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HW--22119

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DE91 001385

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September 7, 1951

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REMOVAL OF RUPTURED SLUG FROM TUBE 1475-DR

SUMMARY

During the scheduled outage on June 27, 1951, the charge in tube 1475-DR was found to be stuck; normal discharge methods failed to move the metal stringer. Forces up to 6,500 pounds applied by the hydraulic ram also failed to move the charge in either direction. Removal of the ruptured slug was effected by hydraulically ejecting the slugs downstream from the ruptured slug transferring the upstream slugs to an adjacent tube, and removing the process tube containing the ruptured piece. Subsequent visual inspection revealed that the slug was ruptured.

The tube was replaced and charged with the regular production loading. The lost production time was 18.5 hours.

DETECTION

During normal discharge operations on June 27, 1951 the charge in tube 1475-DR failed to move under normal pressure from the charging machine. Water samples from the tube and smears from the rear nozzle analyzed by the Radiation Monitoring Group failed to indicate the presence of a ruptured slug. There were no indications of the slug rupture on the effluent water monitoring system or any other instrument. Subsequent visual inspection of the slug, however, revealed that it was ruptured.

ISOLATION

Since radiation surveys failed to indicate a ruptured regular metal slug in tube 1475-DR, the effluent from the tube was not isolated.

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REMOVAL

After efforts to discharge the tube with a regular charging machine failed, attempts were made to move the charge with a hydraulic ram. Forces up to 6,500 pounds failed to move the charge in either direction. After removing the orifice from the tube inlet, the slugs downstream of the ruptured slug were hydraulically ejected using water pressures up to 395 psi. The upstream slugs were then transferred by use of the special transfer cask to tube 1475-DR. Tube 1475-DR, including the ruptured slug, was then removed.

PERTINENT DATA ON THE CHARGE

Tube 1475-DR contained the regular production loading charged on November 30, 1950, and the metal had reached a concentration of 569 MUD/Ton. The ruptured slug was the 53rd from the downstream end of the charge, canned July 7, 1949, of MR metal on H line. It was processed on truck No. 5 and was autoclaved.

RADIATION MONITORING ASPECTS

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

SLUG DISPOSAL

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

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