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September 19, 1951

This document consists of

2 pages

REMOVAL OF RUPTURED SLUG FROM TUBE NO. 0970-BSUMMARY

The 105-B Reactor was shut down at 9:52 A.M. on September 17, 1951 to effect removal of a ruptured uranium slug from tube No. 0970-B. Removal was accomplished with the charging machine, using normal forces. The time required from shutdown to start-up was twenty-three minutes which was within the calculated recovery time of twenty-six minutes. The production loss has been estimated to be 8 M.W.D.

DETECTION

The differential activity recorder in A sample room gave the first indication of increasing activity on crossheader 9½ at 8:30 P.M. on September 16. This indication of a ruptured slug was investigated periodically by sampling water from header 9½ and adjacent crossheaders for activity but no conclusive results were obtained until samples taken at 9:15 A.M. on September 17 revealed that water from 9½ header exceeded the activity from adjacent headers by a factor of three. The Reactor was shutdown when the results of these VCM analyses were received. There were no indications of the abnormal condition on any of the other monitoring devices. A survey of the rear pigtails revealed a reading of 2.5 R/hr. at tube No. 0970.

SHUTDOWN, REMOVAL AND START-UP

The operating level was reduced from 470 MW to 150 MW at a rate of 50 MW/min. and then the remainder of the horizontal rods were inserted under normal power as rapidly as possible. Immediately, under temperature monitoring control, the process water pressure was reduced from 400 psi to 150 psi. The pressure on 9½ crossheader was then reduced to about 40" of head. A maximum tube temperature of 650°C was observed during the period this header was at reduced pressure.

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SHUTDOWN, REMOVAL AND START-UP (Cont.)

The charge was displaced with solid aluminum dummies, using the pneumatic charger with only normal pressures experienced. The tube was capped and the water pressure restored to 400 psi as rapidly as possible. Operation of the Reactor was resumed at 10:15 AM.

CONTROL OF EFFLUENT

After the removal of the ruptured piece from tube No. 0970, the effluent flow was switched to the north basin and the water in the south basin was pumped to the 107-B crib. Samples from both retention basins and the storage basin revealed only normal activity levels and the basins were returned to regular service.

DATA ON THE CHARGE

Tube 0970-B contained regular metal charged February 20, 1951. The tube was operating at 218 KW power level and had reached 67 % of current goal concentration.

The ruptured slug was in the center of the charge, as determined by monitoring the pieces discharged. It was an XR type, canned January 23, 1951, processed on truck 2, line H and had been autoclaved.

EXAMINATION AND DISPOSAL

Examination of the slug revealed that the end cap had become separated from the remainder of the piece. There were three cracks in the can wall from $\frac{1}{2}$ " to 1" long from the cap end.

The slug was photographed, canned and is being held in the 105-B storage basin awaiting transfer to 111-B for further examination.

W. M. Koop
OPERATIONS UNIT
REACTOR SECTION

WV:EM

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