

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-461/91007(DRP)

Docket No. 50-461

Licensee No. NPF-62

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

Facility Name: Clinton Power Station

Inspection At: Clinton Site, Clinton, Illinois

Inspection Conducted: March 26 - April 29, 1991

Inspectors: P. G. Brochman
F. L. Brush
J. F. Schapker

Approved By: Roger D. Lanksbury, Chief
Reactor Projects Section 3B

5/17/91
Date

Inspection Summary

Inspection from March 26 - April 29, 1991 (Report No. 50-461/91007(DRP))
Areas Inspected: Routine, unannounced safety inspection by the resident inspectors of licensee action on previous inspection findings; operational safety; maintenance/surveillance; emergency preparedness; engineering and technical support; and licensee event reports. Results: For the six areas no violations or deviations were identified. One unresolved item was identified; (does the design basis for the control room habitability meet the requirements of General Design Criteria 4 and 19 - paragraph 5).

The following is a summary of the licensee's performance during this inspection period:

Plant Operations

- The plant was operated at 100% power for the entire report period with no transients or operational problems.

Maintenance/Surveillance

- The quality of observed maintenance and surveillance activities was good. The backlog of outstanding corrective maintenance tasks continued to be reduced.

Emergency Preparedness

- An issue was identified relating to whether the design basis for the main control room's habitability systems took into account the hazardous chemicals stored at a nearby offsite facility [UNR 461/91007-01 (DRP)]

Engineering and Technical Support

- The licensee inspected the control rod drive hydraulic control units for evidence of cracking due to similar problems in the industry. No problems were identified.
- The inspectors reviewed the licensee's evaluation of the potential for problems with net positive suction head for the standby liquid control pumps. The licensee increased the volume of liquid stored in the standby liquid control tank and raised the setpoint on the level instruments.
- The inspectors identified an issue relating to the hydrogen recombiner containment penetrations and their proximity; and the possibility of short-circuiting the recombiner process. [OPN 461/91007-02(DRP)]

Safety Assessment and Quality Verification

- The quality of the licensee event reports has remained acceptable.
- Temporary Instruction (TI) 2515/065 was completed.

DETAILS

1. Persons Contacted

Illinois Power Company (IP)

- J. Perry, Vice President
- *J. Cook, Manager - Clinton Power Station (CPS)
- *J. Miller, Manager - Nuclear Station Engineering
- F. Spangenberg, III, Manager - Licensing and Safety
- *R. Morgenstern, Manager - Nuclear Training
- *J. Palchak, Manager - Nuclear Planning and Support
- *D. Miller, Director - Plant Radiation Protection
- *P. Yocum, Director - Plant Operations
- *S. Razor, Director - Plant Maintenance
- R. Phares, Director - Licensing
- S. Hall, Director - Nuclear Program Assessment
- *J. Sipek, Supervisor, Regulatory Interface

Soyland Power

- *J. Greenwood, Manager - Power Supply

The inspector also contacted and interviewed other licensee and contractor personnel during the course of this inspection.

* Denoted those present during the exit interview on April 29, 1991.

2. Action on Previous Inspection Findings (92702)

a. Control of Overtime

During a review of overtime practices (see inspection report 461/90028(DRP)), the inspectors noted that the nuclear station engineering department (NSED) did not have a procedure in place to control the use and approval of individuals performing safety-related work (e.g., the station nuclear engineers). Licensee management committed to issuing a procedure to control overtime. The inspectors reviewed NSED procedure A.20, "Budget Preparation and Expenditure Tracking," and verified that paragraph 3.4 and attachment 6 contain adequate guidance for the control and approval of overtime.

- b. (Closed) Information Notice (461/88046-IN)^{cx} The licensee reviewed their purchase orders against the list of companies provided in the information notice supplements. The review determined that no circuit breakers were purchased from any of the companies listed. This item is closed.

- c. (Closed) Violation (461/89029-02(DRSS))^{OK}: Routine maintenance on the Post Accident Sampling System (PASS) gamma monitors and pH monitor not performed in accordance with CPS Procedure No. 1890.30, "Post Accident Sampling Program," Section 6.1.1. and 6.1.2. The licensee has added the preventive maintenance (PM) for the pH monitor and the liquid and gaseous sample gamma monitors to the PM tracking program and incorporated a monthly PASS panel checklist into procedure 1890.30 to assure that maintenance and operational status of the PASS system is documented and acted upon as necessary. This item is closed.
- d. (Closed) Unresolved Item (461/89030-03(DRP))^{OK}: Inspector concerns relating to the licensee's program to address all issues surrounding an event was not as thorough as it could be. The licensee has trained approximately 30 personnel on the methods of the Human Performance Evaluation System (HPES) for performing evaluations of casual factors in addressing root cause evaluations. The inspectors have reviewed the corrective actions for this issue and no additional response is required. This item is closed.
- e. (Closed) Violation (461/89038-01(DRP))^{OK}: The licensee failed to document the results of the cleanliness inspections on the Division I and III diesel generator heat exchangers before and after maintenance. Corrective action included revising CPS procedure 1019.02, "System Cleanliness," training maintenance personnel on the revised procedure, and initiating an annual briefing on the importance of the maintenance, verification, and documentation of system cleanliness. The inspectors have reviewed the corrective actions for this violation and no additional response is required. This item is closed.
- f. (Closed) Violation (461/90014-01(DRS))^{OK}: Plant Technical Staff engineers identified a potentially significant condition adverse to quality relating to low flow indications through the shutdown service water (SX) system pump room heat exchanger 1VH07SA, but failed to promptly initiate a Condition Report or determine its cause. On November 26, 1990, the NRC proposed a \$50,000 civil penalty for this violation. In a letter dated December 19, 1990, the licensee did not contest the violation and paid the civil penalty. The inspectors reviewed the licensee's response and verified that the corrective actions listed below had been accomplished:
- Clinton Power Station (CPS) personnel were counseled to emphasize the importance of corrective action programs, including the responsibility to accurately identify and respond to deficiencies.
 - The licensee revised the Condition Report procedure to require prompt and accurate identification of deficiencies; the initiation of immediate corrective action; and notification of all CPS departments affected by the condition.

- The licensee re-established a Corrective Actions Board to ensure proper deficiency identification, root cause analysis, and corrective action implementation.
 - A Corrective Action Review Board (CARB) was established for improving the Corrective Action Program effectiveness.
- g. (Closed) Violation (461/90014-02a(DRS)^{OK}): Prior to initial plant startup on April 17, 1987, the licensee failed to assure that the design bases of the shutdown service water (SX); and control room heating, ventilation, and air conditioning (HVAC); and chilled water (VC) systems were correctly translated into specifications, drawings, procedures and instructions, and that design control measures properly verified or checked the adequacy of the design. Specifically, the performance of these systems did not meet the design basis requirements specified respectively in Sections 9.2.1.2 and 9.4.1.1 of the Updated Safety Analysis Report (USAR). This was due in part to inadequate design input supplied by an equipment vendor and resulted in less than design specified cooling water flow in numerous system components. Design control measures for verifying or checking the adequacy of the vendor supplied data failed to note that data was not appropriate for the type of cooling coils purchased.

On November 26, 1990, the NRC proposed a Severity Level III violation with no civil penalty. The inspectors reviewed the licensee's response and verified the corrective actions listed below:

The licensee performed systematic examinations of flow and pressure drop data provided by the manufacturers of the heat exchanger cooling coils used in the SX and VC systems. The data reviewed determined that the vendor flow data for the American Air Filter (AAF) heat exchangers was incorrect for heat exchanger cooling coils with clean out plugs.

Pressure drop data for all AAF-supplied cooling coils associated with the SX system were re-evaluated and corrected by the architect-engineer (AE). The correct flow data has been incorporated into applicable test procedures. Flow through the three divisions of the SX and VC system was balanced using the corrected data, and the resulting flows have been verified by the AE to be adequate.

The inspectors observed corrective measures in progress. The inspectors and an NRC consultant reviewed the AE's calculations and confirmed the adequacy of the flow rates to perform the heat removal capacity required by the USAR. The licensee performed pipe routing modifications and flow restrictor modifications to achieve a flow balanced system.

The inspectors reviewed these modifications and the resulting flow rates through the SX system heat exchangers. Some of the flow rates did not meet the current USAR requirements. However, the AE has performed safety evaluations for each of these conditions and confirmed the flow rates are adequate to maintain the safety margins required. The USAR values are to be changed to reflect these corrections. The licensee has committed to submit these changes in the next USAR change submittal.

Based on the actions taken, the inspectors have no further concerns on this issue and this violation is closed.

h. (Closed) Violation (461/90014-02b(DRS))^{dk}: Pre-operational test PTP-SX-01 was deficient in that:

- (1) Inaccurate design flow differential pressure (dp) data was used for the American Air Filter (AAF) heat exchangers;
- (2) Non-conservative flow measurement acceptance criteria were applied without a technical basis;
- (3) The dp flow balance measurement did not account for pressure losses between the dp tap and the component being measured; and
- (4) Flow balancing of the SX system was not performed after installation of the flow restricting orifices.

The design data for the AAF heat exchangers were deficient in that the design flow differential pressure (dp) data supplied by the vendor was inaccurate. The AAF supplied inaccurate pressure drop data was subsequently incorporated into the pre-operational test procedure PTP SX-01.

PTP-SX-01 was not consistent with the requirements of the design specifications. The acceptance criteria for flow balancing the loads served by the SX system were assigned a non-conservative plus-or-minus ten percent allowable deviation from design flows. This non-conservative allowable deviation contributed to the acceptance of flow rates less than design specifications.

The licensee was unable to determine the origination of the 10% allowable deviation value. Normal practice during the pre-operational test program required issuance of a Field Problem Report (FPR) to determine tolerances on design specifications when those tolerances were not provided in design documents. However, review of FPRs for the SX system did not identify any issued to obtain this allowable deviation value.

PTP-SX-01 also failed to account for the pressure drop for pipe head loss between the differential pressure tap and the component being measured. PTP-SX-01 contained specific information on test equipment to be utilized during the performance of flow balancing; however, it did not specify the locations at which dp or "Clampatron" flow measurement devices should be attached. It was left to the discretion of the startup test engineer to determine the specific locations at which to connect test equipment. Failure to account for pipe head loss resulted in errors when flow values were calculated.

In addition, following the initial pre-operational testing, flow restriction orifices were installed to obtain required flow through certain heat exchangers so that excessive valve throttling would not be required. Adequate pre-operational retesting was not performed for all affected components following installation of the flow restrictor orifices. The precise reason for failure to perform adequate retesting could not be determined because the extent and basis for retesting on the specific heat exchangers were poorly documented in the test log.

The inspectors reviewed the licensee's response and verified that the corrective actions listed below had been accomplished:

The licensee issued a 10 CFR Part 21 report which identified the AAF heat exchangers design data as being deficient, in that the design flow dp data supplied by the vendor was inaccurate. Differential pressure data for all AAF supplied cooling coils associated with the SX and VC systems were re-evaluated and corrected by the AE. The corrected data was incorporated into the test procedure. Flow through the SX and VC systems was balanced using the data. The non-conservative tolerance of plus or minus ten percent applied to minimum flow specifications in PTP-SX-01 was corrected by the implementation of Test Procedure 2800.10, "SX System Flow Balance Verification." An increase of five percent was added to the minimum flow values to allow for instrument error. In addition, the test procedure accounted for the pipe head losses. Differential pressure measurements were taken but were not relied upon to determine the flow rate. Three types of non-intrusive velocity flow devices were also used to measure flow (Controlotron, Polysonics, and Panametrics flow meters). The inspectors verified the flow measurement capability of each device and its limitations.

The licensee also performed extensive calculations of the safety significance of the SX low flows. An evaluation was performed to determine if the 27 heat exchangers/cooling coils using the SX system for cooling water could have performed their designed safety function with their as-found flow rates based on: direct heat rejection; room temperature increases; and subsequent effects on environmental qualification, building steel/concrete, secondary containment drawdown time, and radiological release rates.

The evaluation concluded that temperatures would have increased in several areas of the plant, but these temperature increases would have had no detrimental effect on the operability or environmental qualification of the applicable safety-related components. The evaluation further concluded that the less-than-design flow rates did have an impact on secondary containment drawdown ability, but would not result in release rates that would exceed off-site or main control room radiological dose limits. Based on this evaluation of the as-found flow rates, the ability of the SX system heat exchangers/cooling coils to support safe shutdown of the plant and maintain the plant in a safe shutdown was not exceeded.

The licensee reviewed 34 additional testing procedures. The procedures were prepared in approximately the same time frame as PTP-SX-01 (February 1984). All procedures reviewed dealt with flows. All safety-related procedures/systems were selected while a sampling of nonsafety-related procedures were reviewed. The scope of the review included:

Review of the acceptance criteria section of the procedure to determine if "generic" tolerances were used.

Review of the implementing section of the procedure to determine if "generic" tolerances were used.

The results of the review concluded there were no safety-related procedures which had "generic" tolerances in them. Those procedures with tolerances were verified to be appropriate. The reviews confirmed that the test program problems on safety-related systems were limited to the SX system and to the AAF heat exchangers in the VC system.

Based on a review of this information, the inspectors have no further concerns. This violation is closed.

1. (Closed) Unresolved Item (461/91004-01(DRP))^{ck}: Questions on the revision to the Division III battery loading calculation. On December 20, 1990, the licensee had identified that the battery loading calculation was too low. This was due to the fact that Institute of Electrical and Electronics Engineers (IEEE) standard 485 indicated that the locked rotor current for the starting motor on the Division III diesel generator's diesel powered air compressor should be included as a momentary random load. Consequently, the licensee revised the load profile from 112 amps for 1 minute and 52 amps for the next 239 minutes to 165 amps for 1 minute and 52 amps for the next 239 minutes. The battery was successfully tested at this higher discharge rate.

During subsequent discussions with the licensee, the inspector determined that the licensee had never committed to IEEE-485; consequently, while the increase in the discharge rate was prudent and conservative, it was not required. Therefore, the inspectors have no further concerns regarding this issue; and this item is closed.

No violations or deviations were identified.

3. Plant Operations

The unit operated at power levels up to 100% for the entire report period.

a. Operational Safety (71707)

The inspectors observed control room operation, reviewed applicable logs, and conducted discussions with control room operators during March and April. During these discussions and observations, the inspectors ascertained that the operators were alert, cognizant of plant conditions, and attentive to changes in those conditions, and that they took prompt action when appropriate. The inspectors verified the operability of selected emergency systems, reviewed tagout records, and verified the proper return to service of affected components. Tours of the auxiliary, containment, fuel-handling, rad-waste, and turbine buildings were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations, and to verify that maintenance requests had been initiated for equipment in need of maintenance.

The inspectors verified by observation and direct interviews that the physical security plan was being implemented in accordance with the station security plan.

The inspectors observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. The inspectors also witnessed portions of the radioactive waste system control associated with rad-waste shipments and barreling.

The observed facility operations were verified to be in accordance with the requirements established under Technical Specifications, 10 CFR, and administrative procedures.

b. Battery Instrumentation (71707)

During a review of control room indications, the inspectors noted that the Division 3 dc power system instrumentation was not consistent with Divisions 1, 2, and 4. Clinton Updated Safety Analysis Report (USAR), section 8.3.2.1.2.4, stated that for each Division 1, 2, and 4 dc power system an ammeter and volt meter

were provided in the main control room to monitor the battery charge/discharge current and dc bus voltage, respectively; and that a high discharge rate of a battery would be monitored through the ammeter. For Division 3, only a voltmeter was provided in the main control room.

Question and response number 430.133 to the Clinton Final Safety Analysis Report (FSAR) requested that the licensee indicate compliance with or deviation from the NRC's licensing review guidelines for Class 1E dc power systems. These guidelines stated, in part, that battery current (ammeter - charge/discharge) and dc bus voltage indications shall be provided in the control room.

The licensee's response stated an ammeter and a voltmeter were provided in the main control room to monitor the battery charge/discharge current and dc bus voltage for the Division 1, 2, and 4 dc power systems. For Division 3 the licensee stated: "The Division 3 alarms and indications meet the general requirements of IEEE 308-1974 and Regulatory Guide 1.47. These alarms and indications, combined with the periodic test and surveillance requirements included in the Technical Specifications, are sufficient to provide reasonable assurance that the Class 1E dc power system is ready to perform its intended safety function." Since the NRC staff has previously accepted this deviation, the inspectors have no further concerns.

No violations or deviations were identified.

4. Maintenance/Surveillance (61726 & 62703)

Station - maintenance and surveillance activities of safety-related and non-safety-related components listed below were observed or reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides, industry codes or standards, and in conformance with Technical Specifications.

D21208 Repacking "A" reboiler auxiliary steam inlet valve -
0A5036A.

PMMVYM008 Cleaning and inspection of RHR "A" heat exchanger room
cooling coil "A".

PMMVYM009 Cleaning and inspection of RHR "A" heat exchanger room
cooling coil "B".

PEMDGA014 Calibration of emergency diesel generator (EDG) relay
232-DG1A, Reverse Power.

- PMMDGM095 Inspect compression valves and clean external surfaces of aftercooler, intercooler, and cylinders of EDG starting air compressors.
- PCIDGM009 Replace EDG crankcase high pressure switch.
- DO4386 Repair threaded connection on fuel oil system.
- PEMDGA013 Clean & Inspect Division 1 generator and exciter and megger.
- PCIDGM521 EDG 16 cylinder expansion tank level switch alarm functional test.

The following items were considered during this review: the limiting conditions for operation were met while affected components or systems were removed from and restored to service; approvals were obtained prior to initiating work or testing; quality control records were maintained; parts and materials used were properly certified; radiological and fire prevention controls were accomplished in accordance with approved procedures; maintenance and testing were accomplished by qualified personnel; test instrumentation was within its calibration interval; functional testing and/or calibrations were performed prior to returning components or systems to services; test results conformed with Technical Specifications and procedural requirements and were reviewed by personnel other than the individual directing the test; any deficiencies identified during the testing were properly documented, reviewed, and resolved by appropriate management personnel; work requests were reviewed to determine the status of outstanding jobs and to assure that priority was assigned to safety-related equipment maintenance which may affect system performance.

The licensee performed a planned corrective and preventative maintenance outage on the Division I emergency diesel generator. The inspectors observed the activities listed above and the coordination of the effort by maintenance supervision. No problems were identified by the inspectors.

No violations or deviations were identified.

5. Emergency Preparedness (71707)

On March 19, 1991, a fire occurred on the premises of Shield Soil Service, a facility located approximately 2.5 miles ENE of Clinton station in the town of DeWitt. There was no impact on the station, as it was not downwind of the fire. During followup of the fire, the inspectors inquired if operations department management had evaluated this event as an "unusual event" as defined by Clinton emergency plan implementing procedure EC-02, Category 15.2, "Toxic or Flammable Gasses/Liquids Released." The inspectors were informed that management had deemed this event not-classifiable due to the fact that the fire was

not upwind of the plant and that the licensee had determined that the station was not within Shield Soil Service's emergency planning zone (EPZ). The inspectors have reviewed this decision and agree with it.

The Illinois Emergency Services and Disaster Agency (ESDA) had developed an EPZ for Shield in accordance with the requirements of the Superfund Amendment and Reauthorization Act (SARA) of 1987, Title III, since Shield stored extremely hazardous chemical onsite. The chemical of concern at Shield, considered by ESDA, was anhydrous ammonia [NH₃OH]. On April 10, 1991, the inspectors contacted ESDA to obtain additional information and were informed that ESDA had just completed its bi-annual review of these EPZs and that the EPZ for Shield had been increased and now included Clinton station. This new information was scheduled to be published by July 1, 1991.

The inspectors further reviewed the Clinton USAR, sections 2.2, "Nearby Industrial, Transportation, and Military Facilities," and 6.4, "Habitability systems." Paragraph 2.2.3.1.3, stated, in part, "There are no industries within five miles of the site which manufacture, use, or store hazardous materials," [Page 2-2.10]. Paragraph 6.4.4.2, "Toxic Gas Protection," stated, in part, that design for toxic gases other than chlorine from offsite sources was not implemented since the frequency of transportation or delivery of gases does not dictate it. As discussed in section 2.2, there are no hazardous products or materials regularly stored, manufactured, or used within 5 miles of the station," [page 6.4-9].

10 CFR Part 50, Appendix A, Criterion 19, required, in part, that a control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions. Clinton USAR, Section 6.4, stated that the control room habitability systems were in compliance with Criterion 19. Section 6.4.1.c. stated that the design basis for the habitability system's functional design included provisions to preclude significant entry of toxic gases from outside the plant.

Regulatory Guide 1.78, "Assumptions for Evaluating the Habitability of a Nuclear Power Plant Control Room During Postulated Hazardous Chemical Releases," paragraph C.1 stated, "If major depots or storage tanks of hazardous chemicals such as the chemicals listed in Table C-1 of this guide are known . . . to be present within a five-mile radius of the reactor facility, these chemicals should be considered in the evaluation of control room habitability . . . Table C-2 gives the criteria to be used in evaluating the hazards of chemicals to the control room"

Table C-2 specified a weight of 13,000 pounds of chemical as a threshold, for the Clinton type of control room, based on standard assumptions. The inspector has calculated an adjusted threshold weight, using equation (1), based on a toxicity limit of 70 mg/m³, an air exchange rate of 0.5, and a Pasquill stability Category of G, for NH₃OH using Clinton specific air exchange and meteorological data. A Type "C" control room (Clinton type) was utilized, as there was no automatic isolation for ammonia.

Equation 1

$$\text{Adjusted Threshold value} = \text{Threshold value} \times \frac{\text{Actual Toxicity limit}}{\text{Reference Toxicity limit}} \\ \times \frac{\text{Actual Air Exchange Rate}}{\text{Reference Air Exchange Rate}} \times \text{Actual Pasquill Stability Category}$$

Applying the above listed assumptions yields an adjusted threshold value of:

$$13,000 \text{ lbs.} \times [(70/50) \times (1.2/0.5) \times 0.4] = 17,472 \text{ lbs.}$$

Since the facility has the capacity to store up to 72,000 pounds of NH₃OH, plus smaller quantities of toxic chemicals such as pesticides, herbicides, or fertilizers, the inspectors requested that the licensee evaluate, within 60 days of receipt of this report, whether or not the hazardous chemicals stored at Shield Soil service affect the design basis of the control room habitability systems; and to verify that the habitability systems comply with the requirements of Criterion 19. The inspector's review of this evaluation will be tracked as unresolved item (461/91007-01(DRP)).

In initial discussions with the licensee, the licensee's staff indicated that this facility had been evaluated in 1981 at the time of initial licensing of Clinton, but had been small enough to be deemed insignificant and therefore not included in the USAR. However, in subsequent discussions with the licensee's staff the inspectors were informed that the 72,000 lb. tank of NH₃OH had existed since 1965. The inspector requested that the licensee evaluate this.

No violations or deviations were identified; however, one unresolved item was identified.

6. Engineering and Technical Support (37700)

a. Control Rod Drive Hydraulic Control Unit

The licensee performed an inspection on certain welds on the charging water line connection to the accumulator riser coupling of the Hydraulic Control Units (HCUs). This was based on recommendations from General Electric (GE) due to cracking of these welds at another Boiling Water Reactor (BWR) 6 facility. A 100% visual inspection revealed no indication of cracking. Ten percent of the welds were also given a liquid penetrant test and no indications were observed. The torque on the bolts for the charging water lines j-clamps were checked and no problems were found. The HCUs were inspected for missing hardware. Four bolts, on three HCUs, that were missing were replaced. This completed the actions recommended by GE.

b. Standby Liquid Control System

The NRC issued Information Notice 91-12 as the result of an industry identified problem concerning the potential loss of net positive suction head (NPSH) for the standby liquid control system (SLC) pumps.

The issue concerns low tank level with elevated liquid temperatures and possible pump interaction between the two positive displacement pumps, whose suctions were in parallel.

The licensee raised the level of sodium pentaborate solution in the SLC tank to ensure that adequate NPSH would be available. The licensee discovered during their investigation of these concerns, that the size of the SLC tank pump suction piping was changed from three to six inches during initial plant construction. However, the instrument "zero reference" had not been changed to account for the larger diameter pipe. The licensee raised the "zero reference" above the top of the suction piping nozzle. The licensee intends to submit a change to technical specifications to reflect these new values.

c. Local Leak Rate Test (LLRT) Test Rig Explodes

At 8:40 a.m. on March 25, 1991, station technical and maintenance personnel were performing a LLRT on the containment upper air lock, per Clinton procedure 9861.03, "Type B Local Leak Rate Testing." After completing the test of the inner door seal, the test rig was connected to the outer door seal and the nitrogen bottle was changed out. A new bottle was installed and the regulator was, "backed out to what was thought to be adequate."

When the outlet valve on the nitrogen bottle was opened, the test rig was pressurized to approximately 400 psig. This exceeded the design rating of the desiccant dryer on the inlet of the test rig, which was made of metal. This caused the desiccant dryer to explode. The fragments of the dryer shattered a light bulb and lacerated the left knee of a maintenance worker. No other injuries or damage occurred.

The licensee investigated the event and developed four causes: (1) the lack of overpressure protection on the LLRT carts, (2) the high pressure regulator installed on the nitrogen bottle was not set properly, (3) a high pressure regulator should not have been used for this application, and (4) the lack of an air source in the immediate area.

The licensee's corrective actions included: (1) the installation of relief valves on the LLRT carts, (2) the use of low pressure regulators on the nitrogen bottles, (3) briefing of technical and maintenance personnel on this accident, and (4) evaluation of the need to proceduralize instructions on the use of regulators.

The inspectors have reviewed this event and identified two root causes and one contributing cause. The first root cause was that the physical design of Clinton Station was not conducive to performing this test. This was due to the fact that an air supply drop was not provided in the vestibule outside the air lock and that to use the next closest air supply drop, several fire and/or security doors would have to be propped open, and a hose run to the test rig. This would cause an operating and security inconvenience. The second root cause was, consequently, that the original design of the LLRT test rig was modified from using low pressure service air, from an air drop, as a pressure source to a high pressure nitrogen bottle. However, this design change did not recognize the possibility that the regulator could be misset or fail. In either case, this would supply nitrogen at a pressure above the design value of the desiccant dryer housing. This design feature would mandate that an over pressure device (safety valve or rupture disk) be installed to protect the test rig. The contributing cause involved the training of the personnel in the use of regulators.

d. Request for Information on the Emergency Diesel Generator Fuel Oil System

On April 18, 1991, the inspectors received a request from Region III to provide information on the seismic qualification of fuel oil (FO) systems for the emergency diesel generators (EDG). The inspectors obtained the requested information and forwarded it to Region III. No problems were identified.

e. Hydrogen Recombiner Containment Penetrations

The inspectors identified an issue near the close of the inspection period, relating to the Hydrogen Recombiner System. Since the containment penetrations (suction and discharge points for the hydrogen recombiners) were in relative close proximity; 8 feet for the A system and 25 feet for the B system, the inspectors question if nearness of the penetrations had the possibility of short-circuiting the effectiveness of the system. The inspectors will follow up on this issue in a subsequent report; and it will be tracked as open item (461/91007-02(DRP)). OY

No violations or deviations were identified.

7. Safety Assessment/Quality Verification

a. Licensee Event Report (LER) Follow-up (90712 & 92700)

Through direct observation, discussions with licensee personnel, and review of records, the following LERs were reviewed to determine that the reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with Technical Specifications.

<u>LER No.</u>	<u>Title</u>
461/88011 ^{OK}	Random failure of a condenser pit high level switch results in shutdown of vacuum, and manual scram.
461/88019 ^{OK}	Unknown plugged inlet lines cause drywell air coolers' condensate flow monitoring system to be inoperable resulting in missed drywell atmosphere grab samples.
461/89001 ^{OK}	Unacceptable main steam line isolation valve leakage rates due to valve seat wear.
461/90002 ^{OK}	Shutdown Service Water System heat exchanger design errors results in low flows.
461/90010 ^{OK}	Division I and II Emergency Diesel Generators service water piping expansion bellows tie rods missing.
461/90011 ^{OK}	Division I and II Emergency Diesel Generators shutdown service water throttle valve mispositioning.

These items are closed.

b. Temporary Instruction (TI) 2515/065

This temporary instruction was issued to provide guidance to the NRC staff on following-up the Three Mile Island (TMI) Action Plans - NUREG-0737, "Clarification of TMI Action Plan Requirements," and documenting licensee closure and NRC verification of each item in the NUREG. NUREG-1435 contained the status of all TMI items. NUREG 1435 and TI 2515/065 were reviewed to determine the status of TMI items. The licensee has completed all action items required of them by NUREG 0737 and all NRC verifications had been completed except for item I.C.1.

Inspection report 461/91006(DRS) closed this item, which completed the NRC verification of NUREG-0737. This completes TI 2515/065 and it is considered closed.

No violations or deviations were identified.

8. Management and Organizational Changes

On April 10, 1991, the Illinois Power Company Board of Directors elected Mr. Lloyd D. Haab as the company's chief executive officer (CEO), effective immediately. Mr. Haab replaces Mr. Wendell J. Kelly who was

the CEO and chairman of the board of directors. Mr. Kelly will be retiring as chairman of the board of directors on June 1, 1991. Mr. Haab will also continue in his position as company president.

On March 13, 1991, Mr. Roger Morgenstern replaced Mr. Richard Gill as manager of training. Mr. Morgenstern had been the manager of scheduling and outage management.

On March 13, 1991, the licensee announced that the scheduling and outage management department would be transferred and would now report to the plant manager. A task force was formed to determine the final structure of this new organization, under the plant manager.

On April 26, 1991, Mr. R. Gill resigned as manager of the nuclear programs and assessment group (NPAG). Subsequent to his departure, the NPAG was dissolved and the functions assigned to other offices.

9. SALP Presentation

On April 26, 1991, Mr. A. B. Davis, Region III Administrator, and members of his staff, and Mr. J. Hannon, Director, NRR Project Directorate III-3, and members of his staff, presented the results of the Systematic Assessment of Licensee Performance (SALP) assessment in a public meeting with Messrs, L.D. Haab, CEO and President of Illinois Power Company, J. S. Perry, Vice President, and members of their staffs. Subsequent to the meeting, questions from the public and the press were responded to.

10. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. An open item disclosed during the inspection is discussed in paragraph 6.e.

11. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. An unresolved items disclosed during the inspection is discussed in Paragraph 5.

12. Exit Interview

The inspectors met with the licensee representatives denoted in paragraph 1 at the conclusion of the inspection on April 29, 1991. The inspectors summarized the purpose and scope of the inspection and the findings. The inspectors also discussed the likely informational content of the inspection report, with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents or processes as proprietary.