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REMOVAL OF RUPTURED SLUG FROM TUBE 3467-B

SUMMARY

The B Reactor was shut down at 11:37 P.M. on October 31, 1951, to remove a ruptured uranium slug from tube 3467-B. Removal was accomplished by hydraulically ejecting the portion of the charge downstream from the ruptured slug, transferring part of the upstream charge to adjacent tube 3468-B, and removing the process tube containing the offender and the balance of the charge. The removal operation required 33.0 hours; however, the Reactor remained down 65.0 hours to complete a scheduled outage and the associated temporary poison discharge.

DETECTION

The presence of a rupture was initially detected when header samples were being monitored routinely. Subsequent sample analysis confirmed the rupture. A reading of 2 R/hr. was obtained at the rear pigtail of tube 3467-B after the Reactor was shut down.

REMOVAL

Efforts to discharge tube 3467-B normally with the pneumatic charging machine were unsuccessful. The downstream spacers and seven metal slugs were hydraulically ejected. Forces up to 4,200 lbs. failed to backseat the remainder of the charge; additional force was not applied when it was apparent that the tube had stretched. Forty slugs upstream from the ruptured piece were transferred to adjacent tube 3468-B. The forty-first piece from the front could not be transferred because of an apparent slug deformity that caused it to bind in the tube. When it was finally moved into the transfer cask, it jammed in the cask's nozzle and the transfer could not be completed. The piece was then returned to tube 3467-B. The tube, containing the ruptured slug and the sixteen pieces which could not be transferred, was pushed into the storage basin. An initial force of 3,200 lbs. was required to move the tube.

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The tube was not replaced during this outage due to manpower requirements in other areas.

DATA ON THE CHARGES 3467-B AND 3468-B

Tube 3467-B contained 64 regular pieces charged January 23, 1951. The charge was operating at 307 KW power level and had reached 95% of the current goal concentration.

The ruptured slug was the 57th piece from the front of the charge. It was of NK metal canned January 5, 1951, on G line. It was processed on truck No. 7 and autoclaved.

The regular charge in tube 3468-B, which was displaced to facilitate the transfer of pieces from tube 3467-B, was operating at 309 KW power level and had reached 95.7% of the current goal concentration.

EXAMINATION AND DISPOSAL

Examination of the ruptured slug was made while it was still stuck in a tube section. This partial examination revealed that the welded end cap and a conical segment of metal had parted from the slug. Three radial cracks were noted in the exposed metal surface.

The ruptured slug in the section of tube was canned and is being held in the 105-B storage basin awaiting transfer to 111-B Building for further examination.

R.M.U. ASPECTS

Excepting for some minor spreading of contamination which was detected and removed expeditiously, contamination was confined to established danger zones. There was no over-exposure of personnel.

A A Jacobson
OPERATIONS UNIT
REACTOR SECTION

A. A. Jacobson

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