U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-461/87003(DRSS)

Docket No. 50-461 License No. NPF-55

Licensee: Illinois Power Company
500 South 27th Street
Decatur, IL 62525

Facility Name: Clinton Nuclear Power Station, Unit 1

Inspection At: Clinton Site, Clinton, Illinois

Inspection Conducted: January 12-15,1987

Inspectors: James Foster
Team Leader

James Foster 2/2/87
Date

T. Ploski for Ted Allen 2/3/87
Date

Approved By: T. Ploski for William Snell, Chief
Emergency Preparedness Section
2/3/87
Date

Inspection Summary

Inspection on January 12-15, 1987 (Report No. 50-461/87003(DRSS))
Areas Inspected: Routine, announced inspection of the Clinton Power Station emergency preparedness exercise involving observations by five NRC representatives of key functions and locations during the exercise. The inspection involved three NRC inspectors and two consultants.
Results: Two violations were identified relative to inadequate corrective action on two previous Exercise Weaknesses. These two repeat exercise weaknesses are summarized in the Appendix.

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DETAILS

1. Persons Contacted

   a. NRC Observers and Areas Observed

   James Foster, Control Room, TSC, OSC, EOF
   Ted Allen, OSC, In-plant Teams, PASS Sample
   Hironori Peterson, Control Room, Emergency Operations Facility (EOF)
   Mike Stein, Control Room
   Carl Corbit, EOF

   b. Illinois Power Company

   *D. Hall, Vice President
   *J. Perry, Emergency Manager
   *F. Spangenberg, Manager, Licensing and Safety
   *J. Greene, Manager NSED
   *J. Greenwood, Manager Power Supply
   *D. Hillyer, Director Radiation Protection
   *J. Wilson, Power Plant Manager
   *H. Lane, Manager Scheduling and Outage Maintenance
   *R. Wyatt, Director Nuclear Planning
   *T. Camilleri, Director Nuclear Projects
   *J. Cook, Assistant Power Plant Manager
   *R. Gardner, Supervisor of Emergency Preparedness
   *R. Campbell, Manager Quality Assurance
   *D. Waddell, Assistant Supervisor, Emergency Preparedness
   *E. Till, Director Nuclear Training
   C. Graf, Control Room (simulator) Controller
   J. Hunsicker, Laboratory Controller
   A. Adams, Public Affairs
   J. Brownell, Licensing Specialist
   G. Baker, Supervisor Medical Programs
   J. Dodson, Emergency Information Coordinator
   M. Graham, Public Information Coordinator
   T. Cammelleria, Controller
   K. Rollofson, Controller Messenger
   J. Skov, Lead Controller, Operational Support Center (OSC)
   R. Derbort, Controller, Injured Person
   W. Mullins, Controller, Post Accident Sample System (PASS)
   P. Sefranek, Controller, PASS Panel
   T. Roe, OSC Supervisor
   M. Reandeau, Radiological Control Coordinator, OSC
   M. McLure, Technical Information Liaison
   J. Wemlinger, Technical Information Liaison
   C. Kretz, Stenographer

c. Non-Illinois Power Company

W. Weaver, FEMA Region V
G. Wenger, FEMA Region V
E. Field, Illinois Department of Nuclear Safety
A. Pepper, Illinois Department of Nuclear Safety
N. Corrington, Macon Co. ESDA
M. Strain, DeWitt Co./Clinton Co. ESDA

*Denotes those personnel listed above who attended the exit interview on January 14, 1986.

2. Licensee Action on Previously Identified Open Items

(Closed) Open Item No. 461/85040-03. The classification of the General Emergency was inappropriately delayed during the 1985 Emergency Exercise. During the next (1987) Exercise, there was once again an inappropriate delay in declaring a General Emergency. This is a repeat of the previous Exercise Weakness and is therefore a violation. The old Open Item No. 461/85040-03 will be closed and the violation will be tracked under a new Open Item No. 461/87003-01.

(Closed) Open Item No. 461/85040-05. During the 1985 Emergency Exercise, it was observed that the contamination control practices in the EOF Environmental Laboratory were poor. During the next (1987) exercise, it was observed to be still poor. This is a repeat of the previous Exercise Weakness and is therefore a violation. The old Open Item No. 461/85040-05 will be closed and the violation will be tracked under a new Open Item No. 461/87003-02.

(Closed) Open Item No. 461/85039-18. Need to determine the percentage of availability of meteorological data. The licensee provided data packages which indicated that meteorological data availability for three parameters (sixty meter windspeed and direction, ten meter windspeed and direction, and sixty and ten meter temperature, delta temperature and precipitation) had been consistently greater than 90% during a study period of three months. This item is closed.

(Closed) Open Item No. 461/85040-06. During the previous Emergency Exercise, the information flow to the media was at times poor. During the present exercise, information flow to the media was determined to be adequate. This item is closed.

3. General

An exercise of the Clinton Power Plant Emergency Plan was conducted at the Clinton station on January 13, 1987. The exercise tested the applicant's and offsite emergency support organizations' capabilities to respond to a simulated accident scenario resulting in a major release of radioactive effluent. Attachment 1 describes the Scope and Objectives of the exercise and Attachment 2 describes the exercise scenario.

The exercise was integrated with a test of the emergency plans of the Illinois Department of Nuclear Safety (IDNS) and Illinois Emergency Services and Disaster Agency (ESDA). This was a full-participation exercise for the State of Illinois and DeWitt County.

4. General Observations

a. Procedures

This exercise was conducted in accordance with 10 CFR Part 50, Appendix E requirements using the Power Station Emergency Plan and Emergency Plan Implementing Procedures.

b. Coordination

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

c. Observers

The applicant's observers monitored and critiqued this exercise along with five NRC observers and a number of Federal Emergency Management Agency (FEMA) observers. FEMA observations on the response of State and local governments will be provided in a separate report.

d. Exercise Critiques

A critique was held with the applicant and NRC representatives on January 14, 1987, the day after the exercise. The NRC discussed the observed strengths and weaknesses during the exit interview. In addition, a public critique was held at the Clinton Station Visitor's Center on January 15, 1987, to present the preliminary onsite and offsite findings of the NRC and FEMA exercise observers, respectively.

5. Specific Observations

a. Control Room

Assignment of responsibilities among the Control Room staff was effective; the Shift Supervisor was able to focus on EAL declarations, communications, and event mitigating strategies, while his crew carried out the detailed actions associated with plant control.

Control Room personnel were knowledgeable regarding the proper procedures to use, and used their procedures. The operators continued to search for alternative system lineups to restore reactor vessel level even after it was obvious that their efforts would be unsuccessful.

Throughout the exercise there was very good communication formality and methodology, e.g. "repeat backs" and use of "This is a drill" statements.

Notifications to the State and NRC were accurate, transmitted expeditiously, and performed in accordance with procedure. Log keeping by the Shift Supervisor was satisfactory, and the use of a tape recorder to record events in the Control Room appeared worthwhile for accident reconstruction. Operators reacted effectively and promptly, using a commercial telephone connection when the "red phone" to the NRC was inoperable.

One of the few weak areas noted in the performance of Control Room Staff, was that they did not quantify the Reactor Coolant System (RCS) leak rate either by thumb rule or calculation after the initial estimate of 20 gpm at 0908 hours.

Support for the Control Room could also have been better at times. For example, projections of time to core uncovery and estimated time remaining before limits were exceeded on suppression pool temperature, containment temperature, and containment pressure were not provided by the TSC or EOF to the Control Room.

Following the declaration of a Notice of Unusual Event (NUE) and escalation to the Alert, there were too many calls to the Control Room for press release information. The phone calls would have been even more disruptive if the Shift Supervisor had not made it clear that they were a low priority compared to making required notifications. When the hospital called the Control Room for information on the injured man, it was provided by the Shift Supervisor because he had overheard some of the radio traffic between the scene and the OSC. Since an official report had not been provided to the Control Room, there was little assurance that the Shift Supervisor had the most recent information. The request for information should have been referred to the OSC.

The interface between the Control Room and support personnel was generally good, but several problems were noted. For example, the Control Room did not receive a report confirming the fire after an operator was sent to check out the fire alarm. There was also some disagreement between the Control Room operators and Repair Team No. 2 about which valve was to be opened locally to restore a path for RHR flow.

Based on the above findings, this portion of the licensee's program is acceptable.

b. Technical Support Center (TSC)

Technical Support Center (TSC) activation began upon declaration of the Alert, and was fully staffed at within 30 minutes. Upon arrival, TSC personnel immediately went to assigned positions, prepared supplies, reviewed checklists, and prepared to assume their duties. Status boards were filled out as initial data became available. Command and control of the emergency response were formally transferred to the TSC following a briefing of the Site Emergency Director (SED) by the Control Room Shift Supervisor.

Good control was demonstrated by the TSC manager throughout the exercise, and noise levels in the TSC were acceptable. Briefings and updates of information were periodically conducted in the TSC to good effect.

Status boards were very well utilized, including those displaying present and forecast weather conditions, major problems, plant parameters and radiological effluent from the Standby Gas Treatment System (SBGTS). Trending of SBGTS effluent noble gas radiation levels and reactor vessel level was performed, and advance estimates were made of fuel uncovery timeframe based on the rate of reactor vessel level decrease.

TSC personnel demonstrated determination, perseverance, and ingenuity in their attempts to find ways to mitigate the accident. Several creative system lineups, and unique ways to get water to the vessel (breaking of condenser tubes by explosives as a way to obtain circulating water) were explored. The SED did an excellent job of keeping the team directed at principal problem areas and most likely avenues of corrective action.

Checklists, logs, notification forms, and applicable procedures were referred to by TSC personnel. Procedures and forms were used extensively. Communication, including information flow to on-site response facilities and notifications to Federal, State and local authorities appeared to be excellent.

Assembly and accountability of non-essential personnel was successfully demonstrated within the goal of 30 minutes.

Based on the above findings, this portion of the licensee's program is acceptable.

c. Operational Support Center (OSC)

The Operational Support Center (OSC) was activated, manned, and placed in operation within 15 minutes after the declaration of an Alert. The OSC Supervisor formally informed the Technical Support Center (TSC) that the OSC was activated and that he was in charge. Throughout the exercise, the OSC Supervisor provided frequent briefings to the OSC staff, maintained control of the OSC, and otherwise demonstrated his ability to make appropriate decisions and to satisfactorily direct OSC operations.

The OSC was very well equipped and staffed. The OSC staff worked well together and used emergency procedure checklists to complete equipment checks in a timely manner. Emergency and operating procedures, technical manuals, plant maps and plans, and repair and damage control equipment were readily available. Personnel dosimetry, radiological protection clothing, and instruments were available and properly used. Muster logs for various skills and trade specialities were maintained and adequate numbers of personnel were present to support the many teams dispatched during the exercise.

Communications between the OSC and in-plant teams and TSC were generally good, and the communications equipment proved to be reliable. Designated communicators and recorders maintained adequate communication logs and assisted with status boards. Status boards were effectively utilized to keep track of plant conditions, in-plant teams, in-plant radiation levels, and for briefings.

Habitability at the OSC was confirmed promptly and periodically assessed throughout the exercise. Radiological control practices at the OSC were adequately demonstrated during the exercise. Personnel were either frisked for contamination or passed through portal radiation monitors to enter the OSC. Radiation Protection (RP) personnel checked material brought into the OSC, maintained contaminated waste control, properly directed the use of anti-contamination clothing, and issued and collected dosimetry devices. Each in-plant team included at least one RP Technician.

Assignment of personnel to in-plant teams to perform tasks requested by the Control Room, TSC, or OSC Supervisor was done in a timely manner. Clear instructions and briefings were provided to the teams, including anticipated hazards, radiation exposure restrictions, and travel routes. "Emergency Team Data Sheets" were used to document team composition, tasks, restrictions, and individual exposures.

Teams were dispatched in a timely manner except for the fire brigade team which took about 20 minutes to organize and dispatch. Part of the delay was because some fire brigade members had previously "suited up" in anti-contamination clothing in case they were needed for other assignments. Consequently, they did not have time to check out their fire brigade equipment and had to remove their anti-contamination clothing before donning their fire fighting gear. An adequate number of fire brigade personnel should be available to initially check out the fire brigade gear and be held for fire brigade team duties unless they are urgently needed elsewhere.

Based on the above findings, this portion of the licensee's program is acceptable.

d. <u>Injured Person Drill</u>

A search and rescue team was promptly formed and dispatched from the OSC in response to a report that one worker had not been accounted for during personnel accountability procedures. The team, including a station nurse and RP technician, was well briefed on the use of the stretcher, the last known location of the missing worker, the search pathway, and how frequently to report back to the OSC. The team worked well together, and displayed good attitudes and role-playing during the entire drill.

The missing worker was located near the lowest level of the Auxiliary Building and was simulated as being unconscious and suffering from a compound fracture of the right leg, a large laceration to the left leg, and a contusion to the right cheek. Colored fluid, make-up, and a leg fracture moulage were used to simulate the injuries. Vital signs and physical responses were provided by a controller. The worker's clothes were simulated as being heavily contaminated, while body contamination levels were simulated as being about ten times control levels.

The injured person's location and apparent condition were promptly communicated to the OSC. His status was first determined by the nurse and prompt treatment was administered to the fractured leg and then the laceration. The team worked well together and the RP technician conducted general area radiation surveys, collected an air sample, and monitored the injured person. One team member could have ingested internal radioactivity (had the simulated conditions been real) from blowing up the air splint applied to the victim's leg. A blow tube cover or air bulb hand pump could be used to eliminate the chance of personnel internal contamination from blowing on a tube that may become contaminated.

The clothing was cut and removed from the injured person and he was carefully placed on the stretcher for transport to an ambulance. The team started up the first flight of stairs with the stretcher positioned so the injured person's feet went first. A controller properly stopped the team and had them turn so the injured person's head was first up the stairs. An injured person should not be carried upstairs feet first due to the difficulty in maintaining the person's head even with or slightly elevated in respect to his feet.

A radiological controlled area had been established at an exit door when the team arrived with the injured person. However, the ambulance did not arrive for about 30 minutes, or until about an hour after the injured person's condition was reported to the OSC. A faster response by the ambulance should be possible. The injured person was properly transferred to the ambulance with a minimal chance of contamination of the ambulance or crew and a RP technician accompanied the injured person in the ambulance.

Based on the above findings, this portion of the licensee's program is acceptable.

e. Post Accident Sampling System Drill (PASS)

The Post Accident Sampling System (PASS) team was dispatched from the OSC. Actual sampling operations including the collection and analyses of a containment atmosphere and containment water sample were executed. Panel operators and laboratory chemists followed the procedures step-by-step, as expected. The PASS team members worked well together and demonstrated their familiarity with PASS operations. Samples were collected, packaged, transported to the laboratory, and analyzed in a controlled and timely manner and with minimum handling. The syringe used to withdraw a liquid sample from the PASS panel had been modified by adding a locking plate to hold the syringe handle at the desired position. The locking plate is an improvement over the previously used rubber spacers and simplified syringe use.

Radiation monitoring and exposure control for the PASS team was generally good. The RP technician conducted periodic habitability surveys, directed radiological control steps, and monitored the PASS panel at required and appropriate times. Pocket dosimeters were frequently checked for accumulated exposures. The RP technician recognized the need for and requested exposure extensions for himself and the panel operators. The extensions were granted and properly recorded on exposure control records. An exception to the good radiological control practices was when the RP technician was approximately five minutes slow in having the PASS team relocate to a lower radiation exposure area to wait for a lengthy sample purge.

Based on the above findings, this portion of the licensee's program is acceptable.

f. Emergency Operations Facility (EOF)

The EOF was activated in a timely manner, and personnel began their tasks in a professional manner. Status boards were filled in as data became available. The human factors engineering and frequent updating of the status boards were excellent. The EOF was provided with habitability surveys, dosimeters and had electronic surveillance activated in a timely manner. Observed personnel and equipment/facility surveys were appropriately implemented.

The EOF Emergency Manager was clearly in charge of the facility and periodically provided the entire EOF staff with updates on the emergency status. The EOF Emergency Manager also held periodic meetings with his immediate staff. Good information flow was observed during these meetings.

The noise level in the EOF was low, and only required two reminders by the Emergency Manager for maintenance of the low noise level. The Emergency Manager used a microphone/speaker to make all announcements which were clearly heard by all EOF staff.

All exercise staff conducted their assignments in a professional and business-like manner. Good engineering ingenuity was displayed in the attempts to find alternate methods to inject water into the reactor vessel.

The Emergency Information staff appeared to maintain good communications with the Joint Public Information Center (JPIC). The EOF log and recordkeeping was very good, and would have allowed reconstruction of EOF actions during the accident.

The Emergency Exercise Controllers implemented their roles in an effective manner and no prompting was observed.

The location for field team access and egress within the EOF were zoned, covered with plastic and had plastic-lined barrels for contaminated clothing. The laboratory and Field Team supplies appeared to be adequate.

All field team members were observed conducting inventory and equipment function checks, using check-off procedures in a business-like manner.

The Field Team Coordinator maintained good communications with the field teams in a crisp and decisive manner.

The Dose Assessment Supervisor, although under considerable pressure from time-to-time, was very good at ensuring that precise communications were provided before definitive statements were made.

The General Emergency was not declared when required by plant conditions. At 1000, the plant had experienced a Loss Of Coolant Accident (LOCA) with failure of the Emergency Core Cooling System (ECCS), a potential core melt situation that warranted an EAL escalation in accordance with Emergency Classification Procedure EC-02. Pertinent sections of Procedure EC-02 would be "fuel cladding," "fuel cladding failure and actual or potential failure of both reactor coolant boundary and primary containment," or "other" which references BWR accident Sequences in Table 4.4 of the Emergency Plan.

At approximately 20 minutes into the Site Area Emergency (1017 hours), the Emergency Manager announced that one fission barrier was breached, the second was in jeopardy, and the third was still intact. Although during this general time period the reactor vessel level was steadily decreasing due to a LOCA and loss of ECCS, the containment pressure and temperature was increasing, along with the level of radioactivity released via the SBGTS, the Emergency Manager did not declare a General Emergency.

At approximately 1130, the Emergency Manager was aware that two fission product barriers were breached. He stated that once indicators of containment integrity loss were present, he would escalate to the General Emergency Classification. During this time, a continuous higher than normal radioactive release was underway from the noble gas effluent of the SBGTS, and the release rate was increasing steadily.

At 1137 hours, the EAL evaluator came to the conclusion via the EAL tables that the plant should be in a General Emergency. This information should have been immediately given to the Emergency Manager and a General Emergency declared. However, the recommendation was not provided until a staff meeting held at 1142 hours, and the General Emergency was declared formally at 1150 hours.

When the General Emergency was not declared based on a LOCA with failure of ECCS, then the subsequent trends of important plant parameters should have resulted in escalation based on predictable core damage and a recognizable, though gradual, failure of containment. Following failure of ECCS due to the loss of electrical bus 1B1, the trend of reactor vessel level indicated eventual core uncovery, while increasing Standby Gas Treatment System activity indicated the early stages of a radioactive release, and rising suppression pool temperatures (with no prospects for restoring suppression pool cooling or providing containment spray) assured that containment pressure would continue to increase.

It was concluded that the General Emergency should have been declared sometime between 1030 and 1130 hours, but definitely earlier than 1150 hours, per either the LOCA and loss of all ECCS (and heat sink), or the existing declining trend of plant parameters. This was considered as an Exercise Weakness, and is similar to a previous Exercise Weakness. This new Weakness will be tracked as Open Item No. 461/87003-01. In addition, the failure to correct this Exercise Weakness is a violation.

Two snow samples and one air sample were analyzed in the EOF Environmental Laboratory. These samples were essentially free of radioactive contamination, and were double-bagged to minimize external contamination potential. However, had the samples been contaminated, laboratory and personnel contamination would have been likely for the following reasons:

(1) No contamination detection instrumentation nor "swipes" were available to establish contamination status.

(2) The sample bags were sealed with "duct" type tape that the technician had great difficulty removing. The violent efforts to open the bags would lead both to personnel and laboratory contamination.

(3) The snow samples were removed from two plastic bags by dipping the containers into the bags. Dripping snow water was observed on the outside of the containers.

(4) No contamination surveys appeared to be available, and no forms for survey results appeared to be available.

In summary, the observed methods for contamination control in the EOF environmental laboratory were inadequate and considered an Exercise Weakness. These observations are similar to the observations made in the previous exercise that resulted in an Exercise Weakness. This new Weakness will be tracked as Open Item No. 461/87003-02. The failure to correct this Exercise Weakness is also a violation.

The communications on a few radiological conditions led to disagreements between some EOF staff members. A contamination incident occurred inside the entrance to the EOF in the properly-zoned access/egress location. During habitability surveys, 700-900 DPM of contamination was found in the hallway outside of the EOF room. Since the level was less than the 1000 DPM limit, the EOF room staff determined (properly) that no limit had been exceeded. The access/egress location, however, was contaminated above the limit. The technicians that were surveying then received conflicting instructions that were properly resolved by the EOF Decontamination Coordinator, who promptly stated "I am responsible for this area, and it will be treated as contamination." Cleanup and resurvey efforts were reasonably prompt.

There was confusion on interpretation of the SPING Monitor readings in terms of what they mean. Although simple interpretation was apparently not covered by procedure, the technician was able, after a few minutes, to make a tentative judgement.

Field monitoring data and plant release projections appeared to vary by a factor of 50 on one occasion during the exercise. Dose rate projections from the EOF were approximately 200 mR/hr, but the Field Team had readings of less than 4 mR/hr. Similarly, the Field Teams had instructions (from somewhere) that a two week jump into Recovery had been initiated. After a conference with the Field Team Coordinator, the Dose Assessment Supervisor told them to hold their positions for 10 minutes until verification occurred.

Although no major problems arose in these few instances of communications problems, attention should be given to them to minimize the chances of recurrence.

The EOF Status Board with listing of staff members was generally maintained up-to-date as members arrived at the EOF room. However, the security guard who printed the names on the board generally had to stop the team members as they came in and ask them what their name was; each member should be instructed to provide name and position automatically as they arrive. In addition, one status board block, lined with red tape (indicating the need to be filled in before declaring the EOF operational) was never completed. This block indicates the readiness of a Field Team for deployment. The Dose assessment Supervisor or his delegate should inform the status board security guard of team readiness if this red-lined block is to be used.

Two violations were identified in this area.

g. Offsite Radiological Monitoring Teams

No NRC observers were assigned to offsite radiological monitoring teams for this exercise.

h. Joint Public Information Center (JPIC)

No NRC observers were assigned to this area. A review of information flow documentation indicated that information was adequate.

6. Licensee Critiques

The licensee held three levels of critiques, one at the individual facility immediately following the exercise a second on the day after the exercise, and a formal critique. NRC personnel attended some of these critiques and determined that exercise deficiencies of significance had been identified by the licensee, with minor exceptions.

7. Exercise Scenario and Control

The exercise scenario was challenging, including an injured, contaminated man, multiple equipment failures, Post Accident Sample Team, assembly/accountability, and meteorological changes. The exercise escalated to the General Emergency classification.

Minor scenario problems were noted. The control room (simulator) panels were not tagged for equipment noted as out of service in the initial plant conditions, and this was corrected following comments by the operators.

The simulator operator was observed in conversation with Control Room players after questions had apparently been asked of him. The simulator operator should be identified as a controller or non-player.

Based on the above findings, this portion of the licensee's program is acceptable.

8. Exit Interview

The inspectors held an exit interview the day after the exercise on January 14, 1987, with the representatives denoted in Section 1. The NRC Team Leader discussed the scope and findings of the inspection. The applicant was also asked if any of the information discussed during the exit was proprietary. The applicant responded that none of the information was proprietary.

Attachments:
1. Clinton Exercise Scope and Objectives
2. Clinton Exercise Scenario Summary

I. 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, the State of Illinois and local governments to respond to a simulated emergency at Clinton Power Station (CPS). The Exercise is designed to test as much of the Clinton Power Station Emergency Plan and the Illinois Plan for Radiological Accidents as is reasonably achievable without mandatory public participation.

Illinois Power Company (IPC) will participate in the CPS 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 CPS 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 pre-positioned in the Simulator to receive Exercise Messages.

Illinois Power Company has established specific objectives and ground rules for the Exercise. These objectives and ground rules may be found later in this section. IPC has also limited its participation in some areas. The areas which will not be demonstrated during the Exercise are, but not necessarily limited to, the following:

1. Due to low power testing and startup activities expected onsite during the Exercise, evacuation of non-essential personnel and accountability will be limited to approximately fifty (50) Illinois Power Company personnel.

2. This scenario has a perceived fire internal to the plant creating a lot of smoke. The plant fire brigade will respond. However, no fire will be visually detected and assistance from the local volunteer Fire Department will not be required.

CLINTON POWER STATION
1986 EXERCISE OBJECTIVES

Primary Objective:

Demonstrate the capability to implement the Clinton Power Station (CPS) Emergency Plan in cooperation with the Illinois Plan for Radiological Accidents (IPRA) to protect public health and safety, and plant personnel.

Supporting Objectives:

1. Demonstrate the capability to quickly and accurately identify and classify accident conditions consistent with implementing procedures.

2. Once the emergency is classified or re-classified, demonstrate timely notification of the Illinois Emergency Services and Disaster Agency (IESDA), the Illinois Department of Nuclear Safety (IDNS) and the Nuclear Regulatory Commission (NRC) within the time required by implementing procedures.

3. Demonstrate the capability to properly notify IPC Emergency Response Organization personnel in accordance with implementing procedures.

4. 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.

5. 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.

6. Demonstrate the capability to assess accident conditions by the collection and analysis of a Post Accident Sampling System (PASS) sample, by performing reactor core damage estimations, and by performing offsite dose assessments.

7. Demonstrate the capability to dispatch and control Field Monitoring Teams during varying meteorological conditions.

8. Demonstrate the capability of Field Monitoring Teams to conduct field radiological surveys, including the collection and analysis of air samples for radioiodine, and to collect, as needed, additional liquid, vegetation and soil samples.

9. Demonstrate the capability of emergency workers to receive, analyze, and store field samples in the EOF Environmental Laboratory while following approved procedures and acceptable radiological controls.

10. Demonstrate the capability to perform offsite dose assessments in coordination with governmental authorities.

11. Demonstrate the capability of the Operations Support Center to control emergency teams including emergency maintenance activities.

12. Demonstrate implementation of effective health physics controls by the emergency teams.

13. Demonstrate the capability to provide dosimetry and monitor radiation exposures to onsite emergency workers and Field Monitoring Teams.

14. Demonstrate the capability to effectively communicate reports, information and assessments of the situation among participating principal command and control centers, personnel and emergency teams.

15. Demonstrate the capability to make appropriate, timely public protective action recommendations to offsite authorities in accordance with implementing procedures.

16. Demonstrate timely, effective information flow from the Emergency Operations Facility (EOF) to the Joint Public Information Center (JPIC).

17. Demonstrate the capability to provide accurate, timely information to the news media from the JPIC in cooperation with governmental agencies.

18. Demonstrate the ability, through discussion, to implement appropriate measures for controlled recovery and re-entry.

19. Demonstrate the capability to critique objectively the emergency response and identify deficiencies. This will necessarily 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.

II. SCENARIO

Initial Conditions the Day Before the Exercise (January 12, 1987)

Clinton Power Station (CPS) is operating at full power. This is the 95th continuous day at full power. Fuel exposure is approximately 3500 Megawatt Days per Ton (MWD/T) into cycle 1. Reactor coolant chemistry is within normal specifications.

The High Pressure Core Spray (HPCS) system was tagged out earlier this morning. The plant is in a 14-day Limiting Condition for Operation (LCO). Maintenance personnel will begin work to replace several sections of the pump impeller later today. The work is needed to increase the slowly degrading efficiency of the pump. The maintenance work is expected to take five days.

Initial Conditions on Exercise Day (January 13, 1987)

Clinton Power Station (CPS) continues to operate at full power. CPS is in its second day of a 14-day Limiting Condition for Operation (LCO) due to the inoperability of the High Pressure Core Spray (HPCS) system. Maintenance work on the pump impeller began yesterday morning following a tag-out of the HPCS system.

Time has nearly expired on the quarterly operability surveillance of Low Pressure Core Spray (LPCS) valves. The LPCS system was temporarily placed out of service this morning at 0500 Hours to cycle and record valve stroke times. The planned surveillance will place CPS in another LCO action statement to return LPCS to service or be in Hot Shutdown within 12 hours. The surveillance is expected to last until 1000 Hours today, at which time the LPCS system will be returned to service.

NARRATIVE SUMMARY
FOR
THE 1986 CLINTON POWER STATION EXERCISE SCENARIO

Initially, Clinton Power Station will be operating at approximately 100 percent power, near mid-cycle core life. CPS is in its second day of a 14-day Limiting Condition for Operation (LCO) due to the inoperability of the High Pressure Core Spray (HPCS) system. The Maintenance Department is replacing several sections of the HPCS pump impeller to increase the slowly degrading efficiency of the pump.

Time has nearly expired on the quarterly operability surviellance of Low Pressure Core Spray (LPCS) valves. The LPCS will be placed temporarily out of service in the morning to cycle and record valves stroke times. The planned surveillance will place CPS in a Technical Specification action statement to return LPCS to service or be in Hot Shutdown within 12 hours. The tests are expected to take two hours, at which time the LPCS system will be returned to service.

UNUSUAL EVENT (0800-0900)

While performing Low Pressure Core Spray (LPCS) valve operability tests, the LPCS Suppression Pool Suction Valve 1E21F001 will be timed shut. However, upon given an open signal, the valve fails to open. Problems with mechanical binding within the valve and motor operator render the valve inoperable. Realizing that the valve cannot be repaired quickly, the Shift Supervisor must declare LPCS inoperable and order a controlled plant shutdown. An Unusual Event should be declared.

ALERT (0900-0950)

While proceeding towards hot shutdown, a feedwater control system malfunction will occur causing feedwater pump ramp up and high reactor water level scram. The feedwater pumps will not trip in time to prevent flooding of the main steam lines. Almost simultaneously, a failure in the Reactor Core Isolation Cooling (RCIC) initiation logic will cause the RCIC system to automatically start. Since the RCIC turbine utilizes steam from the main steam lines, a water slug will be forced through the RCIC steam supply piping. An unisolatable RCIC steam supply line break will then occur within the Drywell due to water hammer. High pressure and temperature in the Drywell will immediately indicate a breach in the reactor coolant pressure boundary and an Alert should be declared.

SITE AREA EMERGENCY (0950-1130)

The RCIC line break will cause the reactor to depressurize allowing the operation of low pressure Emergency Core Cooling Systems (ECCS). Low Pressure Coolant Injection pump A (LPCI A) fails to start. Low Pressure Coolant Injection pump C (LPCI C) is used to control reactor water level. Residual Heat Removal pump B (RHR B) will be placed in suppression pool cooling mode.

Later, smoke is indicated on the 781' elevation of the Auxiliary Building followed by the loss of the Division II 125 VDC power. Control power is lost to Division II equipment causing LPCI C and RHR B to trip. No major source of water to the reactor is available. The smoke indicates a fire of some nature occurred in the Auxiliary Building causing the loss of Division II 125 VDC, a safe shutdown system. A Site Area Emergency should be declared.

GENERAL EMERGENCY (1130-1430)

Reactor water level will fall below the top of the active fuel. The reactor will be depressurized. A General Emergency should be declared due to the loss of 2 of 3 fission product barriers, and the potential loss of the third.

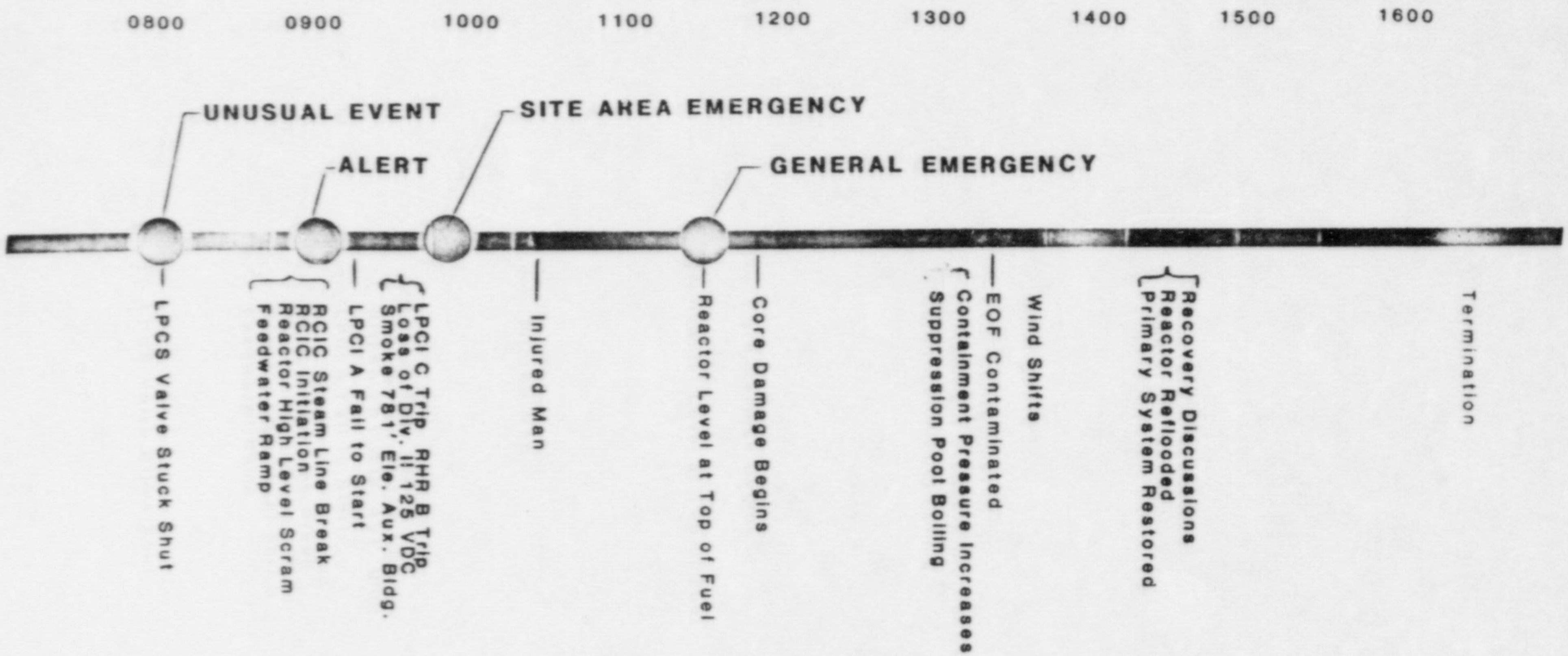
Efforts to restore significant quantities of water to the reactor will prove fruitless. Suppression pool temperature will increase to above design limits. Localized boiling will occur in the suppression pool causing an increase in Containment pressure.

The increase in Containment pressure will cause Containment leak rate to increase dramatically. Due to the onset of fuel damage and the high radioactive concentration airborne in Containment, substantial radiological releases will occur through Standby Gas Treatment System (SGTS).

RECOVERY (1430-1630)

Emergency repairs will be completed which will allow a primary injection system to reflood the reactor. Containment spray will be used to quickly reduce Containment pressure. Radiological release rates will then decrease and recovery/ reentry plans will be discussed.

EXERCISE TIME LINE



LEGEND

 Indicates the approximate time the emergency classes will be declared.