

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-461/92019(DRSS)

Docket No. 50-461

License No. NPF-62

Licensee: Illinois Power Company  
Mail Code V-275  
P.O. Box 678  
Clinton, IL 61727

Facility Name: Clinton Power Station

Inspection At: Clinton Site, Clinton, IL

Inspection Conducted: December 1-3, 1992

Inspectors:

C. Cox

12/15/92  
Date

T. Ploski

12/18/92  
Date

Accompanied By: R. Doornbos  
D. Draper  
D. Nelson  
M. Shuaibi

Approved By:

J. W. McCormick-Barger  
J. W. McCormick-Barger, Chief  
Emergency Preparedness and  
Non-Power Reactor Section

12/18/92  
Date

Inspection Summary

Inspection on December 1-3, 1992 (Report No. 50-461/92019(DRSS))

Areas Inspected: Routine, announced inspection of the Clinton Power Station's annual emergency preparedness exercise, involving: review of the exercise scenario (IP 82302) and observations by six NRC representatives of key functions and locations during the exercise (IP 82301).

Results: No violations or deviations were identified. The licensee's overall exercise performance was very good; however, one weakness requiring corrective action was identified regarding timely issuance of protective action recommendations to offsite agencies (Section 5d) and one inspection follow-up item was identified regarding a 30 minute delay in beginning the accountability process after a Site Area Emergency declaration (Section 5a).

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Excellent technical discussions between facilities, scenario challenges such as loss of power to emergency response facilities, controller performance, and a critical self-evaluation were strong points for this exercise.

## DETAILS

### 1. NRC Observers and Areas Observed

- C. Cox, Control Room Simulator (CRS), Technical Support Center (TSC), Operations Support Center (OSC), and Emergency Operations Facility (EOF)
- R. Doornbos, CRS
- T. Ploski, TSC
- M. Shuaibi, TSC
- D. Nelson, OSC and inplant teams
- D. Draper, EOF

### 2. Licensee Representatives

- J. Perry, Senior Vice President
- J. Cook, Vice President
- F. Spangenberg, Manager, Licensing and Safety
- R. Morgenstern, Manager, Training Department
- R. Wyatt, Manager, Quality Assurance
- J. Miller, Manager, Nuclear Station Engineering Department
- M. Lyon, Director, Emergency Response
- P. Yocum, Director, Plant Operations
- R. Phares, Director, Licensing
- J. Manskey, Director, Planning
- W. Evans, Supervisor, Emergency Drills and Exercises
- W. Yarosz, Supervisor, Emergency Planning
- J. Sipek, Supervisor, Regional Regulatory Interface
- E. Turner, Nuclear Program Controller

The above licensee representatives attended the December 3, 1992 exit interview. The inspectors also contacted other licensee personnel during the course of the inspection.

### 3. General (IP 82301)

An announced daytime exercise of the Clinton Power Station's emergency plan was conducted at the Clinton site on December 2, 1992. The exercise tested the capabilities of the licensee's emergency organization to respond to an accident scenario involving the simulated release of radioactive effluent. The attachments to this inspection report summarize the licensee's scope of participation and the exercise scenario.

### 4. General Observations (IP 82301)

The licensee's response was coordinated, orderly and timely. If the scenario events had been real, the actions taken by the licensee would have been sufficient to mitigate the accident and permit state and local authorities to take appropriate actions to protect the public's health and safety.

5. Specific Observations (IP 82301)

a. Control Room Simulator (CRS)

The CRS properly implemented the emergency plan. The shift supervisor (SS) correctly declared an Unusual Event (UE) after receiving conflicting reports on whether an injured worker was contaminated or not. The SS choose the conservative decision to declare the victim contaminated so as not to delay the responding hospital's treatment of the worker. After determining a reported fire in the Division I Diesel output breaker could affect safety related equipment, the SS again made the proper classification of a Site Area Emergency (SAE) and by-passed an Alert declaration.

Off-site notifications were timely for the UE and the SAE. The state received notification within 15 minutes after declaration of the UE and after the SAE and the NRC was notified well within an hour. The SS provided a good turnover brief to the Station Emergency Director (SED) for the transfer of command and control to the Technical Support Center (TSC).

Once the Division I bus was de-energized, in the response to the fire in the diesel output breaker, the operating crew's performance declined. Communications between operators were poor, crew briefings ceased, and while the operators actively pursued all avenues available to control critical plant parameters, they did so as individuals and not as a crew. As the result of the breakdown in the crew's performance, the wrong path in the Emergency Operating Procedures (EOPs) was taken which challenged the core earlier than planned in the scenario. It did not result in core damage however. During the facility critique, the simulator controller, who was also a simulator instructor, noted the poor performance and placed the crew on remedial training and a control room log entry was made prohibiting that crew from control room duties until the remedial training was successfully completed.

The CRS's communication capabilities did not exactly match the actual control room's capabilities. Special phones had to be used during the drill and plant pages had to be relayed through the controller network. As a result, the controllers had to brief the operators for 10 minutes explaining the differences, how to compensate for them, and at times had to prompt operators because of the communication problems. Some delays in communications, including a 30 minute delay in relaying the plant page for conducting the site accountability, were directly attributed to the lack of communication capabilities in the CRS. The 30 minute delay in starting the site accountability after the Site Area Emergency declaration is an Inspection Followup Item (No. 461/92019-01).

No violations or deviations were identified.

b. Technical Support Center (TSC)

The performance in the TSC was very good. The TSC was fully staffed and operational within 30 minutes after the SAE declaration. The transfer of command and control from the SS, in the CRS, to the SED, in the TSC, was good. The SED ensured that he was adequately briefed on the events and that all the required TSC staff were in place and ready to perform their duties.

Briefings in the TSC were very good and frequent. Good command and control was demonstrated with priorities being set and status of teams being tracked. Status boards were kept up to date and the staff in the TSC closely monitored the parameters available and noted changes, such as a wind shift at 10:20 a.m..

There were two minor instances of pre-staging in the TSC after the UE declaration. The Administrative Supervisor and the Emergency Advisor reported to the TSC shortly after the UE declaration and began performing their duties. While procedures allowed the Emergency Advisor the discretion to report at the UE, no such guidance existed for the Administrative Supervisor. Also, since the UE was due to a contaminated injured person with little possibility of escalation to an Alert or greater, the Emergency Advisor's reporting to the TSC was questionable.

No violations or deviations were identified.

c. Operations Support Center (OSC) and Inplant Teams

Overall, the OSC performed very well, functioning in a very efficient and effective manner. The activation of the facility was timely and efficient. This was even more noteworthy due to the use of emergency lighting simulating a loss of power. Habitability was quickly established.

The dispatch and tracking of teams were very good. Team briefings were comprehensive. Status boards were used effectively to track available personnel and to track the teams that were dispatched. The OSC Director and his assistants maintained good communications with the dispatched teams.

The TSC Assistant SED frequently went into the OSC to confer with the OSC Director face to face. This enhanced the transfer of information between the TSC and OSC on plant status, priorities, and results of the inplant teams' efforts.

No violations or deviations were identified.

d. Emergency Operations Facility (EOF)

Activation of the Emergency Operations Facility was very good. The EOF was fully staffed and ready to assume command and control

within 30 minute of the SAE; however, the Emergency Manager (EM) delayed assuming command and control to allow the SED to demonstrate the TSC objective of command and control of emergency efforts. The turnover brief from the SED to the EM was very good.

Update briefings in the EOF were very good, especially the briefings received from the SED, in the TSC, over an intercom system. Staff meetings were frequent and a good format for discussing priorities and sharing information within the EOF; however, the timing and length of the meetings contributed to the exercise weakness described below.

At 10:25 a.m., the EM announced he would declare a General Emergency (GE) at 10:30 a.m. It was conservatively based in anticipation of losing the last available train of the Emergency Core Cooling System (ECCS). The notification form for the state was filled out for the GE declaration and the Protective Actions Evaluator was developing a protective action recommendation (PAR) when at 10:30 a.m. the EM called for a staff meeting. During the meeting, which lasted for 20 minutes, the notification form was used to notify the state of the GE declaration without a PAR. After the meeting was over, the EM discovered that no PAR had been issued with the GE declaration, therefore he had another notification form filled out with a PAR for the GE declaration and the state was updated approximately 25 minutes after the initial GE declaration. Technical Specification (TS) 6.8.1.f requires Emergency Plan Implementing Procedures (EIPs) to be written, implemented, and maintained. EIP RA-02, Protective Action Recommendations, paragraph 4.2.4 states "Protective Action Recommendations are mandatory for a GENERAL EMERGENCY. They should be given immediately." EIP EC-07, Emergency Plan Notification, paragraph 4.3.1 requires PARs notifications to be completed within 15 minutes. Contrary to TS 6.8.1.f, there was a failure to implement EIP RA-02 and EIP EC-07 when the EM failed to provide the mandatory PAR for the GE declaration and notify the off-site agencies of the PAR within 15 minutes. For an actual event, the failure to implement the EIPs would be considered a violation. For an exercise, the failure to provide the offsite agencies with the mandatory PAR for a GE within 15 minutes of the GE declaration is an exercise weakness (Item No. 461/92019-C2).

Overall problem solving activities were very good. The EOF Administrative Supervisor and his staff immediately re-routed logistic support and the Field Team Communicator pre-positioned field teams in response to scenario traffic problems. The engineering staff actively pursued multiple solutions to the loss of ECCS, prioritizing the solutions based on probability of success.

Dose assessment activities were generally good; however, the dose projections after the GE were not as frequent as recommended by procedures. Also the radiological status boards were not

frequently updated, possibly due to the rapidly changing conditions during the radiological release.

No violations or deviations were identified.

e. Medical Response

The overall medical response and contamination control to the contaminated injured worker was good. The proper medical concerns were displayed and there was good coordination between operations, radiation protection, and security.

A problem was noted when the radiation protection technicians (RPTs) were the first to arrive at the scene. They did not display proper first aid techniques when they commented to the victim about how severe his injury appeared. Due to a drill staging problem, the RPTs were not supposed to be the first responders and were not trained as such.

No violations or deviations were identified.

6. Exercise Objectives and Scenario Review (IP 82302)

The exercise scope and objectives and the exercise scenario were submitted to the NRC well within the required timeframes. No problems were identified during the review of the scenario or objectives.

Challenging aspects of the scenario included rapidly escalating events, scenario events requiring the assistant shift supervisor to respond outside of the control room, multiple equipment failures including leaving the OSC without normal lighting for several hours, and the loss of the dose assessment computer requiring the dose assessment staff to use a backup model.

No violations or deviations were identified.

7. Exercise Control and Exercise Simulation (IP 82301)

Exercise control was very good. There were adequate controllers to control the exercise. It was noted on several occasions that when controllers were challenged by players to provide unearned scenario data, the controllers refused to provide the information until the players performed the evolutions that would generate the data. The players, on those occasions, appeared uncertain about the scope of play required to earn scenario data.

No violations or deviations were identified.

8. Licensee Critique (IP 82301)

The licensee's controllers held initial critiques in each facility with the participants immediately following the exercise. Several of these

critiques were observed and were determined to be detailed. Inputs from all participants were sought.

A formal critique was held on December 3, 1992 prior to the exit interview. The licensee provided a summary of its preliminary, self-identified, performance strengths and weaknesses, which were generally in agreement with the inspectors' preliminary findings.

No violations or deviations were identified.

9. Exit Interview

On December 3, 1992, the inspectors met with those licensee representatives identified in Section 2 of this report in order to present and discuss the preliminary inspection findings.

The licensee indicated that none of the matters discussed were proprietary in nature.

Attachments:

1. Scope of Participation and Exercise Objectives
2. Exercise Scenario Summary

Attachment 1

CLINTON POWER STATION  
EMERGENCY PREPAREDNESS EXERCISE SCENARIO

December 2, 1992

## INTRODUCTION

### SCOPE OF PARTICIPATION

The Clinton Power Station Emergency Exercise will be conducted during normal working hours to demonstrate the integrated capability of Illinois Power Company to respond to a simulated emergency at Clinton Power Station (CPS). The exercise is designed to test the Clinton Power Station Emergency Plan. This is a full participation exercise with State and local government agencies including Illinois Emergency Management Agency, Illinois Department of Nuclear Safety and DeWitt County Emergency Services and Disaster Agency participating.

Illinois Power (IP) will participate in the exercise by activating the emergency response organization and emergency response facilities as appropriate, subject to limitations that may become necessary to provide for safe operations of the plant.

In lieu of using the main control room, the simulator control room will be used during the exercise. Hereinafter, any reference to the main control room implies the simulator. An off-duty main control room shift crew will be prepositioned in the simulator to receive exercise messages.

Illinois Power Company has established specific objectives and ground rules for the exercise. These objectives and the ground rules may be found later in this section. A full scale demonstration of evacuation and accountability was satisfactorily conducted during the After Hours Drill on July 24, 1992. For the exercise on December 2, 1992 evacuation and accountability will be simulated.

CLINTON POWER STATION  
1992 EXERCISE OBJECTIVES

Primary Objective:

Demonstrate the capability to implement the Clinton Power Station (CPS) Emergency Plan to protect the health and safety of the general public as well as plant personnel.

Supporting Objectives:

1. Demonstrate the capability of the Main Control Room Staff to recognize the emergency conditions, to classify the event, and to perform mitigating actions.
2. Demonstrate the capability to quickly and accurately identify and classify the accident as conditions change.
3. Once the emergency is classified or reclassified, to demonstrate the capability to notify the Illinois Emergency Management Agency (IEMA), the Illinois Department of Nuclear Safety (IDNS) and the Nuclear Regulatory Commission (NRC) within the time required by implementing procedures.
4. Demonstrate the capability to properly notify Illinois Power Company (IP) Emergency Response Organization personnel in accordance with implementing procedures.
5. Demonstrate the ability to notify site personnel of the emergency condition.
6. Demonstrate the capability to activate the Technical Support Center (TSC), Emergency Operations Facility (EOF), Operations Support Center (OSC), Headquarters Support Center (HSC) and Joint Public Information Center (JPIC) in accordance with implementing procedures.
7. Demonstrate the clear transfer of Command Authority from the Shift Supervisor to the Station Emergency Director, to the Emergency Manager in accordance with implementing procedures.
8. Demonstrate the capability to assess accident conditions by performing reactor core damage estimations and by performing offsite dose assessments.
9. Demonstrate the capability to dispatch and control Field Monitoring Teams for plume tracking and environmental monitoring.
10. Demonstrate the capability of Field Monitoring Teams to conduct field radiological surveys, including the collection and analysis of air samples, radioiodine, and to collect, as needed, additional liquid, vegetation and soil samples.

11. Demonstrate the capability to receive, analyze, and store field samples in the EOF Environmental Laboratory while following approved procedures and acceptable radiological controls.
12. Demonstrate the capability of the Operations Support Center to control Emergency Teams including emergency maintenance activities.
13. Demonstrate implementation of effective health physics controls by the Emergency Teams.
14. Demonstrate the capability to provide dosimetry and monitor radiation exposure to onsite emergency workers and Field Monitoring Teams.
15. Demonstrate the capability to effectively communicate reports, information and assessments of the situation among participating principal command and control centers, personnel and emergency teams.
16. Demonstrate the capability to make appropriate, timely public protective action recommendations to offsite authorities in accordance with implementing procedures.
17. Demonstrate timely, effective information flow from the Emergency Operations Facility (EOF) to the Joint Public Information Center (JPIC).
18. Demonstrate the capability to provide accurate, timely information to the news media from the JPIC.
19. Demonstrate the ability to discuss appropriate measures associated with recovery activities in order to restore the plant to a Pre-emergency condition.
20. Demonstrate the capability of the First Aid Team and Radiation Protection personnel to properly respond to an accident involving contaminated and/or injured personnel and to provide proper first aid.
21. Demonstrate the capability to transport an injured/contaminated person(s) to an offsite medical facility and to provide support as necessary.
22. Demonstrate the capability to critique objectively the emergency response and to identify deficiencies. This will require an evaluation of items such as (1) the operation of the Emergency Response Facilities, (2) suitability of individuals in fulfilling emergency assignments and (3) the adequacy of emergency procedures and equipment available.

# Attachment 2

1992 GRADED EXERCISE

## NARRATIVE SUMMARY

### INITIAL CONDITIONS

Clinton Power Station is operating at 100% power in the 21st day of continuous operation. The plant is currently in a Limiting Condition of Operation (LCO) for the Reactor Core Isolation Cooling (RCIC) System for repair of steam leaks. The Rising and Latham 345Kv lines are out of service for installing fiber optics on the static line between Clinton and the "345 Kv Tower" near Maroa. This work is scheduled to take eight days and this is the fifth day of work. Central Illinois is under a winter storm watch for today. Low Pressure Coolant Injection (LPCI) C is inoperable but available due to cracks found on the pump discharge nozzle during ultra-sonic testing. Division I Diesel Generator is ready to start for its surveillance run.

### SUMMARY

At 0800, while two men are working in the Reactor Core Isolation Cooling (RCIC) room, 1E51F045 RCIC Turbine Steam Supply Shutoff valve falls off of the scaffolding. The valve breaks the leg of one of the workers. The other worker manages to pull him out of the room. The man is also contaminated and requires hospitalization. This should result in a Notification of Unusual Event being declared in accordance with EC-02, Symptom 15.6. At 0825 during a surveillance run of Division I Diesel a fire breaks out in the Division I Diesel output breaker. This should result in an ALERT being declared in accordance with EC-02, Symptom 12.1. At 0845 after the garbage truck has picked up his load he slides off the road into the Emergency Reserve Auxiliary Transformer (ERAT) causing it to trip and spring a small leak. At 0845 a Reactor Feed Pump Flow Controller fails. Reactor water level rises until a level 8 trip scrams the reactor and trips all turbines. Reactor can be fed using the Motor Driven Reactor Feed Pump (MDRFP). At about 0915 the Brokaw 345 Kv line experiences galloping and is lost. While attempting to restore the 345KV lines, the switchmen sent to the Latham substation slide off the road and end up in a ditch. They are not hurt but will be delayed because of this. The switchmen sent to the Rising substation are iced in and cannot reach the substation. The operators sent to the switch yard cannot close in the disconnects due to icing. Division I Diesel is out of service from the fire. When HPCS is started, pieces of the suction check valve 1E22F002 are sucked into the pump and destroy most of the impeller. The HPCS Flow will be non-existent. Division II Diesel starts. Operators will soon be forced to depressurize the reactor when water level drops to -162". This should result in a SITE AREA EMERGENCY being declared in accordance with EC-02, Section 5.1.

After depressurization Operators will attempt to inject with LPCI 'B'. LPCI B will fail due to insufficient flow through the discharge line as a result of the 1E12F024B RHR pump B test return to Suppression Pool valve to remain open. When LPCI 'C' is started the pump will initially inject but after 15 minutes the discharge nozzle will break. As a result the pump will trip but 1E12F042C, RHR Pump 1C LPCI Spray Valve will fail to shut. This results in back flow from the vessel to LPCI 'C' pump room due to leakage past the check valve. At about 1015 Reactor Recirculation Pump seals begin to leak. A GENERAL EMERGENCY should be declared in accordance with EC-02, Section 5.1. when it is apparent that with no injection a core melt accident is in progress. Radiation levels begin to increase rapidly onsite. Soon radiation levels offsite are noticed. Containment temperatures and pressures increase rapidly leading to a significant release offsite. Containment pressure exceeds design pressure before operators are successful in repairing Division I Diesel and LPCI 'B'. A source of offsite power will be restored at 1300 when the Rising 345 Kv line is repaired. After all State and utility objectives are satisfactorily demonstrated the Exercise will terminate.

## 1992 GRADED EXERCISE TIME LINE

<u>EVENT</u>	<u>APPROXIMATE TIME</u>
One Man injured and Contaminated	0800
A Notification of Unusual Event Declared in Accordance With EC-02, Symptom 15.6	0815
Fire in Division I Diesel Output Breaker	0825
Alert Declared in Accordance With EC-02, symptom 12.1	0840
Garbage Truck Hits ERAT, Damaging It	0845
Reactor Feed Pump Flow Controller Failure Level 8 Trips Turbines and Reactor	0845
Loss of 345 Kv Brokaw Line, Resulting In Loss of Offsite Power	0915
HPCS Started and Impeller Destroyed	0915
Site Area Emergency Declared in Accordance with EC-02, Symptom 5.1	0930
Top of Active Fuel Reached, Reactor Depressurized	0945
LPCI "B" Started and Failed LPCI "C" Started	0950
LPCI "C" Breaks Reactor Water Bleeds Off to LPCI "C" Room	1005
Reactor Recirculation Seals Fail	1015
General Emergency Declared in Accordance With EC-02, Symptom 5.1	1035
Division I Diesel Repaired and LPCI "B" Repaired	1235
Rising 345 Kv Line Repaired	1300
Drill Terminated Critiques Begin	1400