

ABNORMAL OCCURRENCE REPORT NO: 50-313/74-2

Report Date: 7/2/74

Occurrence Date: 6/26/74

Facility: Arkansas Nuclear One - Unit 1

Identification of Occurrence:

Crack in Decay Heat System "Loop A" discharge piping near coupling weld at vent valve DH-1010 (between DH pump and DH cooler). Reportable under Tech. Specification 1.8.5.

Conditions Prior to Occurrence:

Fuel in reactor core, plant in cold shutdown condition prior to initial criticality. Decay Heat system "Loop A" in operation to maintain uniform boron concentration in the reactor coolant system.

Description of Occurrence:

June 26, 1974, 0042 hours:

During normal walkthru inspection of operating systems, a leak in the Decay Heat system "Loop A" discharge piping was identified in the vicinity of the coupling weld at vent valve DH-1010. "Loop A" was secured and the Operations Supervisor was notified.

0115 hours:

Decay Heat "Loop B" was brought into service.

0950 hours:

Decay Heat system "Loop A" was drained and a die-penetrant check was performed around the weld area of DH-1010. Inspection revealed a crack approximately two inches in length tangent to the valve weld with another crack approximately 1½ inches in length intersecting the first crack at an angle of approximately 65°. Both cracks were in the heat affected zone of the weld.

Designation of Apparent Cause of Occurrence:

Examination of the affected area was conducted by a qualified metallurgist, a consultant from Bechtel Engineering. His findings are as follows:

On the outside of the pipe, in the area of the cracks, the base metal was extensively ground and slightly undercut. On the inside of the pipe, heat discoloration was noted which appeared more severe in the area of the cracking. In addition, the inside of the weld area was slagged approximately 0.02 - 0.03 inches, indicative of substantial heat input. The transition radius between the weld and base metal was sharper than was observed in the respective Decay Heat "Loop B" vent valve.

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Analysis of Occurrence:

At the time of the occurrence, DH "Loop A" was being used to ensure uniform boron concentration in the reactor coolant system. Reactor building integrity was not required. DH "Loop B" is operating to continue maintaining uniform boron concentration. Since the occurrence was before initial criticality, no radioactive material was released, no safety implications were involved and public health and safety was not endangered.

Corrective Action:

The section of pipe around vent valve DH-1010 was cut out and is being replaced. Approved procedures are being used for cleaning, welding and inspecting the repair of the piping. The vent valve will be re-installed in the new pipe section to conform with existing P&ID's. ANO QA/QC inspectors are witnessing and inspecting as applicable. The failed section of pipe was sent to Bechtel Engineering Metallurgical Laboratory for further metallurgical examination.

Failure Data:

Examination of the Decay Heat "Loop B" vent valve revealed a larger more uniform weld deposit, absence of base metal grinding or undercutting and no indication of excessive heat input during welding. Further analysis of situation will determine the extent of corrective action investigation, the results of this analysis are to be forwarded upon availability.

Prepared by

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INVESTIGATOR(s)

Reviewed by

*G. Hillier*

PLANT SAFETY COMMITTEE

Date

*7-2-74*

Approved by

*W. W. Anderson*

PLANT SUPERINTENDENT

Date

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SAFETY REVIEW COMMITTEE

Date

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LICENSING SUPERVISOR

Date

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Reviewed by

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MANAGER, NUCLEAR SERVICES

Date

*7-5-74*

Recommend Approval

*William H. Wood*

DIRECTOR, POWER PRODUCTION

Date

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Approved by

*G. Hillier*

SENIOR VICE PRESIDENT

Date

*7-5-74*