

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-295/79-14; 50-304/79-13

Docket No. 50-295; 50-304

License 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, Illinois

Inspection Conducted: June 2-July 2, 1979

Inspector: *R. L. Spessard*
J. E. Kohler *for*

8/6/79

Approved By: *R. L. Spessard*
R. L. Spessard

8/6/79

Inspection Summary

Inspection on June 2-July 2, 1979 (Report No. 50-295/79-14; 50-304/79-13)

Areas Inspected: Routine unannounced inspection of plant operations, maintenance, licensee event reports, and Unit 1 and Unit 2 reactor trips. The inspection involved 120 hours of onsite inspection by one NRC inspector. Results: Of the areas inspected, one item of noncompliance (infraction - violation of TS surveillance requirement, Paragraph 12) was identified in one area.

998 096

7909240 666

DETAILS

1. Persons Contacted

- *N. Wendke, Station Superintendent
- C. Schumann, Operating Assistant Superintendent
- *E. Fuerst, Unit 1 Operating Engineer
- *R. Ward, Unit 2 Operating Engineer
- F. Stetkar, Shift Foreman
- T. Boyce, Shift Engineer
- K. Garside, Shift Foreman
- J. Harbin, Shift Engineer
- R. Landrum, Nuclear Station Operator
- D. Kaley, Nuclear Station Operator
- N. Valos, Shift Foreman
- F. Pauli, Shift Engineer
- L. Pruett, Shift Engineer
- J. Brandice, Nuclear Station Operator
- E. Murach, Maintenance Assistant Superintendent
- L. Soth, Assistant Superintendent Administrative Support Services
- J. Mariani, Technical Staff Supervisor
- *T. Parker, Assistant Technical Staff Supervisor

*Denotes those present at the exit interview on July 2, 1979.

2. Monthly Reactor Operations Summary

Unit 1

The unit operated at our levels up to 100% through June 8, 1979, when the unit tripped due to the 1(C) feedwater pump tripping from 100% power. During recovery from this trip, water hammers were experienced followed by a spurious safety injection. The unit was placed in cold shutdown after June 8, 1979, for steam generator feedwater nozzle to pipe inspections. The unit started up on approximately June 18, 1979, with the 1(A) and 1(C) feedwater pumps in operation. Shortly after this startup, high vibration alarms were received from the turbine generator. The unit was shut down on June 24, 1979, for turbine vibration investigation. Unit 1 startup commenced on June 28, 1979, and was limited to approximately 50% power due to availability of only the 1(C) feedwater pump. The unit has varied between 50%-90% power since June 28, 1979.

Unit 2

Power levels up to 90% have been achieved during the month with routine power operation. The unit is the swing unit and has not reached base load operation at 100% power because of conservatism in

the axial power distribution monitoring system. One reactor trip occurred on June 13, 1979, due to an electrical switching error. Reactor operation has been continuous since June 13, 1979.

3. Review of Plant Operations

During the month, the inspector spent time in the control room and reviewed shift performance, shift logs, tagging practices, compliance with LCO's and plant startups. Tours of the auxiliary building, turbine building, and site perimeter were conducted. Unit 1 containment was entered by the inspector on June 8 to witness a portion of the visual inspection performed on the steam generator feedwater lines. No items of noncompliance were identified during the monthly review of plant operations.

4. Maintenance

During the month, certain jobs were reviewed by the inspector. The maintenance packages associated with the below listed jobs were reviewed for completeness in order to determine if work control procedures were being followed. The following jobs were being reviewed.

<u>Job</u>	<u>Work Package Number</u>
Turbine Generator Vibration	00876
1(C) Feedwater Pump Maintenance	00593
Unit 2 Reactor Trip Bypass Breaker	00685
Unit 1 Steam Generator Nozzle Inspection	00660
	00661
	00662
	00663

The inspector identified no items of noncompliance regarding the maintenance items reviewed.

5. Licensee Event Report Reviewed

The following licensee event reports were reviewed during the month and are considered closed.

<u>Unit 1</u>	<u>Unit 2</u>
79-32	79-29
79-31	79-31
79-29	79-33
79-12	79-25
79-44	

No items of noncompliance were identified, except for the matter discussed in Paragraph 12 below relating to LER 304/79-29.

6. Unit 2 Reactor Trip of June 13, 1979

During performance of periodic tests PT-5A and B which tests the reactor trip breakers, a reactor trip from approximately 35% power, occurred on June 13, 1979, at 2:30 a.m. The cause of the trip is attributed to personnel error. While in the process of racking out the train B reactor bypass trip breaker and racking in the train A reactor trip breaker, the bypass breaker jammed and movement was not possible. In order to free the stuck breaker, and in an effort to return the train A reactor trip breaker to service in routine alignment, an equipment man used a metal pry bar to gain leverage to free the stuck breaker. This action, which was performed on an energized 480 volt system, caused a ground to occur. The ground caused a ground relay in the rod control system to actuate leading to a reactor trip and damage to the rod control system.

The individual involved in the event has been instructed not to perform electrical switching without supervision in the future. This item is considered closed by the inspector.

No items of noncompliance were identified.

7. Unit 1 Reactor Trip of June 8, 1979 (LER No. 295/79-44)

On June 8, 1979, approximately 0600, a Unit 1 trip occurred resulting from low 1D steam generator level which was caused by a trip of the steam driven 1C feedwater pump. The pump trip occurred from a high thrust bearing wear signal. Sixteen minutes after the reactor tripped, four water hammers were experienced signified by spikes on all four feedwater flow recorders.

Subsequent to the water hammers, a momentary safety injection signal originating from the high steam line delta P safety injection signal was received. However, no automatic safety injection occurred. One and a half minutes later, operators manually initiated safety injection. The safety injection ran for 100 seconds before it was terminated by operating personnel, having concluded that the cause of the safety injection was spurious.

The inspector was at the Dresden facility in Morris, Illinois, at the time of the Unit 1 reactor trip. The inspector was dispatched to the Zion site and arrived at approximately 11:30 a.m.

The licensee investigated the events associated with the failure of the SI to actuate automatically. Review of the annunciator printout by the inspector showed that the safety injection signal was present for less than 1/60th of a second. This signal duration was sufficient to activate the safety injection annunciator and typer which are composed of solid-state electronics, but the time was insufficient

in duration to activate the mechanical relays associated with the safety injection. The relays were subsequently tested by special performance of PT-10A and B and found to be satisfactory.

Had a real event occurred in which safety injection was required, it is assumed that the initiating event would have lasted more than 5/60ths of a second, the time required for automatic SI relays to actuate. The inspector reviewed the alarm typer output, discussed the event with the cognizant engineer and has no further questions regarding the failure of the SI to automatically actuate.

No items of noncompliance were identified.

8. Unit 1 Steam Generator Feedwater Nozzle Inspection

Unit 1 was taken to cold shutdown immediately after the June 8, 1979, reactor trip in order to inspect for possible cracking in the steam generator feedwater nozzle piping and welds. No cracks were found and the unit was cleared for service. Results of the piping investigation are covered in Region III inspection report 50-295/79-12.

9. Unit 1 Turbine Vibration

Following the Unit 1 reactor startup after the steam generator nozzle inspection, high vibration at the number 11 main generator bearing was recorded. The unit was taken off the line on June 23, 1979, to investigate the cause of the vibration. Investigation revealed several perimeters in the exciter area that were out of tolerance. These were corrected according to Westinghouse specifications.

A unit startup was commenced on June 27, 1979. At approximately 1:30 p.m. with the main generator at 1800 rpm, while in the process of picking up loads, a turbine trip reactor trip occurred. The first out panel declared the trip to be caused by a thrust bearing failure. Investigation by the licensee revealed that the alarm was spurious caused by a malfunction in the thrust bearing alarm network. The alarm was repaired and the unit was in service on June 28, 1979. The inspector has no further questions regarding this item.

No items of noncompliance were identified.

10. Spent Fuel Expansion Hearings

During the month, the inspector participated in public hearings held in Waukegan, Illinois. The inspector presented testimony on June 11 and June 12, 1979, and June 21 and June 22, 1979, on behalf of the NRC regarding contentions 2L and 2F2.

11. Feedwater Pump Trips

The inspector met with Mr. Wandke and others of his staff on June 20, 1979. During this meeting, the inspector discussed the performance of the 1B feedwater pump. The inspector stated that a review of plant transients since January showed that 1B feedwater pump trips themselves were responsible for two safety injection-water hammer (SI-WH) transients and the 1C pump was responsible for one SI-WH. It was the inspector's conclusion that 1B feedpump operation was erratic and should not be used until proved to be more stable.

The licensee agreed with the inspector's conclusion and had previously substituted the 1A pump for the 1B pump. According to the licensee, the 1B pump control system was being overhauled and would not be put into full operation until stable operation was achievable.

The inspector will continue to follow the operation of the 1B feedwater pump. (295/79-14-01)

12. 2C Containment Spray Pump (LER 304/79-29)

The licensee notified RIII on May 22, 1979, that Technical Specification 4.6.1.c for Unit 2 was violated when the 2C containment spray pump was rendered inoperable without first performing the required surveillance on the redundant A and B containment spray pumps. The licensee performed the required surveillance upon discovery. The cause of the event is classified as personnel error. Corrective action consisted of placing warning signs on control boards and local panels informing the shift that automatic pump actuation upon safeguards only occurs when the battery switch is in the automatic position. The licensee is also investigating modification of the battery switch. A similar event occurred previously in 1978 (LER 295/78-66). This event is considered an item of noncompliance against TS 4.6.1.c and is classified as an infraction. Since corrective and preventive actions have already been taken, no response to this item of noncompliance is required.

13. Management Exit

An exit was held with Mr. Wandke and others of his staff at the conclusion of the inspection on July 2, 1979, in which the results of the inspection were summarized. The inspector stated that there was one item of noncompliance regarding inoperability of the 2C containment spray pump without performing the required surveillance (LER 304/79-29), but that no response would be required because corrective and preventative actions had been taken.