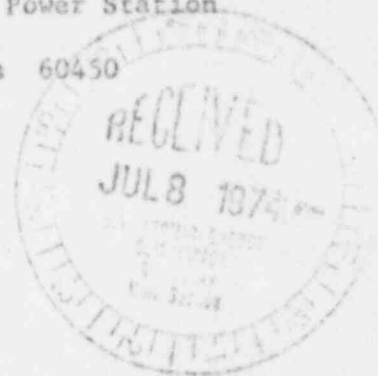




Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to Post Office Box 767
Chicago, Illinois 60690

EBS Ltr.#481-74

Dresden Nuclear Power Station
R. R. #1
Morris, Illinois 60450
July 2, 1974



Mr. J. F. O'Leary, Director
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

50-249

SUBJECT: LICENSE DPR-25, DRESDEN NUCLEAR POWER STATION, UNIT #3, REPORT
OF ABNORMAL OCCURRENCE PER SECTION 6.6.B.1 OF THE TECHNICAL
SPECIFICATIONS.
UNIT 3 FEEDWATER LINE VIBRATION.

References: 1) Notification of Region III of AEC Regulatory Operations
Telephone: Mr. F. Maura, 0900 hours on June 23, 1974
Telegram: Mr. J. Keppler, 1430 hours on June 24, 1974
2) Dresden Station Piping and Instrumentation Diagram M14.

Dear Mr. O'Leary:

This letter is to report a condition relating to the operation of Unit #3 at about 2214 hours on June 23, 1974. At this time, damage to the unit's feedwater piping was discovered.

PROBLEM

At about 2214 hours on June 23, 1974, severe vibrations were experienced on unit 3 feedwater system. As a result of the vibrations the feedwater system incurred damage to the feedwater regulation valves and several pipe restraints.

Prior to the occurrence, the unit was in the "Run" mode with thermal power at 2122 megawatts. Electrical load at the time was approximately 630 megawatts. At the time of the occurrence, the unit was in the process of increasing load from a load drop in which weekly surveillance was performed.

The following is a record of the events that occurred on June 23, 1974 at the time of the incident:

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| <u>Time</u> | <u>Event</u> |
|-------------|--|
| 2214 | 3B feedwater regulation valve locked up. (3A regulation valve was in service at the time of failure). 3B service air compressor tripped. |
| 2216 | Feedwater heaters 3D1, 3D2, 3D3, 3B1, 3B2, and 3C2 tripped. |
| 2217 | 3A feedwater regulation valve locked up. Feedwater flow and reactor level appeared steady for about 30 seconds then both decreased. Level dropped from 30 inches to 21 inches. Feedwater flow decreased from about 7×10^6 lbs/hr. to 2.6×10^6 lb/hr. |
| 2218 | Clean-up recirculation pump tripped. |
| 2219 | Reset 3A feedwater regulation valve. Feedwater flow increases to 12×10^6 lb/hr. and reactor level increases to 35 inches. Shift foreman inspected area of feedwater regulation valves. Reports that air line on 3B feedwater regulation valve had broken loose and that the minimum flow valve was damaged in the open position. |
| 2240 | Clean-up system back in service. |
| 2248 | Feedwater heaters reset. |
| 0040 | After a visual examination of the piping was made, a unit shutdown was ordered by Mr. B. Stephenson in order to make a more detailed examination. |
| 0610 | Unit off system. |
| 0700 | Unit subcritical. |

INVESTIGATION

An investigation into the problem began immediately upon reaching shutdown. Following shutdown a visual inspection of the feedwater piping was performed. During this inspection, the following equipment was found damaged.

1. Low flow feedwater regulation valve found in open position and rotated approximately 30 degrees. All air lines and electrical feeds to the low flow valve were found broken off and bent. Upstream pipe support for low flow valve found broken off its pad with concrete base cracked.

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2. "A" feedwater regulation valve upstream pipe support pad pulled out of its cement base.
3. "B" feedwater regulation valve air supply line found broken off its main header.
4. All three reactor feed pump discharge line pipe supports showed signs of movement. "A" feed pump had bent warming line. "C" reactor feed pump discharge line flow element tap looked as though it may have been bent. However, the welds on this line were later tested and found to be satisfactory. Also "A" pump minimum flow to condenser had loose insulation.
5. In the "D" heater bay, two pipe hangers on the heater outlet had tack welds broken. A heater line entering the "X" area had a displaced pipe support pedestal.
6. In the turbine pipe way in the extraction steam piping, one pipe support pedestal showed a three quarter of an inch movement. Also one line had the pipe support pad cement cracked.
7. The reactor feed pump suction header under the hotwell, had three pipe support pedestal cement pads cracked.

During the inspection of the feedwater piping, a check of the "A" feedwater regulation valve was performed. The intent of the check was to verify that the "A" regulation valve would lock up on a loss of instrument air. The "A" regulation valve did operate as designed during the check out.

Also, to determine if the feedwater piping integrity was affected, the entire feedwater piping was tested. All welds were tested using either magnetic partical or dye penetrant. The results of this testing showed no signs of failure.

In review of the chart recorders for feedwater flow, reactor water level, and condensate demineralizer differential pressure, it appears that the "A" feedwater regulation valve went nearly closed. At this time, no reason has been determined to cause the valve closure. However, investigation into the problem is continuing, and any additional information will be transmitted to Region III.

CORRECTIVE ACTION

To correct the condition, the feedwater piping was inspected and repaired. All feedwater piping welds were tested using either magnetic partical or dye penetrant, with results satisfactory. The feedwater regulation valves were checked out for proper operation with special attention given to "A" regulation valve lock up ability. The results of this inspection showed that the "A" regulation valve would lock up as designed, and failed to show a reason for its closure.

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In addition, two six point recorders will be placed on the feedwater control circuit in order to determine if any spurious signals exist. At this time, the two six point recorders are being purchased and will be installed immediately upon their arrival on site. Also, during startup and until the recorders are available, the unit will operate in single element control. An operating order has been written to insure that the unit operates in single element control, unless prior approval has been obtained from an operating engineer to go to three element control.

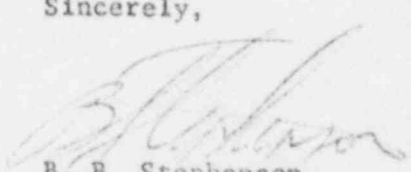
Also, the problem is being investigated by General Electric and it is expected that a modification to the feedwater control system will result. Also, in regards to feedwater system vibrations, a task force has been organized to investigate the problem at Quad Cities Nuclear Power Station as well as at Dresden Station.

EVALUATION

During the occurrence, the safety of the plant and public was not in jeopardy. Although damage to the feedwater system did occur, an orderly shutdown was performed. Also, at the time of the occurrence, all emergency systems were operational, and primary containment was not compromised.

In regard to cumulative experience, this is the first time the feedwater system has experienced damage. However, approximately one year ago a feedwater regulation valve had gone partially closed during operations in which a scram occurred. The inspection revealed a faulty component in the feedwater control system which was then replaced.

Sincerely,



B. B. Stephenson
Superintendent

BBS:TEL:do