Summary of Vanadium Ores Received at the Metals Reserve Company’s Farmington, New Mexico Ore Buying Station, 1943-1944

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CONTRIBUTED REPORT CR-15-C

September 2015

Arizona Geological Survey

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INTRODUCTION

While researching sources of information on pre-U.S. Atomic Energy Commission's (AEC) carnotite mining on the Navajo Indian Reservation, the author discovered another source. Records of an ore buying station in Farmington, New Mexico operated for a federal vanadium program, provided additional information. The purpose of this report is to record this data.

THE METALS RESERVE VANADIUM PROGRAM

Metal Reserve Company was a U.S. Government agency created during World War II to acquire some 40 commodities for the Nation’s strategic stockpile. These materials included vanadium used as a steel alloy. In February 1942 U.S. Vanadium Corporation (USV) was selected as the prime contractor for the vanadium program. To acquire vanadium ore, USV set up ore buying stations in southwestern Colorado and southeastern Utah. These stations were located at Durango, Rico, Dove Creek and Gateway, Colorado and at Monticello, Moab and Thompson, Utah. There was also a station Farmington, New Mexico. The price schedules for vanadium ores were increased.

Ores purchased at ore buying stations were processed for Metals Reserve at the Durango mill operated by USV, at the Monticello mill operated by Vanadium Corp. of America and at the Gateway mill operated by Nisley & Wilson.

The Farmington station purchased ore from mines in the Carrizo Mountains in Apache County, Arizona. At the station, the weighed ore was loaded onto railroad cars of the Denver and Rio Grande Western narrow gauge railroad and taken to the vanadium mill at Durango, Colorado.

Metals Reserve terminated its vanadium program February 28, 1944 after some 6 million pounds of \( V_2O_5 \) had been acquired for the strategic stockpile.

At the Monticello mill, uranium was recovered by a circuit in the mill. At the Durango mill, uranium was recovered by processing mill tailings. All this was done secretly by the Manhattan Engineer District (Manhattan District Engineers, 1948).

THE WADE-CURRAN VANADIUM LEASES

By the mid-1930s the need for vanadium as a steel alloy was increasing. In 1940, John F. Wade and Thomas F.V. Curran were issued two leases by the Office of Indian Affairs, U.S. Department of the Interior, to mine on the Navajo Indian Reservation in Apache County, Arizona.

Mining on these two leases did not occur until 1942 when the Metals Reserve program was in place. In 1943, Wade and the Curran brothers, Thomas and Charles, were the only bidders on a 168-square-mile exploration lease in the northern and western Carrizo Mountains. On the day the
Details of those leases are given in Table 1. All the ores mined on the three leases were hauled by truck to the Farmington ore buying station.

THE FARMINGTON ORE BUYING STATION

The ore buying station at Farmington, New Mexico was established to receive vanadium ore from the Carrizo Mountains in northwestern New Mexico and northeastern Arizona (Figure 1). Only ores mined by John F. Wade and the Curran brothers, Thomas and Charles, were received. Vanadium ores mined by Vanadium Corporation of America were trucked to the ore buying station at the Monticello, Utah mill.

An example of a Farmington scale ticket is given in Figure 2. Copies of these tickets were located in the National Archives, Rocky Mountain Region, Bloomfield, Colorado, Record Group 434-00-054. The tickets cover the period June 1943 through February 28, 1944. Tickets prior to June 1943 could not be located.

These tickets show, for the first time, where the ore mined under Lease I-149-IND-6197 came from. A summary of the information on the tickets is given in Table 2.

COMMENTS

During a conversation the author had with John F. Wade in 1955 (oral communication), he stated something like this: “he mined the North Martin before the AEC got the Manhattan lease.” Based on this information the author believed the mine was operated under Lease 6197, and stated this in earlier reports (Chenoweth, 1991, p. 22; 2011, p. 5). The ore buying station tickets would indicate the mine was active under Lease 3798.

In the same conversation, Mr. Wade mentioned mining some ore on the west side of Cove Mesa. A few sacks of ore were lowered to the valley floor via a cable with a pulley. There is no ticket for Cove Mesa ore. It was such a small amount it could have been included with another mine’s ore. The area of mining on Cove Mesa was mapped by Union Mines geologists on August 2, 1945 (Harshbarger, 1946, Fig. 3). See Figure 3.

CONCLUSION

The ore buying station scale tickets show only the CB&W-MC mine, in South Saytah Canyon, and the Saytah mine, in Saytah Wash, delivered ore to the station when Lease 6197 was an exploration lease.
REFERENCES


APPENDIX

The geologic setting and production history of the mines on the Wade-Curran leases is given in the following Arizona Geological Survey reports:

- Martin CR-99-A
- Eurida CR-03-C
- Sunnyside CR-97-C
- Syracuse CR-97-D
- South Saytah (CB&W-MC) CR-11-M
- Cove Mesa CR-13-A

A report covering the Saytah mine is in preparation.

A report on the history of the North Martin mine is on file at the Economic Geology Section of the AZGS in Phoenix, AZ.

All of the uranium/vanadium ores in the Carrizo Mountains occur in sandstone beds of the Salt Wash member of the Morrison Formation. The principal ore mineral was tyuyamunite, a calcium uranium vanadate.
Table 1. Summary of the Wade-Curran vanadium leases.

<table>
<thead>
<tr>
<th>Lease No.</th>
<th>Dated</th>
<th>Lessee</th>
<th>Areas Included</th>
<th>Shipments</th>
<th>Total Tons</th>
<th>V₂O₅ %</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-149-IND-3798</td>
<td>Effective January 19, 1940</td>
<td>Wade, Curran and Co.</td>
<td>65.02 acres, Martin, Saytah and Eurida No. 2 claims</td>
<td>August 1942-November 1943</td>
<td>2,198.05</td>
<td>2.91%</td>
</tr>
<tr>
<td>I-149-IND-4225</td>
<td>Effective May 9, 1940</td>
<td>Wade, Curran and Co.</td>
<td>42.32 acres, Syracuse and Sunnyside claims</td>
<td>May 1942-October 1943</td>
<td>966.30</td>
<td>4.37%</td>
</tr>
<tr>
<td>I-149-IND-6197</td>
<td>Effective October 27, 1943</td>
<td>Curran Brothers and Wade/U.S. Vanadium Corp.</td>
<td>168 square miles</td>
<td>December 1943-February 1944</td>
<td>388.35</td>
<td>1.94%</td>
</tr>
</tbody>
</table>

Source: GSA, 1981
Figure 1. Index map of the Carrizo Mountains showing the location of the vanadium mines that operated in the 1940's.
Table 2. Summary of the Farmington ore buying station scale tickets.

<table>
<thead>
<tr>
<th>Location</th>
<th>Period</th>
<th>Tickets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin</td>
<td>July 7, 1943 - November 30, 1943</td>
<td>142</td>
</tr>
<tr>
<td>Sunnyside</td>
<td>June 8, 1943 - October 7, 1943</td>
<td>20</td>
</tr>
<tr>
<td>South Saytah</td>
<td>December 1, 1943 - February 7, 1944</td>
<td>46</td>
</tr>
<tr>
<td>Saytah</td>
<td>December 23, 1943 - February 28, 1944</td>
<td>18</td>
</tr>
<tr>
<td>Eurida</td>
<td>July 5, 1943</td>
<td>1</td>
</tr>
<tr>
<td>Left blank</td>
<td>September 24, 1943</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>228</strong></td>
</tr>
</tbody>
</table>

South Saytah is the CB&W-MC mine.

Figure 2. Example of a scale ticket. Weight is in wet pounds as no assaying was done.
Ore: Soft, thin-beded, X-beded, brown to gray var. ss. along thin sh seams. These ores worked by Wade-Curran.
COMMENTS ON FIGURE 3

Union Mines Development Corp. (UMDC) was a civilian geologic contractor for the Manhattan Engineer District. On the Colorado Plateau, the organization investigated the uranium resources of the Salt Wash Member of the Morrison Formation and the Entrada Sandstone, where the Entrada contained roscoelite deposits. All known exposures of uranium-vanadium were described and plotted on base maps. Old vanadium mines were mapped and sampled.

A summary of UMDC’\'s investigations in the Carrizo Mountains, in Apache County, Arizona, was written by Harshbarger (1946). Figure 3 is from that document as are the sampling results:

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Thickness</th>
<th>SOQ</th>
<th>%</th>
<th>V_2O_5</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>3450</td>
<td>2.5</td>
<td>0.03</td>
<td>1.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3451</td>
<td>4.0</td>
<td>0.03</td>
<td>2.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3452</td>
<td>1.5</td>
<td>0.20</td>
<td>2.32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SOQ – Code for U_3O_8
Harshbarger (1946, appendix 2, p. ix).

Map Symbols

xxxxxxx-SOM and vanadium minerals
Numbers refer to thickness in feet
M-medium, L-low, VL-very low, estimated vanadium grade
SOM-Code for uranium minerals
On the day the lease became effective, a two-thirds interest was assigned to the U. S. Vanadium Corp. (USV) (GSA, 1981).