

REPORT DATE: January 24, 1979
OCCURRENCE DATE: January 2, 1979

REPORTABLE OCCURRENCE 79-01
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REPORT NO. 50-267/79-01/03-L-0

Final

IDENTIFICATION OF
OCCURRENCE:

For a period of about 40 minutes on January 2, 1979, total primary coolant oxidants exceeded 10.0 volume parts per million (vpm), while the core average outlet temperature was greater than 1,200°F.

This constitutes operation under a degraded mode permitted by LCO 4.2.10, and is reportable per Fort St. Vrain Technical Specification AC 7.5.2(b)2.

EVENT
DESCRIPTION:

At about 2030 hours on January 2, 1979, the on-service purification train Low Temperature Adsorber (LTA) began to release carbon monoxide (CO) to the primary coolant. The reactor was being operated at 52% power with a core average outlet temperature of 1,255°F.

By about 2040 hours, the total oxidant concentration (the sum of carbon monoxide, carbon dioxide, and water) exceeded 10.0 vpm resulting in operation in a degraded mode of LCO 4.2.10.

At 2100 hours it was discovered that decreased liquid nitrogen cooling flow to the LTA had caused the release of carbon monoxide to the primary coolant resulting in a total oxidant concentration of about 20 vpm. Reactor power was reduced to 28%, and full flow of liquid nitrogen to the LTA was re-established. The core average outlet temperature decreased below 1,200°F at about 2120 hours. The total oxidant concentration reached a maximum of about 70 vpm at 2200 hours and then rapidly decreased.

CAUSE
DESCRIPTION:

Normally, the LTA is cooled by liquid nitrogen to remove carbon monoxide and other gaseous impurities. Apparently a gaseous nitrogen "bubble" formed and decreased the liquid nitrogen cooling flow to the LTA, which allowed the LTA to release the carbon monoxide it had adsorbed. At the time of the event the oxidants of water and carbon dioxide were at a concentration of 5.0 and 1.0 vpm, respectively. These concentrations did not increase appreciably throughout the event.

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CORRECTIVE
ACTION:

The liquid nitrogen storage tank pressure was increased to about 15 psig to collapse the gaseous nitrogen "bubble" and restore liquid nitrogen cooling flow to the LTA. Reactor power was reduced to about 28% to decrease the core average outlet temperature below 1,200°F and return within the specifications of LCO 4.2.10. The reactor was operated with a core average outlet temperature less than 1,200°F while the oxidants were being removed by the purification system.

A similar event occurred on December 10, 1978, (reference Reportable Occurrence Report No. 50-267/78-37/03-L-0). Increasing the liquid nitrogen storage tank pressure was used to correct that problem, also. However, after recovery from the event, the "normal" system operating pressure of 10 to 12 psig was re-established.

Recurrence of the problem indicated that a higher system operating pressure should be maintained. The system is currently being operated at 15 to 17 psig. No further problem with decreased liquid nitrogen flow to the LTA has been encountered.

No further corrective action is anticipated or required.

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