

U. S. NUCLEAR REGULATORY COMMISSION
REGION III

Report No. 50-237/86012

Docket No. 50-237


License No. DPR-19

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

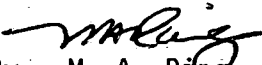
Facility Name: Dresden Nuclear Power Station, Unit 2

Inspection At: Morris, IL

Inspection Conducted: April 30 through May 1, 1986

Inspector: 
S. G. Dupont

6/11/86
Date

Approved By: 
M. A. Ring, Chief
Test Programs Section

6/11/86
Date

Inspection Summary

Inspection on April 30 through May 1, 1986 (Report No. 50-237/86012(DRS))
Areas Inspected: Licensee Event Report No. 86-004 (92700).
Results: No violations were identified.

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DETAILS

1. Persons Contacted

- *D. J. Scott, Station Manager
- *R. Flessner, Service Superintendent
- *R. Stolls, Quality Assurance Engineer
- *J. Brunner, Assistant Superintendent, Technical Services
- *J. Achterberg, Technical Staff Supervisor

The inspector also interviewed other licensee employees, including members of the technical staff, instrument mechanics and nuclear engineers.

*Denotes personnel in attendance at the May 1, 1986 exit meeting.

2. Licensee Event Report (LER) Review

a. LER No. 86-004, Unit 2, Summary

On February 7 through 20, 1986, Unit 2 operated above the license thermal power limit of 2527 megawatts while at 100 percent power. The maximum power overshoot was 1.52%. The licensee attributed the power overshoot to a masked input signal to the process computer from the 2C Reactor Feedwater Flow transmitter. The error of indicated thermal power was a result of changing the reactor feedwater pump combination from pumps "A" and "B" to "A" and "C" after a seal leak developed on pump "B". This made the 2C Reactor Feedwater Flow transmitter an input to the process computer. Since the transmitter signal was in error, the computer-provided thermal power indication was indicating less than actual thermal power, allowing electric output and thermal power to be increased to the "indicated" limit. However, when the electric output was increased to 834 megawatts-electric and thermal power to 2527 megawatts-thermal, the actual thermal power was 2563 megawatts-thermal or an error of 36 megawatts-thermal. The transmitter was discovered to be out of calibration on February 24, 1986. The out-of-calibration condition was attributed to the transmitter being jarred during the Unit 1 outage (additional information is provided in Paragraph 2.b).

The inspector reviewed the event and discovered that the following information contributed to the event and masked the error from the licensee:

- (1) Prior to the event the licensee was researching a decrease in the unit efficiency from the previous year. Normally, the unit produces approximately 830 to 840 megawatts-electric at 2527 megawatts-thermal with similar circulating water inlet temperatures. However, recently the unit has been somewhat less efficient with approximately 820 megawatts-electric output.

After the reactor feedwater pump combination had been changed, the unit was able to increase the electric output to approximately 830 megawatts-electric without exceeding the indicated thermal limit. Because of this concern with efficiency and the actions which were being taken to improve efficiency, the licensee did not associate the increase in electric output after changing the reactor feedwater pump combination with a possible error in indicated thermal power.

- (2) The licensee had established an alarm to alert the operator to take corrective action whenever power level exceeds 100.5%. However, the tripping signal for the alarm is provided by the process computer which is the same signal that provides indicated thermal power. Since the erroneous indicated power level had not exceeded 100.5% the alarm did not annunciate.

b. Review of Instrument Calibration

The inspector reviewed the calibration documents for the 2c Reactor Feedwater Flow Transmitter, model GEMAC 553, and found that prior to the January 1986 calibration, the instrument had demonstrated good stability requiring only slight recalibration. Listed below is a table of calibration data showing the rapid change in the instrument in 1986, compared to previous calibrations:

Required setpoint(ma)	<u>May 1983</u>		<u>August 1983</u>		<u>January 1986</u>		<u>February 24, 1986</u>	
	As Found	As Left(ma)	As Found	As Left(ma)	As Found	As Left(ma)	As Found	As Left(ma)
10.0	10.0	10.0	10.1	10.1	*11.5	10.0	*8.2	10.0
11.6	11.6	11.6	11.7	11.7	*13.0	11.5	*9.9	11.7
16.4	16.4	16.4	16.5	16.5	*17.8	16.3	*15.1	16.4
24.4	*24.6	24.4	24.5	24.5	*25.8	24.4	*22.8	24.5
35.6	35.7	35.6	*35.8	35.6	*36.9	35.5	*34.2	35.7
50.0	50.1	50.1	50.1	50.1	*52.0	49.9	*48.7	50.1

Note: *Points of calibration that did not meet the acceptance criteria of ± 0.2 ma.

Additional review of data collected in 1985 revealed the same findings as the data collected in 1983. From the above data, the inspector concluded that the change in calibration since January 1986, was not from gradual aging. The inspector also reviewed the calibration procedure DIP 600-1, "Feedwater Control Calibration and Maintenance," Revision 2 (dated 1984), and determined that the procedure and practices used to calibrate the instrument were adequate. Licensee personnel informed the inspector that they believed the change in the instrument characteristics was due to an acute physical shock during the recent Unit 1 outage. The inspector visually verified that the instrument appeared to have received a shock from a physical impact since both sensing lines had been bent. In conclusion, the licensee determined that the instrument had been slightly damaged and will be replaced.

c. Licensee's Corrective Action

(1) Reactor Feedwater Flow Transmitter.

All transmitters are scheduled to be replaced due to lack of sufficient speed and accuracy to adequately interface with computers. In addition, to provide protection from future jarring of the transmitters that may produce erroneous inputs, the licensee installed a barrier around the instruments. The inspector finds this to be sufficient to prevent further recurrence.

(2) Program

The licensee revised operating surveillance procedure DOS 500-18, "Operators' Flow Control Line and Average Core Thermal Power Surveillance," to notify a qualified Nuclear Engineer after a feedwater pump combination alteration. The Nuclear Engineer will verify core thermal power before and after the feedwater changeover. The inspector finds that this should identify any transmitter calibration problems.

d. Conclusions

Even though the core power exceeded the license thermal limit by 1.52%, the inspector verified, by document review, that no safety limits or fuel related limits (102%) of the Technical Specifications were exceeded. However, during the review, the inspector noted that thermal power did exceed the license thermal limit by 1% continuously for 4 hours and 59 minutes on February 18, 1986. This issue is not being considered a violation in that it appears to meet the tests of 10 CFR 2, Appendix C, Section V.A: 1) it was identified by the licensee, 2) it would have been considered a Severity Level IV or V violation since the Safety Limit of 102% was not exceeded, 3) it was reported by the licensee, and 4) it was corrected within a reasonable time to prevent recurrence. The inspector has no further concerns.

3. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of violation or deviations. An unresolved item disclosed during the inspection is discussed in Paragraph 2.d.

4. Exit Interview

The inspector met with the licensee representatives (denoted in Paragraph 1) on May 1, 1986. The inspector summarized the scope and findings of the inspection. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector. The licensee did not identify any such documents or processes as proprietary. The licensee acknowledged the statements made by the inspector with respect to the findings.