended protective action only if weather conditions permit and an evacuation time analysis confirms it as the preferred choice. At no time did the Environmental/Emergency Coordinator perform the analysis to confirm evacuation as the preferred choice. The method for this analysis is delineated in Procedure ED-24.

At approximately 1105 the Recovery Manager decided that a General Emergency declaration was appropriate; however, due to the time spent filling out the Nuclear Alert Report System (NARS) form and checking it with the TSC, the State was not notified until 1123, and the local governments were not notified directly by the licensee at all. All NARS form notifications took around 20 minutes to complete, although 10 CFR 50, Appendix E, requires the licensee to have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency. Based on the interim FEMA findings discussed in Section 7, notification of Scott and Clinton County in Iowa of changing emergency classifications was not accomplished within 15 minutes of declaration. When the decision was made to downgrade the emergency to a recovery mode, some confusion was apparent regarding how to complete the NARS form, since there is no box for recovery.

d. Joint Press Information Center (JPIC)

The JPIC was maintained in the EOF, but away from the EOF Managers. Security for the JPIC and EOF was implemented prior to the start of the exercise. News information flow was accurate and timely after the EOF was activated. Information was well coordinated between the licensee and both states, although some confusion did arise regarding the use of the terms such as potential releases and no releases. The licensee's technical spokesperson provided adequate briefings during the event; however, some difficulty was encountered in handling the press (Specifically, discussing the pros and cons of nuclear power).

e. 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 staffed in a timely manner after the initial emergency declaration. Radiation monitoring for the OSC is identical to that used in the TSC since they share a common air space. The OSC Supervisor's function as demonstrated during the exercise was not well defined. Although a status board was available, it was not used during the exercise.

Most survey instrumentation and the air samplers were not stored at the OSC, but were obtained from the Rad/Chem office; however, radios were not available for use by teams dispatched from the OSC. All OSC respiratory equipment was stored at the opposite end of the TSC, and none of the equipment had been packaged in accordance with ANSI Z88.2 standards. The OSC emergency kit did not contain the following necessary equipment: dosimeter charger; inventory sheet; recordkeeping or survey forms; Emergency Response Facilities phone number lists; QEPs; and radios.

f. Inplant/Onsite Health Physics Teams

The inplant/onsite health physics teams were aware of the location of protective clothing, potassium iodide (KI), and self contained breathing apparatus. Health physics teams and personnel were aware of their dose limits; however, dose histories were not kept for everyone in the OSC. The Rad/Chem Director provided very good briefings to the teams regarding actions to take to minimize exposures. The High Radiation Sampling System (HRSS) team demonstrated good health physics practices and a good understanding of the sampling procedures. Counting procedures were good as were sampling procedures. Inplant health physics teams did not utilize the QEPs. A Cutie Pie ionization survey instrument was used by the teams to monitor dose rates; however, this instrument was never bagged in plastic to prevent noble gas intrusion into the ionization chamber. Post accident sampling of containment atmosphere and primary coolant utilizing the HRSS system went very well; however, on one occasion, a diluted 60 cc sample vial stuck on the septum or holder and was then removed by hand. In the event of an accident, removal by hand should not be done due to potentially high dose rates. Either a tygon septum, mechanically clamping the vial to the elevator, or a sharper sample needle should solve this problem.

g. Environmental Monitoring Teams

Environmental monitoring teams were assembled in a timely manner and dispatched. Field monitoring teams maintained good radiation exposure control and were aware of how to operate survey instruments. Samples collected were well labeled as was the sampling location; however, there was some confusion as to what was meant by "contamination survey." On some occasions the team took direct survey readings with the pancake probe GM, and on other

occasions the team smeared the ground with filter paper and took survey readings of the smear. In addition, the team never determined whether they were collecting an air sample from the plume as opposed to under the plume by taking beta/gamma and gamma only readings. Although Cutie Pie ionization chamber survey instruments were used, they were not bagged to prevent noble gas intrusion. All of these problems resulted because the team failed to refer to their procedures (EG-3). At one time, the team thought they had collected an air sample when they had never turned the air sampler on. They could not hear that the air sampler was not running due to the noise of the gasoline generator, and they turned the generator off before checking the air sampler. The team did not determine the air sampler flow rate for each sample collection. Several times in Iowa, communications with the EOF and the team were lost, and the team could not locate the telephone number to call the EOF. When the offsite teams initially checked out their equipment in the field, no check sources were available to verify instrument response.

h. Site Evacuation

When the Site Area Emergency was declared, the site assembly siren was sounded. Accountability was completed within thirty minutes; however, no preparations were made for onsite evacuation and QEP 360-3 was not referenced. Only after the General Emergency declaration was QEP 360-3 referenced, and at that time the Station Director indicated that a discussion involving the exercise participants had been held the day before the exercise and the decision had been reached that onsite evacuation should not be initiated for a Site Area Emergency unless the public was also being evacuated. When questioned by the inspector, the licensee stated it was the company's position that it will not evacuate nonessential station personnel unless the public is also being evacuated. This is contrary to Criterion II.J.4 of NUREG-0654, Revision 1 and the GSEP. The licensee was asked at the exit meeting to explain their position on site evacuation. They stated the position of the company is that we will consider site evacuation at a Site Area Emergency and we've considered it, and for most cases we won't do it. NRC inspectors had previously identified the failure of the licensee to evacuate non-essential personnel during a Site Area Emergency as a deficiency in Inspection Report No. 50-237/81-26; however, since the Chief Controller at that exercise had also identified this as a problem at the licensee's critique, and since 10 CFR 50, Appendix E, Section IV.F. states, in part, that any weaknesses identified during the critique shall be corrected, NRC inspectors were of the opinion that this problem had been corrected prior to this exercise. As a result of this and other deficiencies, an enforcement conference was held with licensee representatives on September 9, 1982. This is further discussed in Paragraph 8.b of this report.

1. Scenario Problems

Although this scenario was developed to meet the outline developed at the July 13, 1982, scenario planning meeting; the Emergency Action Levels (EAL) used for this exercise were identical to the EALs used by the licensee at all of their other facilities to date (e.g., containment radiation level). Overall, the scenario contained technical inaccuracies, last minute changes, and lacked sufficient operational data to provide a complete test to ensure that all emergency organization personnel are familiar with their duties. When the Rad/Chem Director wanted to collect an offgas sample, the entire operation was aborted by the controllers because the scenario did not contain any information on dose rates near the sampling location nor did it contain sample results. The operational data was so minimal that some information which should have involved emergency organization personnel attempting to get answers to specific questions from the control room had to be obtained by questioning the the controller, who then gave an answer. The entire information exchange pathway was thus bypassed. On some occasions when specific data was requested from the control room, the scenario did not provide the data, so real time data was used. Reactor building area radiation monitor readings were in error, and affected the decisions made by the Rad/Chem Director. Because information was not available in the scenario through the normal communication links, interactive dialogue between the controllers and participants became the norm. This resulted in too much controller prompting.

The Scenario and exercise made no attempt to discuss recovery. No attempt was made to compile a detailed list of plant problems as a result of the event and to develop priorities for corrective actions. The iodine sample results for the event were revised in the scenario the night before the exercise. As a result of the iodine concentrations in the scenario, different protective measures recommendation for the public would have been taken. These recommendations were blocked by the controllers when the magnitude of the error became apparent.

The NRC had been provided with copies of the scenario approximately ten days prior to the exercise; however, all offsite and onsite sampling results and survey data were missing. This was brought to the attention of the licensee's controllers; however, data was not provided to the NRC until the afternoon prior to the exercise.

7. Review of Interim FEMA Findings

During the August 25, 1982, public critique, the FEMA Region VII representative identified significant emergency preparedness problems in Scott and Clinton counties of Iowa. The NRC Region met with FEMA Region VII on September 3, 1982, to obtain a description of the significant offsite deficiencies in these Iowa counties. The interim FEMA findings related to the adequacy of the Scott and Clinton County plans,

communications equipment, ability to provide prompt instructions to the public, and timeliness of notifications. In addition, the Scott County Emergency Operations Center was too small to accommodate the county/State emergency response personnel. Based on these interim findings, the NRC requested FEMA to make a formal finding on the adequacy of offsite preparedness for Quad-Cities based on the exercise and existing emergency plans. Rather than wait for receipt of the formal FEMA findings, an enforcement conference was held with the licensee on September 9, 1982. This is discussed further in Paragraph 8.b of this report.

8. Management Meetings

a. Exit Meeting - August 24, 1982

The inspectors held an exit interview with licensee representatives denoted in Paragraph 1.a at the conclusion of the exercise. Major areas requiring additional attention were discussed and are identified in Paragraph 5.

b. Enforcement Conference - September 9, 1982

As a result of the interim FEMA findings concerning offsite planning in Iowa, the licensee's position on site evacuation, and the poor quality of the exercise scenario; an enforcement conference was held in the NRC Region III office among the personnel denoted in Paragraph 1.b. The licensee was briefed on the interim FEMA findings, and was told that the provisions of 10 CFR 50.54(s)(2) would be enforced if the formal FEMA findings identified significant deficiencies in offsite preparedness. After discussions involving the wording in the licensee's plan and its proposed implementation regarding site evacuation, the licensee agreed to issue a directive to all potential Recovery Managers and Station Directors stating that site evacuation of non-essential personnel will normally be implemented for any Site Area or General Emergency. Only unusual conditions, such as severe weather or radiological releases, could result in a site evacuation not being implemented. The licensee agreed to work on improving scenario development. To this end, the licensee requested that NRC personnel be present at the next exercise scenario development meeting.

SCENARIO OUTLINEQUAD CITIES STATION, AUGUST, 1982

PHASE	MSG NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS
Initial Situation (0800-0830)	1	0800	Control	All	- Ground Rules (pre-published)
	2	0815	Control	C.R.	- Normal Operating Information
Site Emergency (0830-1100)	3	0830	Control	C.R.	- Reactor Trouble: $6 \times 10^2$ R/hr in Primary Containment. EALS for Site Emergency. $> 4 \times 10^2$ R/hr in Primary Containment. - Metro Data: --- Wind Direction: from East (90°) --- Wind Speed: 10 mph --- $\Delta T = 1^\circ/100m$
	C.I.	(0830-1100)	C.I.		- Various Control Information for Site Emergency Phase.
	4	0845	Control	C.R.	- Reactor Status. - Metro Data: --- Wind Direction: from East (90°) --- Wind Speed: 10 mph --- $\Delta T = 1^\circ/100m$
	C.I.	0845	C.I.		- Rod Position Diagram.
	5	0900	Control	C.R.	- Reactor Status. - Metro Data: --- Wind Direction: from East (90°) --- Wind Speed: 10 mph --- $\Delta T = 1^\circ/100m$
	C.I.	0900	C.I.		- Rod Position Diagram.
	6	0915	Control	C.R.	- Reactor Status. - Metro Data: --- Wind Direction: from East (90°) --- Wind Speed: 10 mph --- $\Delta T = 1^\circ/100m$
	2A	0915	Contingency	C.R.	- Contingency Message. Declaration of Site Emergency. (NARS Form provided)
	2B	0930	Contingency	RCF	- Contingency Message. Declaration of Site Emergency. (NARS Form provided)
	7	0930	Control	Recovery Manager	- Recovery Group arrives at RCF.
	C.I.	(0830-1100)	C.I.		- Various Control Information for Site Emergency Phase.
8	0930	Control	C.R.	- Reactor Status. - Metro Data: --- Wind Direction: from East (90°) --- Wind Speed: 10 mph --- $\Delta T = 1^\circ/100m$	
9	0945	Control	C.R.	- Reactor Status. - Metro Data: --- Wind Direction: from East (90°) --- Wind Speed: 10 mph --- $\Delta T = 1^\circ/100m$	
10	1000	Control	C.R.	- Reactor Status. - Metro Data: --- Wind Direction: from East (90°) --- Wind Speed: 10 mph --- $\Delta T = 1^\circ/100m$	
11	1015	Control	C.R.	- Reactor Status. - Metro Data: --- Wind Direction: from East (90°) --- Wind Speed: 10 mph --- $\Delta T = 1^\circ/100m$	

## SCENARIO OUTLINE

## QUAD CITIES STATION, AUGUST, 1982

PHASE	MSG NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS
Site Emergency (0830-1100) (Continued...)	C.I.	1025	C.I.		- Control Information.
	12	1030	Control	C.R.	- Reactor Status. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 10 mph --- $\Delta T=1^{\circ}/100m$
	13	1045	Control	C.R.	- Reactor Status. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 10 mph --- $\Delta T=1^{\circ}/100m$
	C.I.	1045	C.I.		- Control Information.
General Emergency (1100-1200)	14	1100	Control	C.R.	- Reactor Status. High Rad Level in Containment $6.5 \times 10^4$ R/Hr. EALs for General Emergency $\geq 2 \times 10^3$ R/Hr., in Primary Containment. - Sheltering Recommendation (2-5 Miles) - Metro Data: ---Wind Direction: from East (270°) ---Wind Speed: 10 mph --- $\Delta T=1^{\circ}/100m$
	C.I.	1100-1200	C.I.		- Various Control Information for General Emergency Phase
	15	1115	Control	C.R.	- Reactor Status. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 10 mph --- $\Delta T=1^{\circ}/100m$
	C.I.	1120	C.I.		- Control Information.
	16	1130	Control	C.R.	- Reactor Status. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 10 mph --- $\Delta T=1^{\circ}/100m$
	14A	1145	Contingency	C.R., TSC BOF	- Contingency Message. Declaration of General Emergency (NARS Form provided). BOF - Action.
	14B	1145	Contingency	TSC, BOF	- Contingency Message. Results of Containment Air and Reactor Coolant Samples. No release of Iodine.
	17	1145	Control	C.R.	- Reactor Status. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 10 mph --- $\Delta T=1^{\circ}/100m$
General Emergency (Imminent Release)	18	1200	Control	C.R.	- High Rad Level in Containment $6.5 \times 10^4$ R/hr High Drywell Pressure. Imminent Release. Evacuation recommendation. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 10 mph --- $\Delta T=1^{\circ}/100m$
	C.I.	(1200-1330)	C.I.		- Various Control Information for General Emergency - Imminent Release Phase.
	19	1215	Control	C.R.	- Reactor Status. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 10 mph --- $\Delta T=1^{\circ}/100m$

## SCENARIO OUTLINE

## QUAD CITIES STATION, AUGUST, 1982

PHASE	MSG NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS
General Emergency (Imminent Release) (Continued...)	20	1230	Control	C.R.	- Reactor Status. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 10 mph --- $\Delta T$ -1°C/100m
	18A	1230	Contingency	C.R.,TSC BOF	- Contingency Message. Declaration of Imminent Release. (NARS Form provided) BOF - Action
	21	1245	Control	C.R.	- Reactor Status. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 10 mph --- $\Delta T$ -1°C/100m
	18B	1300	Contingency	TSC, BOF	- Contingency Message; Results of Containment Air and Reactor Coolant Samples. No release of Iodine
	22	1300	Control	C.R.	- Reactor Status. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 10 mph --- $\Delta T$ -1°C/100m
	23	1315	Control	C.R.	- Erratic Flow in SBGTS noted.
	C.I.	1315	C.I.		- Control Information.
General Emergency (Release) (1330-1430)	24	1330	Control	C.R.	- Final Barrier (Valve) in SBGTS fails. - Chimney Monitors Off - Scale, pegged high. - Same Evacuation Recommendation.
	C.I.	(1330-1430)	C.I.		- Various Control Information for General Emergency - Release Phase.
	25	1345	Control	C.R.	- Reactor Status. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 10 mph --- $\Delta T$ -1°C/100m
	C.I.	(1350-1430)	C.I.		- Control Information.
	24A	1400	Contingency	C.R.,TSC BOF	- Contingency Message. Release has begun through SBGTS, (NARS form provided) BOF - Action
	26	1400	Control	C.R.	- Reactor Status. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 10 mph --- $\Delta T$ -1°C/100m
	27	1415	Control	C.R.	- Reactor Status. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 10 mph --- $\Delta T$ -1°C/100m
	C.I.	1420	C.I.		- Control Information.
Recovery Phase (1430-1630)	28	1430	Control	C.R.	- Reactor Status, SBGTS vent readings Normal Range. - Reactor Status. - Metro Data: ---Wind Direction: from East (90°) ---Wind Speed: 20 mph --- $\Delta T$ -1°C/100m
	C.I.	(1430-1530)	C.I.		- Control Information.
	29	1430	C.I.	Maintenance	- Repairs completed.

## Attachment 1

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PHASE	MSG NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS
Recovery Phase (1430-1630' (Continued...))	C.I.	(1430-1600)	C.I.		- Various Control Information for Recovery Phase.
	30	1445	Control	C.R.	- Reactor Status. - Metro Data: - Wind Direction: from East (90°) - Wind Speed: 20 mph - $\Delta T = 1^{\circ}/100m$
	29A	1500	Contingency	C.R., TSC BOF	- Release has stopped. Increase in Wind Speed. - Wind Direction: From East @ 20 mph
	31	1500	Control	C.R.	- Reactor in Cold Shutdown Status.
	32	1515	Control	All	- Time has Elapsed.
	33	1530	Control	All	- Reactor in Cold Shutdown. - 250 R/hr in Drywell.
	34	1545	Control	C.R.	- Reactor in Cold Shutdown Status.
	33A	1600	Contingency	C.R., TSC BOF	- Contingency Message. Down-Grade to Alert (NARS Form provided) BOF-Action
	35	As Directed By the State Exercise Directors and the CECO. Chief Controller	Control	All	- Terminate Exercise. - Conduct Critiques.