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Richland, Washington
June 15, 1951

To: File

This document consists of
3 pages.

REMOVAL OF RUPTURED SLUG FROM TUBE #2278-H

SUMMARY

An emergency shutdown of H File was initiated at 8:50 A.M. on June 13, 1951 to investigate indications of the presence of a ruptured slug in one of the tubes on 21 crossheader. The presence of a ruptured regular metal slug in tube #2278, which contained the H-10 loading pattern, was confirmed when a reading of 1 R/hr. was observed at the rear pigtail and the tube charge was found to be stuck. Removal was effected by backseating with a hydraulic ram, hydraulically ejecting the downstream slugs, removing the tube ribs downstream of the ruptured slug with the rotary reamer, and then applying the hydraulic ram and pneumatic machine to discharge the tube.

The tube was removed, replaced, and charged with the regular production loading.

Operation was resumed at 10:05 P.M. on the same day. The lost production time was 13.3 hours.

There was no overexposure of personnel and no spread of contamination outside established danger zones.

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REMOVAL OF RUPTURED SLUG FROM TUBE #2278-HDETECTION

The initial indication of the slug rupture was observed at 5:40 A.M. on June 13, 1951, during a routine check of crossheader samples using the VGM instrument. The slightly higher readings indicated on header 21 were substantiated by activity counts on 1 cc evaporated samples. Subsequent hourly samples revealed a narrowing difference between samples from header 21 and samples from adjacent headers. There were no indications of the slug rupture on the effluent water monitoring system, or any other instrument.

Since considerable excess reactivity was available, following the startup which occurred about 7 hours before, and considerable recovery time was available, the Pile was shut down for an investigation. A 1 R/hr. reading was observed on the pigtail of tube #2278, indicating the presence of a ruptured regular metal slug in this tube.

ISOLATION

After about two hours had elapsed, the tube was isolated and the Pile effluent was diverted to the previously unused side of the 107 retention basin, and the basin in use when the rupture occurred was sampled. Analysis revealed only normal amounts of contamination in the water, and the basin was released for service.

REMOVAL

After attempts to discharge the tube using the pneumatic charging machine were unsuccessful, the charge was backseated about 4", using the hydraulic ram, with forces of about 2500 pounds being required. The slugs downstream of the ruptured slug were then hydraulically ejected, using water pressure at 400 psi, with the orifice removed from the tube inlet. The tube ribs downstream of the ruptured slug were removed using the rotary reamer.

The tube was then discharged using the hydraulic ram and pneumatic charging machine; an initial force of about 1500 pounds being required to move the charge.

PERTINENT DATA ON THE CHARGE

Tube #2278-H contained the H-10 loading pattern, charged on July 10, 1950. The regular metal in the charge had reached a concentration of 631 MWD/ton. The

REMOVAL OF RUPTURED SLUG FROM TUBE #2278-HPERTINENT DATA ON THE CHARGE

ruptured slug was the 17th from the downstream end of the charge. Examination of the slug revealed a small hole in the side of the can, with no apparent weld failure, and negligible distortion.

The slug was an MR type, canned on May 17, 1950, from H line, truck #8, and had been autoclaved at 300 Area.

H. I. ASPECTS

There were no unusual special hazards aspects associated with the incident. There was no overexposure of personnel and no spread of contamination outside established danger zones.

SLUG DISPOSAL

The ruptured slug has been transferred to the Metallurgical Laboratory at 111-B Building for further examination.

CGL:rf

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P DIVISION

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