

## ***A mid-1950s collection of uranium ore samples from Arizona, Colorado, Utah, and Canada***

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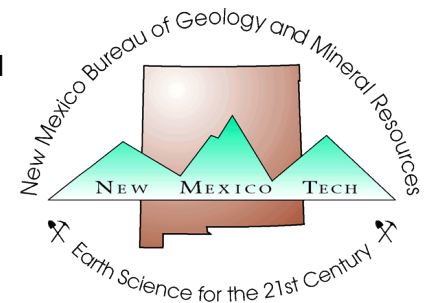
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# A Mid-1950s Collection of Uranium Ore Samples from Arizona, Colorado, Utah, and Canada

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and

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In October, 2019, I (PJM) examined several boxes of uranium ore samples that had been given to the Denver Gem and Mineral Guild, a Denver area rock and mineral club. One of the club members had been given them by someone from a family in the Golden, Colorado area, saying that they had been collected by a geologist in the family who had passed away some years ago, and they had no idea what to do with them. The samples were wrapped in paper, some with typed labels on index cards and some labels hand written in pencil on pieces of paper. A few of the specimens were wrapped in newspaper dated September, 1958 from *The Northern Miner*, an Ontario mining journal. They provided an interesting set of mostly well labeled specimens from uranium deposits that would have been mined in the 1950s. Modreski examined the specimens, and Lueth obtained powder XRD data on some of the uranium minerals in them. Those specimens of sufficient historical or mineralogical interest will be donated to the NMGGMR Mineral Museum. Descriptions of the specimens and localities follow. Below, the descriptions written in regular text were what appeared on the original labels; comments in italics were added by the authors. The letters/numbers used to refer to the specimens were added by us (PJM).

AM-1 "Pitchblende, Ascension mine, Jefferson Co., Colo." *Massive grayish-black material, appears slightly foliated or sheared. "Uraninite" had been written in pencil, but crossed out, below "Pitchblende" on the label. The Ascension mine, MRDS (USGS Mineral Resources Data System) #10107989, was one of the uranium-producing mines in the Ralston Buttes mining district, north of Golden, near Golden Gate Canyon and Tucker Gulch, Jefferson County, CO. Mineralization in the district occurs as Laramide-age (circa 70 Ma) veins cutting Proterozoic metamorphic rocks. The largest and most recently worked mine in the district (from the 1950s until 2000) was the Schwartzwalder mine. XRD = quartz, uraninite, pyrite, perhaps thorianite.*

HJ-1 "Copper-Uranium ore, Happy Jack mine, White Canyon, San Juan County, southeastern Utah. Uraninite (black), Zippeite (yellow-orange), Uranopillite (yellow), Johannite (green)." *The Happy Jack mine is a uranium-copper-vanadium deposit in the Shinarump Conglomerate (Triassic) (Trites and Chew, 1955). The rock sample consists of multicolored uranium minerals, yellow to orange to dark to light green, in*

*a friable mostly-black sandstone. Some 65 minerals (including varieties and mineraloids; 60 valid species) are listed in mindat.org from the mine. These include 20 uranium minerals + 2 uranyl vanadates (carnotite, metatyuyamunite) + 1 other vanadate (metarossite). The variously colored areas on the sample each appeared, not surprisingly, to be a mixture of minerals. XRD (black material) = quartz, uraninite, chalcocopyrite, pyrite, johannite. XRD (yellow material) = natrozippeite, johannite, metauranocircite, chalcocopyrite, plus unidentified diffraction peaks. XRD (orange material) = natro-(?)zippeite(?), johannite, barnesite, quartz, plus unidentified peaks. XRD (green material) = johannite, quartz, blatonite, brannerite, chabazite, gypsum. Barnesite,  $(\text{Na,Ca})\text{V}_6\text{O}_{16} \cdot 3\text{H}_2\text{O}$ , a red-brown, radiating/fibrous mineral, is not listed by Mindat from the Happy Jack mine; nor is blatonite, a yellow, fibrous uranyl carbonate,  $(\text{UO}_2)\text{CO}_3 \cdot \text{H}_2\text{O}$ .*

MM-1 "Pitchblende, Mena mine, Jefferson Co., Colo." *A small, metallic-black vein bordered by brick-red host rock. As with sample AM-1, "Uraninite" had been written, this time above, "Pitchblende," but crossed out. The Mena was one of the more prominent mines in the Ralston Buttes district, near Ralston Creek. Eckel (1997) lists a number of copper, bismuth, nickel, and silver minerals occurring here, as well as uranium. Eckel (p. 511) describes the pitchblende mineralization as "Pitchblende occurs as a colloform coating on rock fragments and fracture surfaces, and in thick, black veinlets in the breccias of the Mena vein." XRD (black + pink material) = dolomite, uraninite, calcite, pyrite.*

MV-1,2,3,4 "Carnotite, yellow, in sandstone host rock, Monument #2 mine, Monument Valley, northeastern Arizona." *According to mindat.org, the Monument #2 mine "is one of the richest U-V deposits in the Monument Valley area." Mindat reports 48 valid mineral species, including 11 uranium minerals, 18 vanadates, and 4 uranyl vanadates. The samples show yellow (with some greenish or orange tints) uranium mineralization in sandstone. Sample MV-1, not studied. MV-2, yellow mineralization in sandstone/breccia; XRD = quartz, carnotite. MV-3, yellow crusts, XRD = uranophane, plus peaks that may questionably match metakirchheimerite and vivianite. MV-4, multicolored crusts (yellow, orange, green), XRD = uranopillite, chalcocopyrite, heulandite, jachymovite(?), and a possible but very unlikely match to margaritasite.*

TC-1-6, "Uranium ores, Tallahassee Creek district." *The Tallahassee Creek uranium district, Fremont County, Colorado, consists of uraninite and coffinite mineralization in the Tallahassee Creek Conglomerate (Oligocene) and Echo Park Alluvium (Eocene) (Eckel, 1997). The uranium mineralization is commonly associated with fossil wood or other carbonaceous material. According to mindat, uranium minerals identified in the district include autunite, coffinite, meta-autunite, metatorbernite, torbernite, and uraninite. Sample TC-2 contained yellow uranium mineralization on sandstone; XRD = uranophane. Sample TC-4 labeled, "Autunite in petrified wood, Tallahassee Creek, Fremont Co., Colo." consisted of crusts of a yellow uranium mineral (unlikely to be autunite as labeled) on reddish-brown, poorly preserved (crumbling) fossil wood; XRD = quartz, montmorillonite, and other peaks not yet*

*positively correlated with any specific uranium mineral. Sample TC-5 was black sandstone, presumed to contain uraninite or coffinite; XRD = quartz, pyrite, uraninite, biotite, glauconite, and possibly an amphibole. Sample TC-6 was of a bright yellow crust on sandstone; XRD = metatyuyamunite, calcite, quartz.*

Other ore samples in the collection (not studied further) included three samples of uraninite-bearing "Quartz pebble conglomerate-pyrite, uraninite-Blind River [Ontario], Canada."

## References

- Eckel, 1997, *Minerals of Colorado*, Updated and Revised, Fulcrum Publishing, Golden, CO, 665 p.
- Trites, A.F., Jr., and Chew, R.T., III, 1955, *Geology of the Happy Jack mine, White Canyon area, San Juan County, Utah*. U.S. Geological Survey Bulletin 1009-H, p. 235-248.