

1. Report Number: 50-244/73-11
- 2a. Report Date: December 21, 1973
- 2b. Occurrence Date: December 14, 1973
3. Facility: R. E. Ginna Nuclear Power Plant, Unit No. 1
4. Identification of Occurrence:

This abnormal occurrence is the type defined by Technical Specifications Article 1.9d: "Failure of one or more components of an engineered safety feature or plant protection system that causes or threatens to cause the feature or system to be incapable of performing its intended function."

The motor-driven auxiliary feedwater pumps ("A" and "B") lost suction and failed to pump during the conduct of routine surveillance testing due to the presence of air on the suction side of the pumps. From the time the reactor became critical (0025, December 13, 1973) until the time that one pump was vented and tested so that two auxiliary pumps (one motor-driven and one steam-driven) were available for operation (approximately 0430, December 14, 1973), the plant may have been in violation of Technical Specifications, Article 3.4.1.b which requires that two of the three auxiliary feedwater pumps must be operable when the water coolant is above 350°F and the reactor is critical. It is considered that the plant was in a safe condition since the steam driven auxiliary feedwater pump was operable and it is capable of supplying sufficient feedwater for removal of decay heat from the core.

5. Conditions Prior to Occurrence:

Plant was operating at a power level of 1380 MWt.

6. Description of Occurrence:

The "A" and "B" motor-driven feedwater pumps were found to be air bound and would not pump.

The plant was placed in a cold shutdown condition commencing December 11, 1973 in order to repair a leak on the charging pump filter vent line. The reactor was made critical at 0025 on December 13, 1973 and brought to a power level of 1380 MWt at 0155 on December 14, 1973. The reported abnormal occurrence was detected during routine surveillance tests of the auxiliary feedwater pumps (PT-16) which commenced at 0415 on December 14, 1973. The pumps were immediately vented using vent valves installed on the pump casings and the tests were then performed satisfactorily.

The Results and Test Engineer again performed periodic test PT-16 on all auxiliary feed pumps commencing 0940, December 14, 1973 and satisfactory operation was verified.

7. Designation of Apparent Cause of Occurrence:

The apparent cause was the presence of air in the suction side of the motor-driven auxiliary feedwater pumps. The auxiliary pump suction lines feed from a common header that provides condensate water flow between the condensate storage tanks and the condenser hotwells via either the makeup lines or the reject lines, depending upon the condensate hotwell levels.

It is believed that the existence of air in the auxiliary feedwater pump suctions can be attributed to one of the following situations:

- a. During cold shutdown the condensate reject valve had been disassembled and repaired.
- b. Upon returning to power, make-up feedwater had been transferred to the condensate storage tanks.

Either of these actions could have resulted in the development of an air bubble in the condensate system or header supplying the electric-driven auxiliary feed pump suctions which are connected at the top of the header.

The steam-driven auxiliary feed pump did not exhibit this loss of suction upon testing either due to the fact that the air had already been eliminated or because the steam-driven pump suction line to the condensate feed header is connected at the side of the header.

8. Analysis of Occurrence:

This equipment malfunction is attributed to design of the system which permits air to become entrapped in the pump suction, most likely at the high point of the condensate reject line, and the plant startup procedure does not take specific steps to purge this air and test the auxiliary feedwater pumps.

9. Corrective Action:

a. The Plant Operations Review Committee is reviewing the condensate reject and auxiliary feedwater pump vent procedures.

b. Action is being initiated to install a vent on the high point of the condensate reject line to eliminate the possibility of an air bubble at this location which is considered the most likely collection point.

c. Action to prevent a repetition of the occurrence is being taken by manually venting all auxiliary feed pumps every eight hours until actions in paragraphs a and b above are complete.

d. Administrative Order A-25 sets forth policy and procedures for the observation and reporting of unusual plant operating conditions and

was re-emphasized by the Plant Superintendent's memorandum of August 1, 1973 for instances where abnormal occurrences may have occurred. Action is being taken to ensure that all plant personnel are aware that all operational events occurring in the plant which vary from the normal are covered by this administrative order and memorandum.

10. Failure Data:

a. This is the first malfunction of this type recorded for the auxiliary feedwater pumps when surveillance tests were being conducted. In the investigation, it was reported that on at least one occasion during startup, one of the auxiliary feed pumps used for the addition of feedwater to the condenser had become airbound and required venting. This instance was not recognized and reported as improper performance of the pump or the feedwater system since the plant was in startup prior to criticality.

b. Equipment identification: Worthington Type 2WTF87 (Multi-stage, diffuser type, centrifugal pump).

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RMS MR JOHN F O'LEARY DIRECTOR DIRECTORATE OF LICENSING

U S ATOMIC ENERGY COMMISSION WASHDC 20545

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U.S. ATOMIC ENERGY COMM.
TWX UNIT

SUBJECT: ABNORMAL OCCURRENCE 73-11, FAILURE OF THE TWO MOTOR DRIVEN
AUXILLIARY FEED WATER PUMPS TO PUMP WHEN INITIALLY STARTED ON
ROUTINE TESTS

R.E. GINNA NUCLEAR POWER PLANT UNIT #1

DOCKET NO. 50-244

DEAR MR O'REILLY:

IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION 6.6.2A, ABNORMAL
OCCURRENCE REPORTS, WHICH REQUIRES NOTIFICATION BY TELEPHONE AND
TELEGRAPH, THE FOLLOWING REPORT IS SUBMITTED:

THE OPERATORS WERE CONDUCTING THE AUXILIARY FEEDWATER SYSTEM FLOW
TEST (PT 16) DURING THE MIDNIGHT TO 0300 SHIFT ON FRIDAY,
DECEMBER 14, 1973. WHEN THE "A" MOTOR DRIVEN AUXILIARY FEEDWATER PUMP WAS STARTED, THERE WAS NO
PRESSURE OR FLOW INDICATION SO THE PUMP WAS STOPPED. THE PUMP WAS
THEN VENTED AND THE FLOW TEST ON THE "A" PUMP WAS COMPLETED
SUCCESSFULLY. A SIMILAR SEQUENCE OCCURRED WITH THE "B" PUMP. THE FLOW
TEST ON THE STEAM DRIVEN PUMP WAS COMPLETED SUCCESSFULLY WITHOUT
INCIDENT.

THE PRC MET AND MADE THE FOLLOWING RECOMMENDATIONS:

1. INSTALL A VENT ON THE HIGH POINT OF THE CONDENSATE REJECT LINE.
2. REVIEW OUR CONDENSATE REJECT AND AUXILIARY FEEDWATER PUMP VENT
PROCEDURES.
3. VENT THE AUXILIARY FEEDWATER PUMPS ONCE PER SHIFT UNTIL THE
CONDENSATE REJECT LINE VENT IS INSTALLED

VERY TRULY YOURS

CHARLES E PLATT, SUPERINTENDENT GINNA STATION

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JOHN F O'LEARY DIRECTOR DIRECTORATE OF LICENSING

IC ENERGY COMMISSION WASHDC 20545

U.S. ATOMIC ENERGY COMM.
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ABNORMAL OCCURRENCE 73-11, FAILURE OF THE TWO MOTOR DRIVEN
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TESTS

NA NUCLEAR POWER PLANT UNIT #1

D. 50-244

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OUR CONDENSATE REJECT AND AUXILIARY FEEDWATER PUMP VENT

S.
HE AUXILIARY FEEDWATER PUMPS ONCE PER SHIFT UNTIL THE
E REJECT LINE VENT IS INSTALLED

Y YOUNG
E PLATT, SUPERINTENDENT LINVA STATION

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