U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-295/82-14(DPRP); 50-304/82-13(DPRP)

Docket Nos. 50-295; 50-304 Licenses No. DPR-39; DPR-48

Licensee: Commonwealth Edison Company
P. O. Box 767
Chicago, IL 60690

Facility Name: Zion Nuclear Power Station, Units 1 and 2

Inspection At: Zion Site, Zion, IL

Inspection Conducted: May 15 through July 16, 1982

Inspectors: J. R. Waters — 8/10/82

K. A. Connaughton — 8-10-82

J. K. Heller — 8-10-82

J. M. Peschel — 8-12-82

Approved By: D. W. Hayes, Chief — 8/10/82
Reactor Projects Section 1B

Inspection Summary

Inspection on May 15 through July 16, 1982 (Reports No. 50-295/82-14(DPRP); 50-304/82-13(DPRP)

Areas Inspected: Routine unannounced resident inspection of licensee action on previous inspection items, Unit 2 startup with 0 Diesel Generator out of service, missing portion of broken valve guide, failure of 1A SI pump, fire protection program, bullet resistant fire doors, Unit 1 primary to secondary leakage, Unit 2 reactor trip of July 7, 1982, design changes and modifications, Fischer Porter transmitters rated less than design, Operational safety verification, maintenance operations, surveillance operations and Licensee Event Reports. The inspection involved a total of 576 hours by four NRC inspectors including 72 hours onsite during off-shifts.

Results: Of the areas inspected one item of noncompliance was identified (improper startup of Unit 2, Paragraph 4).

DETAILS

1. Persons Contacted

*K. Graesser, Station Superintendent
*E. Fuerst, Assistant Station Superintendent, Operations
G. Pliml, Assistant Station Superintendent, Administrative and Support Services
*K. Kofron, Assistant Station Superintendent, Maintenance
*R. Budowle, Unit 1 Operating Engineer
*J. Gilmore, Unit 2 Operating Engineer
L. Pruett, Assistant Technical Staff Supervisor
*P LeBlond, Assistant Technical Staff Supervisor
*A. Miosi, Technical Staff Supervisor
B. Schramer, Station Chemist
F. Ost, Health Physics Engineer
C. Silich, Technical Staff Engineer, ISI
*B. Harl, Quality Assurance Engineer
*T. Lukens, Quality Control Engineer
B. Kurth, Master Instrument Mechanic
*F. Lentine, Nuclear Licensing Administrator
*J. Marianyi, Operating Engineer

*Denotes those present at the exit meeting of July 16, 1982.

2. Summary of Operations

Unit 1 remained shutdown until July 1, 1982, when the reactor was taken to hot standby for post refueling physics testing. The following trips and unscheduled shutdowns subsequently occurred:

a. On July 4, 1982, the reactor was made subcritical from hot standby at 11:30 p.m. to await completion of repairs to the 1A Safety Injection Pump, (see Paragraph 6). July 6, 1982, at 6:15 a.m. the reactor was taken critical again.

b. On July 6, 1982, the reactor tripped at 4:47 p.m. from hot standby due to an inadvertant safety injection. The trip and safety injection occurred during the performance of containment pressure logic testing when mechanics reset the wrong safety injection train. The boron injection tank was reconstituted and the reactor taken critical at 11:48 p.m. July 6, 1982. The unit was tied to the grid at 8:28 a.m. July 7, 1982.

c. On July 7, 1982, the reactor tripped from less than 10% power at 8:47 a.m. due to a high flux signal from intermediate range nuclear instruments, (see Paragraph 10). The reactor was taken critical again at 10:50 a.m. and restored to the grid at 2:17 p.m. July 7, 1982.

Unit 2 operated at power levels up to 100% during the inspection period. The following unscheduled shutdowns and reactor trips occurred:

a. On May 16, 1982, the unit tripped from full power at 12:47 a.m. The trip resulted from instabilities in the 2C feedwater pump speed control system. Operators took manual control but were unable to stop the speed oscillations. The reactor tripped from high level in the 2D steam generator. The reactor was made critical again at 4:00 a.m. and restored to the grid at 6:18 a.m. May 16, 1982.

b. On June 5, 1982, the unit tripped from full power at about 12:48 a.m. in response to a pressurizer low pressure signal. The trip occurred when a mechanic was equalizing and isolating the uncompensated pressurizer level instrument, and inadvertantly opened the reference leg drain valve. Since two pressurizer pressure instruments sense pressure on this line, the reactor protection system tripped the unit. The reactor was made critical at 3:58 a.m. June 7, 1982, and restored to the grid at 5:47 a.m. June 7, 1982.

c. On June 25, 1982, Unit 2 tripped from full power at 2:28 p.m. due to a ground on the main transformer bus work, (see Paragraph 4). The reactor was taken critical again at 9:16 p.m. June 28, 1982, and restored to the grid at 6:02 a.m. June 29, 1982.

d. On July 8, 1982, the unit was manually tripped from full power at 5:33 a.m. Operators first observed a loss of condenser vaccuum and received a steam flow/feed flow mismatch alarm. A loud rumbling was heard in the control room. This, combined with indication of increasing feed flow led the operator to believe a feed line break had occurred. The operator then manually tripped the turbine thus tripping the reactor. The vaccuum loss is believed to have resulted during the restoration of a condensate suction strainer to service. The increased back pressure is thought to have caused the turbine governor valves to close (EHC was in "imp in"). A scaling problem in the control system apparently caused the low pressure intercept valves to close and the moisture separator reheater relief valves to lift. This produced the noise heard in the control room. The reactor was taken critical again at 1:40 a.m. July 9, 1982, and restored to the grid at 6:20 a.m. July 9, 1982.

3. Licensee Action on Previous Inspection Items

(Closed) Open Item (50-295/82-04-01): Corrective action for components wetted during flooding of reactor cavity. In Commonwealth Edison letter of June 18, 1982, the licensee addressed the specific concerns involved with the reactor vessel cavity flooding occurrence.

(Closed) Open Item (50-295/82-12-01): Corrective action for violation of fuel handling procedure. The licensee's response has been reviewed and accepted.

(Closed) Noncompliance (295/81-22-01; 304/81-18-01): Failure to provide test criteria for modifications. The licensee has conducted training for Station Nuclear Engineering Department personnel concerning the need to evaluate requirements and specify adequate criteria for testing when a modification is approved for installation. Written guidance has been provided listing two categories of test requirements and the situations when each will be used.

(Closed) Noncompliance (295/81-05-01; 304/81-03-01): Failure to implement portions of ANSI N18.7-1976. Topical Report CE-1-A was revised to clarify the commitment of older Commonwealth Edison nuclear plants to the revision of ANSI N18.7 which was effective at the time that the operating license was issued for that plant. In the case of the Zion Station, the applicable revision of ANSI N18.7 was the 1972 edition. As a consequence, examples of this noncompliance concerning the preventive maintenance program, the fluid system cleanliness program, and the housekeeping program are no longer applicable.

(Closed) Unresolved Item (295/81-10-03; 304/81-06-03): Qualifications of Offsite Review Group members in the Reactor Operations discipline were ambiguous. Qualifications for the discipline were revised in order to clarify the requirements for experience as a reactor operator. Procedures now require five years experience in reactor operations/Nuclear Power Plant operations and experience as a reactor operator.

(Closed) Unresolved Item (295/81-10-04; 304/81-06-04): Newly hired buyers or Purchasing Agents are not administratively prohibited from working on QA related purchase orders until having received QA training. A memo issued on June 11, 1981, by N.E. Wandke prohibits new buying personnel from committing purchase orders for safety related and/or ASME code requirements until completing the Indoctrination and Training Program for buyers.

(Closed) Unresolved Item (295/81-10-01; 304/81-06-01): Procedural discrepancies. The licensee has revised Quality Procedure No. 4-51, removing the statement that the buyer authorizes shipment for use and installation. The licensee also revised Quality Procedure No. 15-51, removing the engineering disposition requirement and the deferring of the hold tag. The new procedures are Quality Procedure No. 4-51, May 15, 1981, Revision 11, Procurement Document Control for Operations - Processing Purchase Documents; and Quality Procedure No. 15-51, May 15, 1981, Revision 10, Nonconforming Materials, Parts, and Components for Operation - Spare Parts and Materials.

(Closed) Open Item (295/81-10-02; 304/81-06-02): Lack of uniform standard criteria for determining the technical acceptability of a vendor or supplier. The licensee has developed SNED Procedure Q.41, Technical Evaluation of Vendors, to establish the criteria for technical review of vendors. A examination of vendor reviews showed that the procedure was being followed and the records were being retained.

4. Startup of Unit 2 with "0" Diesel Generator Out of Service

On June 23, 1982, Unit 2 tripped from full power at 2:30 p.m. The initiating event was a ground on the main transformer. It was later determined that fire fighting exercises conducted to the north of the turbine building had resulted in the transformers being covered with a residue of the fire fighting chemical. A sudden rain had interacted with the chemical forming a conducting solution and the transformer busses arced to ground. The ground tripped the main generator which tripped the turbine, which in turn tripped the reactor. Since arcing had also been reported on the system auxiliary transformer, a plant

cooldown was commenced at 7:22 p.m., June 25, 1982, to allow the system auxiliary transformer to be externally cleaned and inspected. The reactor coolant system was brought below 200°F on June 26, 1982, at 9:40 a.m. The loads were switched to the diesel generators and the system auxiliary transformer was de-energized at 3:40 p.m., June 26, 1982. Following completion of the cleaning and inspection of the transformer, offsite power was restored at 7:00 p.m. June 26, 1982.

As a result of high temperature alarms, the "0" diesel Generator was taken out of service for repair at 12:30 a.m., June 27, 1982. At 4:00 a.m., June 27, 1982, a reactor coolant pump heatup was commenced in preparation for taking Unit 2 critical. The unit exceeded 200°F at approximately 9:00 a.m. on June 27, 1982.

The Senior Resident Inspector found the unit in hot shutdown during his control room tour on the morning of June 28, 1982. The inspector inferred, from discussions with operators, that Unit 2 startup was awaiting completion of repairs to the "0" diesel generator. Upon visiting the control room at approximately 4:30 p.m., June 28, 1982, the inspector learned that the licensee intended to take Unit 2 critical prior to restoring the "0" diesel generator to service. At approximately 5:00 p.m., June 28, 1982, the inspector called the Assistant Superintendent for Operations at his home and expressed his concern that starting up Unit 2 with the "0" diesel generator out of service might be in violation of Technical Specifications requirements. The Assistant Superintendent for Operations stated that Technical Specifications allowed recovery from an inadvertent trip with one diesel generator out of service. The phone call ended without a mutual agreement being reached.

Unit 2 was made critical at 9:16 p.m., June 28, 1982, and tied to the grid at 6:02 a.m., June 29, 1982. The post repair testing of the diesel generator was completed at 1:00 a.m., June 29, 1982.

Technical Specification 3.15.1 states: "The unit reactor shall not be made critical unless all the following minimum requirements are satisfied." Paragraph 3.15.1.B states: "The unit diesel generators (1A and 1B for Unit 1 - 2A and 2B for Unit 2) and the common diesel generator (0) shall be operable."

Contrary to the above, Unit 2 was made critical on June 28, 1982, with the "0" diesel generator out of service.

In discussions with the inspector the licensee has maintained that the startup of Unit 2 was allowable under Technical Specifications 3.15.2 which states: "For power operation, including recovery from inadvertent trip, the availability of electric power shall be as specified in 3.15.1 except as specified in...3.15.2.c..." Section 3.15.2.c states: "From and after the date that one of the diesel generators for a unit...is made or found inoperable reactor operation on that unit is permissible only during the succeeding seven days..."

Technical Specifications define inadvertent trip in Section 1.0.D as "a reactor trip that results from personnel error or from minor equipment malfunction and that can be demonstrated to be unrelated with a reactor plant transient or any valid protection system action."

The licensee maintains that the subject trip fits the above definition since it was not caused by a transient in the primary plant. The licensee further states that any reactor trip not originating from a primary plant parameter is anticipatory and may be considered inadvertent. The licensee maintains that this interpretation has been in effect for many years and cites examples as recent as January of 1982, of instances in which a unit was restarted under the inadvertent trip guidelines.

Per the definition of inadvertant trip, the trip must be unrelated to a reactor plant transient or any valid protection system response. The trip of June 25, 1982, was in response to a actual ground on the main transformer. All protective systems functions as designed. The trip, therefore, did result from a valid protection system response and was not inadvertent. The only trips which would meet the definition of inadvertent would be those in which the parameters sensed by the reactor protection system did not exceed their trip set points. Examples of such would be failure of an instrument or component in the reactor protection system such that a false trip signal was generated, or an operator error that generates a false trip signal. Under the licensee's definition almost all of the reactor trips that have occurred at Zion could be called inadvertant.

Further, startup of the reactor three days after the scram occurred during which the unit was taken to cold shutdown, is not considered a scram (trip) recovery as provided by Technical Specifications Paragraph 3.15.2.

An enforcement conference with the licensee concerning this occurrence has been scheduled for July 21, 1982.

This item is considered to be in noncompliance with NRC requirements as documented in the Appendix to the report transmittal letter (50-304/82-13-01).

5. Missing piece of Broken Valve Guide

On April 29, 1982, the licensee attempted to shut the Unit 1 twenty-seven inch loop A cold leg isolation valve. The motor operator tripped on torque limit when the valve was still about six inches from fully shut. Repeated attempts to fully shut the valve were unsuccessful. On May 7, 1982, after removing the valve bonnet it was discovered that one of the valve guides was broken. The major thirty-two inch portion of the broken guide was removed. After installing an inflatable bladder in the piping on the reactor vessel side of the valve and draining the water from the loop, a six inch piece of guide was removed from the bottom of the valve body. Small metal slivers were also vacuumed from the valve body. The site ISI co-ordinator inspected the system from the bladder to the reactor coolant pump and no loose pieces

were seen. Valve repairs were commenced. On May 11, 1982, after completion of valve repairs the bladder was removed. A station quality control inspector inspected the valve body (now half full of water) and saw no loose pieces. The re-installation of the valve bonnet was completed on May 11, 1982.

Comparison of the thirty-two inch and six inch previously removed pieces indicated that a piece of the valve guide approximately two inches in length was unaccounted for. This was known to station management prior to reinstalling the valve bonnet. The area around the valve was searched and approximately thirty-seven barrels of rad waste were opened and inspected in an attempt to locate the missing piece. The licensee believes that the piece was removed from the valve, either by workers or with the valve bonnet, and was lost or mixed with rad waste. The resident inspector was made aware of the missing piece on May 19, 1982.

In the event that the piece was still inside the A Reactor Coolant Loop, the licensee proposed refilling and repressurizing the RCS and running the B, C and D Reactor Coolant Pumps. They theorized that if the piece was still in the loop, back flow from the other coolant pumps would carry it to the cold leg plennum of the A Steam Generator and its impacts would be heard on the Loose Parts Monitor. This back flow operation was performed on May 25, 1982, and sounds were heard on the loose parts monitor. The RCS was depressurized and partially drained and the cold leg steam generator plennum was opened. The piece was not found in the steam generator so a diver was sent down the cold leg pipe toward the reactor coolant pump. The diver did not find the piece. The process of refilling, repressuring and running three reactor coolant pumps was repeated two more times. The diver inspected the pipe two more times and the piece was not found. The licensee determined that the noise heard on the loose parts monitor resulted from thermal expansion in the steam generator support structure.

On June 15, 1982, the licensee presented their findings and theories to the NRC. A Confirmatory Action Letter was issued on June 22, 1981, by Region III detailing additional actions to be taken when the A Reactor Coolant Pump was run for the first time. These actions included installation of additional monitoring equipment, retention of a licensee consultant, obtaining baseline date, and concurrance by NRC technical consultants on the installation and operation of the noise monitoring apparatus. Analysis of data obtained during the initial run of the A Reactor Coolant Pump was inconclusive due to the high background noise.

Having satisfied the requirements of the Confirmatory Action Letter, the licensee was permitted to resume power operation on Unit 1. The licensee is still committed by the letter to perform an evaluation of the consequences of the missing piece in the reactor coolant system.

A conference with the licensee to discuss system cleanliness has been scheduled for July 21, 1982.

This item is considered unresolved pending further review and the results of the July 21, 1982, conference (50-295/82-14-01).

6. Failure of the 1A Safety Injection Pump

During the performance of surveillance testing June 20, 1981, the 1A safety injection pump controller tripped approximately five seconds after starting. The pump shaft was found to be seized and the pump was disassembled. Upon opening the casing the shaft was found to be sheared between the third and fourth empeller from the suction (motor) end. The suction wear ring and the outboard packing box bushing were found to be fractured. A one inch diameter, five inch long carbon steel stud with two chrome alloy nuts was found in the pump suction plennum. The stud had three curved wear marks on it. Two had a corrosion film on them and the third, the deepest, was still bare metal. The curvature of the wear marks matched the curvature of the impeller lock nut.

Based on the above, the licensee concluded that the stud initiated the sequence of events causing the shaft to fracture. The licensee postulates that the bolt binding on the impeller lock-nut created an imbalance which broke the wear ring and caused the outboard packing box to seize. The motor torque then fractured the shaft.

The licensee was unable to determine how the stud got into the pump suction. No maintenance on the suction flowpath had been performed during the refueling outage. The licensee inspected the piping internals from the pump suction to the first elbow and found nothing. All suction valves were verified to be operable. No installations using studs of a similar nature were found in the pump room. The corrosion film on the stud and two old wear marks suggest that the stud was in the system for some length of time, but the licensee could not estimate how long.

A new rotating element was obtained from site stores to replace the fractured one. Slight casing warpage combined with manufacturing tolerances required extended machining operations to obtain a proper fit on the new rotating element. Since this work was in the critical path to resumption of power operations, the licensee requested and was granted a Technical Specifications change to allow Unit 1 to be taken critical with the safety injection pump out of service. The change permitted operation up to 5% power for seven days with the pump out of service, provided that redundant safety systems were operable. The 1A safety injection pump was returned to service July 6, 1982.

No items of noncompliance were identified.

7. Fire Protection/Prevention Annual Inspection

The inspectors examined the licensee's installed fire detection and suppression systems, manual fire fighting equipment, fire brigade training and administrative controls over combustible materials and ignition sources. These aspects of the fire protection program were reviewed using the requirements in the facility Technical Specifications and the Fire Protection/Prevention Program implementing procedures.

a. Procedures

1. ZAP 2., Fire Fighting Forces: The inspector reviewed the training records of four fire brigade leaders and twenty fire brigade members and verified that retaining was conducted quarterly.

2. ZAP 2B, Fire Prevention Surveillance Procedures: The inspector reviewed the completed 1982 files and verified that the equipment operator fire inspection check lists, weekly storeroom and warehouse inspection checklist and the fire drill response sheets were completed as required.

3. MDAI 9-51-1B, Fire Prevention When Cutting or Welding: The inspector reviewed approximately 100 completed 1982 welding and cutting permits. Additionally, the inspector verified, during tours of the auxiliary building, that the requirements of MDAI-9-51-1B were implemented when welding or grinding was observed.

*4. PT208 Monthly Outside Firehose Checks

*5. PT212 Fire Extinguisher Inspection

*6. PT217 Fire Hose Monthly Inspection

*7. PT206 PYR-A-Larm Detector System Test

*8. PT214 Interior Deluge System Test

*9. PT215 Yearly Fire Extinguisher Inspection

*10. PT220 Yearly Fire Protection Valve Cycling

*The inspector reviewed completed test data for 1982.

b. Plant Tours

The inspector examined combustible and ignition source controls during tours of the turbine and auxiliary building. On one tour the inspector noted that the two fire hoses assigned to auxiliary building fire response cart No. 1 were outside the hydro test frequency. This was discussed with the Assistant Fire Marshall; the hoses were replaced.

During a tour of the 579 level of the auxiliary building the inspector noticed that a fire barrier for the east wall was not intact. Welder's cotton had been packed in the penetration and the barrier was posted per Appendix 1C, Non-Functional Penetration Fire Barrier Surveillance, to ZAP 2A. ZAP 2A allows packing welder's cotton in the penetration instead of posting/performing a fire watch as required by Technical Specifications Section 3.21.6.b. The inspector discussed the use of temporary fire barrier with the Assistant Fire Marshall and asked to see the licensee's evaluation demonstrating that packing a fire barrier with welder's cotton makes the fire barrier functional. This was discussed at the monthly exit and the licensee agreed to provide this information (Open Item 50-295/82-14-02, 50-304/82-13-02).

No items of noncompliance were identified.

8. Regional Request on Bullet Resistant Fire Doors

The resident inspector was requested by Region III to determine the manufacturer of installed bullet resistant fire doors and determine if the licensee had documentation specifically confirming that the doors had been tested and approved for fire resistance by a nationally recognized laboratory. It was determined that the doors were manufactured by Chicago Bulletproof Equipment Company. The Licensee had documentation provided by the manufacturer that specifically confirmed the doors, as supplied, had been tested and approved by a nationally recognized laboratory.

No items of noncompliance were identified.

9. Unit 1 Primary to Secondary Leakage

As documented in previous inspection reports, Unit 1 began experiencing primary to secondary leakage just prior to the January 1981 refueling outage. During the February to July 1982, refueling outage 100% of the inservice steam generator tubes were inspected and plugged as necessary. Since the completion of that outage no short lived isotopies have been detected in the steam generator samples.

No items of noncompliance were identified.

10. Unit 1 Trip of July 7, 1982

Unit 1 tripped from 10% indicated power at 8:47 a.m. July 7, 1982. The trip signal originated from the intermediate range neutron flux (25%). The trip was due to intermediate range indication being much higher than power range indication. The reason for this is discussed below. The unit was being ramped up in power when Intermediate Range Channel N-35 reached 20% giving a rod block signal. Power range indication was still below 10% i.e., the P-10 interlock had not been satisfied. Operators went to level trip bypass on the N-35 cabinet

to allow further rod withdrawal. The power increase was continued and P-10 eventually satisfied. With P-10 satisfied operators engaged the intermediate range manual block from the control board. The operators then restored the N-35 level trip to normal on the cabinet since it was no longer required. Due to a problem with a feedwater control valve the power increase was halted. The operator had to shim rods in to control Tave. This drove power range indication back below 10% which automatically reinstated the intermediate range flux trips. N-35 was reading above 25% and the reactor tripped on N-35 intermediate range flux.

The Technical staff nuclear engineers investigated the large discrepancy between intermediate range and power range indication. Both sets of instruments are set with the same detector currents as they were prior to shutdown for the refueling outage. A new type of core reload pattern was used this outage in which older assemblies were moved to the periphery of the core. By comparing predicted fuel assembly powers to those known prior to shutdown it was shown that the ratio of intermediate range indication to power range indication should be higher after the new core reload. This, combined with the fact that N-35 is a new detector, explained why that channel of intermediate range exceeded 25% prior to the power range indicators exceeding 10%.

Using the predicted fuel assembly powers and the old fuel assembly powers the licensee was able to establish a ratio to adjust the power range indication up to more closely agree with actual thermal power.

Once this was done the unit was successfully started up and tied to the grid. Final calibration of the power range instruments was performed at power based on calorimetric date.

No items of noncompliance were identified.

11. Design Changes and Modifications

Through record review the inspector verified for the design changes listed below that design changes were made in accordance with 10 CFR 50.59; that design changes were reviewed in accordance with Technical Specifications and the established quality assurance program; that design changes were conducted in accordance with written procedures which included identification of inspections required by codes or standards, and acceptance test procedures which defined acceptable values or acceptable standards; that test records verified performance of equipment modified to Techical Specifications/FSAR requirements and performance of modified equipment was reviewed and approved; that operating procedures modifications were made and approved in accordance with Technical Specifications; that installation procedures were adequate for the identified function; and that records of design changes were maintained as described in 10 CFR 50.59b and the established QA program.

Modification No.	Title
M22-2-80-19	PRT to Auto Gas Analyzer Containment Isolation Valves
M22-2-80-38	Pressurizer PORV Modification
M22-2-80-43	Containment Spray Diesel Battery Charger Changeout
M22-2-80-46	Charging Pump Miniflow Isolation Valve Logic Change

No items of noncompliance were identified.

12. Fisher Porter Transmitters Rated Less than Design Pressure

On June 4, 1982, the licensee reported that nine installed differential pressure transmitters manufactured by the Fisher Porter Company had pressure ratings of 1500 psi instead of the required 3000 psi. This discrepancy has apparently existed since the plant was constructed. Five of the transmitters have been replaced or upgraded. The four remaining transmitters indicate safety injection and charging pump flow on each unit. These instruments are not required to function during an accident. The licensee has determined that the loss of ECCS flow that could occur if the transmitters developed external leakage is acceptable. Additionally the transmitters have already experienced higher pressures than would occur during an accident and have not failed.

No items of noncompliance were identified.

13. Operational Safety Verification

The inspector observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the period of May 15 through July 16, 1982. The inspector verified the operability of selected emergency systems, reviewed tagout records and verified proper return to service of affected components. Tours of areas listed below 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.

a. Unit 1 Containment Building
b. Turbine Building
c. Auxiliary Building*
d. Crib House
e. Secondary Alarm Station
f. Badge Issue Station
g. Protected Area Fence*

*The inspector performed radiation surveys using NRC supplied instrumentation.

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

The inspector observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls.

During a tour of the auxiliary building at approximately 6:00 a.m. on June 25, 1982, the inspector found the door to the Unit 2 pipe chase propped open to facilitate use of a hose. The door had a sign attached "High Radiation - Authorized Entry Only" implying the door should have been secured in some manner. The inspector could not find anyone in the room or in the area. This was brought to the attention of the Rad-Pro technician at the checkpoint and discussed later that day with the Rad-Chem foreman. The foreman informed the inspector that accessible areas inside the door were not a high radiation area (according to the latest survey) and that entry into the high radiation area was through a second door in the room. The inspector went back to the area and found a second locked door that had also a high radiation sign affixed to the door. The inspector is concerned that workmen could develop a habit of not obeying radiological postings if the licensee allows doors with high radiation signs to be left open.

This concern was discussed with plant management at the exit interview and he agreed to look into the matter.

The inspector walked down the accessible portions of the cold leg accumulator systems to verify operability. The inspector also witnessed portions of the radioactive waste system controls associated with radwaste shipments and barreling. The inspector independently surveyed two rad waste trucks.

These reviews and observations were conducted to verify that facility operations were in conformance with the requirements established under Technical Specifications, 10 CFR and administrative procedures.

No items of noncompliance were identified.

14. Monthly Maintenance Observation

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

The following items were considered during this review: The limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activites were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were implemented; and, fire prevention controls were implemented.

Work requests were reviewed to determine status of outstanding jobs and to assure that priority is assigned to safety related equipment maintenance which may affect system performance.

The following maintenance activities were observed/ reviewed:

a. No. 2 Spent Fuel Pool Heat Exchanger Inlet Valve Repair
b. 1A Safety Injection Impeller/shaft Replacement
c. 1MOV RC 8002A Repair
d. 1PCV-NT11 Repair
e. 1PCV-NT03 Calibration

No items of noncompliance were identified.

15. Monthly Surveillance Observation

The inspector observed Technical Specifications required surveillance testing on the timing of control rod drop and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that limiting conditions for operation were met, that removal and restoration of the affected components were accomplished, that test results conformed with Technical Specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

No items of noncompliance were identified.

16. Licensee Event Reports Followup

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

LER No.	Unit 1
79-25	Missed APDMS Surveillance
81-38	Containment Isolation Valve Failure
81-51	Missed Equalizing Charge on Battery 112
82-05	Flow Reduction in "D" Steam Generator due to Nozzle Cover
82-18	Auxiliary Building Radiation Monitor Found Out-of-Tolerance
82-19	Condensor Air Ejector Reading Low
82-20	Fuel Building Area Radiation Monitor Failed High

LER No.	Unit 2
82-04	Failure of Westinghouse 22S BFD Relay
82-07	Over Boration of Boron Injection Tank
82-11	Condensor Air Ejector Reading Low
82-12	Loss of Power to Safeguards Sequence Timer
82-13	Loop 2A Overpower Delta-T Setpoint Summator Was Found Out-of-Tolerance
82-14	Steam Generator 2A Pressure Comparitor Setpoint Was Found Drifting

No items of noncompliance were identified.

17. Augmented Inspection Coverage

During the inspection period the following NRC personnel were temporarily assigned to Zion Station to augment the resident inspection coverage: K. A. Connaughton (Reactor Inspector-Region III) and J. K. Heller (Resident Inspector-Palisades Nuclear Power Station). Such augmented resident inspector coverage will continue until the resident inspector position at Zion is permanently filled.

18. During the inspection period the Senior Resident Inspector attended the following offsite functions

June 2, 1982	Zion SALP Meeting	Region III Headquarters Glen Elyn, Illinois
June 15, 1982	Steam Generator Leakage and RCS Loose parts meeting	NRC Headquarters, Bethesda, Maryland
June 30 through July 1, 1982	Resident Inspector Seminar	West Chicago, Illinois

19. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of non-compliance or deviations. Two unresolved items (Paragraphs 5 and 7) were disclosed during this inspection.

20. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) throughout the inspection period and at the conclusion of the inspection on July 16, 1982, and summarized the scope and findings of the inspection activities.

The Licensee acknowledged the inspector's comments.

21. On July 21, 1982, an enforcement conference was conducted with licensee management personnel in regard to the matter discussed in Paragraph 4 of this report. The results of this conference will be documented in a separate NRC report.