THE LITHIUM-URANIUM CONNECTION

The association of lithium with uranium deposits has been noted with increasing frequency in the last few years. The most noteworthy examples are the occurrence of lithium clays stratigraphically above uranium deposits at McDermitt caldera in northern Nevada and a similar occurrence in the Date Creek uranium deposit near Wickenburg, Arizona. Additional occurrences, some with less economic potential were reported by Glanzman, Rytuba, and Otton at the annual meeting of the Geological Society of America in San Diego last November. All of these occurrences are in sedimentary rocks of volcaniclastic origin, suggesting that both elements originate within the volcanic sequence and travel in the same ground waters.

The newly reported association of lithium with uranium occurs in ground water samples from a western Nevada alluvial valley containing a large amount of volcaniclastic debris that was drilled last fall by the USGS Lithium Resource Appraisal Program. Analyses of water samples from one well in Fish Lake Valley contain as much as 0.38 ppm uranium and 21 ppm lithium, according to Sigrid Asher-Bolinder, James D. Vine, Richard K. Glanzman, and Joseph R. Davis. The uranium values are as much as 15 times the average of other wells in the area and the lithium values are equally high, even though the water samples are not that saline.

The Li/Cl ratios for samples collected from depths of 55, 115, 335, and 435 feet are 0.0027, 0.0028, 0.0022, and 0.0031 for waters whose residue ranges from 14,000, 3,200, 1,010, and 543 ppm, respectively. Corresponding U/Cl ratios range from 0.00004, 0.00024, and 0.00036 to 0.0036, respectively. Although the pH values of 7.8, 9.9, 9.1, and 8.8 show all the waters to be alkaline, the total alkalinity, expressed as $CaCO_3$ is relatively low, 310, 180, 170, and 380, respectively.

It is anticipated these data will be of sufficient interest to encourage additional drilling in the area by private companies exploring for uranium and lithium. In addition, the association of both elements in anomalous amounts should encourage further prospecting for both elements in areas formerly thought favorable for only one or the other.

ALTAMONT OILS, UINTA BASIN

Donald Anders reports that sulfur and carbon isotope analyses along with hydrocarbon compositional data, suggest that the oils from the Altamont spaced area near the Cedar Rim field, Uinta Basin, being produced at 8632- to 9252-foot depths, are probably migrating up from deeper Altamont-Bluebell production between the 12,375- and 14,612- foot levels. Likewise, the shallow Monument Butte oil from the 5020-foot level is similar in composition to 9030- to 12,060-foot Altamont-Bluebell production suggesting migration from the deeper Altamont-Bluebell fields. The shallow, immature oils produced at the 4700-foot level in the Black Tail Ridge field and the Altamont spaced area are so chemically different from the Altamont-Bluebell oils, that it appears they are not migrated oils from the deeper Altamont-Bluebell fields. The Bluebell oils from the 8276- to 8466-foot level are compositionally different from the deeper Bluebell oils, suggesting that they are not coming from migrated deeper production. The Twelve Mile Wash oils are distinct in composition. The Horseshoe Bend and Red Wash oils are similar in composition and suggest a common source.

Evolution of the crude oils in the Uinta Basin follow expected maturation routes. The shallower more immature oils are heavy, NSO-rich crudes, whereas, the deeper more mature crudes are lighter paraffin-rich oils.