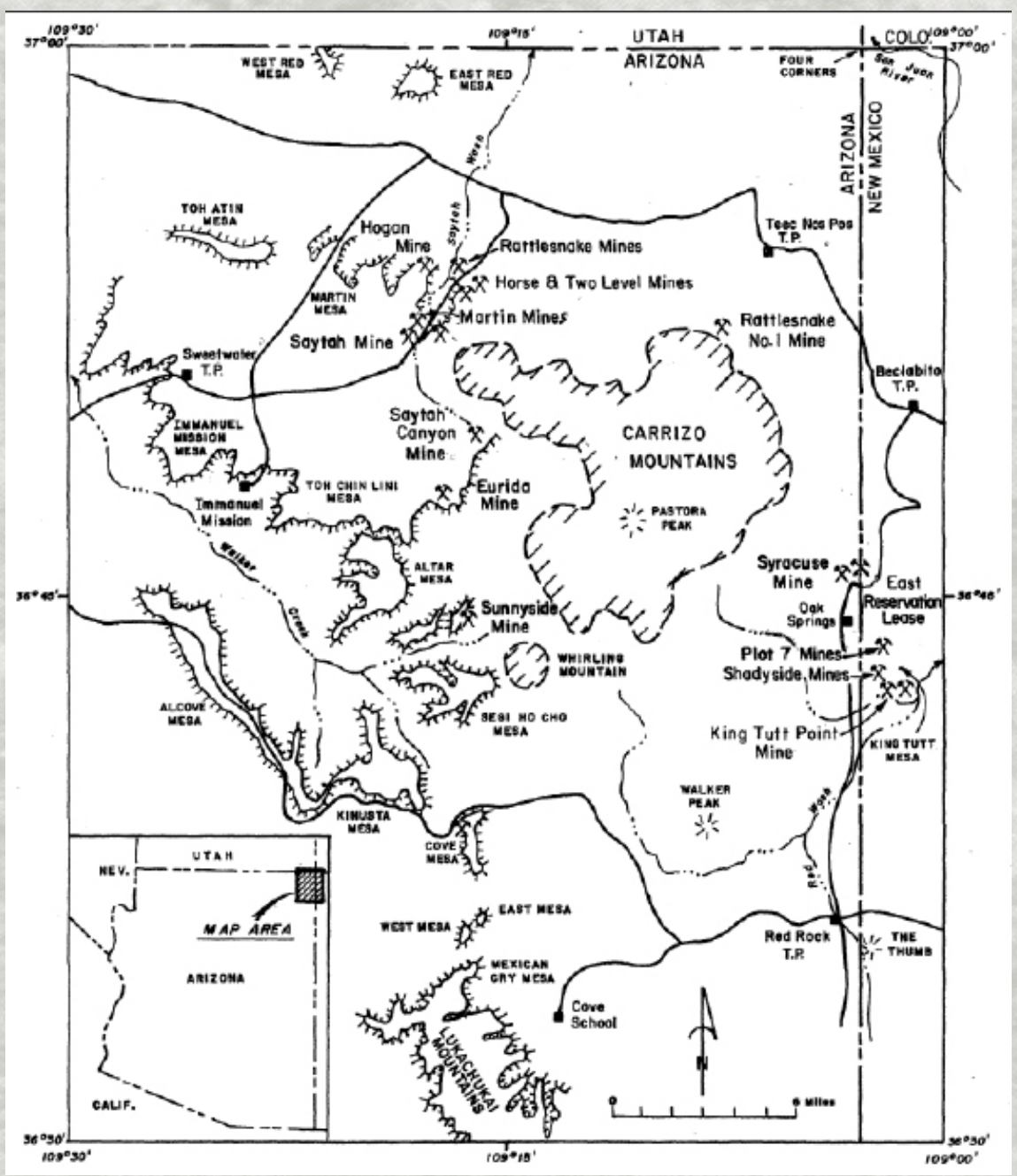
Summary of Vanadium Ores Received at the Metals Reserve Company's Farmington, New Mexico Ore Buying Station, 1943-1944

William L. Chenoweth



CONTRIBUTED REPORT CR-15-C

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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

Chenoweth, W.L. 1991, Vanadium mining in the Carrizo Mountains, 1942-1947, San Juan County, New Mexico, and Apache County, Arizona: New Mexico's Bureau of Mines and Mineral Resources Open File Report No. 378, 33 p.

Chenoweth, W.L., 2011, The geology, leasing, and production history of the CB&W-MC and adjacent uranium-vanadium mines in South Saytah Canyon, Apache County, Arizona: Arizona Geological Survey Contributed Report CR-11-14, 19 p.

General Services Administration, 1981, Navajo vanadium narrative, in, Accounting report on Navajo property, copper, missions, National Monuments, rights of way, sand rock, gravel, and vanadium, Dockets 69,299,353, volume 1: General Services Administration, Indian Trust Accounting Division Report, p. 45-65, appendix 67 p., exhibits 19-54, National Archives Record Group 434-99-200.

Harshbarger, J.W., 1946, Supplemental and summary report on the western Carrizo uplift and Chuska Mountains areas of the northern Navajo Indian Reservation, northeastern Arizona: U.S. Army Manhattan Engineer District Raw Materials Operations Report RMO-441, 108 p., 49 figs. 10 maps, (Open-filed by AEC 1960).

Manhattan District Engineers, 1948, Manhattan district history, book VII, volume 1, feed materials: U.S. Army Corps of Engineers Report, Open-filed, 1982 by DOE as American sources of uranium acquired by the Manhattan Project, TM-350, 6 p.

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.

Lease No.:	I-149-IND-3798
Dated:	Effective January 19, 1940
Lessee:	Wade, Curran and Co.
Areas Included:	65.02 acres, Martin, Saytah and Eurida No. 2 claims
Shipments:	August 1942-November 1943
Total Tons:	2,198.05, averaging 2.91% V_2O_5
Lease No.:	I-149-IND-4225
Dated:	Effective May 9, 1940
Lessee:	Wade, Curran and Co.
Areas Included:	42.32 acres, Syracuse and Sunnyside claims
Shipments:	May 1942-October 1943
Total Tons:	966.30, averaging 4.37% V_2O_5
Lease No.:	I-149-IND-6197
Dated:	Effective October 27, 1943
Lessee:	Curran Brothers and Wade/U.S. Vanadium Corp.
Areas Included:	168 square miles
Shipments:	December 1943-February 1944
Total Tons:	388.35, averaging 1.94% V_2O_5

Source: GSA, 1981

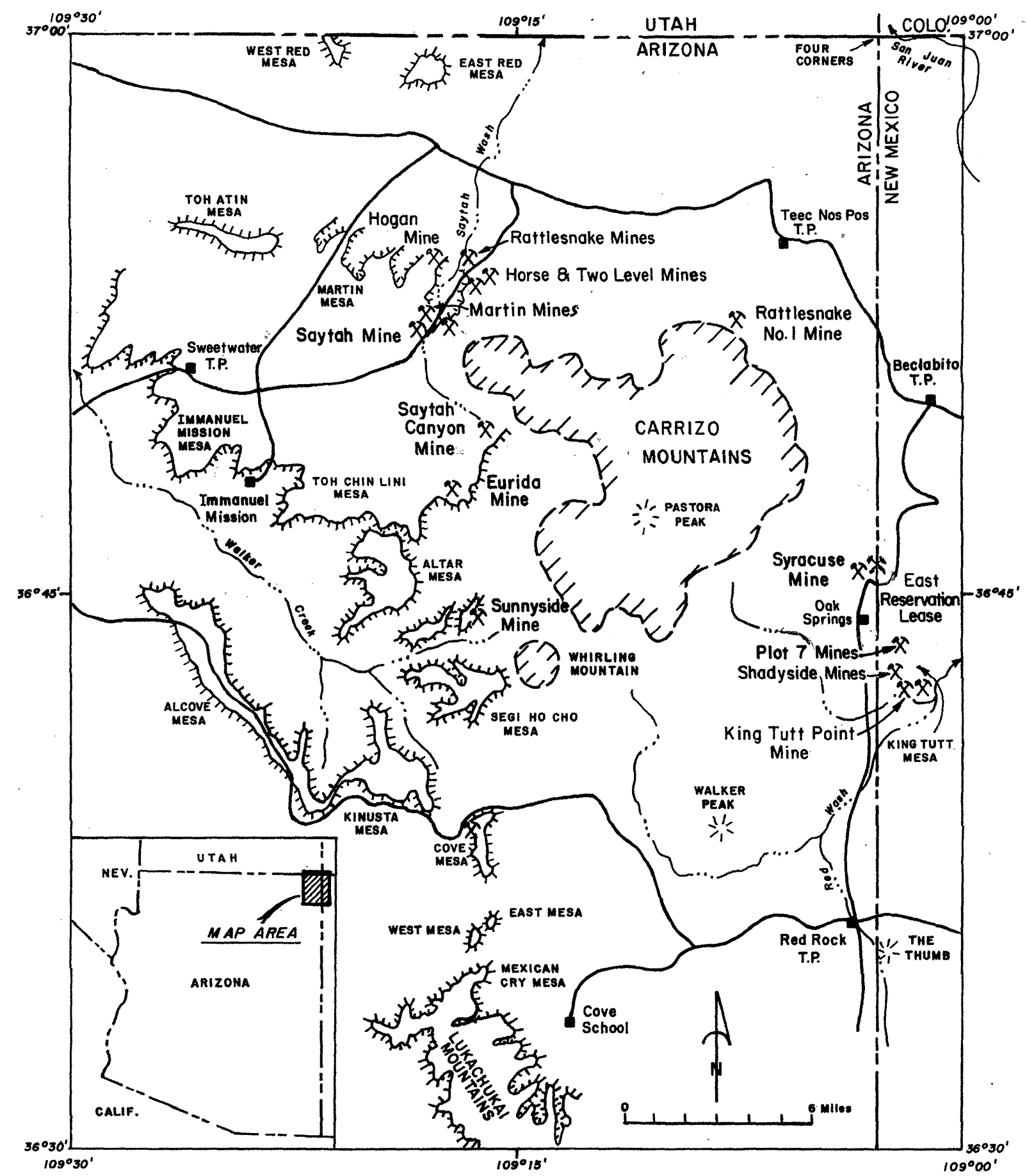
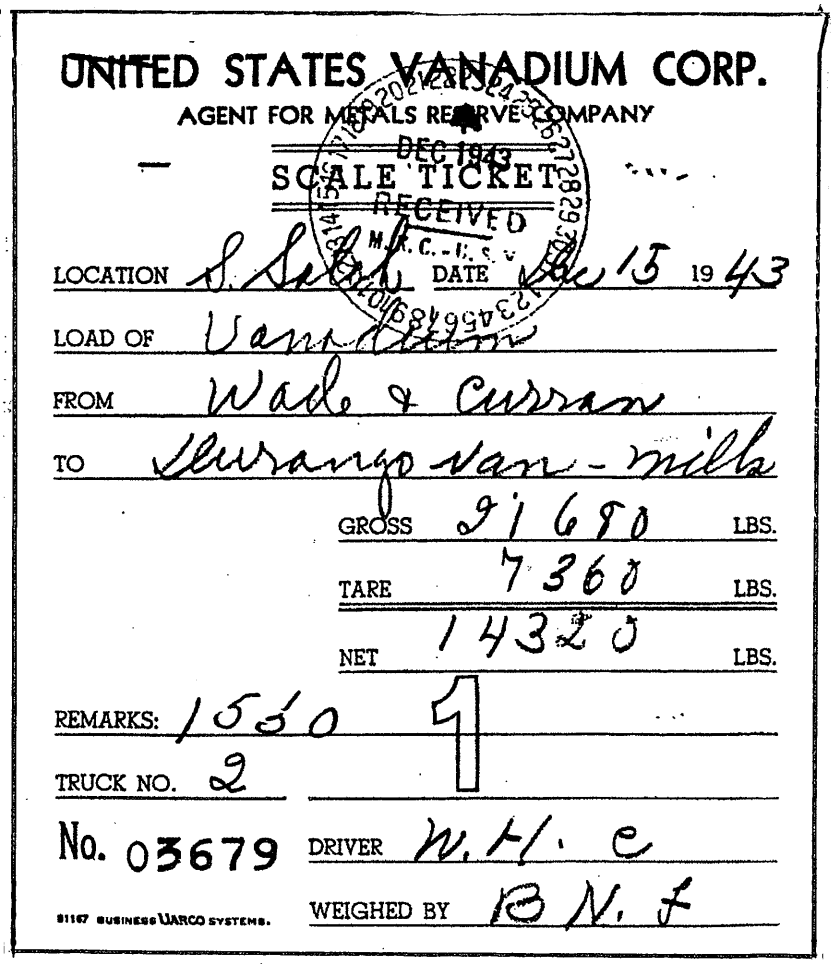


Figure 1. Index map of the Carrizo Mountains showing the location of the vanadium mines that operated in the 1940's

Table 2. Summary of the Farmington ore buying station scale tickets.

Location – Martin	July 7, 1943-November 30, 1943	142 tickets
Location – Sunnyside	June 8, 1943-October 7, 1943	20 tickets
Location – South Saytah	December 1, 1943-February 7, 1944	46 tickets
Location – Saytah	December 23, 1943-February 28, 1944	18 tickets
Location – Eurida	July 5, 1943	1 ticket
Location – left blank	September 24, 1943	1 ticket
	TOTAL	228 tickets

South Saytah is the CB&W-MC mine.


UNITED STATES VANADIUM CORP.

AGENT FOR METALS RESERVE COMPANY

DEC 1943

SCALE TICKET

RECEIVED

LOCATION S. Saytah DATE Dec 15 19 43

LOAD OF Van Ore

FROM Wade & Curran

TO Rio Grande Van-Mills

GROSS 21680 LBS.

TARE 7360 LBS.

NET 14320 LBS.

REMARKS: 1550

TRUCK NO. 2

No. 03679 DRIVER W. H. C

WEIGHED BY B N. F

81167 BUSINESS MARCO SYSTEMS.

Figure 2. Example of a scale ticket. Weight is in wet pounds as no assaying was done.

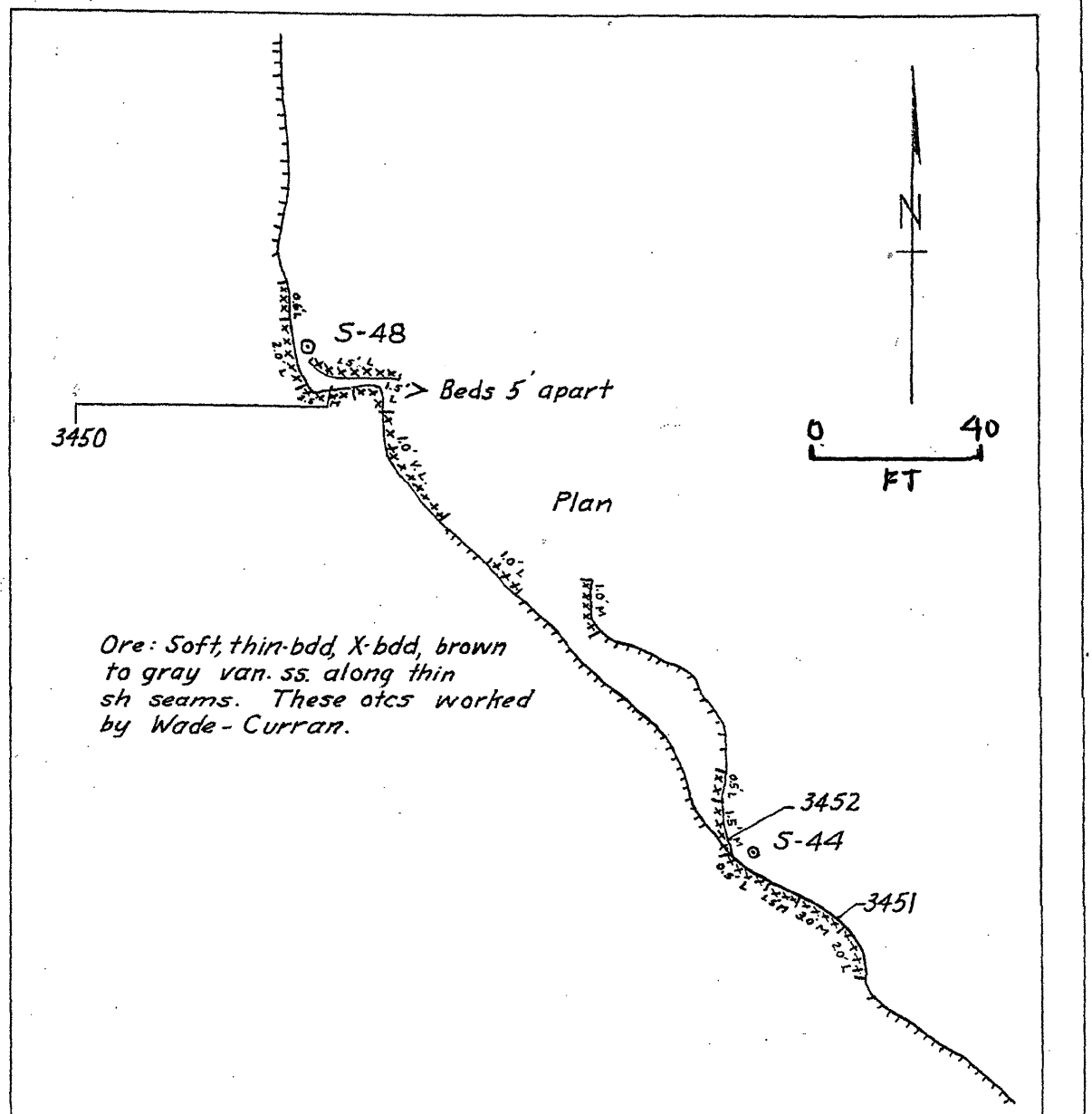


FIGURE NO. 3

UNION MINES DEVELOPMENT CORP.
GRAND JUNCTION, COLO.
FIELD OFFICE

CHUSKA MTNS. AREA
COVE DISTRICT
S-44 & S-48
Scale: 1"=40' 8-2-45
Party 3

Figure 3

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:

Sample No.	Thickness Feet	% SOQ	% V_2O_5
3450	2.5	0.03	1.46
3451	4.0	0.03	2.10
3452	1.5	0.20	2.32

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

OMISSION ON THE BOTTOM OF PAGE 2

On the day the lease became effective, a two-thirds interest was assigned to the U. S. Vanadium Corp. (USV) (GSA, 1981).