



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION

REGION IV

URANIUM RECOVERY FIELD OFFICE  
 BOX 25325  
 DENVER, COLORADO 80225

JUN 23 1989

URFO:GRK  
 Docket No. 40-8943

Mr. John Petersen  
 HCR Box 331B  
 Pearce, Arizona 85625

Dear Mr. Petersen:

Our office is in receipt of your June 6, 1989 letter to Russell Wise discussing the occurrence of faulting at the Crow Butte site. As you are aware, our technical personnel reviewed your previous letter of April 4, 1989, and likewise your most recent correspondence.

In your June 6 letter, you have made other points concerning Mr. Elliot's report, the chemistry associated with uranium deposition and hydrologic testing of the production zone and associated aquifers.

We believe that you are sincere in your concern over potential ground-water contamination associated with uranium recovery efforts. Likewise, our technical staff has reviewed the geological and hydrological information associated with the application, while sharing similar concerns.

Mr. Elliot's report was initially brought to our attention during the June 1984 aquifer exemption hearing. At that time, his "alternate geologic interpretation" was reviewed by the Commission staff. This review as well as other information, resulted in the Commission reevaluating the hydrogeological environment at the site. Our review concluded that adequate confinement appeared to exist. This was later confirmed by successful operation of the pilot facility as well as additional hydrological testing, which took place in latter years.

The mode of uranium deposition at the site is not an issue that the Commission has decided to pursue. We understand that several types of deposition have been theorized. A roll-front deposition controlled by oxidation/reduction boundaries is commonly known to exist in this general area; however, this does not indicate that it is the only deposition environment to exist at the site. Similarly, structural control could be a responsible for the uranium deposition at the site. Environmentally acceptable mineability of the deposits has little to do with either of these modes of deposition, but with the contrasting hydraulic conductivity of the various geological units. To verify the existence of confinement, hydrological testing of the site was performed.

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The hydrological testing utilized a pumping well which sufficiently stressed the mineralized zone as well as the aquitards. Ultra-sensitive pressure transducers as well as real-time recording devices were utilized during the testing. These instruments as well as the data collected represent state-of-the-art technology. The data indicate that no detectable leakage exists across the aquitard. Therefore, we have no reason to believe that mining solutions will migrate out of the zone of mineralization.

In order to verify this conclusion, we are requiring that Ferret install monitor wells in the overlying aquifer. These wells will be centrally located within each production unit to detect vertical excursions. As stated earlier, additional aquifer testing has been performed in support of the commercial application. Similar aquifer testing will be required as mining progresses.

Our office did not pursue determining the presence or absence of faulting at the site, but sufficiently stressed the geological units to determine if leakage could be expected.

We thank you for your consideration and concern associated with hydrological control of mining solution at the Crow Butte site.

Sincerely,

  
Edward F. Hawkins, Branch Chief  
Uranium Recovery Field Office  
Region IV

cc: Gordon Moore  
Russ Wise, RIV  
Senator Scofield  
A. Ludwig, EPA  
Western NE Resources Council