



## **CONTACT INFORMATION**

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PRINTED: 09/12/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: WILLIAMS TUNGSTEN

ALTERNATE NAMES:  
WOTHREE

MOHAVE COUNTY MILS NUMBER: 473A

LOCATION: TOWNSHIP 16.5N RANGE 11 W SECTION 30 QUARTER NW  
LATITUDE: N 34DEG 47MIN 17SEC LONGITUDE: W 113DEG 27MIN 21SEC  
TOPO MAP NAME: CEDAR BASIN - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:  
TUNGSTEN  
IRON SULFIDE  
BISMUTH  
MICA  
COPPER SULFIDE

BIBLIOGRAPHY:

AZ. STATE LAND DEPT. MINERAL MAP  
USGS PRESCOTT QUAD  
ADMMR MOHAVE CUSTOM MILL PROJ. CARD FILE  
BLM UNIT RESCOURE ANALYSIS STEP 3 & 4,  
HUALAPAI UNIT  
USBM IC 8078, P. 66-69  
WILSON, E.D., AZBM BULL 148, P. 16  
ROSEVEARE, G.H., AZBM BULL. 180, P. 98  
HOBBS, S.W., USGS BULL 940-I, P. 259-263  
ADMMR WILLAIMS TUNGSTEN FILE

REFERENCES

WILLIAMS TUNGSTEN

MOHAVE COUNTY

BLM Unit Resource Analysis Step 3 & 4, Hualapai Unit

USBM IC 8078, p. 66-69

ABM Bull. 148, p. 16

USGS Bull 940-I, p. 259-263

ABM Bull. 180, p. 98

MILS Sheet sequence number 0040150864

Arizona State Land Dept. Mineral Map

from: W.H. Crutchfield Jr. Mohave County Prospect Assessment Compilation (post 1982)

Name of Mine or Prospect: Williams Tungsten Group	Towns 16 1/2N	Range Unsurveyed 11W	Section 30	Priority A
Principal Minerals: Scheelite, Wolframite	1:250,000 Quad Williams	7.5' - 15' Quad No coverage		
Associated Minerals: Quartz, Mica, Pyrite, Fluorite	District Aquarius Mtn.	Principal Product Tungsten		
Type of Operation: Underground: Shafts, Tunnels	County Mohave	State Ar.	Type of Deposit Vein	
Ownership or Controlling Interest: Tony Melles and R.J. Miller, Kingman, Ar. (1959) <sup>4</sup>				
Access: From Kingman, Ar. proceed south on U.S. 93 for 37.5 miles. Turn left on unimproved road for 27.3 miles (bear right at all intersections). Mine is located in an unsurveyed and unmapped portion of the Aquarius Range.				
Structural Control or Geological Association:  "The mine is situated in a shallow saddle in the Aquarius Range in an area underlain by light-colored granite. The granite is heterogenous in composition and is cut by irregular dikes and masses of pegmatite and aplite. Most of the rock near the Williams mine is slightly banded, sheeted and gneissoid. The Williams ore deposit is a pegmatitic type of vein containing quartz, mica, wolframite, pyrite, and trace amounts of fluorite. The veins strike about N70°W; one group dips gently north (10 to 30°) while another group dips steeply north. The veins that are gently dipping are most important. These veins appear to be concentrated in a zone of about 200 feet." <sup>4</sup>				
Age of Mineralization:				
Production History		Geochemical Analyses		
1940-1942 <sup>3</sup> good production of tungsten Operated from 1904-1955 <sup>4</sup> Total production 3043 units WO <sub>3</sub>		<u>Assay</u> <sup>5</sup> (from underground assay (Hobbs)). Trace to 8.77% (1944) Average 1.0-2.0% WO <sub>3</sub>		
References				
1) CETA map file Rack #1 and 19A, underground and claim maps. 2) ADMR file, Phoenix, Ar. 3) Mallach (1977) p. 60. 4) Dale (1961) p. 66-69. 5) Hobbs (1943) p. 260-262, underground assay map.				

NAME OF MINE: WILLIAMS

COUNTY: MOHAVE  
DISTRICT: Greenwood  
METALS: WO3

OPERATOR AND ADDRESS:

MINE STATUS

DATE:	OPERATOR AND ADDRESS:	DATE:	MINE STATUS
5/1/44	W.S. Bradbury, Kingman	5/1/44	Developing &
1/45	Edward H. Molson, Box 607, Tucson	6/44	Installing Mills
2/46	Albin Larson, Box 333, Chloride	9/44	Closed
9/15/43	r.f.c. loan \$20,000 50 ton Gravity Mill	1/45	Developing

BRADBURY, W. S.  
Kingman, Ariz.  
Box 71

Williams

See WILLIAMS TUNGSTEN - re gas application 10-27-44

BOLINGER, E. E. (1/3)  
(OWNERS)  
WILLIAMS, ROY (2/3)

MINE - WILLIAMS TUNGSTEN MINE - 71 miles southeast of Kingman

WILLIAMS, Roy  
Box-71  
Kingman, Arizona  
unclaimed 8/11/46

Williams Tungsten Mine

See WILLIAMS TUNGSTEN MINE	
Re - Production survey by Holt	9-30-42
See W file - re request for bulletin	8-24-43
See NEW LONDON - Re B premium	9-14-44
See NEW LONDON - re gas application	2-6-45

KAP WR 6/12/81: Hollis Furguson, P.O. Box 326, Kingman, Arizona 86402 reported he has leased the Williams Tungsten Mine in the Aquarius District, Mohave County. They plan to clean out and evaluate the underground workings.

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KAP WR 8/28/81: Hollis Furguson reported that his planned evaluation of the William's Tungsten Mine, Aquarius District, Mohave County has been abandoned. He explained that there is litigation involving the ownership of the property. Furguson was a leaser.

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RIK

May 8th, 1955.

Mr. Norman D. Fitzgerald,  
Abilene, Texas.

Dear Mr. Fitzgerald:-

In regard to quick stope assays I can see several possibilities. Mr. Blonsky and I have already talked over an "imitation mill" method. However I can see a chemical method that would be even quicker and less work, and possibly more accurate, if you have no sheelite or would make an allowance for same. And I have not yet looked into the sink-float method.

To try out the chemical, and possibly a sink-float would require a couple of days work on my part plus the cost of assayers check assays. To do this I would need about four five-pound samples of such ores as you would ordinarily want to know about. That is marginal ores or masked ore of various types. I could then send you a definite formula together with any correction factors that might be necessary when balanced against proverbial assays.

So if you approve, may this be instructions to Mr. Blonsky to forward such samples, and I should be able to proceed immediately on their arrival.

I am sure that one method or the other will be satisfactory.

Yours Very Truly,

c/c Mr. Blonsky.

(W. D. H. ) (Williams)

See: King Mining Project  
1 claim, 3 pla v/g maps, 1 plan assay v/g map

May 8, 1958.

To: Mr. Norman D. Fitzgerald,  
1141 Butternut St.,  
Abilene, Texas.

called Williams Tungsten Mine

WOLFRAM TUNGSTEN MINE.

Persuant to your request I have made an examination of your Wolfram operations situated 40 miles northeast of Wickieup, Arizona. The property was formerly known as the Williams Tungsten.

Purpose of Examination.

The purpose of the examination was to determine the feasibility of continuing operations in face of the established facts that a great deal of dilution occurred in mining the ore; that the values were spotty and unreliable; and that exploration to find new ore had been disappointing.

Due to the limited purpose of the examination, and the fact that the operators are already well acquainted with conditions, much data usually included in a mining report will be omitted from this one.

General Aspects of Deposit.

The tungsten occurs in a quartz vein within an aplite dike which occupies a fault plane in pre-Cambrian granite. The quartz vein may occur anywhere within the aplite.

The vein varies from an inch or two to two or more feet in width and is quite continuous in length. Dip of the vein and dike is about 25 degrees. The tungsten values however, are very spotty and often in small lenses. These lenses usually have more continuity down the dip than along the strike, causing rather vertical ore shoots.

Operating Difficulties Encountered.

Spotty Ore. The spotty nature of the values is typical of tungsten deposits in Arizona. Before confidence can be had as to tonnage actually in sight, in small blocks on four sides, and sampled at frequent intervals. The cost of this often precludes its advisability, and therefore the advisability of the entire venture.

Flat dip. Your vein has a dip of about 25 degrees - too flat for the ore to "run" by itself. This requires special mining methods and causes increased costs.

It is necessary that the ore be developed

Ore dilution. Ore dilution has been excessive and arises from five different causes:

- (a) A shattered area in the aplite hanging wall immediately above the vein, and usually one to two feet thick.
- (b) Immediate change from good ore to low-grade, when mining in a stop, caused by the spotty nature of the ore.
- (c) Splits in the vein with waste or "horses" between vein segments.
- (d) Scraper tearing into barren footwall.
- (e) Necessary enlargement of passageways.

Visual Assays. Visual assays are not reliable and it takes time to get a chemical assay. Often in the meantime, when stoping, much below-grade ore has gone to the mill.

Possible Correction of Above Difficulties.

Spotty Ore. While it would be advisable to have ore positively developed in small blocks before making heavy capital expenditures, in your situation as it is, I would not advise further development of such type. You have more than sufficient ore assured to pay for the resumption of operations. Grab what you can easily and cheaply, and let ultimate tonnage fall where it may.

Dilution. Type (a) dilution can be largely avoided by limiting stop drilling to about 2 foot holes in the ore and lightly loaded. After the blast any large chunks of waste can be sorted into the waste fill, and the ore diverted into an ore chute. The hangingwall can then be taken down and diverted to waste fill. This operation will be explained in more detail later on.

Type (b) dilution will be lessened by the use of short holes per above.

(c) Some "horses" cannot be avoided but before drilling it should be determined whether the inclusion of the horse will lower the resulting product below critical grade, and if so it could be left undrilled.

(d) Main scraper ways should be provided with rail or plank skids.

(e) Some method must be instituted to provide quick assays of approximate accuracy. And sufficient stopes should be in working order to permit staggered stoping. That is, after a round of shots, the crew should work on another stope, until the assay of the face of the old stope is known.

Care in these matters should reduce ore dilution to 30%.

Tonnages and Values in Unmined Areas.

The map attached shows <sup>two</sup> areas of remaining ore that should be mined and milled at a substantial profit. These are above and below the 800 level in the vicinity of the main winze.

I have confidence that the sampling and assay values are correct. Ordinarily, in a deposit of this kind (as mentioned above) samples at about 2.5 ft intervals should be required to obtain true averages. But in your case, at least in the area along the winze so many independent samples have been taken (all of which check each other) that I feel you can rely on the average of 1.33%  $Fe_2O_3$  for a width of 24 inches.

Up along the same shoot, above the winze, the ore has been gophiored and mined at by previous operators. There is remaining ore there but I am not quite so sure of either tonnage or values. This area should be rather heavily discounted and taken as a second consideration. Considered alone it might not justify resumption of operations, but as an adjunct to the more positive condition in the winze it does add justification to any plan for resuming operations.

Referring again to the sketch map I have blocked out these two areas and designated them as 800 Raise, and 900 Winze. I have used certain rather severe discounts to compensate for disappointments that may be encountered in stoping, and for dilution. And I have considered mill recovery at 80%.

Herewith follow the figures:

800 Raise Block.

Dimensions 120'x220'x3' equals 61,000 cuft.

Equals 6000 tons.

Discount 2/3 equals 2000 tons.

Value 1.33%, discount 80% dilution,

and 20% mill loss equals .90 units per ton.

At \$55.00 per unit equals \$44.00 per ton.

Less \$30.00 per ton operating costs

Equals \$14.00 per ton profit. On 2000 tons equals \$ 28,000

900 Winze Block.

Dimensions 90'x220'x3' Equals 6,000 tons.

Discount 1/3 equals 3,000 tons.

Value 1.50% less 80%, less 20% equals 1.0 units.

At \$55.00, less \$30.00 leaves \$25.00 per ton net.

On 3,000 tons equals

Estimated Total Net

75,000

\$103,000

General Recommendations.

I will advise that production operations be resumed with the expectation of turning into profit such ore as is easily available and can be mined without further capital expense. A substantial profit seems well assured and the possibility of loss practically nil.

Further exploration by extensive drifting or opening surface showings might expose other ore shoots similar to what you have, but experience has proven that such are not profitable.

Salvage what you can, starting with the best, and continue as long as it will pay. Then quit.

In this regard I will make the following more detailed recommendations:-

Start with small crew. Unless your overhead is very heavy (and I presume it is not) you should obtain better efficiency and certainly much cleaner ore with a small select crew under Mr. Blonsky's personal supervision, than you can if you try to force mine production to meet the capacity of the mill.

Good labor is hard to get for remote camps, but an experienced employer like Mr. Blonsky can almost always obtain a few good ones, whereas if a crew is expanded by taking in Tom-Dick-and-Harry they not only will produce little themselves but spoil the good ones and cause other damage. Such nucleus crew should be increased only if and when efficient labor is available, and places available where they can work efficiently. In other words centralize on mine production and insist on ore as clean as possible. Make milling secondary - the mill to be run only when the pipe lines are full of good ore. Never force the mine to match the mill.

Diversified labor. It would be of great help - but perhaps only partially possible - if a diversified crew could be obtained. By that I mean that most or all of the mill crew could be used for productive mine work when the mill was not running. Starting in this way it is conceivable that you might soon expand into a balanced operation wherein the mine could easily (and with a sufficient reserve) keep the mill running steadily one shift at about 20 tons per day. Such an operation would probably take a total of about 16 men.

Mining Method. Mr. Blonsky has worked out a very clever method of mining the very narrow vein in the rather flat stopes. Unfortunately this was not used in much of your previous operating attempts.

This consists of carrying within a slope a trough or chute that need not be over one or two planks high. A stalled runway can be carried alongside. Below the actual area to be drilled and blasted 45 degree wing bulkheads (also only one or two planks high) are run out on either side of the chute. The ore vein is shot first with the short round mentioned above. The wings hold the ore and deflect it into the chute. The dip is flat and very little ore will run, but it is not difficult to "worry" it into the chute where a small slusher drags it down into the loading chute below. When it comes time to shoot waste the wings are pulled in to form an A above the ore chute and runway, deflecting the broken waste to fill the stoped out area alongside and immediately below. Occasionally (depending on the proportion of ore to waste) it may be necessary to shoot more hanging wall or push some of the waste further down the slope. The fill does not need to be tight at all times, for, except for the shattered area immediately above the ore vein, the hangingwall is very solid.

Mr. Blonsky tried this method in one spot and as far as I could see it worked perfectly. The trouble was that the slope immediately ran into low grade ore, and the lowering of the grade was not detected until much below grade ore had gone to the mill.

Mill and Equipment. The mill setup is metallurgically sound and it has been well demonstrated that it makes a good recovery and produces a high grade concentrate. No major changes are advised.

Quick Assays. Assays from the stopes should be taken after each round. As there is much delay in obtaining commercial assays some quick method of obtaining approximate results should be worked out. I will advise further in this regard, in a few days, in separate letter.

#### Further Exploration.

While I have advised against any further expenditures for exploration there is one spot that would cost so little to explore that it seems worthwhile. This is a crosscut north from the 200 level that could cut an overlying parallel vein. Projecting what is known of this vein an 85' advance of the crosscut should cut it. I would advise advancing the crosscut 40 or 50 feet and then drilling some long drill holes at upward angles to cut the projection. This might be considered as spare time work to be worked at only when there is an enforced delay in regular productive work. Or it might be considered only when you have operating profits ahead.

Operating Costs.

Overall operating costs have been estimated at \$50.00 per ton. This is in line with Mr. Blonsky's experience, with my own guess-estimate, and my own more detailed figuring considering number of men, supplies, contingencies, etc.

I do not believe that the more cautious mining suggested will increase costs provided Mr. Blonsky can give a large measure of his personal attention to that work, and that as little dead work as possible be done.

While it would seem that dilution would increase tonnage I have made no such allowance. There will always be some losses of ore in pillars and ore getting into the waste.

Conclusion.

You certainly have some ore of good grade, and an expenditures for getting started would be very small the chances of loss should be nil.

At the same time I believe you have a better than even chance of mining 5000 tons a profit of \$20.00 per ton.

Considering all factors and recommendations made above I feel that you are fully justified in resuming production.

Start cautiously on good ore and work to the breaking point.

Respectfully Submitted,

  
May 14, 1955

NORMAN D. FITZGERALD

PRODUCER OF CRUDE PETROLEUM  
EXPLORATION - EXPLOITATION  
CONTRACT DRILLING  
1141 BUTTERNUT ST.  
ABILENE, TEXAS

April 30, 1955

Mr. Charles H. Dunning  
817 West Madison Street  
Phoenix, Arizona

Dear Mr. Dunning:

1. Confirming our telephone conversation of yesterday we want you to visit the Wothree tungsten mine and advise us whether to resume small scale operation or sell off the equipment.
2. It is my understanding you plan to leave Phoenix about 7:30 in the morning of Wednesday May 4, or the following day, and proceed on the Wickieup road. The property is some 75 miles southeast of Kingman in the Aquarius range. You probably will have little or no trouble following the signs. Our manager, Mr. George Blonsky, and his family are at Wothree Camp; they will cooperate fully with you and make your stay comfortable.
3. Naturally we have had lots of problems but they have been reduced so that perhaps we need now cope with but one or two: Dilution in mining a thin vein and probable persistence of grade through a reasonable tonnage of ore. You will know best how to serve us but as a possible aid I might suggest that you examine the showing of ore in the winze for its probable extent and persistence. If sufficient tonnage is indicated then consider the mining method and initial operations. These then might be checked against recent mining efforts, with operating and overhead costs and results. Winze assays run 1.53%  $WO_3$  over 25" of vein but of course there will be dilution. Our gross revenue I believe runs about \$58.00 per unit after royalties and miscellaneous charges.
4. Should it appear that you might recommend resumption of operations on a small scale, then we would like you to check on a few other items. We are not interested in a small or precarious operating profit because we know that in a few weeks troubles could

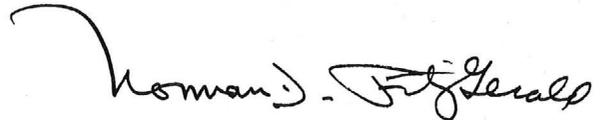
wipe out the accumulations of several months. In this category I would list the risk of an extended shut-down caused by failure of a major item of equipment, the cost of replacing a major facility, or inability to obtain and work suitable labor.

5. You understand, I'm sure, that we want a forthright experienced opinion as to what we ought to do now for our own personal account. Reduced to its simplest terms we already know that we might make an operating profit but we want to know if we should expect to obtain such a profit on reasonable tonnage. We know that you cannot tell us that we will make a profit.

6. Certain plans have been made by George for possible resumption of operations. If it seems advisable we would like you to scrutinize these plans from every possible angle, especially total additional financial risk and time involved to reach a decisive verdict. By a copy of this letter I am asking George to cooperate fully with you in every particular. If you encounter any special problem about which you wish to call me, my office telephone is 4-7346 and home is 2-5597.

Yours very truly,

cc: Mr. George Blonsky  
Wothree Mines  
P. O. Box 47  
Kingman, Arizona



P. S. (Mr. Dunning only).....As soon as you have formulated a recommendation in this matter please call me collect. I may wish to visit with you in Phoenix then go to the mine to finalize plans, and time is quite important to all concerned.

*William Tungsten*

May 8th, 1955.

Mr. Norman D. FitzGerald,  
Abilene, Texas.

Dear Mr. FitzGerald:

Enclosed is the report on the  
Webbhee Tungsten with copy. I have also sent a copy  
to Mr. Blonsky. I trust you will find this in order  
and that I have made myself clear. I have tried to  
express my true feelings.

I am not proud of the sketch map but I merely  
wanted to show a basis for the calculations.

I am also attaching my statement.

It was a pleasure to cover this commitment for  
you and if I can be of any further service I will be  
happy to be so, and when you come out be sure to come  
this way and let me know.

Yours Very Truly,

c/o Mr. Blonsky.

*See - C.R. 8078 - p. 66*

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine Williams Tungsten Mine Date January 12, 1953.  
District Aquarius Dist., Mohave County. Engineer Geo. F. Reed  
Subject: Sec. 19 & 30, Twp. 16<sup>1</sup>/<sub>2</sub>N, R11W., 67 Mi. SE of Kingman by road.  
Notes on Marketing of Concentrates and Possible Production.

General Conditions:

This property has recently been bought outright by Norman D. Fitzgerald of Abilene, Texas. George Blonsky is Manager. They have about a dozen men doing development work and rehabilitation of camp and underground workings.

This property has been fairly well developed with adits and flat-inclined raises since World War I. During World War II, a mill with crusher, rolls and jigs was built and produced at least several hundred units of WO<sub>3</sub>. Total production to date is not known, but is of order of one to two thousand units of WO<sub>3</sub>.

The country rock is granite which has been intruded by a sill or dike of Aplite about 6 feet thick with a strike of N. 65 W. and dip 25 degrees NE. In this sheared dike, the ore occurs in a quartz vein or veins which average about two feet thick. At times there are two veins near top and bottom of the dike. According to Mr. Blonsky and some published assay maps, the ore shoots remaining will assay about 1 $\frac{1}{2}$ % WO<sub>3</sub> with average two foot width. It is possible that in mining, this grade will be reduced to say 1.% by a 50% dilution from sheared aplite. Allowing for this dilution and reasonable luck in mining and development, Mr. Blonsky expects to mine and recover about 10,000 units of WO<sub>3</sub> from about 10,000 tons of ore.

Mr. Blonsky is ready to haul 50 tons of ore to the Borianna Mill (100 mile haul) for a test run this week. He has run some small scale mill tests, also. His plan is to add to the present mill's crushing plant so that he will have two jaw crushers and two sets of rolls, ie. four stage crushing, bringing the ore to 100% through 20 mesh with a minimum of slimes. Then he expects to use tables exclusively for concentration.

Mill tests so far indicate good recovery by making a 45% concentrate, more or less. However, making a 60% WO<sub>3</sub> concentrate seems to be difficult without magnetic separators, etc.

The Tungsten in this and nearby properties seems to be almost entirely in the form of Wolframite. Gangue is quartz with small amounts of pyrite and mica.

Conclusion:

If it were possible for this property to market its production in the form of say 40% WO<sub>3</sub> concentrate at Wenden or nearby point, and to receive nearly full price per unit, it would greatly reduce capital cost in their mill. It might very well be the difference between successful production of 10,000 or more units of WO<sub>3</sub> and on the other hand, loss of invested capital and loss of this possible production of needed metal.

*George F. Reed*

DEPARTMENT OF MINERAL RESOURCES

News Items

Date Aug. 30, 1953

Mine Williams Tungsten Mine

Mohave County, Aquarius Dist.

Location Sec. 19 & 30, T. 16 1/2 N., R. 11 W.

Owner Norman D. Fitzgerald

Address Abilene, Texas

Operating Co. Wothree Mines

Address P. O. Box 448, Kingman, Ariz.

(mine is 67 miles SE of Kingman by Hwy 93)

Pres. George B. Blonsky

Genl. Mgr. George B. Blonsky

Mine Supt.

Mill Supt.

Principal Metals Tungsten

Men Employed about 15 and expending

Production Rate Developing & building mill.

Mill, Type & Capacity Gravity, crushers, rolls, tables & magnetic separator

Power, Amt. & Type 200 HP Diesel Electric Generator & other engines

Signed GEORGE F. REED

(Over)

see next page

This is Front Side of 8-30-53

DEPARTMENT OF MINERAL RESOURCES

News Items

Date November 30, 1952.

Mine Williams Tungsten Mine

Mohave County, Aquarius Dist., Location Sec. 19 & 30, Twp. 16 1/2 N., R. 11 W.

Owner Norman D. Fitzgerald

Address Abilene, Texas

70 miles by road S.E. of Kingman.

Operating Co. Wothree Mines

Address Box , Kingman, Ariz.

Pres.

Genl. Mgr. George B. Blonsky

Mine Supt.

Mill Supt.

Principal Metals Tungsten

Men Employed 13

Production Rate Doing development

Mill, Type & Capacity 50-ton mill, jigging.

Power, Amt. & Type Internal combustion engines.

Signed George F. Reed

(Over)

see next page

This, also, front side 11-30-'52



Present Operations Operators have decided to go ahead with 50 ton mill construction and go into production following extensive tests on metallurgy

New Work Planned Further development, mining & milling. Plans call for rebuilding & adding to old mill. Tabling will be followed by roasting & magnetic separation.

Misc. Notes Recently hauled in a 200 HP diesel generator. A staff is being assembled and crew expected to reach about 25 to 30 men. At present about 15 employed.

This is back side of 8-30-1953

Present Operation Doing development & rehabilitation.

New Work Planned Development work, then rebuild and add to mill.

Misc. Notes Mr. FitzGerald has just bought the mine outright for cash and he and Mr. Elonsky will put it into production as soon as feasible following a little development to check on the ore-bodies.

This is back side of 11-30-1952



zona. MINING WORLD 7/951



Duplicate

NAME OF MINE: WILLIAMS

COUNTY: MOHAVE  
DISTRICT: Greenwood  
METALS: WO3 ✓

OPERATOR AND ADDRESS:

MINE STATUS

DATE:	OPERATOR AND ADDRESS:	DATE:	MINE STATUS
5/1/44	W.S. Bradbury, Kingman	5/1/44	Developing &
1/45	Edward H. Molson, Box 607, Tucson	6/44	Installing Mills
2/46	Albin Larson, Box 333, Chloride	9/44	Closed
		1/45	Developing
9/15/43	r.f.c. loan \$20,000 50 ton Gravity Mill		

BRADBURY, W. S.  
Kingman, Ariz.  
Box 71

Williams

See WILLIAMS TUNGSTEN - re gas application 10-27-44

BOLINGER, E. E. (1/3)  
(OWNERS)  
WILLIAMS, ROY (2/3)

MINE - WILLIAMS TUNGSTEN MINE - 71 miles southeast of Kingman

WILLIAMS, Roy  
Box 71  
Kingman, Arizona

Williams Tungsten Mine

unclaimed 8/11/46

See WILLIAMS TUNGSTEN MINE

Re - Production survey by Holt 9-30-42

See W file - re request for bulletin 8-24-43

See NEW LONDON - Re B premium 9-14-44

See NEW LONDON - re gas application 2-6-45

Mr A. M. Edmer of  
Kingman, Ariz.

May 11/45

Wants letter of recommend from  
this Dept. to be used with O. D. T. to  
operate same on trucking Co.  
between mine & mill, & all mine  
material & sewage. Mine is  
known as "Edmer Mine Co. yet  
a partnership. Trust is 1936 Chevy 1 1/2 T.  
This is Fed. territory. Tons 10 day  
plus up to 40 Tons. needs to obtain

Front of Note  
page 1 of 2

Certificate of W. r. necessity,  
known formerly as Williams  
Tungsten mine 75 miles S. of  
Krugman, near Wickenburg on  
Big Sandy east of river.

W. r.

Back of Note  
Page 2 of 2

11-A-11

DEPT. MINERAL RESOURCES  
RECEIVED  
NOV 6 1944  
PHOENIX, ARIZONA

To: Dunning  
From: He

This application was denied by me due to fact that Bradbury's gasoline ration bank account has been closed. See attached copy.

Also because RFC has foreclosed on equipment at Williams Tungsten mine; and owners have ordered him to vacate property.

He

page 1 of 1

JEWEL TUNGSTEN LTD.

(WILLIAMS MINE)

KINGMAN, ARIZONA

TWELVE CLAIMS \*----- 240 ACRES.

J. H. VAN BUSKIRK

MANAGER

403 HARRISON AVE.

CANON CITY, COLORADO

C  
O  
P  
Y

REPORT

Williams Tungsten Property.

The Williams Tungsten property consists of twelve mining claims held by location, and lies on the eastern slope of the Aquarius Range about seventy five miles south of Kingman, Mohave County, Arizona. The mine is reached by turning south, from U. S. Highway 66 two miles east of Kingman, on the Kingman-Congress Junction Road, to Cane Springs, fourteen miles north of the Town of Wikieup, then turning eastward twenty seven miles to the property.

The deposit occurs in granite rock composed principally of orthoclase and quartz - the higher elevations to the north and south are lava capped. The deep canyons and high crests make the terrain very rugged. The vegetation consists principally of brush with most a total absence of trees in the near vicinity. The region is arid, water supply being obtained from springs on or near the property.

The haulage or mill level at the mine is at an elevation of 4880 feet. The crest of the hill is about 500 feet above the mill level.

The climate is somewhat cooler than in the Valley in the summer-time and somewhat colder in the winter time, but, on the whole, very pleasant for this region.

The geology and structure of this deposit is very well described by Mr. S. W. Hobbs in Geological Survey Bulletin 940-1, pages 259 to 263 inclusive - a copy of which I am enclosing.

I have found the statements of Mr. Hobbs to be substantially correct. However, it must be borne in mind, in reading this report, that there are now available methods of concentration of tungsten ores which were not available at the time of Mr. Hobbs' report, so where Mr. Hobbs has indicated a minable vein width of one foot, the width may now be estimated to be from eighteen to thirty inches.

The claims were located by Ed Williams in 1909 and were held by him until 1940, when the property was acquired by the Continental Mining Company who relinquished their lease, and it was taken, in 1943, by Mr. W. S. Bradbury. Mr. Bradbury obtained a loan from the R. F. C. for the development and operation of the property during the war. At the time negotiations for a loan were being carried on, a thorough sampling of the mine was made. An assay map is enclosed herewith.

I have made two visits to the property - the first on April 28, 29, and 30th, and the second on the 18th and 19th of May, 1948. On both occasions, my conclusion was the property was one of merit and could be successfully operated.

There are some eight or nine cabins in the main camp, all of which were in good repair and could be habitable with very little expense.

The water supply was from a well about a quarter of a mile or more from the main camp, altho the supply as it had been developed was hardly sufficient to supply the camp and the mill; however, I understand additional water could be developed from a spring further up the canyon.

The water was pumped to the camp thru a two inch pipe line by a triplex pump which should have sufficient capacity to supply both the domestic and the operational water for at least a hundred ton operation. Of course, as in all arid countries, it would be advisable to reclaim all water possible from milling operations.

The mine was equipped with a compressor at the Number Three tunnel, the rail and pipe lines had not been removed from the entries and were intact. There were several mine cars on the property and the timber in most instances seemed to be in good condition.

There is an underground connection between the Number Three tunnel and the mill level tunnel which would require some cleaning and could be used for underground transfer way to bring ore to the mill level. It might be necessary to slush the ore part way thru this transfer way, but on the whole, it could be operated with very little difficulty and expense. The mill level would require some timbering and timber replacement to catch up some bad spots and to make an even grade for the haulage track.

These alterations and repairs, I understand, have all been made since my last visit to the property and it should be unnecessary for further additional expenditures to put the mine in an operative condition.

The vein has an East-West strike and a dip of about thirty degrees North. There appeared to be two or more veins within the structure, and I traced two veins, on the surface, and found both of them to be exposed on the opposite side of the hill from the present mine openings. It is my opinion that the mineralization will be continuous in the vein structure thru the hill for a distance of at least twenty-five hundred feet. The exposure on the West side is quite similar to that of the East side. While I did not visit the openings on the West side, from reports I have read, the openings were made in very good ore.

On the occasion of my first visit I spot checked sampled the mine and found the samples taken by the R. F. C. Engineer to be substantially correct. The result of my sampling is as follows:

Coarse tails from Mill	0.36 % WO <sub>3</sub>
First level West end face	1.64 % WO <sub>3</sub>
Second level East and West	1.52 % WO <sub>3</sub>
Haulage level first vein	1.12 % WO <sub>3</sub>
Roy Williams Claim	0.58 % WO <sub>3</sub>

On my second visit I took further samples to check the R. F. C. work, and, as on the occasion of my first visit, the second sampling substantially bore out the correctness of the previous sampling.

It is my opinion the ore is eighteen to thirty inches in width, with average grade from one to one-and-a-quarter per cent  $WO_3$  with parts of the vein being of higher grade and other parts of somewhat lower grade.

It is estimated that there are ore reserves of eighteen thousand tons (six thousand tons as indicated ore and twelve thousand tons as possible ore). Further development work exploring the vein to the West toward the opposite side of the hill should materially increase the ore reserves. The mine at this time could produce fifty tons of ore per day and perhaps an even greater tonnage, and with further development could produce a hundred tons per day.

The mill is located near the portal of the lower or haulage tunnel some two hundred feet below the Number Three tunnel. The mill was in as good condition as could be expected of a mill which had not been operated for several years. All equipment was intact and the mill could have been put into operation with a minimum expenditure of time and money if no changes in the flow-sheet were necessary. I understand some changes were made recently in the mill, which were not sufficient to properly dress the ore.

As the mill was operated, the ore was prepared for gravity concentration by relatively coarse crushing and concentrated by means of jigs and tables.

In my opinion there is sufficient ore of high enough grade to profitably operate the property, but the ore dressing was such that economical recovery of tungsten in a concentrate of marketable grade could not be made.

The ore of this deposit is complex, the minerals within the vein structure including quartz, wolframite, scheelite, pyrite, chalcopyrite and mica. The two tungsten bearing minerals are extremely friable and upon impact, such as occurs in crushing, break in particles too small to be recovered by gravity concentration.

These tungsten bearing minerals are associated with gangue minerals in such particle size which I do not believe would free at less than sixty five mesh, thus indicating flotation would be required to achieve a satisfactory recovery.

For many years it was standard practice in dressing of tungsten ores to use gravity concentration with auxiliary treatment to bring the concentrates to a marketable grade. Recoveries by this method were in the neighborhood of forty five to fifty five per cent. I have examined

recovery graphs of tungsten gravity concentration plants; the recoveries were apparently at a maximum at between eighty and two hundred mesh altho some operators have claimed greater recoveries; however, as far as I was able to determine in my investigations, the recoveries were within this limit.

In my opinion this ore can be successfully dressed and I cannot over emphasize the need for a reputable Metallurgical Engineer, preferably Mr. G. G. Griswold, Jr., to design a flow-sheet. I believe this flow-sheet will include the flotation of the tungsten minerals with perhaps auxiliary treatment such as magnetic or electrostatic separation to bring the concentrates to a marketable grade. The cost of operation on one per cent ore should not exceed twenty dollars per unit, this cost to include mining, milling and amortization.

If the flow sheet should be as indicated, I would estimate the cost of putting the property into operation to treat fifty tons per day to be between twenty and fifty thousand dollars, according to the equipment and power plant installed. If good used equipment can be obtained, the cost would be somewhat near the lower figure; however, if new equipment is used throughout, the cost will be nearer the higher estimate.

Canon City, Colorado,

(Signed) M. N. Shaw.

November 2, 1948

(Copy)

May 12, 1945

Office of Defense Transportation  
Security Building  
Phoenix, Arizona

Gentlemen:

Mr. A. M. Elmer of Kingman, Arizona, is operating a tungsten mine in the Big Sandy district 75 miles south of Kingman.

He has a 1936 Chevrolet dump truck and needs a Certificate of War Necessity.

This truck will be used to haul ore from the mine to the mill which is situated some distance from the mine. The truck will also be used to bring in mine and mill supplies.

This is a sound operation and we recommend that the Certificate of War Necessity be granted as requested.

Yours very truly,

Chas. H. Dunning  
Director

CRD:LP

CC: Mr. A. M. Elmer

DEPARTMENT OF MINERAL RESOURCES

REPORT TO OPA ON  
ACTIVE MINING PROJECT

DEPT. MINERAL RESOURCES  
RECEIVED  
OCT 28 1944  
PROZEN

Date October 27, 1944  
Name of Mine Williams Tungsten  
Owner or Operator W. S. Bradbury  
Address Box 71, Kingman, Ariz.  
Mine Location 70 miles south and east of Kingman

Filing Information  
File System.....  
File No.....  
This chart to be used for gallons of gasoline required per month.

PRESENT OPERATIONS: (check X)

Production.....; Development.....; Financing.....; Sale of mine.....;  
Experimental (sampling).....; Owner's occasional trip.....;  
Other (specify) Idle pending future operations and negotiations

PRODUCTION: Past and Future. Tons  
Approx. tons last 3 months 4 tons concentrates per month  
Approx. present rate per 3 months Idle  
Anticipated rate next 3 months 4 tons concentrates per month  
If in distant future check (X) here \_\_\_\_\_

EQUIPMENT OPERATED:

Type	Quantity or Horse Power	Miles or Hours Per Month	Gallons Required Per Month
Personal Cars	.....	<u>7</u>	.....
Light or Service Trucks	<u>100</u>	<u>1500 miles</u>	<u>150 gals.</u>
Ore Hauling Trucks	<u>Not operating at present</u>		
Compressors	<u>160 cu ft. 360 cu ft.</u>	<u>480 hrs.</u>	<u>400 gal per month and small engine 25 gal</u>
Other Mine or Mill Eqpt.	<u>125</u>	<u>16 hrs. day</u>	.....

PRODUCT PRODUCED OR CONTEMPLATED: Name metals or minerals.

Tungsten concentrates.

REMARKS:

Temp. closed operations pending financial negotiations.  
Revised by Host

Phoenix, Arizona, 6 June 1940

M E M O R A N D U M

TO: Elgin B. Holt, Field Engineer  
FROM: J. S. Coupal, Director  
SUBJECT: Williams Tungsten

Mr. Jack Hoagland would like a little more extensive report on the Williams Tungsten property.

Can you give him such information as the general geology, ore formation, amount of money to be expended before production is to be obtained, the ore at present in sight and the additional ore to be put in sight by the 1,000 ft. tunnel.

I may not have made the requirements clear to you, but I had in mind an article about the size of the one in the last issue of Pay Dirt on diatomaceous earth.

It may be impossible to get some of this material, but Hoagland would like more details, and if necessary you can do a little romancing to assist him in building up the story along reasonable lines.

J. S. Coupal, Director

JSC-jrf

Kingman, Ariz., 6/3/40

To: J. S. Coupal, Director  
From: Elgin B. Holt  
Subject: Williams Tungsten - write-up for Pay Dirt.

Note you want a write-up on this property for Pay Dirt, as soon as possible.

Will comply with your request as soon as I can contact either Bud Williams, Supt., or Dr. Felix Ochs. They come in here every two or three days; so should get them by end of this week at latest.



E. B. H.

Phoenix, Arizona, 10 June 1940

M E M O R A N D U M

TO: Elgin B. Holt, Field Engineer  
FROM: J. S. Coupal, Director  
SUBJECT: Williams Tungsten

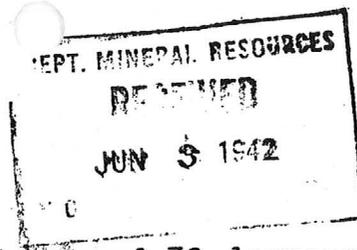
I have forwarded the information on the Williams Tungsten to Jack Hoagland, and he has just called me and stated that in a letter from the New York Office, Mr. Gottschalk states that the company intends to put up a 100 ton mill on this property.

This does not check with your statement of a 30 ton mill, and I should like to have a reply as quickly as possible on this item so that we may be sure of our ground. The estimate of cost given by you is OK for a 30 ton mill, but it would change the write-up very much if they really intend going ahead with a 100 ton mill.

J. S. Coupal, Director

JSC-jrf

WILLIAMS TUNGSTEN



Vein:

According to Williams, the vein, which dips at around 30 degrees from horizontal ranges from 14 inches to 28 inches in width, and has been opened by Tunnel No. 3 for a length of 600 feet, and for an inclined depth below outcrop to the 300-foot level in winze of another 600 feet.

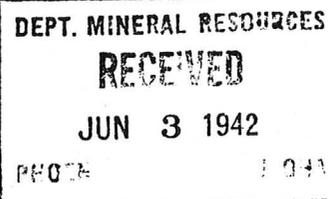
When and if the cross-cut tunnel is driven to vein, this will give an additional depth of 50 feet on vein, below the workings in winze, thereby allowing the ore above to be removed by gravity, instead of by hoisting to Tunnel No. 3 above, as at present.

The vein outcrops on surface a total distance of 1,900 feet, and ore has been mined from it - good tungsten ore - on the opposite side of mountain from main workings referred to. Said vein area on opposite side of mountain is not accessible in that there is no road built to it from the said main workings.

PLANS TO INCREASE PRODUCTION:

Williams states he now has an offer of financial aid with the end in view of taking over the milling equipment belonging to the Continental Mining Company, and putting the property in continuous production, all of which can be done in 30 days time; but he feels that due to the fact that wages of miners have ~~gone~~ gone up to \$7.00 per day, and that mine supplies, as well as auto and truck tires, are difficult to obtain, - due to all this, he would have to have at least \$30.00 per unit for WO<sub>3</sub> concentrates, running in excess of 65 per cent WO<sub>3</sub>, before he could be assured of making any money out of such an operation.

WILLIAMS TUNGSTEN



- 5 - 3/4-ton ball-bearing mine cars.
- 2 - 3/4-ton ball-bearing mine cars\*.
  - 1,200 feet of 3/4-inch electric conduit\*.
- 1 - 7 $\frac{1}{2}$ -HP electric hoist complete with skip.
- 3 - 8" mine blowers & 800-feet of ventilation pipe.
- 1 - 150-Amp. electric welder.
- 1 - Acetylene welding outfit complete\*.
- 1 - 1000-lb tigger air hoist\*.
- 1 - Two-drum slusher hoist; both hoists complete with cable & bucket.
- 2 - Gardner Denver machine drills for drifting, with air & water hose.\*

Buildings:

- 1 - Two-room frame office building - 14' by 28'.\*
- 1 - Boarding house, three rooms, 20' by 60'.\*
- 3 - Bunk houses, to accommodate 40 workmen.\*
- 2 - Dwelling houses, three rooms each.\*
- 1 - Assay office building, 20' by 22'.\*
- 1 - Compressor building, 20' by 30'.\*
- 1 - Engine room, 30' by 30'.\*

Mine Workings:

- 3 - Tunnels on vein, with total length of 1200 feet, with 500 feet of raises and winzes.
- 1 - Cross-cut tunnel 1300 feet in length, driven by Continental Mining Company with object of intersecting vein on its incline 400 feet below Tunnel No. 3; but did not cut vein due to course of tunnel being changed from time to time, and finally, more or less, parallels vein, per a recent survey. Nearest point on this tunnel from vein is 112 feet, per Williams survey.

Ore: Positive & Probable: (Estimate by Roy Williams).

Positive, 2,000 tons; probable, 13,000 tons, above the 180-foot level in the winze in Tunnel No. 3. Average tenor of the above ore, per-Williams, according to past mill runs, equals from 1 per cent to 1.25 per cent WO3.

WILLIAMS TUNGSTEN

DEPT. MINERAL RESOURCES

RECEIVED

JUN 3 1942

to  
PHOENIX, ARIZONA

INVENTORY OF MILL-ERECTED BY CONTINENTAL MINING COMPANY:

Power Plant: 100-HP Wisconsin gas engine, V-belt driven to 75-KVA, 440-volt AC generator. Also one 15-KVA plant for electric lighting.

Mill: Items marked with asterisk belong to Roy Williams, et al.

- 1 - 125-ton head ore bin\*.
- 1 - 60-ton mill ore bin\*.
- 1 - 9" by 16" jaw crusher.
- 1 - Set 14" by 20" rolls.
- 1 - Set 10" by 12" rolls.
- 1 - 50-foot 14" belt conveyor.
- 2 - Electric vibrating screens.
- 7 - Western jigs, including pulleys, belting and line shafting.
- 1 - Esperanza V-thickener\*, inc. 2 $\frac{1}{2}$ -inch centrifugal return pump.
- 2 - 10,000-gallon water tanks\*.
- 1 - 1,000-gallon water tank.
- 1 - mill building\*.
- 1 - Small concentrate drier.

Together with water piping & valves in mill\*.

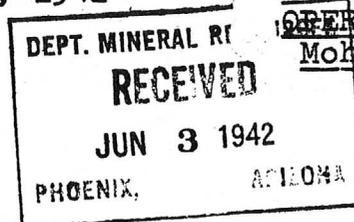
- 15 - AC motors, from 1 $\frac{1}{2}$ -HP to 30-HP, with starting switches.
- 1 - Power line one mile long between mill & pumping plant\*.
- 1 - Pumping plant consisting of a motor powered 50-gallon per minute triplex force pump and 4,000 feet of 2" black pipe\*.
- 1 - Gravity pipe line for domestic water, consisting of 5,000 feet of 3/4" black pipe\*.

Mine Equipment:

- 1 - 360-foot Gardner Denver compressor, with gas engine.
- 1 - 220-foot Ingersoll Rand Comp., with gas engine..
- 3 - Air receivers.
  - 2000 feet of 3/4" water pipe in mine\*.
  - 3,500 feet of 2" air line\*.
  - 2,800 feet of car track - 12 lb. rails\*.

May 24, 1942

To: J. S. Coupal  
From: Elgin B. Holt



OPERATING MINES  
Mohave County

mp

WILLIAMS TUNGSTEN MINE: Roy Williams & Associates, owners, Box 71, Kingman, Arizona. Property located in Greenwood Mining District, 71 miles southeast of Kingman and reached by a county maintained dirt road. Roy Williams has operating lease on 2/3 interest, the other third belonging to E. E. Bollinger, Kingman, Arizona.

1942 PRODUCTION: During last five months Williams and two relatives have been working the mine and operating an 8-ton gravity mill. During this time he has produced 4 tons of concentrates averaging 66 per cent WO<sub>3</sub>. Only selected ores are milled. Ratio of concentration 10 tons ore to one of concentrates.

METALS: Tungsten. Character of ore Wolframite, low in deleterious metals.

1940-41 PRODUCTION: During March, 1940, the Continental Mining Company, of New York, took lease and option on property and erected a 50-ton gravity concentration plant. This plant operated at intervals totaling 60 days and produced in all 15 tons of concentrates averaging 63 per cent WO<sub>3</sub>, per Williams. About 50 per cent of production, consisting of high grade ore and concentrates, was stolen by workmen; this statement being made on good authority. Heads of this operation averaged 1.25 per cent WO<sub>3</sub>. Tails 0.14 per cent WO<sub>3</sub>, also per Williams.

## WILLIAMS TUNGSTEN MINE

### ORE RESERVES

Williams estimates positive ore in mine at 2,000 tons; and probable ore at 13,000 tons, above the 180-foot level in the winze in Tunnel No. 3. Also, he states that the average tenor of positive and probable ores, according to past mill runs, equals from one per cent to 1.25 per cent WO<sub>3</sub>.

### VEIN

According to Williams, the vein, which dips at 30 degrees from the horizontal, ranges from 14 inches to 28 inches in width, and has been opened by Tunnel No. 3 for a length of 600 feet, and for an inclined depth below outcrop to the 300-foot level in the winze of another 600 feet.

When and if the cross-cut tunnel is driven to the vein, this will give an additional depth of 50 feet on vein, below the workings in winze, thereby allowing the ores above to be removed by gravity, instead of hoisting to Tunnel No. 3, as at present.

The vein outcrops on the surface for a total distance of 1,900 feet, and tungsten ore has been mined from it on the opposite side of the mountain from the main mine workings. The said vein area on the opposite side of mountain is not now accessible, in that there is no road built to it from the said mine workings.

### PLANS TO INCREASE PRODUCTION

Williams states he has had an offer of financial aid to take over the milling equipment belonging to the Continental Mining Company, and with which to put the property in continuous production, all of which can be done in 30 days time. However, he feels that due to the fact that the wages of miners have gone up to in excess of \$7.00 per day, and that mine supplies as well as auto and truck tires are difficult to obtain, - due to all this, he would have to have at least \$30.00 per unit for WO<sub>3</sub> concentrates, running in excess of 65%, before he could be assured of making any money out of this operation.

### PROBLEMS

So it would seem that the Williams Tungsten mine, which has a fair amount of ore reserves and is equipped with a first class 50-ton mill, remains closed down due to the low price of tungsten on the one hand, and high cost of labor and supplies on the other. Should this property resume operations, and there is hardly a chance that it will do so unless a better price can be obtained for tungsten, it would be a good idea to merge this mine with the Berger-Phillips property, located 5 miles to the west. (See my report on the said Berger-Phillips property).

Elgin B. Holt.

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine WILLIAMS TUNGSTEN MINE Date Sept. 30, 1942.  
District Greenwood, Mohave Co. Engineer Elgin B. Holt  
Subject: PRODUCTION POSSIBILITY

OWNERS: Roy Williams, et al, Box 71, Kingman, Arizona.

METALS: Tungsten only.

LOCATION

This property is located in the Greenwood Mining District, Mohave County, Arizona 71 miles southeast of Kingman and is reached by a county-maintained dirt road. The property was first worked by Roy Williams' father during World War I.

1942 PRODUCTION

During the first 5 months of 1942, Roy Williams and two relatives worked the mine and operated an 8-ton gravity mill, producing during this period 4 tons of concentrates averaging 66 per cent WO<sub>3</sub>. Only selected ores were milled. Ratio of concentration was 10 tons of ore to one of concentrates. Character of ore is wolframite, low in deleterious metals.

1940-41 Production

During March, 1940, the Continental Mining Company of New York, took a lease and option on property and erected a 50-ton gravity concentration plant, which is still intact at property. I have a complete inventory of this plant, which is powered by a 100-HP Wisconsin gas engine; all mill units being driven by motors. Seven Western jigs were used for concentrating the tungsten values. This plant operated at intervals totaling 60 days and produced in all 15 tons of concentrates averaging 63% WO<sub>3</sub>, per Williams. About 50% of total production was stolen by workmen. Mill heads averaged 1.25% WO<sub>3</sub>; tails 0.14% WO<sub>3</sub> also per Williams.

MINE WORKINGS

There are three tunnels on vein, with an aggregate length of 1200 feet, with 500 feet of raises and winzes. Also, a cross-cut tunnel 1300 feet in length, was driven by the Continental Mining Company with the object of intersecting the main vein on its incline 400 feet below Tunnel No. 3; but did not cut this vein due to course of tunnel being changed from time to time, and finally, more or less, parallels vein, per a recent survey. The nearest point on this tunnel from the vein is 112 feet, per Williams.

PLANS TO INCREASE PRODUCTION

Williams states he has had an offer of financial aid to take over the milling equipment belonging to the Continental Mining Company, and with which to put the property in continuous production, all of which can be done in 30 days time. However, he feels that due to the fact that the wages of miners have gone up to in excess of \$7.00 per day, and that mine supplies as well as auto and truck tires are difficult to obtain, - due to all this, he would have to have at least \$30.00 per unit for W03 concentrates, running in excess of 65% ~~W03~~, before he could be assured of making any money out of this operation.

PROBLEMS

So it would seem that the Williams Tungsten mine, which has a fair amount of ore reserves and is equipped with a first class 50-ton mill, remains closed down due to the low price of tungsten on the one hand, and high cost of labor and supplies on the other. Should this property resume operations, and there is hardly a chance that it will do so unless a better price can be obtained for tungsten, it would be a good idea to merge this <sup>mine</sup> property with the Berger-Phillips property, located 5 miles to the west. (See my report on the said Berger-Phillips property).

Elgin B. Holt.

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VEIN

According to Williams, the vein, which dips at 30 degrees from the horizontal, ranges from 14 inches to 28 inches in width, and has been opened by Tunnel No. 3 for a length of 600 feet, and for an inclined depth/<sup>below outcrop</sup> to the 300-foot level in the winze of another 600 feet.

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TYPE 12a

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

PRODUCTION POSSIBILITY  
SURVEY

Mine WILLIAMS TUNGSTEN MINE

Date Sept. 30, 1942.

District Greenwood, Mohave Co.

Engineer Elgin B. Holt

Subject: PRODUCTION POSSIBILITY

OWNERS: Roy Williams, et al, Box 71, Kingman, Arizona.

METALS: Tungsten only.

LOCATION

This property is located in the Greenwood Mining District, Mohave County, Arizona, 71 miles southeast of Kingman and is reached by a county-maintained dirt road. The property was first worked by Roy Williams' father during World War I.

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This property was not visited.

Report by

Information comes from other reports and conversations with owners

## OWNERS MINE REPORT

A. Brodie Campbell

Date June 10, 1942

1. Mine Williams Mine
2. Mining District & County Aquarius District,  
Mojave County
3. Former name Continental Mining Corp.
4. Location West flank of Aquarius Mts. on  
east side of Big Sandy Wash., east of  
Trout Creek Store.
5. Owner Ed. Williams, Jr., and associates
6. Address (Owner) P.O. Box 71, Kingman, Ariz.
7. Operator "
8. Address (Operator) "
9. President
10. Gen. Mgr.
11. Mine Supt.
12. Mill Supt.
13. Principal Metals Wolframite with some scheelite.  
Sulphides.
14. Men Employed
15. Production Rate 30 units a month.
16. Mill: Type & Cap. Jigs. Gravity.
17. Power: Amt. & Type See appended report.
18. Operations: Present Mine and mill.
19. Operations Planned Mine and mill.
20. Number Claims, Title, etc. 12 claims held by location
21. Description: Topography & Geography Rugged mountainous. Semi-arid climate.  
Elevation 4000'.
22. Mine Workings: Amt. & Condition See appended report.

23. Geology & Mineralization      appended report
24. Ore: Positive & Probable, Ore Dumps, Tailings      See appended report
- 24-A Vein Width, Length, Value, etc.      From Berger and Williams reports there are in excess of 4,000' of outcropping veins having an average depth of 300'.
25. Mine, Mill Equipment & Flow Sheet      See appended report.
26. Road Conditions, Route      Go 72 miles SE of Kingman on Big Sandy Wash road. Inquire at Trout Creek Store for Mine. Fair dirt road.
27. Water Supply      Good from adjacent streams.
28. Brief History      Started in 1902. Considerable production until 1918. Started again in 1939. Run with 75 ton jigging plant in 1940. Now run a high grade mine from sorted ores.
29. Special Problems, Reports Filed      Wilson, Tungsten deposits of Arizona. Appended report by Holt.
30. Remarks      Under proper stimulation this property should become one of the best tungsten producers in the State.
31. If property for sale: Price, terms and address to negotiate.
32. Signed.....
33. Use additional sheets if necessary.

NEWS ITEM

Kingman, Arizona, October 4, 1943. - W. S. Bradbury, whose ~~office~~ <sup>operating</sup> office address is Kingman, Arizona, has been granted a \$20,000 loan by RFC with which to remodel and operate a 50-ton gravity concentration mill at the Williams tungsten mine, belonging to E. E. Bollinger, Roy Williams et al, of Kingman. This property is located in the Greenwood Mining District, Mohave County, 71 miles southeast of Kingman, and is reached by a county-maintained dirt road.

About 6 months ago, Bradbury took ~~an~~ a long-term lease on the mine mentioned, made a thorough examination of property, and applied to RFC for the loan referred to, with which to remodel and operate the mill, which will be supplied with ore from the said mine.

During 1940, the Continental Mining Company, of New York, took a lease and option on the Williams tungsten mine, and erected thereon a 50-ton gravity concentration plant, still, more or less, intact at property. The Continental company failed through bad management and for other causes.

The property is developed by about 3,000 feet of adits on vein, raises, one long cross-cut tunnel and other work. Bradbury states there are around 12,000 tons of ore blocked out in the mine assaying in excess of one per cent WO<sub>3</sub>.

As Bradbury is an experienced mining/~~man~~ <sup>man</sup> ~~operator~~ it is believed he will make a success of this operation.

Elgin B. Holt.

To: ✓ J. S. Coupal, Director  
From: Elgin B. Holt  
Subject: Notes For News Item for PAY DIRT  
on Williams Tungsten, Mohave Co.

Referring again to your memo. of June 1st in which you state you want a write-up on the Williams Tungsten property for next issue of Pay Dirt, Mr. Lewin came in today from the mine and gave me the following information, which you can edit and put in shape, as per your instructions:

Name of Mine: Williams Tungsten.

Location: 72 miles south-east of Kingman, Ariz.

Owner: Ed Williams Estate, Kingman, Arizona.

Operating Co.: The Continental Mining Corporation,

Address: P. O. Box 71, Kingman, Arizona; also  
80 Broad Street, New York, N. Y.

General Manager: Dr. Felix Ochs.

Gen. Supt.: Roy Williams.

Supervising Engr.: Michael M. Lewin.

Metals: Tungsten (Wolframite).

Mill: The company is now constructing a gravity concentration mill, consisting of jigs and tables, with a daily capacity of 30 tons of ore. The capacity of this mill will be increased from time to time, as additional ore is made available by new development work now being carried on.

Mill power plant consists of one 75 H. P. Wisconsin gas engine, which drives a 45 K. W. generator, which in turn furnishes power for various motors used to run various units of mill.

Power for mine: One 60 H. P. Climax gas engine, which drives a ~~300-cu ft~~ 300 cubic foot Ingersoll-Rand compressor. Also one small power unit for running electric lighting plant and mine blower.

Men Employed: Company is working 45 men now during construction period; but after mill starts, about 25 men will be constantly employed; and average monthly pay-roll will then be around \$3,000. Mill will be completed, ready to run, about the end of June, 1940.

Present operations: Ore is now being stoped from the old mine workings, consisting of a lower tunnel 700 feet in length and an upper tunnel 400 feet in length. New work in mine consists of a cross-cut tunnel, now in 150 feet. This tunnel will have to be driven 850 feet further to reach the main vein 220 feet below the lower tunnel mentioned.

Harper also stated that he wanted to continue the main cross-cut tunnel about 30 feet further and then come back and drift on the new vein right and left, as in this way he expects to pick up workable ore shoots. If his surmise is correct, and I believe it is, ore reserves in this mine will be materially increased. Harper also stated that just as soon as some prospect work had been carried out on the new vein, the x-cut tunnel would be ~~found~~ continued to main vein, which should be found about 300 feet ahead of the end of this tunnel.

I then went through some of the upper mine workings with Mr. Lewin and found stoping operations being carried on in Tunnels #2 and #3. This ore being trucked about  $\frac{1}{2}$  mile down hill to mill.

After the x-cut tunnel has been finished to the main vein and connections made with the upper workings of mine, all ore will come down by gravity to the said x-cut tunnel level and trammed therefrom direct to top of mill ore bin, a distance of 300 or 400 feet.

**MILL:** The mill at property consists of a pilot plant, using jigs to recover tungsten values. Capacity of this plant is 30 tons for two shifts of 16 hours. Concentrates are shipped to Smith-Emery Company, of Los Angeles, for storage, to be marketed later on.

Mr. Koffmann informed me that the pilot mill has served its purpose and that steps are now being taken to remodel the mill into a 60-ton per 24 hours efficient plant by the addition of the following equipment, which is now delivered at property:

One 24" by 14" Allis-Chalmer Rolls; two Western Electric jigs; one Card table; elevators, feeders, etc.

**MEN EMPLOYED:** At the present time 48 men are employed, including men employed by contractors carrying out development work in the mine, including the x-cut tunnel mentioned.

Mr. Koffmann asked me to send in the following news item, which could be run with or separately from the above:

Mr. F. A. Koffmann, who is connected with the Continental Mining Corporation, 80 Broad Street, New York, has made his headquarters for the last several weeks at Hotel Beale, Kingman, Arizona, for the purpose of supervising the organization of operations of the Ed Williams tungsten mine, now being exploited by the corporation mentioned. He is also negotiating for several other mining properties in Mohave County. Dr. Felix Ochs is chief geologist of the said corporation.

To: J. S. Coupal, Director  
From: Elgin B. Holt  
Subject: New vein found in x-cut tunnel at Ed Williams Tungsten.

Note: Instead of writing this news item in usual form, I am following your suggestion in your memo. of July 24th - that I give you a detailed picture of the ore occurrence, etc., and you will see to it that my information is put in proper shape for publicity.

Day before yesterday I had a talk with F. A. Koffmann, Agent of the Continental Mining Corporation, here in Kingman, and he stated that Mr. Thompson had just arrived from the mine and reported that the x-cut tunnel now being driven to cut the main known ore vein, about 1,000 feet from portal of said x-cut tunnel, and at a vertical depth approximating 205 feet under the upper mine workings, had encountered a "blind" vein, between 5 and 6 feet wide, at a point 680 feet from portal of said tunnel.

Koffman asked me to go to the mine with him, and as I had not yet been to this property, I went out and back with him to the mine yesterday. Here is what I saw:

On arrival at property, I went into the x-cut tunnel mentioned in company with Mr. Lewin and Mr. Dan Harper, Mine Supt. At that time, the tunnel was still being driven forward and had passed entirely through the vein, which is quite flat, dipping about 15 degrees to the north, meeting the tunnel. Harper, Lewin and I examined the vein carefully and found it to be about 5 or 6 feet wide, measuring it at right angles, of course. The vein is made up of a streak of micaceous quartz on hanging and another streak of this material on foot wall; these streaks of quartz range between 12 inches to 18 inches thick and is the material that carries the tungsten ore in the mine above. Balance of vein, between the two quartz streaks, is altered country rock, described by Harper as Aplite. We took some of the quartz outside the mine and looked the pieces over and noted low tungsten crystals. Harper then gave me some large pieces which he had previously selected from this ~~min~~ vein which showed heavy Wolframite crystals, up to 3/4" thick, as this occurs in streaks. Harper stated that further work would have to be carried out before the importance of this discovery could be determined.

Williams Tungsten continued.

According to Elgin B. Holt, Field Engineer of the Department of Mineral Resources, the sale and present operations of this property was brought about by the Department, more or less in the following manner:

On December 28, 1939, Mr. Paul Guterman, representing the Continental Mining Corporation, wrote to Holt from the Congress Hotel, Tucson, Arizona, stating his company was in the market for a good tungsten mine; that he had received Holt's address from Mr. Miles Carpenter, Field Engineer of the Department at Tucson, to whom he had been introduced by Mr. J. S. Coupal, Director of the Department of Mineral Resources, etc.

Hence, under date of January 5, 1940, Holt wrote Mr. Guterman recommending that he investigate, with the least delay possible, the Ed Williams Tungsten mine, of Mohave County. As a direct result of this letter, Mr. Guterman came on to Kingman, accompanied by Dr. Felix Ochs, Geologist, entered into negotiations with owners of property, through Mr. C. Adams of Kingman; Dr. Ochs proceeded to mine and examined it; and finally the property was sold to the Continental Mining Corporation, which started work without delay and is now completing a mill at property, in order to concentrate the mine run of ore into a marketable product. Therefore, due to the contacts made by Coupal, Carpenter and Holt with Mr. Guterman, the mine referred to was sold, is now operating <sup>employing 78</sup> and number of workmen, with an estimated annual pay-roll of \$36,000.00, beginning about July 1st, or after the mill starts continuous operations.

E. B. H.



11-4-44

DEPT. MINERAL RESOURCES  
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PHOENIX, ARIZONA

To: Dunning  
From: Hoot

This application was denied by me due to fact that Bradbury's gasoline ration bank account has been closed. See attached copy.

Also because RFC has foreclosed on equipment at Williams Tungsten mine; and owners have ordered him to vacate property.

Hoot

May 11/45

Mr. A. M. Edmer of  
Kingman, Ariz.

Wants letter of recommend from this Dept. to be used with O.D.T. to operate same on trucking CO<sub>2</sub> between Neim & Mill, & Del mine "Materick" & average. Mine is known as "Edmer Mine Co. yet Partnership. Tract is 1936 Cheby. 1 1/2 ac. This is in Neb. Territory. Tons 10 day plus up to 40 tons. Needs to obtain

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Justificats of W. necessary,  
town formerly at Williams  
together mine 7 miles S. of  
Burgman. near Wicks on  
Big Sandy east of river.

Maaf,

MISCELLANEOUS

DEPARTMENT OF MINERAL RESOURCES

News Items

Date Aug. 30, 1953

Mine Williams Tungsten Mine  
Location Mohave County, Aquarius Dist.  
Sec. 19 & 30, T. 16 1/2 N., R. 11 W.  
Owner Norman D. Fitzgerald  
Address Abilene, Texas

Operating Co. Wothree Mines  
Address P. O. Box 448, Kingman, Ariz.

(mine is 67 miles SE of Kingman by Hwy 93)

Pres. George B. Blonsky

Genl. Mgr. George B. Blonsky

Mine Supt.

Mill Supt.

Principal Metals Tungsten

Men Employed about 15 and expending

Production Rate Developing & building mill.

Mill, Type & Capacity Gravity, crushers, rolls, tables & magnetic separator

Power, Amt. & Type 200 HP Diesel Electric Generator & other engines

Signed GEORGE F. REED

(Over)

DEPARTMENT OF MINERAL RESOURCES

News Items

Date November 30, 1952.

Mine Williams Tungsten Mine  
Location Mohave County, Aquarius Dist.,  
Sec. 19 & 30, Twp. 16 1/2 N, R. 11 W.  
Owner Norman D. Fitzgerald  
Address Abilene, Texas

70 miles  
by road  
S.E. of  
Kingman.

Operating Co. Wothree Mines  
Address Box , Kingman, Ariz.

Pres.

Genl. Mgr. George B. Blonsky

Mine Supt.

Mill Supt.

Principal Metals Tungsten

Men Employed 13

Production Rate Doing development

Mill, Type & Capacity 50 ton mill, jigging.

Power, Amt. & Type Internal combustion engines.

Signed George F. Reed

(Over)

NEWS ITEM

Kingman, Arizona, October 4, 1943. - W. S. Bradbury, whose ~~office~~ <sup>operating</sup> office address is Kingman, Arizona, has been granted a \$20,000 loan by RFC with which to remodel and operate a 50-ton gravity concentration mill at the Williams tungsten mine, belonging to E. E. Bollinger, Roy Williams et al, of Kingman. This property is located in the Greenwood Mining District, Mohave County, 71 miles southeast of Kingman, and is reached by a county-maintained dirt road.

About 6 months ago, Bradbury took ~~an~~ a long-term lease on the mine mentioned, made a thorough examination of property, and applied to RFC for the loan referred to, with which to remodel and operate the mill, which will be supplied with ore from the said mine.

During 1940, the Continental Mining Company, of New York, took a lease and option on the Williams tungsten mine, and erected thereon a 50-ton gravity concentration plant, still, more or less, intact at property. The Continental company failed through bad management and for other causes.

The property is developed by about 3,000 feet of adits on vein, raises, one long cross-cut tunnel and other work. Bradbury states there are around 12,000 tons of ore blocked out in the mine assaying in excess of one per cent WO<sub>3</sub>.

As Bradbury is an experienced mining/~~operator~~ <sup>man</sup> it is believed he will make a success of this operation.

Elgin B. Holt.

TYPE NO. 2a

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine WILLIAMS TUNGSTEN MINE

Date Sept. 30, 1942.

District Greenwood, Mohave Co.

Engineer Elgin B. Holt

Subject:

PRODUCTION POSSIBILITY

OWNERS: Roy Williams, et al, Box 71, Kingman, Arizona.

METALS: Tungsten only.

LOCATION

This property is located in the Greenwood Mining District, Mohave County, Arizona, 71 miles southeast of Kingman and is reached by a county-maintained dirt road. The property was first worked by Roy Williams' father during World War I.

1942 PRODUCTION

During the first 5 months of 1942, Roy Williams and two relatives worked the mine and operated an 8-ton gravity mill, producing during this period 4 tons of concentrates averaging 66 per cent WO<sub>3</sub>. Only selected ores were milled. Ratio of concentration was 10 tons of ore to one of concentrates. Character of ore is wolframite, with low in deleterious metals.

1940-41 Production

During March, 1940, the Continental Mining Company of New York, took a lease and option on property and erected a 50-ton gravity concentration plant, which is still intact at property. I have a complete inventory of this plant, which is powered by a 100-HP Wisconsin gas engine; all mill units being driven by motors. Seven Western jigs were used for concentrating the tungsten values. This plant operated at intervals totaling 60 days and produced in all 15 tons of concentrates averaging 63% WO<sub>3</sub>, per Williams. About 50% of total production was stolen by workmen. Mill heads averaged 1.25% WO<sub>3</sub>; tails 0.14% WO<sub>3</sub>, also per Williams.

MINE WORKINGS

There are three tunnels on vein, with an aggregate length of 1200 feet, with 500 feet of raises and winzes. Also, a cross-cut tunnel 1300 feet in length, was driven by the Continental Mining Company with the object of intersecting the main vein on its incline 400 feet below Tunnel No. 3; but did not cut this vein due to course of tunnel being changed from time to time, and finally, more or less, parallels vein, per a recent survey. The nearest point on this tunnel from the vein is 112 feet, per Williams.

ORE RESERVES

Williams estimates positive ore in mine at 2,000 tons; and probable ore at 13,000 tons, above the 180-foot level in the winze in Tunnel No. 3. Also, he states that the average tenor of positive and probable ores, according to past mill runs, equals from one per cent to 1.25 per cent WO<sub>3</sub>.

VEIN

According to Williams, the vein, which dips at 30 degrees from the horizontal, ranges from 14 inches to 28 inches in width, and has been opened by Tunnel No. 3 for a length of 600 feet, and for an inclined depth/<sup>below outcrop</sup> to the 300-foot level in the winze of another 600 feet.

When and if the cross-cut tunnel is driven to the vein, this will give an additional depth of 50 feet on vein, below the workings in winze, thereby allowing the ores above to be removed by gravity, instead of hoisting to Tunnel No. 3, as at present.

The vein outcrops on the surface for a total distance of 1,900 feet, and tungsten ore has been mined from it on the opposite side of the mountain from the main mine workings. The said vein area on the opposite side of mountain is not now accessible, in that there is no road built to it from the said mine workings.

PLANS TO INCREASE PRODUCTION

Williams states he has had an offer of financial aid to take over the milling equipment belonging to the Continental Mining Company, and with which to put the property in continuous production, all of which can be done in 30 days time. However, he feels that due to the fact that the wages of miners have gone up to in excess of \$7.00 per day, and that mine supplies as well as auto and truck tires are difficult to obtain, - due to all this, he would have to have at least \$30.00 per unit for WO3 concentrates, running in excess of 65% ~~FeS~~, before he could be assured of making any money out of this operation.

PROBLEMS

So it would seem that the Williams Tungsten mine, which has a fair amount of ore reserves and is equipped with a first class 50-ton mill, remains closed down due to the low price of tungsten on the one hand, and high cost of labor and supplies on the other. Should this property resume operations, and there is hardly a chance that it will do so unless a better price can be obtained for tungsten, it would be a good idea to merge this <sup>mine</sup> property with the Berger-Phillips property, located 5 miles to the west. (See my report on the said Berger-Phillips property).

Elgin B. Holt.

**DEPARTMENT OF MINERAL RESOURCES**  
**STATE OF ARIZONA**  
**FIELD ENGINEERS REPORT**

Mine WILLIAMS TUNGSTEN MINE Date Sept. 30, 1942.  
District Greenwood, Mohave Co. Engineer Elgin B. Holt  
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The vein outcrops on the surface for a total distance of 1,900 feet, and tungsten ore has been mined from it on the opposite side of the mountain from the main mine workings. The said vein area on the opposite side of mountain is not now accessible, in that there is no road built to it from the said mine workings.

PLANS TO INCREASE PRODUCTION

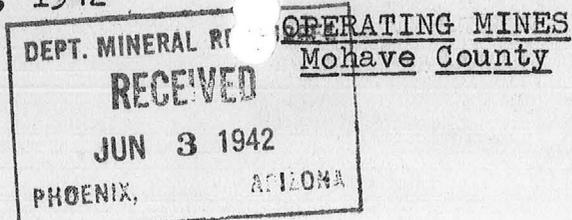
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May 24, 1942

To: J. S. Coupal  
From: Elgin B. Holt



WILLIAMS TUNGSTEN MINE: Roy Williams & Associates, owners, Box 71, Kingman, Arizona. Property located in Greenwood Mining District, 71 miles southeast of Kingman and reached by a county maintained dirt road. Roy Williams has operating lease on 2/3 interest, the other third belonging to E. E. Bollinger, Kingman, Arizona.

1942 PRODUCTION: During last five months Williams and two relatives have been working the mine and operating an 8-ton gravity mill. During this time he has produced 4 tons of concentrates averaging 66 per cent WO<sub>3</sub>. Only selected ores are milled. Ratio of concentration 10 tons ore to one of concentrates.

METALS: Tungsten. Character of ore Wolframite, low in deleterious metals.

1940-41 PRODUCTION: During March, 1940, the Continental Mining Company, of New York, took lease and option on property and erected a 50-ton gravity concentration plant. This plant operated at intervals totaling 60 days and produced in all 15 tons of concentrates averaging 63 per cent WO<sub>3</sub>, per Williams. About 50 per cent of production, consisting of high grade ore and concentrates, was stolen by workmen; this statement being made on good authority. Heads of this operation averaged 1.25 per cent WO<sub>3</sub>. Tails 0.14 per cent WO<sub>3</sub>, also per Williams.

RECEIVED

JUN 3 1942

to PHOENIX, ARIZONA

INVENTORY OF MILL ERECTED BY CONTINENTAL MINING COMPANY:

Power Plant: 100-HP Wisconsin gas engine, V-belt driven to 75-KVA, 440-volt AC generator. Also one 15-KVA plant for electric lighting.

Mill: Items marked with asterisk belong to Roy Williams, et al.

- 1 - 125-ton head ore bin\*.
- 1 - 60-ton mill ore bin\*.
- 1 - 9" by 16" jaw crusher.
- 1 - Set 14" by 20" rolls.
- 1 - Set 10" by 12" rolls.
- 1 - 50-foot 14" belt conveyor.
- 2 - Electric vibrating screens.
- 7 - Western jigs, including pulleys, belting and line shafting.
- 1 - Esperanza V-thickener\*, inc. 2 $\frac{1}{2}$ -inch centrifugal return pump.
- 2 - 10,000-gallon water tanks\*.
- 1 - 1,000-gallon water tank.
- 1 - mill building\*.
- 1 - Small concentrate drier.

Together with water piping & valves in mill\*.

- 15 - AC motors, from 1 $\frac{1}{2}$ -HP to 30-HP, with starting switches.
- 1 - Power line one mile long between mill & pumping plant\*.
- 1 - Pumping plant consisting of a motor powered 50-gallon per minute triplex force pump and 4,000 feet of 2" black pipe\*.
- 1 - Gravity pipe line for domestic water, consisting of 5,000 feet of 3/4" black pipe\*.

Mine Equipment:

- 1 - 360-foot Gardner Denver compressor, with gas engine.
- 1 - 220-foot Ingersoll Rand Comp., with gas engine..
- 3 - Air receivers.
- 2000 feet of 34" water pipe in mine\*.
- 3,500 feet of 2" air line\*.
- 2,800 feet of car track - 12 $\frac{1}{2}$ lb. rails\*.

WILLIAMS TUNGSTEN

DEPT. MINERAL RESOURCES

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JUN 3 1942

PHOTO

1041

- 5 - 3/4-ton ball-bearing mine cars.
- 2 - 3/4-ton ball-bearing mine cars\*.
  - 1,200 feet of 3/4-inch electric conduit\*.
- 1 - 7 $\frac{1}{2}$ -HP electric hoist complete with skip.
- 3 - 8" mine blowers & 800-feet of ventilation pipe.
- 1 - 150-Amp. electric welder.
- 1 - Acetylene welding outfit complete\*.
- 1 - 1000-lb tugger air hoist\*.
- 1 - Two-drum slusher hoist; both hoists complete with cable & bucket.
- 2 - Gardner Denver machine drills for drifting, with air & water hose.\*

Buildings:

- 1 - Two-room frame office building - 14' by 28'.\*
- 1 - Boarding house, three rooms, 20' by 60'.\*
- 3 - Bunk houses, to accommodate 40 workmen.\*
- 2 - Dwelling houses, three rooms each.\*
- 1 - Assay office building, 20' by 22'.\*
- 1 - Compressor building, 20' by 30'.\*
- 1 - Engine room, 30' by 30'.\*

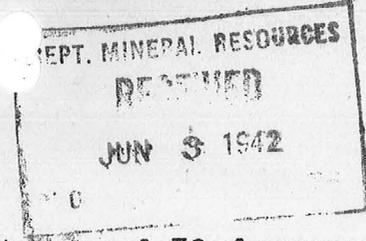
Mine Workings:

- 3 - Tunnels on vein, with total length of 1200 feet, with 500 feet of raises and winzes.
- 1 - Cross-cut tunnel 1300 feet in length, driven by Continental Mining Company with object of intersecting vein on its incline 400 feet below Tunnel No. 3; but did not cut vein due to course of tunnel being changed from time to time, and finally, more or less, parallels vein, per a recent survey. Nearest point on this tunnel from vein is 112 feet, per Williams survey.

Ore: Positive & Probable: (Estimate by Roy Williams).

Positive, 2,000 tons; probable, 13,000 tons, above the 180-foot level in the winze in Tunnel No. 3. Average tenor of the above ore, per-Williams, according to past mill runs, equals from 1 per cent to 1.25 per cent WO<sub>3</sub>.

WILLIAMS TUNGSTEN



Vein:

According to Williams, the vein, which dips at around 30 degrees from horizontal ranges from 14 inches to 28 inches in width, and has been opened by Tunnel No. 3 for a length of 600 feet, and for an inclined depth below outcrop to the 300-foot level in winze of another 600 feet.

When and if the cross-cut tunnel is driven to vein, this will give an additional depth of 50 feet on vein, below the workings in winze, thereby allowing the ore above to be removed by gravity, instead of by hoisting to Tunnel No. 3 above, as at present.

The vein outcrops on surface a total distance of 1,900 feet, and ore has been mined from it - good tungsten ore - on the opposite side of mountain from main workings referred to. Said vein area on opposite side of mountain is not accessible in that there is no road built to it from the said main workings.

PLANS TO INCREASE PRODUCTION:

Williams states he now has an offer of financial aid with the end in view of taking over the milling equipment belonging to the Continental Mining Company, and putting the property in continuous production, all of which can be done in 30 days time; but he feels that due to the fact that wages of miners have ~~goh~~ gone up to \$7.00 per day, and that mine supplies, as well as auto and truck tires, are difficult to obtain, - due to all this, he would have to have at least \$30.00 per unit for WO3 concentrates, running in excess of 65 per cent WO3, before he could be assured of making any money out of such an operation.

**DEPARTMENT OF MINERAL RESOURCES**  
STATE OF ARIZONA

This property was not visited.  
Information comes from other reports and conversations with owners

**OWNERS MINE REPORT**

Report by  
A. Brodie Campbell

Date June 10, 1942

1. Mine Williams Mine
2. Mining District & County Aquarius District,  
Mojave County
3. Former name Continental Mining Corp.
4. Location West flank of Aquarius Mts. on  
east side of Big Sandy Wash., east of  
Trout Creek Store.
5. Owner Ed. Williams, Jr., and associates
6. Address (Owner) P.O. Box 71, Kingman, Ariz.
7. Operator "
8. Address (Operator) "
9. President
10. Gen. Mgr.
11. Mine Supt.
12. Mill Supt.
13. Principal Metals Wolframite with some scheelite.  
Sulphides.
14. Men Employed
15. Production Rate 30 units a month.
16. Mill: Type & Cap. Jigs. Gravity.
17. Power: Amt. & Type See appended report.
18. Operations: Present Mine and mill.
19. Operations Planned Mine and mill.
20. Number Claims, Title, etc. 12 claims held by location
21. Description: Topography & Geography Rugged mountainous. Semi-arid climate.  
Elevation 4000'.
22. Mine Workings: Amt. & Condition See appended report.

23. Geology & Mineralization See appended report
24. Ore: Positive & Probable, Ore Dumps, Tailings See appended report
- 24-A Vein Width, Length, Value, etc. From Berger and Williams reports there are in excess of 4,000' of outcropping veins having an average depth of 300'.
25. Mine, Mill Equipment & Flow Sheet See appended report.
26. Road Conditions, Route Go 72 miles SE of Kingman on Big Sandy Wash road. Inquire at Trout Creek Store for Mine. Fair dirt road.
27. Water Supply Good from adjacent streams.
28. Brief History Started in 1902. Considerable production until 1918. Started again in 1939. Run with 75 ton jigging plant in 1940. Now run a high grade mine from sorted ores.
29. Special Problems, Reports Filed Wilson, Tungsten deposits of Arizona. Appended report by Holt.
30. Remarks Under proper stimulation this property should become one of the best tungsten producers in the State.
31. If property for sale: Price, terms and address to negotiate.
32. Signed.....
33. Use additional sheets if necessary.

NORMAN D. FITZGERALD

PRODUCER OF CRUDE PETROLEUM  
EXPLORATION - EXPLOITATION  
CONTRACT DRILLING  
1141 BUTTERNUT ST.  
ABILENE, TEXAS

April 30, 1955

Mr. Charles H. Dunning  
817 West Madison Street  
Phoenix, Arizona

Dear Mr. Dunning:

1. Confirming our telephone conversation of yesterday we want you to visit the Wothree tungsten mine and advise us whether to resume small scale operation or sell off the equipment.
2. It is my understanding you plan to leave Phoenix about 7:30 in the morning of Wednesday May 4, or the following day, and proceed on the Wickieup road. The property is some 75 miles southeast of Kingman in the Aquarius range. You probably will have little or no trouble following the signs. Our manager, Mr. George Blonsky, and his family are at Wothree Camp; they will cooperate fully with you and make your stay comfortable.
3. Naturally we have had lots of problems but they have been reduced so that perhaps we need now cope with but one or two: Dilution in mining a thin vein and probable persistence of grade through a reasonable tonnage of ore. You will know best how to serve us but as a possible aid I might suggest that you examine the showing of ore in the winze for its probable extent and persistence. If sufficient tonnage is indicated then consider the mining method and initial operations. These then might be checked against recent mining efforts, with operating and overhead costs and results. Winze assays run 1.53%  $WO_3$  over 25" of vein but of course there will be dilution. Our gross revenue I believe runs about \$58.00 per unit after royalties and miscellaneous charges.
4. Should it appear that you might recommend resumption of operations on a small scale, then we would like you to check on a few other items. We are not interested in a small or precarious operating profit because we know that in a few weeks troubles could

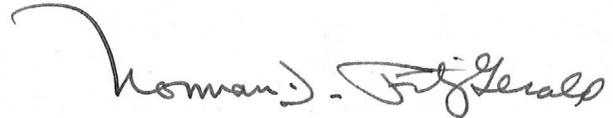
wipe out the accumulations of several months. In this category I would list the risk of an extended shut-down caused by failure of a major item of equipment, the cost of replacing a major facility, or inability to obtain and work suitable labor.

5. You understand, I'm sure, that we want a forthright experienced opinion as to what we ought to do now for our own personal account. Reduced to its simplest terms we already know that we might make an operating profit but we want to know if we should expect to obtain such a profit on reasonable tonnage. We know that you cannot tell us that we will make a profit.

6. Certain plans have been made by George for possible resumption of operations. If it seems advisable we would like you to scrutinize these plans from every possible angle, especially total additional financial risk and time involved to reach a decisive verdict. By a copy of this letter I am asking George to cooperate fully with you in every particular. If you encounter any special problem about which you wish to call me, my office telephone is 4-7346 and home is 2-5597.

Yours very truly,

cc: Mr. George Blonsky  
Wothree Mines  
P. O. Box 47  
Kingman, Arizona



P. S. (Mr. Dunning only).....As soon as you have formulated a recommendation in this matter please call me collect. I may wish to visit with you in Phoenix then go to the mine to finalize plans, and time is quite important to all concerned.

May 8th, 1955.

Mr. Norman D. Fitzgerald,  
Abilene, Texas.

Dear Mr. Fitzgerald:-

In regard to quick stop assays I can see several possibilities. Mr. Blonsky and I have already talked over an "imitation mill" method. However I can see a chemical method that would be even quicker and less work, and possibly more accurate, if you have no sheelite or would make an allowance for same. And I have not yet looked into the sink-float method.

To try out the chemical, and possibly a sink-float would require a couple of days work on my part plus the cost of assayers check assays. To do this I would need about four five-pound samples of such ores as you would ordinarily want to know about. That is marginal ores or masked ore of various types. I could then send you a definite formula together with any correction factors that might be necessary when balanced against proverbial assays.

So if you approve, may this be instructions to Mr. Blonsky to forward such samples, and I should be able to proceed immediately on their arrival.

I am sure that one method or the other will be satisfactory.

Yours Very Truly,

c/c Mr. Blonsky.

(Wothree) Williams

See: King Mining Project  
1 claim, 3 plan v/g maps, 1 plan assay v/g map

May 8, 1955.

To: Mr. Norman D. Fitzgerald,  
1141 Sutternut St.,  
Abilene, Texas,

called Williams Tungsten Mine  
WOTHREE TUNGSTEN MINE.

Persuant to your request I have made an examination of your Wothree operations situated 40 miles northeast of Wickieup, Arizona. The property was formerly known as the Williams Tungsten.

#### Purpose of Examination.

The purpose of the examination was to determine the feasibility of continuing operations in face of the established facts that a great deal of dilution occurred in mining the ore; that the values were spotty and unreliable; and that exploration to find new ore had been disappointing.

Due to the limited purpose of the examination, and the fact that the operators are already well acquainted with conditions, much data usually included in a mining report will be omitted from this one.

#### General Aspects of Deposit.

The tungsten occurs in a quartz vein within an aplite dike which occupies a fault plane in pre-Cambrian granite. The quartz vein may occur anywhere within the aplite.

The vein varies from an inch or two to two or more feet in width and is quite continuous in length. Dip of the vein and dike is about 25 degrees. The tungsten values however, are very spotty and often in small lenses. These lenses usually have more continuity down the dip than along the strike, causing rather vertical ore shoots.

#### Operating Difficulties Encountered.

Spotty Ore. The spotty nature of the values is typical of tungsten deposits in Arizona. Before confidence can be had as to tonnage actually in sight, in small blocks on four sides, and sampled at frequent intervals. The cost of this often precludes its advisability, and therefore the advisability of the entire venture.

Flat dip. Your vein has a dip of about 25 degrees - to flat for the ore to "run" by itself. This requires special mining methods and causes increased costs.

It is necessary  
that the ore be  
developed

Ore dilution. Ore dilution has been excessive and arises from five different causes:

- (a) A shattered area in the aplite hanging wall immediately above the vein, and usually one to two feet thick.
- (b) Immediate change from good ore to low-grade, when mining in a stope, caused by the spotty nature of the ore.
- (c) Splits in the vein with waste or "horses" between vein segments.
- (d) Scraper tearing into barren footwall.
- (e) Necessary enlargement of passageways.

Visual Assays. Visual assays are not reliable and it takes time to get a chemical assay. Often in the meantime, when stoping, much below-grade ore has gone to the mill.

Possible Correction of Above Difficulties.

Spotty Ore. While it would be advisable to have ore positively developed in small blocks before making heavy capital expenditures, in your situation as it is, I would not advise further development of such type. You have more than sufficient ore assured to pay for the resumption of operations. Grab what you can easily and cheaply, and let ultimate tonnage fall where it may.

Dilution. Type (a) dilution can be largely avoided by limiting stope drilling to about 8 foot holes in the ore and lightly loaded. After the blast any large chunks of waste can be sorted into the waste fill, and the ore diverted into an ore chute. The hangingwall can then be taken down and diverted to waste fill. This operation will be explained in more detail later on.

Type (b) dilution will be lessened by the use of short holes per above.

(c) Some "horses" cannot be avoided but before drilling it should be determined whether the inclusion of the horse will lower the resulting product below critical grade, and if so it could be left undrilled.

(d) Main scraper ways should be provided with rail or plank skids.

(e) Some method must be instituted to provide quick assays of approximate accuracy. And sufficient stopes should be in working order to permit staggered stoping. That is, after a round of shots, the crew should work on another stope, until the assay of the face of the old stope is known.

Care in these matters should reduce ore dilution to 20%.

Tonnages and Values in Unmined Areas.

The map attached shows <sup>two</sup> areas of remaining ore that should be mined and milled at a substantial profit. These are above and below the 200 level in the vicinity of the main winse.

I have confidence that the sampling and assay values are correct. Ordinarily, in a deposit of this kind (as mentioned above) samples at about 2.5 ft intervals should be required to obtain true averages. But in your case, at least in the area along the winse so many independent samples have been taken (all of which check each other) that I feel you can rely on the average of 1.33%  $WO_3$  for a width of 24 inches.

Up along the same shoot, above the winse, the ore has been gophered and mined at by previous operators. There is remaining ore there but I am not quite so sure of either tonnage or values. This area should be rather heavily discounted and taken as a second consideration. Considered alone it might not justify resumption of operations, but as an adjunct to the more positive condition in the winse it does add justification to any plan for resuming operations.

Referring again to the sketch map I have blocked out these two areas and designated them as 200 Raise, and 200 Winse. I have used certain rather severe discounts to compensate for disappointments that may be encountered in stoping, and for dilution. And I have considered mill recovery at 80%.

Herewith follow the figures:

200 Raise Block.

Dimensions 140' x 220' x 3' equals 61,000 cuft.

Equals 6000 tons.

Discount 2/3 equals 2000 tons.

Value 1.33%, discount 80% dilution,

and 20% mill loss equals .90 units per ton.

At \$55.00 per unit equals \$44.00 per ton.

Less \$30.00 per ton operating costs

Equals \$14.00 per ton profit. On 2000 tons equals \$ 28,000

200 Winse Block.

Dimensions 90' x 250' x 3' Equals 6,500 tons.

Discount 1/3 equals 3,000 tons.

Value 1.50% less 80%, less 20% equals 1.0 units.

At \$55.00, less \$30.00 leaves \$25.00 per ton net.

On 3,000 tons equals

Estimated Total Net

75,000

\$103,000

General Recommendations.

I will advise that production operations be resumed with the expectation of turning into profit such ore as is easily available and can be mined without further capital expense. A substantial profit seems well assured and the possibility of loss practically nil.

Further exploration by extensive drifting or opening surface showings might expose other ore shoots similar to what you have, but experience has proven that such are not profitable.

Salvage what you can, starting with the best, and continue as long as it will pay. Then quit.

In this regard I will make the following more detailed recommendations:-

Start with small crew. Unless your overhead is very heavy (and I presume it is not) you should obtain better efficiency and certainly much cleaner ore with a small select crew under Mr. Blonsky's personal supervision, than you can if you try to force mine production to meet the capacity of the mill.

Good labor is hard to get for remote camps. But an experienced employer like Mr. Blonsky can almost always obtain a few good ones, whereas if a crew is expanded by taking in Tom-Dick-and-Harry they not only will produce little themselves but spoil the good ones and cause other damage. Such nucleus crew should be increased only if and when efficient labor is available, and places available where they can work efficiently. In other words centralize on mine production and insist on ore as clean as possible. Make milling secondary - the mill to be run only when the pipe lines are full of good ore. Never force the mine to match the mill.

Diversified labor. It would be of great help - but perhaps only partially possible - if a diversified crew could be obtained. By that I mean that most or all of the mill crew could be used for productive mine work when the mill was not running. Starting in this way it is conceivable that you might soon expand into a balanced operation wherein the mine could easily (and with a sufficient reserve) keep the mill running steadily one shift at about 20 tons per day. Such an operation would probably take a total of about 16 men.

Mining Method. Mr. Blonsky has worked out a very clever method of mining the very narrow vein in the rather flat stopes. Unfortunately this was not used in much of your previous operating attempts.

This consists of carrying within a stope a trough or chute that need not be over one or two planks high. A stulted runway can be carried alongside. Below the actual area to be drilled and blasted 45 degree wing bulkheads (also only one or two planks high) are run out on either side of the chute. The ore vein is shot first with the short round mentioned above. The wings hold the ore and deflect it into the chute. The dip is flat and very little ore will run, but it is not difficult to "worry" it into the chute where a small slusher drags it down into the loading chute below. When it comes time to shoot waste the wings are pulled in to form an A above the ore chute and runway, deflecting the broken waste to fill the stoped out area alongside and immediately below. Occasionally (depending on the proportion of ore to waste) it may be necessary to shoot more hanging wall or muck some of the waste further down the stope. The fill does not need to be tight at all times, for, except for the shattered area immediately above the ore vein, the hangingwall is very solid.

Mr. Blensky tried this method in one spot and as far as I could see it worked perfectly. The trouble was that the stope immediately ran into low grade ore, and the lowering of the grade was not detected until much below grade ore had gone to the mill.

Mill and Equipment. The mill setup is metallurgically sound and it has been well demonstrated that it makes a good recovery and produces a high grade concentrate. No major changes are advised.

Quick Assays. Assays from the stopes should be taken after each round. As there is much delay in obtaining commercial assays some quick method of obtaining approximate results should be worked out. I will advise further in this regard, in a few days, in separate letter.

#### Further Exploration.

While I have advised against any further expenditures for exploration there is one spot that would cost so little to explore that it seems worthwhile. This is a crosscut north from the 200 level that could cut an overlying parallel vein. Projecting what is known of this vein an 65' advance of the crosscut should cut it. I would advise advancing the crosscut 40 or 50 feet and then drilling some long drill holes at upward angles to cut the projection. This might be considered as spare time work to be worked at only when there is an enforced delay in regular productive work. Or it might be considered only when you have operating profits ahead.

Operating Costs.

Overall operating costs have been estimated at \$30.00 per ton. This is in line with Mr. Blonsky's experience, with my own guess-estimate, and my own more detailed figuring considering number of men, supplies, contingencies, etc.

I do not believe that the more cautious mining suggested will increase costs provided Mr. Blonsky can give a large measure of his personal attention to that work, and that as little dead work as possible be done.

While it would seem that dilution would increase tonnage I have made no such allowance. There will always be some losses of ore in pillars and ore getting into the waste.

Conclusion.

You certainly have some ore of good grade, and as expenditures for getting started would be very small the chances of loss should be nil.

At the same time I believe you have a better than even chance of mining 5000 tons at a profit of \$20.00 per ton.

Considering all factors and recommendations made above I feel that you are fully justified in resuming production.

Start cautiously on good ore and work to the breaking point.

Respectfully Submitted,



May 14, 1955

DEPARTMENT OF MINERAL RESOURCES  
STATE OF ARIZONA  
FIELD ENGINEERS REPORT

Mine Williams Tungsten Mine Date January 12, 1953.

District Aquarius Dist., Mohave County. Engineer Geo. F. Reed

Subject: Sec. 19 & 30, Twp. 16 $\frac{1}{2}$ N, R11W., 67 Mi. SE of Kingman by road.

Notes on Marketing of Concentrates and Possible Production.

General Conditions:

This property has recently been bought outright by Norman D. FitzGerald of Abilene, Texas. George Blonsky is Manager. They have about a dozen men doing development work and rehabilitation of camp and underground workings.

This property has been fairly well developed with adits and flat-inclined raises since World War I. During World War II, a mill with crusher, rolls and jigs was built and produced at least several hundred units of WO<sub>3</sub>. Total production to date is not known, but is of order of one to two thousand units of WO<sub>3</sub>.

The country rock is granite which has been intruded by a sill or dike of Aplite about 6 feet thick with a strike of N. 65 W. and dip 25 degrees NE. In this sheared dike, the ore occurs in a quartz vein or veins which average about two feet thick. At times there are two veins near top and bottom of the dike. According to Mr. Blonsky and some published assay maps, the ore shoots remaining will assay about 1 $\frac{1}{2}$ % WO<sub>3</sub> with average two foot width. It is possible that in mining, this grade will be reduced to say 1.% by a 50% dilution from sheared aplite. Allowing for this dilution and reasonable luck in mining and development, Mr. Blonsky expects to mine and recover about 10,000 units of WO<sub>3</sub> from about 10,000 tons of ore.

Mr. Blonsky is ready to haul 50 tons of ore to the Boriana Mill (100 mile haul) for a test run this week. He has run some small scale mill tests, also. His plan is to add to the present mill's crushing plant so that he will have two jaw crushers and two sets of rolls, ie. four stage crushing, bringing the ore to 100% through 20 mesh with a minimum of slimes. Then he expects to use tables exclusively for concentration.

Mill tests so far indicate good recovery by making a 45% concentrate, more or less. However, making a 60% WO<sub>3</sub> concentrate seems to be difficult without magnetic separators, etc.

The Tungsten in this and nearby properties seems to be almost entirely in the form of Wolframite. Gangue is quartz with small amounts of pyrite and mica.

Conclusion:

If it were possible for this property to market its production in the form of say 40% WO<sub>3</sub> concentrate at Wenden or nearby point, and to receive nearly full price per unit, it would greatly reduce capital cost in their mill. It might very well be the difference between successful production of 10,000 or more units of WO<sub>3</sub> and on the other hand, loss of invested capital and loss of this possible production of needed metal.

*George F. Reed*

Phoenix, Arizona, 6 June 1940

M E M O R A N D U M

TO: Elgin B. Holt, Field Engineer  
FROM: J. S. Coupal, Director  
SUBJECT: \* Williams Tungsten

Mr. Jack Hoagland would like a little more extensive report on the Williams Tungsten property.

Can you give him such information as the general geology, ore formation, amount of money to be expended before production is to be obtained, the ore at present in sight and the additional ore to be put in sight by the 1,000 ft. tunnel.

I may not have made the requirements clear to you, but I had in mind an article about the size of the one in the last issue of Pay Dirt on diatomaceous earth.

It may be impossible to get some of this material, but Hoagland would like more details, and if necessary you can do a little romancing to assist him in building up the story along reasonable lines.

J. S. Coupal, Director

JSC-jrf

Kingman, Ariz., 6/3/40

To: J. S. Coupal, Director  
From: Elgin B. Holt  
Subject: Williams Tungsten - write-up for Pay Dirt.

Note you want a write-up on this property for Pay Dirt, as soon as possible.

Will comply with your request as soon as I can contact either Bud Williams, Supt., or Dr. Felix Ochs. They come in here every two or three days; so should get them by end of this week at latest.



E. B. H.

Phoenix, Arizona, 10 June 1940

M E M O R A N D U M

TO: Elgin B. Holt, Field Engineer  
FROM: J. S. Coupal, Director  
SUBJECT: Williams Tungsten

I have forwarded the information on the Williams Tungsten to Jack Hoagland, and he has just called me and stated that in a letter from the New York Office, Mr. Gottschalk states that the company intends to put up a 100 ton mill on this property.

This does not check with your statement of a 30 ton mill, and I should like to have a reply as quickly as possible on this item so that we may be sure of our ground. The estimate of cost given by you is OK for a 30 ton mill, but it would change the write-up very much if they really intend going ahead with a 100 ton mill.

J. S. Coupal, Director

JSC-jrf

DEPARTMENT OF MINERAL RESOURCES

REPORT TO OPA ON  
ACTIVE MINING PROJECT

DEPT. MINERAL RESOURCES  
RECEIVED  
OCT 28 1944  
PHOENIX 104

Date October 27, 1944  
 Name of Mine Williams, Jungsten  
 Owner or Operator W. S. Bradbury  
 Address Box 71, Kingman, Ariz.  
 Mine Location 70 miles south and east of Kingman

Filing Information  
 File System.....  
 File No.....  
 This chart to be used for gallons of gasoline required per month.

PRESENT OPERATIONS: (check X)

Production.....; Development.....; Financing.....; Sale of mine.....;  
 Experimental (sampling).....; Owner's occasional trip.....;  
 Other (specify) Idle pending future operations and negotiations.

PRODUCTION: Past and Future. Tons  
 Approx. tons last 3 months 4 tons concentrates per month  
 Approx. present rate per 3 months Idle  
 Anticipated rate next 3 months 4 tons concentrates per month  
 If in distant future check (X) here .....

EQUIPMENT OPERATED:

Type	Quantity or Horse Power	Miles or Hours Per Month	Gallons Required Per Month
Personal Cars	.....	<u>7</u>	.....
Light or Service Trucks	<u>100</u>	<u>1500 miles</u>	<u>150 gals.</u>
Ore Hauling Trucks	<u>Not operating at present</u>		
Compressors	<u>16 cu. ft. 360 cu. ft.</u>	<u>480 hrs.</u>	<u>400 gal per month and small engine 250 gal</u>
Other Mine or Mill Eqpt.	<u>125</u>	<u>16 hrs. day</u>	.....

PRODUCT PRODUCED OR CONTEMPLATED: Name metals or minerals.

Jungsten concentrates.

REMARKS:

Temp. closed operation pending financial negotiations.  
Denied by Dept

*Williams Tungsten*

May 12, 1945

Office of Defense Transportation  
Security Building  
Phoenix, Arizona

Gentlemen:

Mr. A. M. Elmer of Kingman, Arizona, is operating a tungsten mine in the Big Sandy district 75 miles south of Kingman.

He has a 1936 Chevrolet dump truck and needs a Certificate of War Necessity.

This truck will be used to haul ore from the mine to the mill which is situated some distance from the mine. The truck will also be used to bring in mine and mill supplies.

This is a sound operation and we recommend that the Certificate of War Necessity be granted as requested.

Yours very truly,

Chas. H. Dunning  
Director

CHD:LP

CC: Mr. A. M. Elmer

William Tungsten

May 8th, 1956.

Mr. Norman D. FitzGerald,  
Abilene, Texas.

Dear Mr. FitzGerald:

Enclosed is the report on the  
Wobbler Tungsten with copy. I have also sent a copy  
to Mr. Blonsky. I trust you will find this in order  
and that I have made myself clear. I have tried to  
express my true feelings.

I am not proud of the sketch map but I merely  
wanted to show a basis for the calculations.

I am also attaching my statement.

It was a pleasure to cover this commitment for  
you and if I can be of any further service I will be  
happy to be so, and when you come out be sure to come  
this way and let me know.

Yours Very Truly,

c/c Mr. Blonsky.

See - C.C. 8078 - p. 66

To: ✓ J. S. Coupal, Director  
From: Elgin B. Holt  
Subject: Notes For News Item for PAY DIRT  
on Williams Tungsten, Mohave Co.

Referring again to your memo. of June 1st in which you state you want a write-up on the Williams Tungsten property for next issue of Pay Dirt, Mr. Lewin came in today from the mine and gave me the following information, which you can edit and put in shape, as per your instructions:

Name of Mine: Williams Tungsten.

Location: 72 miles south-east of Kingman, Ariz.

Owner: Ed Williams Estate, Kingman, Arizona.

Operating Co.: The Continental Mining Corporation,

Address: P. O. Box 71, Kingman, Arizona; also  
80 Broad Street, New York, N. Y.

General Manager: Dr. Felix Ochs.

Gen. Supt.: Roy Williams.

Supervising Engr.: Michael M. Lewin.

Metals: Tungsten (Wolframite).

Mill: The company is now constructing a gravity concentration mill, consisting of jigs and tables, with a daily capacity of 30 tons of ore. The capacity of this mill will be increased from time to time, as additional ore is made available by new development work now being carried on.

Mill power plant consists of one 75 H. P. Wisconsin gas engine, which drives a 45 K. W. generator, which in turn furnishes power for various motors used to run various units of mill.

Power for mine: One 60 H. P. Climax gas engine, which drives a ~~300-cu ft~~ 300 cubic foot Ingersoll-Rand compressor. Also one small power unit for running electric lighting plant and mine blower.

Men Employed: Company is working 45 men now during construction period; but after mill starts, about 25 men will be constantly employed; and average monthly pay-roll will then be around \$3,000. Mill will be completed, ready to run, about the end of June, 1940.

Present operations: Ore is now being stoped from the old mine workings, consisting of a lower tunnel 700 feet in length and an upper tunnel 400 feet in length. New work in mine consists of a cross-cut tunnel, now in 150 feet. This tunnel will have to be driven 850 feet further to reach the main vein 220 feet below the lower tunnel mentioned.

Harper also stated that he wanted to continue the main cross-cut tunnel about 30 feet further and then come back and drift on the new vein right and left, as in this way he expects to pick up workable ore shoots. If his surmise is correct, and I believe it is, ore reserves in this mine will be materially increased. Harper also stated that just as soon as some prospect work had been carried out on the new vein, the x-cut tunnel would be ~~found~~ continued to main vein, which should be found about 300 feet ahead of the end of this tunnel.

I then went through some of the upper mine workings with Mr. Lewin and found stoping operations being carried on in Tunnels #2 and #3. This ore being trucked about  $\frac{1}{2}$  mile down hill to mill.

After the x-cut tunnel has been finished to the main vein and connections made with the upper workings of mine, all ore will come down by gravity to the said x-cut tunnel level and trammed therefrom direct to top of mill ore bin, a distance of 300 or 400 feet.

**MILL:** The mill at property consists of a pilot plant, using jigs to recover tungsten values. Capacity of this plant is 30 tons for two shifts of 16 hours. Concentrates are shipped to Smith-Emery Company, of Los Angeles, for storage, to be marketed later on.

Mr. Koffmann informed me that the pilot mill has served its purpose and that steps are now being taken to remodel the mill into a 60-ton per 24 hours efficient plant by the addition of the following equipment, which is now delivered <sup>at</sup> property:

One 24" by 14" Allis-Chalmer Rolls; two Western Electric jigs; one Card table; elevators, feeders, etc.

**MEN EMPLOYED:** At the present time 48 men are employed, including men employed by contractors carrying out development work in the mine, including the x-cut tunnel mentioned.

Mr. Koffmann asked me to send in the following news item, which could be run with or separately from the above:

Mr. F. A. Koffmann, who is connected with the Continental Mining Corporation, 80 Broad Street, New York, has made his headquarters for the last several weeks at Hotel Beale, Kingman, Arizona, for the purpose of supervising the organization of operations of the Ed Williams tungsten mine, now being exploited by the corporation mentioned. He is also negotiating for several other mining properties in Mohave County. Dr. Felix Ochs is chief geologist of the said corporation.

To: J. S. Coupal, Director  
From: Elgin B. Holt  
Subject: New vein found in x-cut tunnel at Ed Williams Tungsten.

Note: Instead of writing this news item in usual form, I am following your suggestion in your memo. of July 24th - that I give you a detailed picture of the ore occurrence, etc., and you will see to it that my information is put in proper shape for publicity.

Day before yesterday I had a talk with F. A. Koffmann, Agent of the Continental Mining Corporation, here in Kingman, and he stated that Mr. Thompson had just arrived from the mine and reported that the x-cut tunnel now being driven to cut the main known ore vein, about 1,000 feet from portal of said x-cut tunnel, and at a vertical depth approximating 205 feet under the upper mine workings, had encountered a "blind" vein, between 5 and 6 feet wide, at a point 680 feet from portal of said tunnel.

Koffman asked me to go to the mine with him, and as I had not yet been to this property, I went out and back with him to the mine yesterday. Here is what I saw:

On arrival at property, I went into the x-cut tunnel mentioned in company with Mr. Lewin and Mr. Dan Harper, Mine Supt. At that time, the tunnel was still being driven forward and had passed entirely through the vein, which is quite flat, dipping about 15 degrees to the north, meeting the tunnel. Harper, Lewin and I examined the vein carefully and found it to be about 5 or 6 feet wide, measuring it at right angles, of course. The vein is made up of a streak of micaceous quartz on hanging and another streak of this material on foot wall; these streaks of quartz range between 12 inches to 18 inches thick and is the material that carries the tungsten ore in the mine above. Balance of vein, between the two quartz streaks, is altered country rock, described by Harper as Aplite. We took some of the quartz outside the mine and looked the pieces over and noted low tungsten crystals. Harper then gave me some large pieces which he had previously selected from this ~~min~~ vein which showed heavy Wolframite crystals, up to 3/4" thick, as this occurs in streaks. Harper stated that further work would have to be carried out before the importance of this discovery could be determined.

Williams Tungsten continued.

According to Elgin B. Holt, Field Engineer of the Department of Mineral Resources, the sale and present operations of this property was brought about by the Department, more or less in the following manner:

On December 28, 1939, Mr. Paul Guterman, representing the Continental Mining Corporation, wrote to Holt from the Congress Hotel, Tucson, Arizona, stating his company was in the market for a good tungsten mine; that he had received Holt's address from Mr. Miles Carpenter, Field Engineer of the Department at Tucson, to whom he had been introduced by Mr. J. S. Coupal, Director of the Department of Mineral Resources, etc.

Hence, under date of January 5, 1940, Holt wrote Mr. Guterman recommending that he investigate, with the least delay possible, the Ed Williams Tungsten mine, of Mohave County. As a direct result of this letter, Mr. Guterman came on to Kingman, accompanied by Dr. Felix Ochs, Geologist, entered into negotiations with owners of property, through Mr. C. Adams of Kingman; Dr. Ochs proceeded to mine and examined it; and finally the property was sold to the Continental Mining Corporation, which started work without delay and is now completing a mill at property, in order to concentrate the mine run of ore into a marketable product. Therefore, due to the contacts made by Coupal, Carpenter and Holt with Mr. Guterman, the mine referred to was sold, is now operating <sup>employing 2</sup> and number of workmen, with an estimated annual pay-roll of \$36,000.00, beginning about July 1st, or after the mill starts continuous operations.

E. B. H.



JEWEL TUNGSTEN LTD.

(WILLIAMS MINE)

KINGMAN, ARIZONA

TWELVE CLAIMS \*----- 240 ACRES.

J. H. VAN BUSKIRK

MANAGER

403 HARRISON AVE.

CANON CITY, COLORADO

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REPORT

Williams Tungsten Property.

The Williams Tungsten property consists of twelve mining claims held by location, and lies on the eastern slope of the Aquarius Range about seventy five miles south of Kingman, Mohave County, Arizona. The mine is reached by turning south, from U. S. Highway 66 two miles east of Kingman, on the Kingman-Congress Junction Road, to Cane Springs, fourteen miles north of the Town of Wikieup, then turning eastward twenty seven miles to the property.

The deposit occurs in granite rock composed principally of orthoclase and quartz - the higher elevations to the north and south are lava capped. The deep canyons and high crests make the terrain very rugged. The vegetation consists principally of brush with most a total absence of trees in the near vicinity. The region is arid, water supply being obtained from springs on or near the property.

The haulage or mill level at the mine is at an elevation of 4880 feet. The crest of the hill is about 500 feet above the mill level.

The climate is somewhat cooler than in the Valley in the summer-time and somewhat colder in the winter time, but, on the whole, very pleasant for this region.

The geology and structure of this deposit is very well described by Mr. S. W. Hobbs in Geological Survey Bulletin 940-1, pages 259 to 263 inclusive - a copy of which I am enclosing.

I have found the statements of Mr. Hobbs to be substantially correct. However, it must be borne in mind, in reading this report, that there are now available methods of concentration of tungsten ores which were not available at the time of Mr. Hobbs' report, so where Mr. Hobbs has indicated a minable vein width of one foot, the width may now be estimated to be from eighteen to thirty inches.

The claims were located by Ed Williams in 1909 and were held by him until 1940, when the property was acquired by the Continental Mining Company who relinquished their lease, and it was taken, in 1943, by Mr. W. S. Bradbury. Mr. Bradbury obtained a loan from the R. F. C. for the development and operation of the property during the war. At the time negotiations for a loan were being carried on, a thorough sampling of the mine was made. An assay map is enclosed herewith.

I have made two visits to the property - the first on April 28, 29, and 30th, and the second on the 18th and 19th of May, 1948. On both occasions, my conclusion was the property was one of merit and could be successfully operated.

There are some eight or nine cabins in the main camp, all of which were in good repair and could be habitable with very little expense.

The water supply was from a well about a quarter of a mile or more from the main camp, altho the supply as it had been developed was hardly sufficient to supply the camp and the mill; however, I understand additional water could be developed from a spring further up the canyon.

The water was pumped to the camp thru a two inch pipe line by a triplex pump which should have sufficient capacity to supply both the domestic and the operational water for at least a hundred ton operation. Of course, as in all arid countries, it would be advisable to reclaim all water possible from milling operations.

The mine was equipped with a compressor at the Number Three tunnel, the rail and pipe lines had not been removed from the entries and were intact. There were several mine cars on the property and the timber in most instances seemed to be in good condition.

There is an underground connection between the Number Three tunnel and the mill level tunnel which would require some cleaning and could be used for underground transfer way to bring ore to the mill level. It might be necessary to slush the ore part way thru this transfer way, but on the whole, it could be operated with very little difficulty and expense. The mill level would require some timbering and timber replacement to catch up some bad spots and to make an even grade for the haulage track.

These alterations and repairs, I understand, have all been made since my last visit to the property and it should be unnecessary for further additional expenditures to put the mine in an operative condition.

The vein has an East-West strike and a dip of about thirty degrees North. There appeared to be two or more veins within the structure, and I traced two veins, on the surface, and found both of them to be exposed on the opposite side of the hill from the present mine openings. It is my opinion that the mineralization will be continuous in the vein structure thru the hill for a distance of at least twenty-five hundred feet. The exposure on the West side is quite similar to that of the East side. While I did not visit the openings on the West side, from reports I have read, the openings were made in very good ore.

On the occasion of my first visit I spot checked sampled the mine and found the samples taken by the R. F. C. Engineer to be substantially correct. The result of my sampling is as follows:

Coarse tails from Mill	0.36 % WO <sub>3</sub>
First level West end face	1.64 % WO <sub>3</sub>
Second level East and West	1.52 % WO <sub>3</sub>
Haulage level first vein	1.12 % WO <sub>3</sub>
Roy Williams Claim	0.58 % WO <sub>3</sub>

On my second visit I took further samples to check the R. F. C. work, and, as on the occasion of my first visit, the second sampling substantially bore out the correctness of the previous sampling.

It is my opinion the ore is eighteen to thirty inches in width, with average grade from one to one-and-a-quarter per cent  $WO_3$  with parts of the vein being of higher grade and other parts of somewhat lower grade.

It is estimated that there are ore reserves of eighteen thousand tons (six thousand tons as indicated ore and twelve thousand tons as possible ore). Further development work exploring the vein to the West toward the opposite side of the hill should materially increase the ore reserves. The mine at this time could produce fifty tons of ore per day and perhaps an even greater tonnage, and with further development could produce a hundred tons per day.

The mill is located near the portal of the lower or haulage tunnel some two hundred feet below the Number Three tunnel. The mill was in as good condition as could be expected of a mill which had not been operated for several years. All equipment was intact and the mill could have been put into operation with a minimum expenditure of time and money if no changes in the flow-sheet were necessary. I understand some changes were made recently in the mill, which were not sufficient to properly dress the ore.

As the mill was operated, the ore was prepared for gravity concentration by relatively coarse crushing and concentrated by means of jigs and tables.

In my opinion there is sufficient ore of high enough grade to profitably operate the property, but the ore dressing was such that economical recovery of tungsten in a concentrate of marketable grade could not be made.

The ore of this deposit is complex, the minerals within the vein structure including quartz, wolframite, scheelite, pyrite, chalcopyrite and mica. The two tungsten bearing minerals are extremely friable and upon impact, such as occurs in crushing, break in particles too small to be recovered by gravity concentration.

These tungsten bearing minerals are associated with gangue minerals in such particle size which I do not believe would free at less than sixty five mesh, thus indicating flotation would be required to achieve a satisfactory recovery.

For many years it was standard practice in dressing of tungsten ores to use gravity concentration with auxiliary treatment to bring the concentrates to a marketable grade. Recoveries by this method were in the neighborhood of forty five to fifty five per cent. I have examined

recovery graphs of tungsten gravity concentration plants; the recoveries were apparently at a maximum at between eighty and two hundred mesh altho some operators have claimed greater recoveries; however, as far as I was able to determine in my investigations, the recoveries were within this limit.

In my opinion this ore can be successfully dressed and I cannot overemphasize the need for a reputable Metallurgical Engineer, preferably Mr. G. G. Griswold, Jr., to design a flow-sheet. I believe this flow-sheet will include the flotation of the tungsten minerals with perhaps auxiliary treatment such as magnetic or electrostatic separation to bring the concentrates to a marketable grade. The cost of operation on one per cent ore should not exceed twenty dollars per unit, this cost to include mining, milling and amortization.

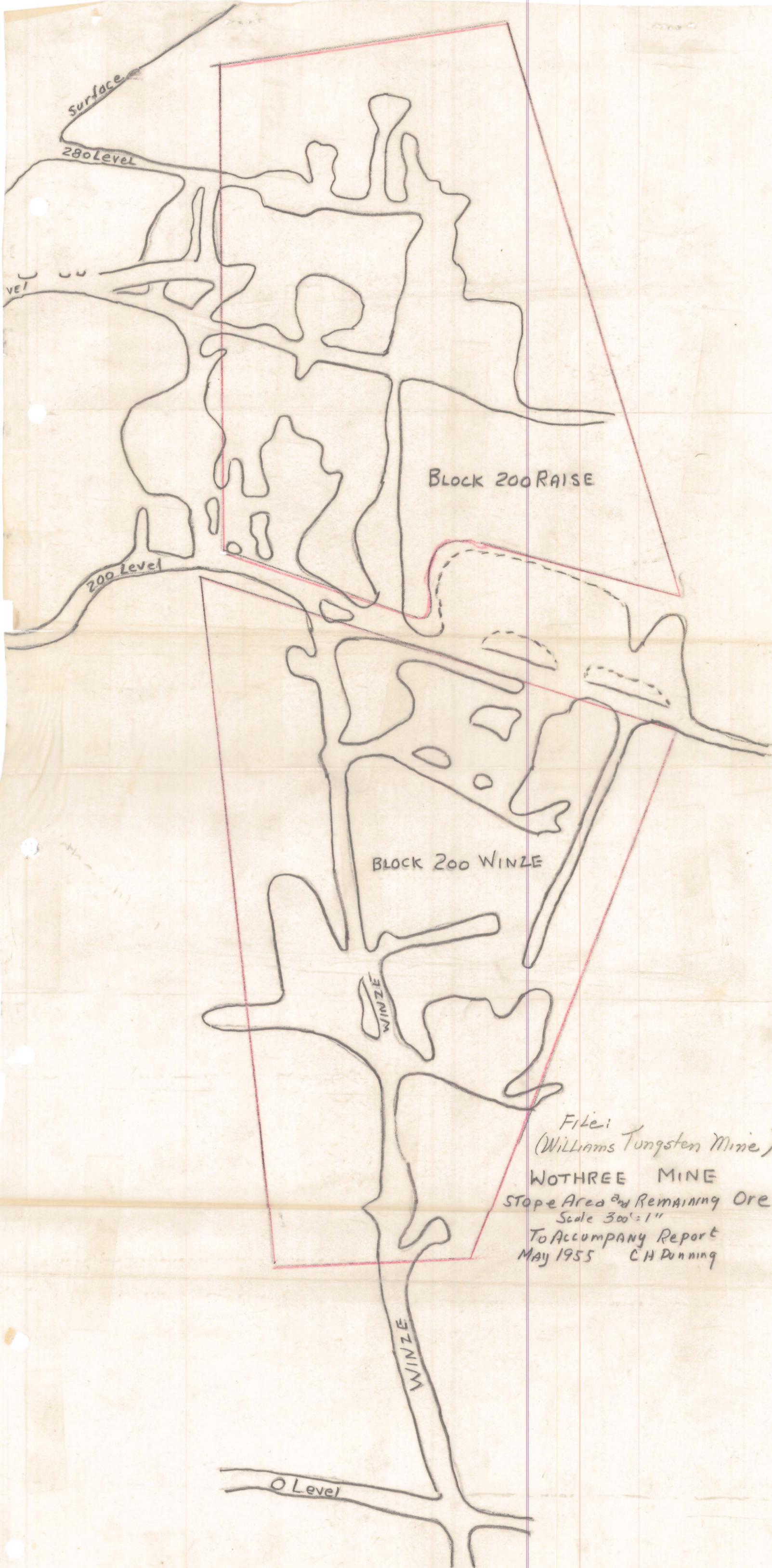
If the flow sheet should be as indicated, I would estimate the cost of putting the property into operation to treat fifty tons per day to be between twenty and fifty thousand dollars, according to the equipment and power plant installed. If good used equipment can be obtained, the cost would be somewhat near the lower figure; however, if new equipment is used throughout, the cost will be nearer the higher estimate.

Canon City, Colorado,

(Signed) M. N. Shaw.

November 2, 1948

(Copy)



File:  
(Williams Tungsten Mine)  
WOTHREE MINE  
Stope Area and Remaining Ore  
Scale 300' = 1"  
To Accompany Report  
MAY 1955 CH Dunning

2' air line 1900' around  
 surface outcrop to vein on other  
 side of hill  
 compressor  
 house  
 Machine &  
 blk. Smith shop

Appetite fault wall indicates good ore  
 Vein continues Valley center  
 Wall change from appetite to fine grained  
 even texture granite. Surface shows  
 this block zone 300' long. Then  
 400 to 500' mineralization. Then a block  
 of 40' then 300 ft. mineralization. Sand  
 values. Mineral and packed out by molybdenum  
 Cont. Sloped vein



500.  
 300  
 150  
 1500  
 200

Williams Tungsten  
 DOCKET NO. ND-5611  
 Wm. BRADBURY  
 July 24, 1943  
 Scale: 1" = 50'

Partially developed ore: Probable Ore:  
 Samples show % WO<sub>3</sub>  
 Samples by Sup. Eng. are circled, others are samples by applicant  
 T.P. Lane