U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Reports No. 50-254/81-10; 50-265/81-10

Docket Nos. 50-254; 50-265 License Nos. DPR-29; DPR-30

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

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

Inspection At: Quad-Cities Site, Cordova, IL

Inspection Conducted: May 19-21, 1981

Inspectors: M. P. Phillips 5/29/81

W. B. Grant 5/29/81

Approved By: W. L. Axelson, Acting Chief 5/27/81
Emergency Preparedness Section

C. J. Paperiello, Chief 6/1/81
Emergency Preparedness and
Program Support Branch

Inspection Summary:

Inspection on May 19-21, 1981 (Reports No. 50-254/81-10; 50-265/81-10)
Areas Inspected: Routine, announced inspection of Quad-Cities emergency exercise involving observations by ten NRC representatives of key functions and locations during the exercise. The inspection involved 77 inspector-hours onsite by ten NRC inspectors.
Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

NRC Observers and Areas Observed

*W. Axelson, Acting Chief, Emergency Preparedness Section, Region III, Technical Support Center (TSC) and Emergency Operations Facility (EOF)
A. B. Davis, Deputy Director, Region III, TSC and EOF
N. Chrissotimos, Senior Resident Inspector, Floater
S. DuPont, Resident Inspector, Floater
*R. DeFayette, Emergency Preparedness Development Branch, Headquarters, Radiation Environmental Monitoring Team
W. Grant, Radiation Specialist, Region III, Corporate Command Center (CCC)
*R. Lickus, Emergency Preparedness Coordinator, Region III, EOF
*M. Phillips, Radiation Specialist, Region III, Operations Support Center (OSC) and Inplant Health Physics Team
J. Strasma, Public Affairs Officer, Region III, EOF
*B. Thompson, NRC Consultant, OSC and Inplant Health Physics Team

*Denotes those attending the exit interview on May 20, 1981.

Commonwealth Edison and Areas Observed

F. Palmer, Vice President Nuclear Stations, Controller, EOF
N. Kalivianakis, Station Director, TSC
D. Galle, Manager of Operations, Controller, TSC
J. Golden, Radioecology/Emergency Planning Supervisor, Controller, EOF
J. Baker, Controller, TSC
J. Gudac, Controller, Control Room
R. Yung, Controller, OSC
F. Ost, Controller, Inplant Health Physics Team
V. Chaney, Controller, Radiation Evironmental Monitoring Team
M. Andrews, Controller, Radiation Environmental Monitoring Team
D. Thayer, Controller, Maintenance Team
W. Brenner, Controller, EOF
W. Worden, Recovery Manager, EOF

The above personnel attended the exit interview on May 20, 1981.

2. 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 May 20, 1981, testing the intergrated responses of the licensee, State, and local organizations to a simulated emergency. The exercise tested the licensee's response to a major noble gas and iodine release. Attach-

ment 1 describes the scenario. The exercise was integrated with a test of the States of Illinois and Iowa, Clinton County (Iowa), Scott County (Iowa), Rock Island County (Illinois), and Whiteside County (Illinois) Plans.

3. 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 (EPIPs) used by the CCC, EOF, and Station.

b. Coordination

The response was coordinated, orderly, and timely. If the event had been real, the actions of the licensee would have been sufficient to permit the States and local authorities to take appropriate protective actions.

c. Observers

Licensee observers monitored and critiqued this exercise along with ten NRC observers and approximately 35 Federal Emergency Management Agency (FEMA) observers. FEMA observed and will report on the responses of the States and local governments.

d. Critique

The licensee held a critique immediately following the exercise the afternoon of May 20, 1981. The NRC and the licensee identified the deficiencies as discussed in the exit interview.

4. Specific Deficiencies Noted

Suggested improvements made by the NRC observers during the exit interview included: (1) provide better management direction to the health physics teams; (2) document results of radiation surveys performed; and (3) provide additional training to the Environs Director in the operation of the Dose Assessment Computer. (SYFA)

5. Specific Observations

a. Control Room

The operators responded well to cues, and made proper notifications. Information on plant conditions was routinely passed to the TSC in a timely manner. Although the exercise did not test the operator's ability to correct plant malfuntions, this area is tested during the NRC licensing examination of the operators.

b. Technical Support Center (TSC)

Activation of the permanent TSC was orderly and timely. Command and Control functions performed at the TSC were adequate. Monitoring of the TSC for radiological habitability was performed in the room housing the ventillation system for the TSC using an Eberline PING-2 which measures airborne radiation levels. More training for the Environs Director on the use of the SYFA is needed. This was demonstrated when he was unable to determine the correct protective actions to be taken while using the SYFA.

c. Operation Support Center (OSC)

The OSC is the assembly area for the health physics emergency teams and the maintenance teams. Timely activation and management of this area were noted. Periodic plant status updates from the control room were passed on to personnel at the OSC. Although the OSC was activated for the entire exercise, no air samples or direct radiation monitoring was performed to ensure habitability. This is attributed to lack of direction from the Rad/Chem Director at the TSC, who is responsible for all onsite protective measures to control personnel exposures. The observers found an adequate supply of protective clothing, potassium iodide, and dosimeters (both high and low range).

d. Emergency Operations Facility (EOF)

The temporary EOF, which is located in the visitors center, was activated in accordance with the Emergency Plan and manned within one hour from the beginning of the exercise. Communications at the EOF were adequate, however, the NRC dedicated Health Physics Network and Emergency Notification System phones were not available. Installation and maintance of these phones is under the direction of the NRC. These phones will be installed in the EOF in the near future. Command and control functions at the EOF were adequate, and it was clear who was in charge. Adequate briefings of personnel regarding updated plant conditions were held. The interface between the senior managers at the EOF and the TSC was excellent.

e. Corporate Command Center (CCC)

The CCC Director was notified of the Site Emergency and other pertinent data by the System Power Dispatcher thirty minutes into the exercise. The CCC was activated, and completely manned within one hour of the beginning of the exercise. Communications with the site and offsite agencies were established. Upon manning of the EOF, some confusion arose at the CCC as to just what they were supposed to do. CCC personnel appeared to handle the situation very well, however, if doubts arose about whether a particular notification or report was to be made by the CCC or the EOF, personnel at the CCC asked

the EOF. The CCC team responded with enthusiasm and intensity and worked at making the exercise run smoothly. They were fully prepared to reassume command functions when notified of the increasing radiation at the EOF. Some minor communication and computer problems were handled quickly and professionally.

f. Public Information Center

The Public Information Center was established in the EOF. CECO's technical spokesperson gave periodic news briefing throughout the exercise. These briefings were occassionally too technical in nature, however, CECO has improved in this area. Report's Guides were disseminated during this test. The inspectors feel this area will continue to improve with more exercises.

g. Environmental Monitoring Teams

The environmental monitoring teams were dispatched to various downwind sectors in both Iowa and Illinois. Although sampling and monitoring procedures were not referred to by the teams during the exercise, these tasks were implemented properly. At times it was unclear as to which map (site environs or Illinois map) the field teams should use. Field teams were never informed as to whether iodine was present in the release, although this information was available at the EOF. Potassium Iodide (KI), dosimetry, and protective clothing were provided to team members prior to being dispatched from the site. Teams were also given a briefing by the Environs Director prior to offsite monitoring. Several times on the Iowa side communications from the team to the EOF was lost. This was due to irregular terrain and not being within line of sight of the Station. On these occasions, the teams could have communicated by using a pay phone. A problem was noted in the use of terminology between teams and the EOF, e.g., dose rate results in mrem instead of mrem/hour. This should be corrected by better training of team members and communicators. Monitoring teams could have been used more efficiently. CECO's teams should have been informed of what the State Radiological Assessment Teams were doing.

h. Inplant Health Physics Teams

The two inplant Health Physics teams were aware of the location of protective clothing, potassium iodide (KI), and self contained breathing apparatus. Both teams demonstrated adequate exposure control and maintained exposure control for maintenance teams involved in the simulated repair of a value.

The only major problem identified involving inplant teams was a basic lack of specific mangement direction in the performance of their duties. There were four problems identified regarding

mangement direction: (1) the team assigned to collect drywell air and primary coolant samples did not know which reactor unit to sample, nor the specific location to collect the primary coolant sample; (2) when told to take surveys outside of the plant in the protected area, the team walked along the edge of the buildings since they had not been directed to any specific locations; (3) in-plant surveys were taken in an ad hoc manner, rather than at predetermined locations; and (4) survey results were not documented, but were verbally passed on to the TSC by telephone.

6. Exit Interview

The inspectors held an exit interview at the conclusion of the licensee's critique with representatives denoted in Paragraph 1. The licensee agreed to address the inspector's concerns stated in Paragraph 4.

Attachment: Exercise Scenario

SUMMARY SHEET

MESSAGES ISSUED

PHASE	MSG NO.	TIME ISSUED	TYPE MESSAGE	ISSUED TO	OUTLINE OF CONTENTS
Pre-Evaluation (0750-0800)	1	0750	Control	All	- Ground Rules (pre-published)
	2	0755	Control	C.R.	- Normal Operating Information
Site Emergency (0800-0900)	3	0800	Control	C.R.	- Reactor Trouble: 6 x 10^2 R/hr in primary containment. EALs for Site Emergency. $\geq 4 \times 10^2$ R/hr in primary containment. Wind Data: (From SSW 202° at 10 MPH, T = -15° C100m)
	C.I.	(0800-0900)	C.I.	E.P. Tms	- Dose & Dose Rate Info in plant Assembly Area. Reactor water sample point. Drywell air sample point. (Good till 0900)
	C.I.	(0800-0900)	C.I.	RCT in Lab	- Results of Drywell Air & Reactor Coolant samples drawn prior to 0900.
	C.I.	(0800-0900)	C.I.	Environs Teams	- Dose & dose Rate at various locations in plant environs. (Site Map)
	C.I.	(0800-0900)	C.I.	Response to queries of Murray & Trettel	- Forecast of low pressure system slowly moving through the area. To be provided if questioned.
	4	0815	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	5	0830	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	(1A)	0830	Contigency	C.R., TSC, EOF	- Contingency message Declaration of Site Emergency. (NARS Form provided)
	6	0840	Control	Recovery Manager	- Recovery Group arrives at EOF.
	7	0845	Control	C.R.	- Reactor status. Wind Data: (SAB)
General Emergency (Transition: To Release) (0900-1100)	8	0900	Control	C.R.	- Reactor Status: 4.8 x 10^4 R/hr in primary containment. EALs for General Emergency: $\geq 2 \times 10^3$ R/hr in primary containment. Wind Data. (SAB)
	9	0901	Control	C.R.	- Valve AO-1-1601-21 lost indication.
	C.I.	(0900-1050)	C.I.	E.P. Teams	- Dose & Dose Rate Info in plant Assembly Area. Reactor water sample point. Drywell air sample point.
	C.I.	(0900-1100)	C.I.	RCT in Lab	- Results of Drywell Air & Reactor Coolant samples drawn between 0900 and 1100.
	C.I.	(0900-1100)	C.I.	Environs	- Dose & Dose Rate at various locations in plant environs. (Site Map)
	10	0915	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	10	0925	Contingency	TSC	- Contingency Message. Send E.P. Team to obtain Drywell Air and Reactor Coolant Samples.
	11	0930	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	(3A)	0930	Contingency	C.R., TSC, EOF, CCC	- Contingency Message. Declaration of General Emergency (NARS form provided)
	12	0930	Control	CCC	- Forecast from Murray & Trettel. (Low pressure system moving slowly to East.)
	C.I.	(0930-1415)	C.I.	Response to queries of Murray & Trettel	- Update forecast to be provided if requested.

Notes: C.I. - Control Information - Verbally presented Data.

SAB - Same As Before - No Change from previous Wind Data.

General Emergency	13	0945	Control	C.R.	- Reactor Status. Wind Data: (SAB)
Transition (Release) (1000-1400)	14	1000	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	15	1015	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	15	1030	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	(8B)	1030	Contingency	TSC, EOF, CCC	- Contingency Message - Results of containment Air and Reactor Coolant Samples.
	17	1045	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	C.I.	(1059-) (1400)	C.R.	H.P. Teams in plant	- Dose & Dose Rate Info in plant.
	18	1059	Control	C.R.	- Final barrier (valve) in SBGTS fails.
General Emergency/ Release (1100-1400)	19	1100	Control	C.R.	- Chimney monitors 2.33×10^9 uCi/sec.
	C.I.	(1100-) (1400)	C.I.	Environs Teams	- Dose and Dose rate at various locations in plant environs. (Site Map)
	C.I.	(1100-) (1400)	C.I.	RCT in Lab	- Results of air & Liquid samples drawn between 1100 and 1400.
	(13A)	1115	Contingency	C.R./TSC EOF, CCC	- Contingency Message. Release has begun through SBGTS. (NARS form provided.)
	20	1115	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	C.I.	(1115-) (1400)	C.I.	Maintenance Teams	- Assessment of Damage. Estimated time for repairs.
	21	1130	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	22	1145	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	19B	1145	Contingency	Maintenance Dir.	- Contingency Message: Dispatch Maintenance Teams to correct malfunction in SBGTS.
	23	1200	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	24	1215	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	25	1215	Control	Maintenance Team	- Assessment of Damage and Estimated Time for repairs
	26	1230	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	(19C)	1230	Contingency	TSC, EOF, CCC	- Contingency Message. Release Rates of of Noble Gas and I 131.
	27	1245	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	28	1245	Control	CCC	- Revised forecast from Murray & Trettel: Wind shifting to West Wind at 1830.
	29	1300	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	30	1315	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	31	1315	Control	Maintenance Team	- Progress report on repairs
	32	1330	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	33	1345	Control	C.R.	- Reactor Status. Wind Data: (SAB)
	34	1345	Control	Maintenance Team	- Progress report on repairs

Notes: C.I. - Control Information - Verbally presented Data.

SAB - Same As Before - No Change from previous Wind Data.

PHASE	SEQ. #	TIME	FROM	TO	REMARKS / COMMENTS
Recovery Phase (1400-1600)	35	[illegible]	Control	Maintenance Team	- Repairs completed.
	36	1400	Control	C.R.	- Reactor status. SABTB vent readings normal range. Wind data: SAB.
	C.I.	(1400-) (1600)	C.I.	H.P. Teams	- Dose & Dose Rate within plant.
	C.I.	(1400-) (1600)	C.I.	Environs Team	- Dose & Dost Rate and results of sampling activities in plant environs.
	37	1415	Control	C.R.	- Reactor Status. Wind Data:
	38	1415	Control	C.R.,CCC	- Wind Data - Increase in wind speed.
	39	1430	Control	C.R.	- Reactor in cold shutdown status.
	(36A)	1430	Contingency	C.R.,TSC EOF,CCC	- Release has stopped. Increase in wind speed. (Wind from SSW at 15 MPH
	(39A)	1445	Contingency	C.R.,TSC EOF,CCC	- Reactor in cold shutdown status.
	40	1600	Control	C.R.,TSC EOF,CCC All Teams	- Endex, conduct critique.

Notes: C.I. - Control Information - verbally presented Data.

SAB - Same As Before - No Change from previous Wind Data.

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