U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-461/85040(DRSS)

Docket No. 50-461 License No. CPPR-137

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

Facility Name: Clinton Power Station

Inspection At: Clinton Site, Clinton, IL

Inspection Conducted: December 3-6, 1985

Inspectors: W. Snell, Team Leader — 12/23/85 Date

J. Patterson — 12/23/85 Date

J. Foster — 12/23/85 Date

Approved By: M. Phillips, Chief, Emergency Preparedness Section — 12/20/85 Date

Inspection Summary

Inspection on December 3-6, 1985 (Report No. 50-461/85040(DRSS))
Areas Inspected: Routine, announced inspection of the Clinton Power Station emergency preparedness exercise involving observations by ten NRC representatives of key functions and locations during the exercise. The inspection involved 228 inspector-hours onsite by six NRC inspectors and four consultants.
Results: Although no items of noncompliance, deficiencies or deviations were identified, six exercise weaknesses were identified and are summarized in the Appendix.

DETAILS

1. Persons Contacted

   a. NRC Observers and / as Observed

      D. Schultz, Control Room
      K. Loposer, Technical Support Center (TSC)
      M. Phillips, TSC, Operational Support Center (OSC)
      C. Hawley, OSC, Inplant Teams, PASS Sample
      A. Smith, OSC, Inplant Teams, Medical Drill
      R. Meck, Emergency Operations Facility (EOF)
      W. Snell, Control Room, TSC, EOF
      J. Foster, Control Room, TSC, OSC, EOF
      J. Patterson, Offsite Monitoring Teams
      R. Marabito, Joint Public Information Center (JPIC)

   b. Illinois Power Company

      W. C. Gerstner, Executive Vice President
      D. Hall, Vice President
      P. Womeldorff, Vice President
      J. Wilson, Plant Manager
      F. Spangenberg, Manager, Licensing and Safety
      H. Deakins, Manager Public Affairs
      A. Adams, Public Affairs
      J. Perry, Manager, Nuclear Programs Coordination
      D. Shelton, Manager, NSED
      H. Daniels, Jr., Project Manager
      W. Connell, Manager, IPQA
      J. Greene, Manager, Startup
      S. Fisher, Manager, Nuclear Planning and Support
      J. Patten, Supervisor, Emergency Response
      R. Freeman, Program Manager ERCIP

      All personnel listed above attended the exit interview on December 5, 1985.

2. General

   An exercise of the Clinton Power Station Emergency Plan was conducted at the Clinton Station on December 4, 1985. 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

3. General Observations

a. Procedures

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

b. Coordination

The applicant's response was coordinated, orderly and 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 ten 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 December 5, 1985, 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 December 6, 1985, to present the preliminary onsite and offsite findings of the NRC and FEMA exercise observers, respectively.

4. Specific Observations

a. Control Room

The Shift Supervisor exhibited above average command and control of his watch section, ensuring crew members knew current plant status, and the direction in which the crew was to move. Many Shift Supervisor directives were anticipatory in nature, e.g., "Be prepared for a loss of power emergency," "Be ready to execute Emergency Operating Procedure . . . when vessel level reaches . . . ," etc. Activities of the Control Room Crew to mitigate the consequences of the postulated accident were innovative, thoughtful, and promptly submitted to the TSC for implementation.

However, accident detection and determination of the implications of the accident was less than timely on at least two occasions. Specifically, a radioactive release started in the fifteen minute interval between 0945 and 1000 of about 2 orders of magnitude increase. During the time interval, turbine building Continuous Air Monitor (CAM) readings increased significantly, accompanied by temperature and level alarms. A determination, however, that a loss

of two fission product barriers in the form of a non-isolable main steam leak had occurred was not made in the Main Control Room until about 1100. A proper event classification was made at 0950, however, based on other Emergency Action Levels (EALs).

Additionally, off normal procedure Earthquakes (CPS No. 4301.01), Paragraph 6.0 - Discussion, suggests contacting a local seismic facility for amplifying information. Although noted and reported as an action item by the STA to the Shift Supervisor, the action was not followed through between the two seismic events (1 hour 45 minutes), nor after the second event.

A diesel generator crankcase explosion resulting in a small fire that was quickly extinguished, and some minor damage to the engine, was ultimately classified by the Shift Supervisor, contrary to his own judgement, but on advice and wishes of the STA and the Plant Manager, as a Site Area Emergency. (This action had to be stopped by the controller to maintain the scenario time line). This classification may have been in excess of the EAL intended to cover explosives in Attachment 10, Page 9, of EC-02, Emergency Classifications. This EAL reads "Severe damage to Safe Shutdown Equipment from explosion." Such a premature classification of a Site Area Emergency was not warranted, even though the wording of the EAL can be interpreted to require it. Further examination of this EAL will tracked as Open Item No. 461/85040-01.

Notifications to offsite authorities for the Notification of Unusual Event and Alert were prompt and timely. However, three items associated with the notifications to the the NRC were noted. First, the Facsimile Event Notification Form, Attachment 4, Page 1 of 4, EC-07 (Revision 1), Emergency Plan Notification, is not the same form as the one in use by Control Room personnel. Second, the Event Notification Form, and the information transmitted to the NRC for the Notification of Unusual Event stated that the EAL was 0.3g acceleration. The actual value was 0.03g. It was noted that 0.25g is the EAL for Site Area Emergency. Third, the Event Notification Form was not familiar to the Shift Supervisor. The Shift Supervisor did not release the message contents, nor is provision made for the Emergency Director to release the form.

Although log keeping practices were effectively practiced by the watch section, the lack of procedure indexing proved troublesome and time consuming to some operators in finding desired operating procedures.

Observations by the NRC evaluator determined that adherence to and understanding of Technical Specifications was less than satisfactory. Specifically, the loss of the Division I Diesel Generator due to the crankcase explosion at 0900 necessitated implementation of Surveillance Requirement 4.8.1.1.1.a within one hour, and requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 within 24 hours. The Shift Supervisor correctly interpreted the requirements, but elected not to conduct the latter two requirements (a starting test, and a load test), not withstanding the degraded condition of the plant and the potential

for loss of power due to the earthquake. The operator charged with performing the surveillance interpreted the requirements as necessitating only the first item, a breaker check. Neither the Shift Supervisor nor the operator implemented the CPS Operating Procedure No. 1405.02, Limiting Conditions for Operation Manual Tracking, a procedure for documenting and tracking LCOs.

In another case, the reactor vessel maximum cooldown rate following the reactor scram at 0945 exceeded 100° F/hr in violation of Technical Specification requirements.

b. Technical Support Center (TSC)

The TSC was manned promptly and in a businesslike fashion. All personnel were signed in on a status board when they arrived at the TSC. However, the sign-in board for the TSC is just inside the door and down several steps. Persons arriving had to queue up to sign in and this not only caused some congestion, it also delayed those persons in getting to their duties.

Communications within the TSC and with other emergency response facilities were good. Assigned communicators were knowledgeable and were able to complete those notifications for which the TSC was responsible within the required time frames, including completion of notifications for the Site Area Emergency within 15 minutes.

Logs in the TSC were well kept and a review indicated they were generally thorough and complete. Trend plots for radiation levels and reactor vessel water level were used and were beneficial. The use of an overhead projector to put drawings/schematics on a screen for review and discussion is noteworthy and it appeared most useful. Meteorological data was frequently updated, including forecast information. Status boards were well used and maintained throughout the exercise.

The transfer of command and control authority from the Control Room to the TSC and subsequently from the TSC to the EOF were very good. In each case formal and clear announcements were made to the TSC staff to inform them of the transfer.

The TSC Site Emergency Director exercised good control and direction of his personnel, and used his experience to keep his personnel focused on the significant problems. TSC personnel were well trained and continued to see ways to inject water to the reactor vessel, to effect repairs, and in general, to combat the casualties, in spite of the fact that the controllers had to deny many of their proposed "fixes" in order to maintain the scenario.

In coordinating efforts with the OSC, there appeared to be an excessive delay in the time between the TSC asking for teams to be dispatched, and the teams actually leaving OSC, and then an excessive time for information from the teams to get back to the TSC.

TSC briefings and status updates were frequent and informative. However, the frequency decreased somewhat as the exercise progressed. In addition, the TSC briefings were somewhat difficult to hear, particularly by those not proximate to the main table. The audio level of the gaitronics (PA system) in the TSC was set too low to be properly heard unless one was right next to the speaker.

Assembly and accountability of approximately 50 non-essential onsite personnel was successfully demonstrated during the exercise. All personnel were accounted for within the goal of 30 minutes.

c. Operational Support Center (OSC)

The Operational Support Center was activated, manned and placed in operation promptly following the declaration of an Alert. The OSC Supervisor made a formal announcement that the OSC was activated and that he was in charge. Throughout the exercise, personnel were quiet and well disciplined. Command and control functions were maintained throughout the exercise, with frequent briefings on plant conditions.

Habitability at the OSC was confirmed and periodically assessed throughout the exercise. The only problem noted in this area was that a number of personnel reporting to the TSC via the OSC did not pass through the frisker (portal radiation monitor) that was set up for this purpose. All personnel should be made aware that they should use the frisker when entering the Control Room, TSC or OSC, or health physics personnel on arrival at the OSC should immediately rope off access to the TSC and Control Room so that entry could only be made by passing through a frisker.

Personal dosimetry was available, properly used, and records maintained. Muster logs for various specialties were available and used. Equipment was orderly and readily available, with self-contained breathing apparatus supplies replenished as needed.

Communications between the implant teams and the OSC were generally good. Teams were well controlled, with the exception of one team which was out of the OSC's control for about one hour. This resulted in tying up two additional teams in a search for the first team.

Briefings and debriefings were conducted in accordance with procedures. However, the radiation values posted on the OSC Plant Radiation Status Board were observed to be outdated at times during the exercise. It was observed that plant radiation levels measured by survey teams were not posted on the status board until the teams returned to the OSC and were debriefed. The status boards could have contained more current radiation data if the radiation levels called in to the OSC by the survey team's were immediately posted on the status boards.

The Post Accident Sampling operation was executed with very little simulation and no prompting. Panel operators followed the procedure step-by-step and were familiar with the appropriate actions. Laboratory Chemists were familiar with equipment and with transmitting resulting data. However, several problems were noted in obtaining the Post Accident Sample System sample.

There was some confusion about respiratory protection for the PASS team. Originally, they were to wear Self Contained Breathing Aparatus (SCBA) equipment. It was suggested by the OSC supervisor that they could use air line respirators. Air lines were provided but it was discovered that only one of the four face-mask respirators available (with the SCBAs) had a connector which would enable the use of airlines. This approach was abandoned and full SCBAs were used. Because of this and other minor hold-ups, the PASS team did not leave the OSC until 30 minutes after the request for the data had been made.

Contamination control at the PASS area was poor. The area had been pre-set with radiation barriers, radiation signs, a step-off pad, rad waste barrels, and extra Anti-C clothing. However, after the initial entry, none of these were used.

After arriving at the PASS panel, the team discovered that there was no procedure for operating the PASS panel at the panel. This resulted in one team member leaving to return to the laboratory to acquire the procedure. While using the procedure, a step required a chemist to go behind the panel to open a valve. There is no shielding in this area and no radiation readings were taken. This could have resulted in a significant overexposure had the events been real.

The space in the PASS sample area was noted to be very limited. There were two panel operators, a team leader, and a radiation protection technician in that limited space. In this instance, the team leader presence inside the PASS sample room appeared to be redundant, as well as questionable from an ALARA standpoint.

An equipment problem was noted in that the tool used to remotely manipulate valves, for ALARA purposes, was too long to fit between the sample panel and some ventilation equipment.

After the undiluted reactor coolant sample was drawn, the shielded cask and trolley were pulled from the alcove and into the PASS sampling room. The controller informed the technicians that the sample would be reading 50,000 R/hr at contact, and 200 mr/hr when inside the cask. The lid was loosely fastened to the cask, the cask was taken into the corridor outside the PASS area, and abandoned there. It was still there after all the PASS team members and controller had returned to the OSC. The cask was not placarded or roped off.

During the analysis of the diluted reactor water off-gas sample, three separate dilutions were performed before the sample could be counted. A maximum level of direct radiation should be pre-established to avoid this trial-and-error approach.

Because of the number and variety of problems observed in collecting the Post Accident samples, this objective was not adequately demonstrated during the exercise. A redemonstration of this system will be required prior to exceeding 5% power and will be tracked as Open Item No. 461/85040-02.

d. Medical Drill

Upon notification, the first aid team responded to the injured person promptly. Information provided by the Controller to the First Aid Team indicated that the injured person had received a compound fracture of the left leg with severe bleeding and an apparent blow to the forehead which could have resulted in neck/ spinal injuries. The victim was located in a highly contaminated area. In general, good first aid practices were performed; however, a number of practices were noted that could be improved. For example, the fractured leg was wrapped to the right leg for support. An appropriate splint was available, and should have been used to support the fractured leg while transporting the victim. In another case, the victims contaminated coveralls were cut from the patients' body. The patient was in shock and shaking severely, however, he was left uncovered and exposed for approximately eight minutes before being covered with a blanket. Additionally, the victims' highly contaminated coveralls, which had been cut free from his body, could have been left in the contaminated area when he was moved on to the backboard for removal to the ambulance. This would have reduced the contamination problem at the hospital.

The hospital staff was prepared for the arrival of the injured person. They handled the contaminated victim in a professional manner and demonstrated good contamination control techniqus, team work, and medical skills throughout their portion of the exercise. One Radiation Protection (RP) technician accompanied the ambulance to the hospital and provided radiation and contamination support to the hospital staff. The RP provided excellent radiological support to the hospital staff. However, the RP did not put on protective clothing immediately upon arrival, but waited until requested to do so by the hospital staff. Also, when the RP surveyed the victim for radiation/contamination with a RM-14 instrument which went off-scale at 50,000 cpm, he reported the reading as greater than 50,000 cpm. Not knowing what the maximum radiation level was, he should have used a Geiger Counter, E-520 which was readily available to verify the actual radiation level on the injured person.

e. Emergency Operations Facility (EOF)

The EOF was staffed and activated well within one hour after declaration of the Site Area Emergency. The transfer of command and control from the TSC to the EOF was smooth and obvious. Status briefings to the EOF staff by the Emergency Manager were timely, thorough and accurate. Overall direction and control of the emergency response activities from the EOF were handled well.

The EOF itself was an excellent facility that worked extremely well from a functional standpoint. Staffing for the facility was adequate to carry out the necessary tasks and responsibilities. In general, status boards were sufficient, accurately and neatly filled out, and continuously used. Logkeeping in the EOF was very good.

The EOF staff was innovative and tenacious in their pursuit of mitigating plant problems. However, the delay in the declaration of the General Emergency was excessive. EPIP EC-02, Emergency Classifications, Attachment 10, page 9 of 9, specifies the classification of a General Emergency for "loss of two of three fission product barriers with a potential loss of third barrier." By 1200, the EOF had recognized the loss of two barriers (Reactor Coolant System and Containment) and discussed the fact that water level was dropping with the projection that the core would be uncovered by 1310. This was sufficient to meet the criteria of the EAL, and a General Emergency should have been declared. Instead, the decision was made by the Emergency Manager to delay the escalation to a General Emergency on the basis that water could be added to the vessel prior to uncovering the core. This untimely classification will be tracked as Open Item No. 461/85040-03, and the applicant's actions in this area examined again during the next exercise.

Access control to the EOF was very good, and included checking of all personnel entering the EOF for contamination. Habitability of the EOF was monitored throughout the exercise.

Meteorological information, including National Weather Service forecasts, were continuously updated and integrated into dose assessments and protective action recommendations (PARs). Dose projections were frequent and adequately integrated into the decisionmaking at the EOF. However, dose projections based on projected plant conditions were all manually computed. At times this proved to be very slow and a bottleneck to obtaining necessary information for decisionmaking. In addition, all dose projections were based on a default release duration of six hours. The staff could have been more aggressive in trying to project the actual release durations and using them in the projections.

PARs were generally adequate and well thought out. However, PARs presented to the offsite authorities were based on sectors and distances from the plant, while the actual implementation of PARs

was achieved by predefined subareas. The EOF did not track the actual subareas where protective actions were implemented offsite. The capability to do this via a map or other means will be tracked as Open Item No. 461/85040-04 and is required to be completed prior to fuel load.

Communications and data flow within the EOF and between the EOF and other facilities was good. The notifications to offsite authorities after declaration of the General Emergency were within the required 15 minutes, including the NRC. Interaction and discussions with State personnel in the EOF were good as was the control of offsite teams by EOF personnel.

The EOF provided a good discussion and consideration on the use of Potassium Iodide. Discussions on tasks necessary for carrying out recovery operations were detailed and thorough.

Observation of the handling of environmental samples brought to the EOF Environmental Laboratory for analysis identified some problems. For example, the sample bag was scanned on the outside, but was not wipe tested for contamination, and the sample preparation was performed on top of the Counter. These practices could easily lead to the spread of contamination. This will be tracked as Open Item No. 461/85040-05 and examined during the next exercise.

f. Offsite Radiological Monitoring Teams (RMTs)

Teams began arriving at the EOF approximately 15 minutes after the Alert was declared. Each two person team quickly and methodically inventoried their emergency equipment kit using the inventory list as a guide. Before being dispatched each team was briefed by the Field Team Coordinator (FTC). Although this preparatory work was well done by each team, it was slightly over one hour before the first team left the parking lot for an assignment. This excessive time delay was primarily due to the Eberline PRS-1/SPA3 Rate Meter/Scaler having their variable high voltage readings out of adjustment. The FTC ultimately decided to dispatch the teams without this instrument, since they were each still equipped with radiation monitoring equipment and could perform radiation surveys. Five teams were mobilized. One of these teams served as a "runner" to transport samples back to the Environmental Laboratory in the EOF for analyses or replace inoperable equipment. This fact should have prompted the FTC to dispatch each team immediately after their remaining equipment was checked for operability.

The FTC also served as a communicator to the RMTs. His directions to the teams were objective, consistent; and the team logistics were well coordinated. The NRC observer concluded that his briefings on plant conditions were too infrequent, and those delivered weren't always informative. At 1130 a message was delivered that plant conditions were the same, with no reference to what "the same" meant. Other messages were almost as brief and

unspecific. It was approximately 35 minutes after the General Emergency was declared before this message was conveyed to the five teams. The technique of having each team verify the message indirectly to the FTC after an important message was relayed was a good one. This ensured that each team heard and understood the message.

Radio communications to the FTC were well done by each team. Proper terminology and decorum were demonstrated by each team in their communications. Plume tracking techniques using the proper monitoring instruments were well done.

Samples were taken properly; proper equipment and sampling techniques were used; and procedures followed. However, labeling of environmental samples was inappropriately placed inside the bag and lacked the start and stop times for the air sample. There was some informal discussion between the team and controller that perhaps a standing water sample would have been more meaningful although the team had been directed to collect the water sample from a running stream or creek by the FTC. Also, one minor error was detected when a team member monitored his hand spade after taking the soil sample. He used the beta/gamma cylindrical probe instead of the "pancake" probe (HP-210) which could have detected any loose contamination on the spade.

g. Joint Public Information Center (JPIC)

The JPIC was a good facility from a functional standpoint. Security for the facility was adequate, and a very good press packet was provided for each reporter as he arrived. The facility was equipped with 20 telephones for use by the media and more could be brought in as needed.

Press releases were timely and in sufficient detail. The use of electronic equipment in the JPIC was good, as was the practice of taping the press briefings and then replaying them for media persons who arrived after the briefing had ended. The status board was kept up-to-date and effectively used. However, the use of graphics for media briefings was poor. The graphics were available for use, but were not utilized. This may have been in part due to the lack of questions from the news media, who were generally passive and did not particularly challenge the JPIC spokespersons. It was also noted that some of the terminology used during the briefings were overly technical in nature.

The major problem identified in the JPIC was the failure to inform the media about the release from the Standby Gas Treatment System until the 1215 briefing. The release had started between 0945 and 1000. Although the magnitude of the release may not have been considered particularly significant to plant personnel (2000 μCi/sec), a delay of this nature could cause a serious credibility problem

between the utility and the media. Information flow to the media via the JPIC will be tracked as Open Item No. 461/85040-06 and will be examined again during the next exercise.

5. Exercise Scenario and Control

The scenario for this exercise was good from a technical standpoint and it challenged the abilities of most exercise participants. The scenario anticipated accurately most player actions which enabled it to stay on schedule with little controller intervention. The extensive amount of plant operational, inplant radiation, and offsite radiation data resulted in a smooth running exercise that minimized the amount of controller improvisation. However, there were several cases observed of controllers providing incorrect data. For example, based on information given by the controller, the chemist calculated that the reactor coolant contained in excess of 600 μCi/ml of activity, and similarly that the undiluted coolant read 50,000 R/hr unshielded. These numbers were obviously much too high. After some discussion, it was decided that the scenario numbers would be reported.

The one area where the scenario was weak was in the area of the offsite release. Keeping the plume in the same direction for the duration of the exercise was not particularly challenging to the offsite monitoring teams or personnel involved in formulating offsite protective action recommendations.

6. Exit Interview

The inspectors held an exit interview the day after the exercise on December 5, 1985, 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 Objective
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 efficient construction and testing operations of the Station.

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. The Exercise Scenario includes simulated events which would, under real circumstances, cause a loss of power to the Emergency Operations Facility (EOF) and other Emergency Response Facilities. Although this is recognized, the Back-up EOF will not be activated and the loss of power to the Emergency Response Facilities will not be simulated.

2. Due to the large number of construction forces expected onsite during the Exercise, evacuation of non-essential personnel and accountability will be limited to approximately fifty(50) Illinois Power Company personnel.

3. According to the scenario, power will be unavailable to the Station's Area Radiation Monitoring/Process Radiation Monitoring (ARM/PRM) System for several hours during the Exercise. To ensure objectives 6 and 9 may be demonstrated, stack flow and radiation data will be available to Exercise participants during the period power is unavailable. However, in-station radiation monitors will be inoperative until a source of power is restored.

CLINTON POWER STATION

1985 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 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.

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 to perform offsite dose assessments in coordination with governmental authorities.

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

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

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

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

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

15. Demonstrate the capability of the Security Force to provide expedient entry of offsite emergency vehicles.

16. Demonstrate the capability of onsite personnel to respond to a simulated injured person where the injury is complicated by radioactive contamination.

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 assemble non-essential Illinois Power Company personnel located within the Protected Area to Site Assembly Areas and to perform individual accountability.

20. Demonstrate the capability to objectively critique 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.

NARRATIVE SUMMARY

FOR

THE 1985 CLINTON POWER STATION EXERCISE SCENARIO

Initially, Clinton Power Station (CPS) will be operating at approximately 86 percent power, near mid-cycle core life. CPS is in its second day of a 7-day Limiting Condition for Operation (LCO) due to the inoperability of Standby Gas Treatment System (SGTS) Train A. The Division I Diesel Generator is temporarily out of service for fuel filter replacement maintenance which is expected to take approximately one(1) hour.

T = 0 - T = 60 UNUSUAL EVENT

At T=0 (0800) a mild earth tremor will occur which will cause plant seismic instrumentation to activate. The tremor's acceleration will be measured at approximately 0.03 g. Although the magnitude of the tremor will be minimal, an Unusual Event should be declared.

During this period, maintenance personnel working on the Division I Diesel Generator will replace the fuel filter and will request the engine be started and tested under load. After the diesel generator is started, maintenance personnel will notice that load starts to drop and will subsequently discover trouble in the engine.

T = 60 - T = 105 ALERT

The diesel engine will soon trip on high crank-case pressure and a small internal explosion will blow one crank-case cover off. A fuel/oil mixture will be blown out along the left side of the engine. A small fire will start, but will be extinguished by personnel at the scene. An Alert will be declared due to a fire potentially affecting safety systems.

Because the Division I Diesel Generator will be out of service, required Technical Specification surveillances will be performed on the remaining two Division II and Division III Diesel Generators. They will perform satisfactorily.

T = 105 - T = 210 SITE AREA EMERGENCY

A strong earthquake occurs with an acceleration measured at 0.255 g which exceeds the Safe Shutdown Earthquake (SSE) level. A Site Area Emergency will be declared. The turbine will trip on high vibrations and the reactor will scram.

The switchyard 345 kv South bus and the emergency offsite 138 kv power supplies will ground fault due to the earthquake. However, the switchyard's North bus will remain energized making offsite power available to the plant. The load dispatcher will indicate that he may lose the one remaining transmission line to the plant and that all offsite power may be lost.

Radiation monitors within the plant begin a slow increasing trend, especially in the Steam Tunnel and Auxiliary Building. Unknown to the operators is a small hairline crack in the B Steam Line upstream of the outboard Main Steam Isolation Valve (MSIV).

During this period an after-shock occurs with an acceleration of about 0.15 g, further rupturing the B Steam Line. Almost immediately, offsite power is totally lost and Division II and Division III Diesel Generators start.

Upon an isolation signal, in-board Main Steam Line Isolation (MSIV) 1B21-F022B will fail to completely close resulting in an unisolatable main steam leak into the steam tunnel.

Reactor water level will begin to decrease. The Reactor Core Isolation Cooling (RCIC) system will initiate, but its capacity will be inadequate. The High Pressure Core Spray (HPCS) will initiate.

Soon, problems associated with the Division II 4160 volt distribution system will cause a loss of all Division II equipment except Standby Gas Treatment System (SBGTS) Train B. The Division II Diesel Generator will continue to run.

The series of earthquakes will cause the seam along the RCIC Storage Tank skirt to tear, allowing the tank to empty. The RCIC Storage Tank level alarm will call for an automatic switching of the RCIC and HPCS suction valves to the Suppression Pool. However, HPCS valve F015 will not open rendering the alternate source of water unavailable. The HPCS pump stalls on low suction pressure. Reactor water level rapidly decreases.

<u>T = 210 - T = 420 GENERAL EMERGENCY</u>

A General Emergency should be declared due to the loss of two fission product barriers with the potential loss of the third, especially with all sources of water to the reactor lost.

Reactor Water Level drops below the top of the active fuel as no make up is available. When the fuel is approximately 50% uncovered, some fuel cladding will begin to perforate. Fission product gases will exit into secondary containment areas through the ruptured main steam line. A release through the Standby Gas Treatment System (SBGTS) Stack to the atmosphere will begin.

Offsite power will be restored and the reactor vessel will be reflooded. At the same time, the inboard Main Steam Isolation Valve (MSIV) will indicate shut. Shutdown cooling will be established. Radioactive releases will begin to subside and the emergency should be de-escalated into the Recovery Phase.

<u>T = 420 - T = ? RECOVERY/RE-ENTRY</u>