

2340 0017

(275)

Item 24

A

MINERAL SURVEY

MODOC MINES & EXPLORATION CO.

THE HOOKER MINING DISTRICT

PERSHING COUNTY, NEVADA

October, 1954.

HISTORY:

John H. Uhalde, born November 30, 1919, Eureka, Nevada. Graduated from White Pine County High School, Ely, Nevada, in 1936. Graduated from University of Nevada, 1942.

Served in United States Army Infantry, from 1942 through 1946, rank of Corporal to Major. Graduated officers Basic Course, Ft. Benning, Georgia, Officers' Advanced Course, Ft. Benning, Georgia, the Staff and Strategic Command Course, Ft. Leavenworth, Kansas. Service ETO. Presently in U. S. A. R.

BACKGROUND:

Six months underground, Star Gold and Tungsten Mine, Cherry Creek, Nevada.

Three months underground, Red Bird Lead, Mercury Mine, Lovelock, Nevada.

Eighteen months underground, block caving, Consolidated Copper Mines, Kimberly, Nevada.

Fifteen months, sampling, milling Nevada Consolidated Copper Mines, McGill, Nevada.

Two years' exploration operations for New World Exploration. Operated and shipped 39,000 long tons iron from McCoy Iron Mines, Battle Mountain, Nevada.

Operator and shipper of 7,000 tons plus lead, copper, silver ore from Aladdin Mines, Elko, Elko County, Nevada, four years.

Former partner, owner Nevada Mineral Laboratories, Reno, Nevada. Analysis, refining of metals, management of mines.

Ten months Manager of Stormy Day Tungsten Mine, Gerlach, Nevada.

REFERENCES:

F. M. Jardine, Sup't Nevada Consolidated Copper Mines, McGill, Nevada (retired).

George H. Playter -- Vice-President, Superintendent, American Smelting and Refining Company, 405 Montgomery St., San Francisco, California.

George McHugh -- Director of Mines, J. R. Simplot Company, Continental Bank Building, Boise, Idaho.

Russell T. Miller, Jr. -- President, New World Exploration Research and Development Co., Van Nuys, California.

Irvin S. Thyle -- Sales Engineer, Western Machinery Co., San Francisco, California.

Leonard Palmer -- Palmer and Decker Co., Bishop, California.

Paul Snow -- Chief Engineer, Western Division COPCO Pacific Ltd., San Carlos, California

Senator Alan Bible, Gazette Bldg., Reno, Nevada.

Hon. Congressman C. Clifton Young, First National Bank Bldg., Reno, Nevada.

Lino DelGrande -- President, South Virginia Branch, First National Bank, Reno, Nevada.

Nevada Credit Rating Bureau, Reno, Nevada.

TABLE OF CONTENTS

Page

Table of Contents	ii
List of Illustrations	iii
Definitions	iv
Introduction	2
Location and Access	2
History	2
Property and Water Rights	7
Mine -- Plant	10
General Geology	10
Workings	11
Metallurgy	12
Liquidation	13
Summary and Conclusions	17
Appendix	A1
Assay Map	A1
Assay Sheets	A2
Diamond Drill Hole Log	A4
U. S. Vanadium Shipments	A9a
Getchell Shipments	A10
Geographic Location	A13
Inventory	A14
Metallurgy -- Zadra Report	A21
Metallurgy -- Western Machinery Report	A24

LIST OF ILLUSTRATIONS

Figure		Page
1.	Stormy Day Mine	1
2.	Ore Bin	6a
3.	Compressor at Portal #11 Adit	8
4.	Shop	9

Rear Pocket

Claim Map

Geology Map

Workings Map

Section Maps

DEFINITIONS

This section is included in the report to clarify the terms used. In the process of evaluating mining properties there are certain terms that can be misleading if not properly qualified. Particular reference is made to the terms used in making estimates of ore tonnages. The U. S. Bureau of Mines and the U. S. Geological Survey have agreed upon the relative dependability of field information:

"'Measured ore' is ore for which tonnage is computed from dimensions revealed in outcrops, trenches, workings, and drill holes and for which the grade is computed from the results of detailed sampling. The sites for inspection, sampling, and measurement are so closely spaced and the geological character is so well defined that the size, shape, and mineral content are well established. The computed tonnage and grade are judged to be accurate within limits which are stated, and no such limit is judged to differ from the computed tonnage or grade by more than 20 per cent."

"'Indicated ore' is ore for which tonnage and grade are computed partly from specific measurements, samples, or production data and partly from projection for a reasonable distance on geologic evidence. The sites available for inspection, measurement, and sampling are too widely or otherwise inappropriately spaced to outline the ore completely or to establish its grade throughout."

"'Inferred ore' is ore for which quantitative estimates are based largely on broad knowledge of the geologic character of the deposit and for which there are few, if any, samples or measurements. The estimates are based on an assumed continuity or repetition for which there is geologic evidence; this evidence may include comparison with deposits of similar type. Bodies that are completely concealed may be included if there is specific geologic evidence of their presence. Estimates of inferred ore should include a statement of the special limits within which the inferred ore may lie."

The term "ore" is often loosely used to designate anything recovered from the earth by mining processes. Technically "ore" is an aggregation of mineral and waste from which one or more metals may be

tracted at a profit. It is obvious then that the market conditions and the efficiency of the mining process will determine whether or not a mineralized area has any "ore".

INTRODUCTION:

The original data for this report were obtained from 23 December, 1953, when the writer took over the management and physical supervision of the Stormy Day Mine, to date.

LOCATION AND ACCESS:

The Stormy Day Mine is in the Hooker Mining District on the West side of the Selenite Range, commonly called the Limbo Range, Pershing County, Nevada.

It is sixteen miles south of the town of Gerlach two and one-half miles east of the main paved highway 34, Wadsworth to Gerlach, Gerlach being the nearest railhead and shipping center.

The topography in the vicinity of the mine is steep, and the general area is one of mild winters conducive to all-year operations.

HISTORY:

The following historical information and production data are compiled from personal contact and the U. S. Bureau of Mines.

The Stormy Day Mine was discovered in late 1941 by J. J. Thrasher. J. J. Thrasher started upper level workings in late 1942, when World War II brought a rise in the price of tungsten.

On January 26, 1944, J. J. Thrasher started shipments to Metals Reserve Company, an agent for the United States Vanadium Corporation, Salt Lake City, Utah. These shipments

stopped July 12, 1944, when the price of tungsten dropped from \$30.00 per unit to \$24.00 per unit.

These shipments comprised a total tonnage of 1142.25 short tons (dry) -- average moisture content 1.9%. The ore carried 810.87 units WO_3 , with shipments varying from a high of 0.90% to a low of 0.63% WO_3 per ton, with an average value of 0.764% WO_3 per ton. This ore came out of stopes on Adit #2 (See Map B)

Verification of the above data can be made by actual shipment receipts on file in the office of Alan Bible, attorney-at-law, the Gazette Building, Reno, Nevada.

The property was idle until 1950, when Mayfield and Reed obtained a lease from J. J. Thrasher. Some 900 tons of ore were shipped and milled under this agreement - no records are available.

Financial difficulties terminated this undertaking in 1952.

In early 1953 Stanley F. O'Leary (now deceased) obtained a lease and option on the Stormy Day Mine from J. J.

Thrasher. Mr. O'Leary applied for an exploration loan under the government sponsored Defense Minerals Administration. Under these contracts the DMEA provides 75% of the money, the operator 25%.

To obtain the 25% payment, Mr. O'Leary gave Dr. Fred M. Anderson of Reno, Nevada, a 1/3 interest in his lease and option. Shortly after the approval of exploration by the U. S. Bureau of Mines Mr. O'Leary died.

Dr. Fred M. Anderson, Alan Bible, Robert L. McDonald, Dr. A. J. Dingacci, a partnership, exercised the O'Leary option and bought the Stormy Day Mine.

The Stormy Day Mine was explored under three government sponsored DMEA loans. The government participation amounts to \$21,000.00.

The first loan was for trenching by bulldozer the mineralized zone for 500 feet south of the #2 adit. (See attached Map B)

This bulldozer work failed to uncover any large mineralized bodies, however several highgrade shoots were exposed. These small highgrade shoots can be mined under a lessee sponsored program.

The second sponsored DMEA loan was to extend the No. 11 crosscut adit not in excess of 200 feet to its intersection with the granite footwall of the mineralized zone; then drift south from the crosscut adit along the mineralized zone for a distance not in excess of 180 feet (See Special Map A)

A 16-foot width tactite ore zone was penetrated, and crosscutting terminated 198 feet from the point of the agreed contact.

Drifting southerly along the granite-tactite contact was started. The mineralized structure was followed for 180 feet.

Two ore bodies, one of 50' length and one of 70' length, were exposed with an estimated width of 8 feet. These ore bodies were sampled under the supervision of the U. S. Bureau of Mines.

At 5-foot intervals the ore zones were marked and jackleg driven holes were run across the tactite into the limestone hanging-wall. Analyses of drill cuttings indicate a weighted average of 0.72% WO_3 . (See attached assay map Exhibit 1). Analyses by Abbot Hanks, Inc., of San Francisco, California. (Attached Exhibit 2).

By means of this DMEA sponsored exploration, an estimated 10,000 tons of commercial grade tungsten ore is measured and proven within the one block between the No. 2 and No. 11 adit levels.

The mineralization exposed by the completed exploration indicated extensions in depth.

A third limited DMEA project was allowed for diamond drilling to explore the projected extension of the tactite ore zone below the #11 adit. Allowable footage 900 feet. Also one hole of 100' to explore for a parallel ore zone in the east granite footwall.

A station was slashed in the southwall of No. 11 Adit (See Map A) and four drill holes were drilled on 50' centers to cut the tactite zone 100 feet below No. 11 adit.

Three of these holes cut the tactite bearing scheelite zone, showing the same width, length and value as on the No. 11 adit, indicating another possible 10,000 tons of commercial tungsten ore.

Permission was received from the U. S. Bureau of Mines to allow two deeper holes to cut the tactite zone at 185 feet below the No. 11 adit. The deep holes were drilled on 100'

centers and the tactite bearing scheelite was cut in these holes, but narrow in width. These holes proved the mineralization and length still persisted at this depth. (Attached diamond drill log Exhibit 3 Map A)

In the interim between exploration project No. 2 and No. 3, a raise from adit No. 11 level was run to adit #2 level. Five other raises were started to various stages of completion. Over 2,000 wet short tons of this ore from development were shipped to the United States Vanadium Corporation, Bishop, California, and 55 short wet tons to Getchell Mines, Redhouse, Nevada. An average of the complete returns on seven shipments 1,403.5 wet short tons was 0.735% WO_3 (See attached Exhibit 4).

The complete Getchell shipments are attached hereto. (Exhibit 5).

Original sheets of these total shipments are on file in the office of Alan Bible, attorney-at-law, Gazette Building, Reno, Nevada.

The reason for these shipments was two-fold, (1) to obtain money to defray present overhead, (2) continue to block out ore and verify its commercial value awaiting diamond drill information.

Shipments were stopped on the completion of the diamond drilling program. We felt we had sufficient ore to warrant a milling program.

On August 2, 1954, Dr. Anderson, Alan Bible, et al., a partnership, gave a lease and option to purchase the Stormy Day Mine to Modoc Mines & Exploration Co., a Nevada corporation, with

offices in Room 310 Clay Peters Building, Reno, Nevada.

Modoc Mines & Exploration Co. continues to develop the Stormy Day Mine.

We have drifted northerly along the granite-tactite contact 105 feet. At 97 feet we encountered tactite bearing scheelite of commercial grade. This could very well be another sizable ore shoot.

We have five thousand tons of ore broken in the stopes and are continuing to break ore, awaiting information on our milling program.

PROPERTY AND WATER RIGHTS:

Modoc Mines & Exploration Co. hold under lease and option the Stormy Day Mine, nine unpatented mining claims

The Stormy Day Extension, of four claims

The Thrasher Group of eight claims

The Thraebert Group of six claims, all located in the Hooker Mining District, Pershing County, Nevada.

The Millsite Claims in T 30 N, R 23 E. See Exhibit 6, Geographic Locations.

Abundant water for camp use is obtainable from nearby springs. The No. 11 adit makes ample water for drilling needs and development work.

In addition, water rights for mining or milling purposes are held on Jenny Creek about a mile distant from camp.

On the Millsite claims ample water of better than 400 gallons per minute is available from the Western Pacific 6" water main.

MINE - PLANT:

The following excellent buildings are presently at the mine site:

Dormitory - Cookery - 20.3' x 60.1' -- equipped with the necessary facilities and many conveniences.

Office - 21' trailer house.

Shop - 20' x 40' for tools, repairs and blacksmith work.

All the necessary machines and tools to carry on mining and exploration at present stage - See attached inventory list Exhibit 7.

GENERAL GEOLOGY:

A very prominent contact zone running northeast, southwest along the foot of the Selenite Range, Hooker Mining District, Pershing County, Nevada, appears to be the geologic control of the district's tactite.

This contact can be traced some 19,000 feet on a northeast, southwest strike showing a general dip of 60° west.

The footwall of the contact is granite, the hanging wall is a very crystalline, live appearing limestone -- probably of Triassic Age.

The contact is a true contact, not a faulted contact, therefore the alteration zone between the lime hanging wall and the granite footwall is in the form of tactite.

The tactite-granite contact appears irregular in direction and varies in width.

East-west breaks, which may later prove to be fault planes, intersect the contact, making sizable ore shoots. At and

along these intersections the tactite carries scheelite, molybdenite, chalcopyrite, pyrrhotite, pyrite, garnet, quartz and calcite.

The depth of the mineralized tactite would be controlled by the limestone. Diamond drilling on the Stormy Day Mine proves the depth of the mineralized tactite to 425 feet.

For further geology, you are referred to reports by M. R. Klepper and C. W. Chesterman, Unpublished Memorandum on Tungsten Deposits, Gerlach Area, Pershing and Washoe Counties, Nevada, August 12, 1953. Attached Map "B".

WORKINGS:

Stormy Day Group. The tactite outcrops on the Stormy Day and can be traced for 200 feet on the surface. Trenches and pits prove the width of the tactite to be from 7' to 12' wide, having values from 0.7 to 1.0% WO_3 . See Map B.

Adit No. 1 -- a prospect crosscut intersected the tactite-granite contact at 150', 105' below the surface, and was drifted 140' in a southerly direction cutting several small shoots of commercial tactite bearing scheelite. See Map B.

Adit No. 2 intersected the tactite-granite contact at 125'. The tactite scheelite ore zone is 7' wide, 60' long and goes 125' to the surface. Drifting was done 20' in a southerly direction in tactite bearing scheelite. Drifting 68' in a northerly direction encountered east-west fracturing and a second tactite scheelite ore zone, 10' wide, 60' long and 125' to the surface. Shipments show the grade of this zone to be 0.7% WO_3 . See Map B.

The No. 11 adit crosscut cut the tactite-granite contact at 412 feet. At this particular intersection the tactite was 16 feet wide, showing an average of 1.03% WO_3 .

The mineralized structure was drifted for 180 feet in a southerly direction.

Six raises are started on the block of ore between No. 11 adit and No. 2 adit. Raises one and four connect No. 11 adit and No. 2 adit. Shrink stoping is being carried on between the two levels.

The mineralized structure is being drifted to the north on this level.

Scheelite bearing tactite was cut at 97 feet and is being drifted at the present time.

Three short adits (See Map B) explore the contact south of No. 2 adit and show good highgrade shoots of ore, small in width.

At the present time lessees are working in two of these adits.

METALLURGY:

The Stormy Day ore is very amicable to flotation.

It appears that better than 85% recovery of the WO_3 can be made by flotation.

Two tests have been made, one by J. Zadra, U. S. Bureau of Mines, and one by the Western Machinery Company of San Francisco, California.

For further information and particulars on metallurgy see attached "Exhibit 8" Zadra Report, and attached "Exhibit 9", Western Machinery Report.

LIQUIDATION:

Mining Cost per Ton - Operating - Based on 1500 tons per month.

1. Labor:

(a) Manager of Mine	1	\$ 750.00	per mo.
(b) Miners	1	475.00	" "
	2 @ 416.	835.00	" "
(c) Trammer	1	325.00	" "
(d) Trammer-Mucker	1	400.00	" "
(e) Compressor Man & Steel Sharpening - Surface Man	1	325.00	" "
(f) Cook	1	235.00	" "
		<u>3,345.00</u>	

Social Security, Unemployment, Industrial Insurance 12%		400.00	" "
		<u>\$3,745.00</u>	" "

2. Rentals of Mining Equipment 1,200.00

3. Mining General

(a) Powder	450.00
(b) Caps	25.00
(c) Fuse	80.00
(d) Steel	220.00
(e) Fuel (1) Diesel	150.00
(2) Gas	30.00
(f) Lumber, chutes, stalls, ladders, wedges	100.00
(g) Lubricants (machine oil, grease, etc.)	50.00
(h) Vehicle Travel	175.00
(i) Gas & Power	75.00
(j) Misc. Repairs & Spares	100.00
(k) Groceries & Misc. Facilities (First aid, laundry, samples, engineering supplies)	<u>500.00</u>

Total 1,955.00

Total \$6,900.00

$$\frac{6900}{1500} = \$4.60 \text{ cost per ton}$$

Milling Cost

50 Tons per Day

1. Labor

(a) Mill Foreman	\$ 550.00
(b) Crusher Plant Operator	480.00
(c) Mill Men 4 @ 450.00 per mo.	<u>1800.00</u>

	Sub-Total	2830.00
Social Security, Unemployment, Industrial Insurance 12%		<u>340.00</u>
	Total	\$ <u>3170.00</u>

2. Milling General

(a) Receiving, Crushing and Grinding	1125.00
(b) Flotation Reagents	3000.00
(c) Misc. and Spare Parts & Repairs	300.00
(d) Auxiliaries, Heating, etc.	200.00
(e) Vehicle Travel	100.00
(f) Lubricants	50.00
(g) Groceries & Misc. Facilities (First Aid, Laundry, Tests, etc.)	200.00
(h) Handling, Package Shipping Concentrates	425.00
(i) Drying concentrates	<u>50.00</u>

Total \$ 5450.00

3. Water

(a) Plant Consumption	500.00
-----------------------	--------

4. Power

(a) Plant Consumption	<u>150.00</u>
-----------------------	---------------

Milling Total \$ 9270.00

Cost of Milling per Ton $\frac{9270}{1500} = \$6.18$

5. Acid Treatment

(a) Material	450.00
(b) Operator	450.00
(Social Security, Unemployment, Industrial Insurance 12%)	55.00
(c) Misc. Spares, etc.	<u>45.00</u>
	Total \$ <u>1000.00</u>

Cost Acid Treatment per Ton $\frac{1000}{1500} = \$ 0.68$

Mining Cost - Development - 100 Lineal Ft. per month - 350 tons

1. Labor

(a) Miner	1 @	\$ 450.00
(b) Trammer-Mucker	1 @	<u>350.00</u>

	Sub-Total	800.00
Social Security, Unemployment, Industrial Insurance 12%		<u>75.00</u>

Total	\$ 875.00
-------	-----------

2. Rentals of Mining Equipment	600.00
--------------------------------	--------

3. Development General

(a) Powder	130.00
(b) Caps	10.00
(c) Fuse	35.00
(d) Steel	105.00
(e) Fuel (1) Diesel & Gasoline	75.00
(f) Lumber	40.00
(g) Lubricants	20.00
(h) Misc. Repairs & Spares	40.00
(i) Groceries & Misc. Facilities	150.00
(j) Track & Ties Drift Haulage	150.00
(k) Water and Air Lines	<u>50.00</u>

Total	\$ 805.00
-------	-----------

Grand Total	2280.00
-------------	---------

$\frac{2280}{350} = \$6.53$ cost per ton development mining

$\frac{2300}{1500} = \$1.55$ cost per ton mining operation

B. Ore Haulage from Mine to Millsite 1500 tons per month

1. Contract Haulage @ \$1.50 per ton	\$ <u>2250.00</u>
Total	\$ 2250.00

Summary Total Cost per Ton

1. Mining Operation	\$ 4.60
2. Development	1.60
3. Milling	6.20
4. Acid Treatment	0.70
5. Hauling	1.50
Total Direct Costs	<u>\$14.60</u> per ton

Based on an ore average of 0.60% WO_3 . Estimated recovery 85%

Net sales of income per ton basis equals	\$31.50
Less total costs	<u>14.60</u>
	\$16.90 net per ton

NOTE: This summary does not include royalties or indirect costs.

SUMMARY AND CONCLUSIONS:

The Stormy Day Mine has responded to exploration. We have 7,000 tons of measured ore from the No. 2 adit to the surface; 10,000 tons of measured ore in the block between adit No. 11 and Adit No. 2. We have 10,000 tons indicated in the block below the No. 11 adit as shown by core drilling.

From some 3000 tons of ore shipped, core assays, stope assays, the grade appears to be 0.70% WO_3 . This would give 17,000 units of WO_3 indicated at the present time. With the price of \$63.00 per unit, the Stormy Day Mine has a gross worth of \$1,071,000.00.

From our liquidation figures after mill recovery based on 85% recovery 0.60 % WO_3 heads, the Stormy Day has a gross net of \$535,500.00.

The unexplored potential on the Stormy Day and the contact north is tremendous. One can expect at least four times the present indicated potential.

I strongly recommend this project as a good mining venture.

JOHN H. UHALDE
Superintendent
Stormy Day Mine

REPORT OF ASSAY

ABBOT A. HANKS, INC.

Assayers, Chemists, Engineers
624 Sacramento Street
San Francisco.

November 25, 1953

Dr. Fred M. Anderson
6 State Street
Reno, Nevada

Sample of ore

Deposited by

Labty. No.	Mark	Percentages
		<u>TUNGSTIC OXIDE</u>
61860	#38	1.77%
61	#39	0.26
62	#40	0.80
63	#41	0.10
64	#42	1.74
65	#43	3.26
66	#44	0.58
67	#45	1.71
68	#46	1.01
69	#47	0.02
70	#48	0.02
71	#49	0.13
72	#50	0.03
73	#51	0.49
74	#52	0.63
75	#53	1.07
76	#54	0.89
77	#55	0.92

Page -1-

ABBOT A. HANKS, INC.

/s/ Martin P. Quist"EXHIBIT 2"

REPORT OF ASSAY

ABBOT A. HANKS, INC.

Assayers, Chemists, Engineers
624 Sacramento Street
San Francisco.

November 25, 1953

Dr. Fred M. Anderson
6 State Street
Reno, Nevada

Sample of Ore

Deposited by

Labty. No.

Mark

Percentages
TUNGSTIC OXIDE

61878	#56-A (Dark Ore)	1.07%
79	#56-B (Light Ore)	1.72
80	#57	3.25
81	#58	1.09

Page -2-

ABBOT A. HANKS, INC.
ORIGINAL SIGNED BY
MARTIN P. QUIST

"EXHIBIT 2"

Docket No. DMEA-2925
Contract No. Idm-E521

Stormy Day Mine

Pershing Co., Nevada

Diamond Drill Hole #1
Strike: East Dip: -45°

Underlined footages indicate mineralization or tactite structures.

<u>Feet</u>	<u>Description</u>
0 - 21	
0 - 8	Bx core
8 -	Ax core
0 - 21	Silicified limestone, inclusions of pyrite
21 - 45	
21 - 21.4	Granitic injected sill interlain between beds of limestone
21.4 - 45	Varying amounts of silicified ribbed limestone within a massive dark lime.
45 - 90	
<u>45 - 45.8</u>	Tactitic material, garnetized and silicified, containing small amounts of molybdenum occasional pyrite.
45.8 - 90	Limestone varying between massive bedded to thin bedded, silicified along bedding planes.
90 - 125.3	
90-118.5	More massive granular, marbellized limestone, epidote increasing in content to contact.
118.5-125.3	Heavy dark tactite, garnet and epidote pre-dominant. Tactite gradually changing to a quartzose granite. 118.5 - 121' assayed 0.62% WO_3 , 118.5 - 125.3' assayed 0.34% WO_3 .
125.3 - 135	
125.3 - 128	Quartzose material, granitic texture. No WO_3 lamped.
128 - 130.5	Aplitic granite.
130.5 - 135	Massive granite
	135' end of hole.

EXHIBIT 3

Stormy Day Mine
Pershing Co., Nevada

Diamond Drill Hole #2
Strike: S 72°E Dip: -42°

Underlined footages indicate mineralization of tactite structures.

<u>Feet</u>	<u>Description</u>
0 - 8	
0 - 8	Bx core. Banded limestone, silicified, some pyrite.
8 - 18	
8	Ax core
8 - 9.4	Granitic dike or sill in limestone beds.
9.4 - 15	Softer marbellized limestone
15 - 18	Semi-epidotized in a hard crystalline limestone.
18 - 66	
18 - 38	Same as above, slightly marbellized
38 - 58	No core (plug bit)
58 - 66	Some banding in a hard limestone, slightly marbellized.
66 - 93	
66 - 72	No core (plug bit).
72 - 93	Very fine granular structure, soft, some epidote throughout limestone.
93 - 103	
93 - 96	Same as above, increasing epidote.
<u>96 - 97</u>	Garnetized zone within a marbellized limestone. Red garnet, no epidote and no WO ₃ noted.
97 - 103	Continued epidotized limestone, hard, slightly marbellized.
103 - 117	
103 - 114	Continued epidotized limestone, hard, slightly marbellized.
114 - 117	Increasing epidote banding.
117 - 121	
<u>117 - 118.5</u>	Heavy pyrite (25% est.), considerable chalcopyrite in quartz groundmass. No WO ₃ .
<u>118.5-119.2</u>	WO ₃ intermixed with heavy sulfides in tactite. Assayed 1.07% WO ₃ .
<u>119.2-121</u>	Dark red tactite with occasional specks of scheelite.
121 - 140	
121 - 123	Greenish cast quartz, (no WO ₃) in an increasing granitic structure.
123 - 140	Massive granite to end of hole
140 feet end of hole	

Stormy Day Mine
Pershing Co., Nevada

Docket No. DMEA-2924
Contract No. Idm-E521

Diamond Drill Hole #3
Strike: S56° E Dip: -40°

Underlined footages indicate mineralization or tactite structures.

<u>Feet</u>	<u>Description</u>
0 - 27	
0 - 8	Bx Core
8 -	Ax core
7 - 7.2	Seam of pyrite and sphalerite in banded silicified limestone
7.2 - 10	Banded limestone
10 - 10.4	Granitic dike material (sill) within a marbellized, epidotized limestone, silicious near dike.
10.4 - 27	Semi-epidotized limestone, crystalline
27 - 67	
27 - 28	Soft gougy material, water course?
28 - 28.5	Garnet and quartz in a granular limestone. No WO ₃ .
28.5 - 37	Semi-epidotized limestone, somewhat marbellized.
37 - 48	No core (plug bit).
48 - 54	Same as above, little change in composition.
54 - 54.6	Granitic dike material cutting crystalline limestone. Some pyrrhotite and epidote. No WO ₃ .
54.6 - 67	Crystalline limestone inclusions of epidote.
67 - 88.5	
67 - 72	Dark red garnet in white quartzose groundmass, considerable epidote (No WO ₃ lamped).
72 - 88.5	White coarsely crystalline limestone, considerable epidote.
88.5 - 95	
88.5 - 93	Mostly quartzose structure, some epidote and occasional garnet crystals (No WO ₃).
93 - 93.4	Bank of garnetized tactite in a white quartz (No WO ₃)
93.4 - 95	Gradational change from a white quartz to a quartzose granite, granitic texture.
95 - 118	
95 - 105	Quartzose granite, glassy texture.
105 - 118	Quartz with a semi-granitic texture, slightly gneissoid. Occasional WO ₃ specks, very small.
118 - 179	
118 - 179	Massive granite, no alteration areas or changes in texture.

179' end of hole.

Stormy Day Mine
Pershing Co., Nevada

A-7
Docket No. DMEA-2925
Contract No. Idm-E521

Diamond Drill Hole #4
Strike: N 72° E. Dip: -42°

Underlined footages indicate mineralization or indication of mineralization.

<u>Feet</u>	<u>Description</u>
0 - 29	
0 - 8	Bx core
8 -	Ax core
4 - 411	Pyrite seam
4.1 - 29	Slightly granular, marbellized limestone, epidotized
29 - 99	
29 - 64	No core, plug bit.
64 - 99	Marbellized limestone, slightly schistose, containing varying amounts of epidote.
99 - 124	
<u>99 - 100</u>	Red garnetized tactite, containing epidote and molybdenum. No WO ₃ noted.
100 - 117	Dark semi-felsic textured limestone, mottled white splotches, slightly epidotized throughout.
117 - 117.5	Granitic sill intruding limestone bedding planes
<u>117.5 - 118</u>	Tactitic material, epidotized, altering to mostly quartz. Occasional pyrite throughout section.
	No WO ₃ .
118 - 124	Increasing epidote in a silicious limestone.
124 - 130	
<u>124 - 129</u>	Red garnetized tactite (WO ₃ throughout entire section). Lower part of section alters to greenish cast, highly silicious granite. (124 - 126' assays) 0.62% WO ₃) (126 - 129' assays 0.08% WO ₃)
129 - 130	Silicified granite altering to a massive granite.

130' end of hole.

Stormy Day Mine
Pershing County, Nevada

Docket No. DMEA-2924
Contract No. Idm-E521

Diamond Drill Hole #5
Strike: S85°E Dip: -67°

Underlined footages indicate mineralization or tactite structures.

<u>Feet</u>	<u>Description</u>
0 - 10	
0 - 2	Bx core
2 -	Ex core
0 - 10	Banded limestone, slightly silicious and crystalline
10 - 115	
10 - 115	No core (plug bit)
115 - 134	
115 - 118	Soft crystalline limestone, marbellized.
<u>118 - 119.5</u>	Dark brown pyrrhotite and garnetized tactite in quartz groundmass (No WO ₃ noted)
119.5 - 126	Red tactite, altering to a granitic textured quartz at end of the section. 119.5 - 121 Occasional small crystals increasing WO ₃ values at 121'. Sample from 121 - 124.5' assayed 0.02% WO ₃ , 124.5 - 126 red tactite but no WO ₃ lamped.
126 - 135	Massive granite, unaltered.
	135' end of hole.

Docket No. DMEA-2924
Contract No. Idm-E521

Stormy Day Mine
Pershing Co., Nevada

Diamond Drill Hole #6
Strike: N62°E Dip: -67°

Underlined footages indicate mineralization of tactite structures

<u>Feet</u>	<u>Description</u>
0 - 14	
0-2	Bx core
2 -	Ex core
0 - 14	Banded and slightly silicified limestone. Granitic sill at 7.5 feet
14 - 129	
14 - 129	No core (Plug bit)
129 - 138	
129 - 134	Crystalline limestone, considerable epidote.
<u>134 - 138</u>	Garnetized tactite at 134', occasional WO ₃ between 134 - 134.5'. Rock becoming less garnetized and more quartz at end of section.
138 - 169	
138 - 169	Gradational alteration to a massive granite. Continued granite to end of hole
	169' end of hole

Diamond Drill Hole #1a
Strike: East Dip: Flat

Hole drilled from end of No. 11 adit, along the continuation.

<u>Feet</u>	<u>Description</u>
0 - 98	
0 - 2	Bx core
2 -	Ex core
0 - 98	Entire hole drilled in a massive granite, no alteration in composition or no other structures encountered.
	98' end of hole.

SAMPLING

Lot No.	Wet Wgt.	% H ₂ O	Dry Wgt	Grab %	U.S.V.	Control	Umpire	Tentative Settling	Final Settlement	Additional Payment
1061	306790	2.38	299499	1.49	1.10	1.15	1.07	6257.36	6257.36	
1081	327590	2.56	363042	1.03	.86	.72	---	5776.07	5776.07	
1104	335850	2.97	325876	.72	.72	.62	--	4340.84	4340.84	
1113	425830	3.20	412200	.82	.75	.85	.79	5719.46	6024.34	304.88
1123	452460	2.52	441041	.80	.66	.90	.70	5384.98	5711.32	326.34
1133	343990	1.94	337318	.65	.43	.65	.57	2610.72	3461.04	850.32
1145	579570	2.54	564846	.65	.57	.95	---	5795.28	6400.00	
	<u>2,817,080</u>				<u>.735%</u>	<u>-.91%</u>			<u>37,970.97</u>	

NOTE: Shipments 1-7 - 1,408.5 tons or
\$26.90 per ton or .735% WO₃

Exhibit 4

GETCHELL MINE INC.

Red House, Nevada

CUSTOM ORE SETTLEMENT SHEET

Received of: Stormy Day Mine
 Dr. Fred Anderson
 130 South Virginia Street
 Reno, Nevada

Date Rec'd 5-6-54
 Shippers Mark
 Lot No.

BY GETCHELL MINE INC.

<u>1</u>	Trucks weighing	<u>33,340</u>	Gross Lbs.
<u>1.0</u>	% Moisture	<u>11,270</u>	Tare Lbs.
<u>0.78</u>	% WO ₃	<u>22,070</u>	Net Wet Lbs.
<u>10.0245</u>	Net dry tons	<u>221</u>	Moisture Lbs.
<u>8.521</u>	Contained STU WO ₃	<u>21,849</u>	Net Dry Lbs.

PAYMENT:

Pay for 80% contained STU WO₃ _____ at \$ 46.00 @ \$ 313.58

LESS CHARGES:

Treatment of 10.9245 Net Dry Tons at \$6.00 @ \$ 65.55

Sampling & Assaying \$ 10.00

Umpire Assay Lot #1 \$ 7.50

TOTAL \$ 83.05

NET PROCEEDS \$ 230.53

Less Partial Payment - - - - - 170.00

Bal Due 60.53

"EXHIBIT 5"

GETCHELL MINE INC.

Red House, Nevada

CUSTOM ORE SETTLEMENT SHEET

Received of: Stormy Day Mine
 Dr. Fred Anderson
 130 South Virginia Street
 Reno, Nevada

Date Rec'd 5-7-54
 Shipper's Mark
 Lot No.

BY GETCHELL MINE INC.

<u>1</u>	Trucks weighing	<u>77,490</u>	Gross Lbs.
<u>1.7</u>	% Moisture	<u>29,700</u>	Tare Lbs.
<u>0.72</u>	% WO ₃	<u>47,790</u>	Net Wet Lbs.
<u>23.489</u>	Net Dry Tons	<u>812</u>	Moisture Lbs.
<u>16.912</u>	Contained STU WO ₃	<u>46,978</u>	Net Dry Lbs.

PAYMENT:

Pay for 80% contained STU WO₃ 13.530 at \$ 46.00 * \$ 622.38

LESS CHARGES:

Treatment of 23.489 net dry tons at	\$140.93
Sampling & Assaying	10.00
Umpire Assay Lot #2	7.50
TOTAL	<u>\$ 158.43</u>

	NET PROCEEDS	\$ 463.95
Less partial payment - - - - -		<u>330.00</u>
	Bal Due	\$ 133.95

* (equals)

"Exhibit 5"

GETCHELL MINE INC.

Red House, Nevada

CUSTOM ORE SETTLEMENT SHEET

Received of: Stormy Day Mine
 Dr. Fred Anderson
 130 South Virginia St.
 Reno, Nevada

Date Rec'd 5-17-54
 Shipper's Mark
 Lot No.

BY GETCHELL MINE INC.

<u>1</u>	Trucks weighing	<u>75,720</u>	Gross Lbs.
<u>1.2</u>	% Moisture	<u>29,620</u>	Tare Lbs.
<u>0.64</u>	% WO ₃	<u>46,000</u>	Net Wet Lbs.
<u>22.7735</u>	Net Dry Tons	<u>553</u>	Moisture Lbs.
<u>14.575</u>	Contained STU WO ₃	<u>45,547</u>	Net Dry Lbs.

PAYMENT:

Pay for 80% contained STU WO₃ 11.660 at \$46.00 @ * \$536.36

LESS CHARGES:

Treatment of 22.7735 net dry tons at \$6.00 @ * \$136.64

Sampling & Assaying 10.00

TOTAL \$146.64

NET PROCEEDS \$389.72

* (equals)

"EXHIBIT 5"

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
RARE AND PRECIOUS METALS EXPERIMENT STATION
Hydrometallurgical & Ore-Dressing Branch
Box D, University Station

Reno, Nevada
November 20, 1953

METALLURGICAL DIVISION
Region III

Stormy Day Mines, Pershing Co., Nev.
DMEA 2455 - Tungsten (Jones) Re-O-2.107

The ore contained 0.7 percent WO_3 as scheelite in a siliceous gangue, with pyrrhotite, pyrite, garnet, quartz, calcite and a little molybdenite. Analyses also showed 5.3 percent sulfur, 0.17 percent copper, less than 0.01 percent molybdenum, only traces of gold and silver, and no platinum.

Examination of the ore after crushing to 1/4-inch size showed considerable liberation of scheelite at minus 20-mesh, but much of the scheelite was very fine-grained.

A portion weighing 100 pounds was stage-crushed to minus 20-mesh. This was hydraulically classified into three sand products and slimes. Each was treated on the laboratory shaking table. The coarse middlings were ground to minus 35-mesh and retreated.

The concentrates from these operations contained scheelite, pyrrhotite, pyrite, and garnet. After drying the bulk concentrates were sized by screening into five portions, plus 48, 65, 100 and 200-mesh, and minus 200-mesh. Each was cleaned in several stages;

1. The low-intensity magnet was used to remove most of the pyrrhotite .

2. The high-intensity magnetic separator removed most of the garnet.

3. Since these treatments left much pyrite in the scheelite product, flotation treatment was used to remove most of the pyrite. (In usual plant practice, the product containing pyrite would be given a flash roast, and the altered pyrite would then be removed by magnetic separation. Since no flash roasting equipment was available, the pyrite was removed by flotation, using standard reagents.)

1.

"EXHIBIT 8"

The final scheelite concentrates contained 64.75 percent WO_3 , representing 65.1 percent recovery of the total tungsten in 0.72 percent of the original weight of ore. Analyses of this product also showed 1.67 percent sulfur, and 0.03 percent molybdenum.

Detailed data of these tests are shown in the following tabulation:

Product	Weight, Percent	<u>Analysis-Percent</u>		<u>Distribution-Percent</u>	
		WO_3	S	WO_3	S
Scheelite Concentrates	.72	64.75	1.67	65.1	.2
Pyrite Flot. "	.35	4.94	46.2	2.4	3.0
Hi Magnetic "	6.34	1.64	19.3	14.5	23.1
Total Middlings "	3.88	.99	7.2	5.3	5.2
Lo-Magnetic concentrates	3.90	.01	37.1	0.1	27.2
Table Tailings	75.86	.03	2.5	3.7	36.7
Slimes	8.95	.72	2.7	8.9	4.6
Composite	100.00	.72	5.3	100.00	100.00

Examination of the several middling products and high-intensity magnetic concentrates showed that the scheelite was very fine-grained and locked with gangue minerals, and would require grinding to minus 100-mesh for liberation. Satisfactory treatment of material ground to that fineness would require flotation, as would further treatment of the slimes products resulting from the gravity treatment described.

FLOTATION TESTS

A portion of the ore was ground to minus 100-mesh for flotation. The sulfide minerals were removed by conditioning the pulp with 1.0 pound copper sulfate per ton of ore, then several increments of potassium pentasol amyl xanthate, as collector reagent, totalling 0.16 pound per ton of ore, and 0.5 pound Dow froth, as frother. Concentrates were made containing 29.4 percent sulfur, representing 98.6 percent removal, in 18.8 percent of the original weight of ore. This product contained only 0.06 percent WO_3 , representing a loss of only 1.6 percent of the total tungsten.

The scheelite was then floated after conditioning the pulp with 5 pounds caustic soda and five pounds sodium silicate per ton of ore, and 0.15 pound quebracho. The collector reagent used was 6 pounds oleic acid, modified with 0.6 pound serosol 18, added in small increments. The rougher froth was cleaned with 0.2 pound quebracho.

Concentrates containing 10.6 percent WO_3 were made, representing 96.7 percent recovery, in 6.6 percent of the original weight of ore. Detailed data of the test are as follows:

Product	Weight Percent	Analyses-Percent		Distribution-Percent	
		WO_3	S	WO_3	S
Sulfide concentrates	18.8	0.06	29.4	1.6	98.6
Scheelite concentrates	6.6	10.60	0.09	96.7	0.1
Cleaner tailings	5.2	0.11	0.09	0.8	0.1
Rougher tailings	69.4	*0.01	0.09	0.9	1.2
Composite	100.00	0.72	5.6	100.00	100.00

* Less than 0.01 percent WO_3

Conclusions:

The simplest treatment method, particularly for a small tonnage plant, apparently would be grinding the ore to minus 100-mesh, and treating the pulp by two stages of flotation. In the first stage, nearly complete removal of sulfide minerals could be accomplished. In the second stage, the scheelite could be recovered satisfactorily, and if desirable, several cleaning steps could be employed to produce higher grade final concentrates than obtained in the laboratory.

WESTERN MACHINERY COMPANY
"WEMCO PRODUCTS"
760-766 Folsom Street
San Francisco 7, California

June 22, 1954

Dr. Fred Anderson
No. 6 State Street
Reno, Nevada

Subject: Stormy Day Laboratory Test
Project L-458

Dear Dr. Anderson:

Attached hereto please find a metallurgical report covering the completed test work as of this date on the Stormy Day Ore.

The last test indicated that by a change in reagents which probably would be accomplished in practice, can materially change the total recovery and improve the grade of the rougher concentrate. You will note in Table IV that a rougher concentrate was made containing 7.14 percent scheelite, representing 93.8 percent of the total WO_3 . While in Test V, a concentrate of 23.88 was made representing 83 percent of the total scheelite. In practice a rougher concentrate of approximately 15 percent, would prove satisfactory, it could then be cleaned and recleaned and probably brought up to 30 percent, which would then go to acid treatment for producing a final product of 60 percent or better. These are things that usually work out in practice and cannot be duplicated in the laboratory inasmuch the quantity of rougher concentrate is very small.

I am sending a copy of this letter to Mr. Alan Bible, in the Gazette Building, also one to John Uhalde for their information and trust that you find it sufficiently complete to make a final determination as to the future of the property.

I do not know the exact time as to when I will make my next trip to Nevada, but if it is not necessary for me to come before, and you and Mr. Bible wish to discuss future financing, etc., do not hesitate to let me know, and I will make arrangements to come over at that time.

With kindest regards, we are

Very truly yours,

WEMCO DIVISION
Western Machinery Company
/s/ IRVIN S. THYLE
Irvin S. Thyle
Sales Engineer

LST:lt

"EXHIBIT 9"

June 21, 1954

A-25
Project : L-458

Technicians: P. A. Boukind
J. V. Hill

Sample - 1

Report of Preliminary Froth Flotation
Tests Conducted on a Sample of Tungsten
Ore Submitted by Stormy Day Mine, Reno,
Nevada.

Introduction and Purposes

A sample of tungsten ore from northwest Nevada was submitted on March 18, 1954 by Stormy Day Mine, a partnership. The sample weighing approximately 100 pounds was received in good condition.

A limited amount of development work has been completed on the property which is about 10 miles south of Gerlach, Nevada. The client is now diamond drilling to determine ore reserve, and as an aid to planning future development work.

The purpose of this project was to determine if ore as represented by the submitted sample could be concentrated with froth flotation.

Sample History:

Description and Analysis:

The sample, packed in two doubled bags, was received in good condition. It was composed primarily of large lumps about 6 inches in diameter. The sample did not seem to contain as much fine material as would be obtained in "mine run" ore.

Scheelite was present in the sample as well dispersed fine (about 35 mesh) crystals. Minor amounts of pyrite, powellite, and molybdenite were also observed. Primary gangue minerals were quartz, epidote, garnet and calcite.

Exhibit 9

June 21, 1954

Project L-458

A test head portion of this sample contained 0.71 percent WO_3 (Calculated assay on 2 separate flotations tests was 0.89 percent WO_3).

Other characteristics of the sample as determined, on a portion of the sample after it had been crushed to minus 10 mesh, were as follows:

Percent Moisture (as received)	0.45
Specific Gravity	3.26
pH (50 g plus 100 m. of distilled water pH 7.0)	8.3
Soluble Salts (pounds per ton)	0.6

Preparation for Testing

The entire sample was stage crushed to pass through a one-half inch square opening. After crushing, the sample was thoroughly mixed by repeated riffing and three-quarters of the sample put in reserve. The one-quarter riffled out was staged crushed to minus 10 mesh, thoroughly mixed, and riffled into representative 600 gram portions for testing.

To provide storage for future projects in this laboratory it will be necessary, pending contrary instructions, to discard the reserve of this sample and of the test products 3 months from the date of this report.

Test Procedure:

Froth flotation test charges were ground, as shown in each test sheet, in a laboratory ball mill with steel balls. Each ground charge was transferred to a WEMCO Laboratory Fagergren Flotation Machine and conditioned with the air valve closed. After a conditioning period the air valve was opened and the resultant froth removed from the surface of the pulp by hand paddle skimming. The removed product was the "rougher" concentrate

June 21, 1954

Project L-458^{A-27}

(Sulfide, WO_3 , or Scavenger) and the final remaining product was the "rougher" or "scavenger tail."

General Notes

Most of pyrite and other metallic minerals were removed prior to scheelite flotation. This was accomplished by froth flotation with reagents often utilized for "sulfide" flotation.

San Francisco tap water (pH7.6) was used throughout these tests. The temperature of the pulp during conditioning and flotation was about 22° centigrade.

A key to the reagent symbols used in the tabulation of test results may be seen in Table I.

Test Results

Test F-1

This was a "guide" test to determine the approximate grind and flotation reagent quantities required for good promotion of scheelite and depression of gangue minerals. The general appearance of this test was good, however the concentrate contained some "locked" gangue. This locking was indicative of too coarse a grind so the products of this test were not analyzed.

Detailed procedure and product weights for this test are shown in Table II.

Test F-2

A slightly finer grind and less promoter reagent was used for this test. The resulting froth was "lacey" in appearance. This type of froth is general characteristic of good scheelite flotation. Less "locked" gangue was observed in the concentrate than in the concentrate of test F-1.

June 21, 1954

Project L-458 A-28

The tungsten rougher concentrate represented 11.7 percent by weight of the total sample, assayed 7.14 percent WO_3 and contained 93.8 percent of the total WO_3 .

An assayed screen analysis of the final rougher tail indicated the grind used was sufficiently fine for good scheelite liberation. It is possible that a slightly coarser grind might be adequate as most of the scheelite in this rougher tail was in the minus 200 mesh fraction of the rougher tail. A screen analysis of flotation feed, after grinding, is shown in Table III

Test F-3

The procedure for this test was essentially the same as for Test F-2 except that more quebracho and less oelic acid were used in a successful attempt to produce a higher grade rougher concentrate.

The rougher concentrate grade, 23.88 percent WO_3 , was over 3 times the grade obtained in Test F-2 with a sacrifice of about 10 percent in recovery. Froth appearance during flotation of this concentrate was characteristic of froths which are "upgraded" in practice with various cleaning stages.

The tungsten concentrate contained only 0.10 percent sulfide sulfur. This was an indication that sulfide removal prior to tungsten flotation was fairly complete. Presuming a 60 percent WO_3 concentrate could be produced by cleaner flotation and acid treatment in plant practice the sulfide sulfur content of this final concentrate would probably not exceed the generally specified maximum of 0.50 percent.

Conclusions

1. Ore as represented by the submitted sample can be concentrated with froth flotation.
2. Required removal of sulfides prior to tungsten flotation was accomplished with simple sulfide flotation. The loss of WO_3 in each of these products was slightly over 2 percent.
3. Determination of final concentrate grade is best done in plant practice where froth cleaning and acid treatment for removal of undesired minerals can be performed on actual mill products.

Recommendations:

1. A representative portion of the diamond drill cores, weighing from 100 to 200 pounds, should be submitted for final testing. The primary purpose of this final testing would be to determine if the core drill sample responds similarly to froth flotation, since it is assumed the core drill sample would be more representative of ore as it would be mined than the sample used for these preliminary tests.
2. A sample of water from the proposed source for milling should be submitted with the core drill sample. A final flotation test should be made using this water sample. The results obtained could be compared with results when using laboratory tap water to determine if special water treatment would be required.

At least 20 gallons should be submitted. It should be shipped in clean containers - preferably glass. Glass Con-

June 21, 1954.

Project L-458

tainers would be preferable. However clean milk cans or other containers could also be used.

3. A semi-quantitative spectrographic analysis should be made of any new ore sample submitted for testing. This analysis would be used to decide what specification elements should be determined on a final test concentrate.

MINERAL TESTING LABORATORY
WEMCO DIVISION
WESTERN MACHINERY COMPANY

/s/ JACK V. HILL
Jack V. Hill, Chief Technician

/s/ PERRY A BOUKIND
Perry A. Boukind, Technician

June 21, 1954

Project L-458

TABLE I
KEY TO REAGENT SYMBOLS.

<u>SYMBOL</u>	<u>REAGENT DESCRIPTION</u>
CuSO	Copper sulfate
Z6	Dow Chemical Company Xanthate Z-6
D250	Dow Chemical Company Dowfroth 250
SA	Commercial soda ash
SS	Sodium Silicate (40° Baume)
Queb	Clarified quebracho as supplied by American Cyanamid Company
OlAc	Oleic acid as supplied by American Cyanamid Company
A-18	American Cyanamid Company Aerosol 18

MINERAL TESTING LABORATORY
WESTERN MACHINERY COMPANY

Project L-458

Date 5/10/54Engineer P. A. Boukind Table No. II Test No. F-1 Sample 1

FROTH FLOTATION TEST on a representative portion of the
sample stage crushed to minus 10 mesh.

Point of Addition	Conditions				Reagents - Pounds per Ton							
	Time Mins.	% Solid	pH	CuSO ₄	Z6	D250	SA	SS	Queb	OlAc	A-18	
Ball Mill	6/2	60										
Cond.	5	22	8.6	1.0								
Sul. Flot.	6	"			0.16	0.12						
Cond.	5						2.0	2.0	0.15			
WO ₃ Flot.	6		9.7							.21	.15	
										.21	.05	
										.21	.05	

Stage ground thru 100 mesh

Tungsten concentrate appeared rather low grade.

PRODUCT	Percent Weight	Assay %	
		WO ₃	
Assay Sample	-	0.71	
Calc Sample	100.0		
Sul. Ro. Conc	10.4		
WO ₃ Ro. Conc.	13.7		
+ 200 Ro Tail	30.4		
-200 Ro Tail	45.5		

June 21, 1954

Project L-458

TABLE IIISCREEN ANALYSIS OF SAMPLE AFTER GRINDING FOR
TESTS F-2 and F-3

<u>Mesh</u> <u>(Tyler)</u>	Percent Weight Retained	
	<u>Individual</u>	<u>Cumulative</u>
100	1.3	1.3
150	11.2	12.5
200	14.4	26.9
325	22.6	49.5
Pan	50.5	100.0

MINERAL TESTING LABORATORY
WESTERN MACHINERY COMPANY

Date 5/10/54

Project L-458

Engineer P. A. Boukind

Sample 1

Table No. IV Test No. F-2
FROTH FLOTATION TEST on a representative portion of the
Sample stage crushed to minus 10 mesh.

Point of Addition	Conditions			Reagents- Pounds per Ton							
	Time : Mins.	% Solid	pH	CuSO ₄	Z-6	D250	SA	SS	Queb	DI Ac	A-18
Ball Mill	7 1/2	60	-								
Cond	5	22	8.7	1.0							
Sul. Flot.	6	"			0.16	0.12					
Cond.	5		9.7				2.0	2.0	0.15		
	3									0.21	.15
WO ₃ Flot.	5									0.07	.05
										0.07	.05
										0.07	.05
Stage ground thru 100 mesh											

Product	Percent Weight	Assay %	% Distribution
		WO ₃	WO ₃
Assay Sample	---	0.71	---
Calc Sample	100.0	0.89	100.0
Sul. Ro. Conc.	9.9	0.21	2.4
WO ₃ Ro Conc.	11.7	7.14	93.8
+ 200 Ro Tail	25.8	0.03	0.9
-200 Ro Tail	52.6	0.05	2.9
Calc Ro Tail	78.4	0.04	3.8

MINERAL TESTING LABORATORY
WESTERN MACHINERY COMPANY

Project L-458

Date 5/26/54

Sample 1

Engineer P. A. Boukind

Table No. V Test No. F-3

FROTH FLOTATION TEST on a representative portion of the sample
stage crushed to minus 10 mesh

Point of Addition	Conditions				Reagents-Pounds per Ton						
	Time : Mins.	% Solid	pH		CuSO ₄	Z-6	D250	SA	SS	Queb	OlAc : A-18
Ball Mill	7 1/2	60									
Cond.	5	22	8.7	1.0							
Sul. Flot.	6	"	8.4		0.16	0.12					
Cond.	5		9.6					2.0	2.0	0.20	
	3									0.14	0.40
WO ₃ Flot.	3									0.07	---
Scav. Flot.	2									0.07	0.10
										0.07	0.10

Product	Percent Weight	Assay %		% Distribution	
		WO ₃	Sulfide : Sulfur	WO ₃	
Assay Sample	-	0.71		---	
Calc. Sample	100.0	0.89		100.0	
Sul. Ro. Conc.	7.2	0.28	29.00	2.2	
WO ₃ Ro Conc.	3.1	23.88	0.10	83.0	
Scav. Conc.	3.7	1.95	0.35	8.1	
Scav. Tail	86.1	0.07		6.7	
Ro and Scav. (Calc) WO ₃ Conc	6.8	11.95		91.1	
Calc Ro Tail	89.8	0.15		14.8	