

12S

33 E

12

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R

S

.. Grant..... COUNTY

.. Quartzburg..... AREA

..... ELEVATION

..... ROAD OR HIGHWAY

...7.miles.to.Prairie.City..... DISTANCE TO
SHIPPING POINT

PRESENT LEGAL OWNER (S) .. Joseph A. McCarthy.....

Address Mercantile Commerce National Bank, St. Louis, Mo...

OPERATOR

Name of claims Area Pat. Unpat.

Name of claims Area Pat. Unpat.

EQUIPMENT ON PROPERTY

PUBLISHED REFERENCES

Lindgren 01:711
Swartley 14:197
Parks & Swartley 16:210
Gilluly, Reed and Park 33:101
Dogami Bull. 14B:125

MISCELLANEOUS RECORDS

Owners: Controlled by the Mercantile Commerce National Bank of St. Louis, Missouri. The trust officer in charge is Joseph A. McCarthy.

The U.S. Vanadium Corporation of America, a subsidiary of the Union Carbide and Carbon Corporation, has taken an option on the Standard Mine, and work began in April, 1941.

Location: In sec. 12, T. 12 S., R. 33 E., about 7 miles from Prairie City on the East Fork of Dixie Creek.

History: In May, 1937, fire swept the property, destroying the old 75 ton mill.

"Development on the property began about 1880, but at the time of Lindgren's examination in 1900 only the upper tunnel and the inclined shaft, a

total of probably 600 feet of workings, had been driven. The mine was most actively exploited between 1900 and 1907, when about 4000 feet of development and considerable stoping were done. Except for a few feet of drifting in 1915 and the shipment of a few tons of ore to the Sumpter Smelter in 1923, the mine has since been idle.

"Data on production are very incomplete. Prior to 1900 the mine had shipped a few tons of chalcopyrite-gold ore from the shaft.

"In 1900 Lindgren reports a shipment of 10 tons of \$34 ore from the upper tunnel. D. F. Hewett, of the United States Geological Survey, who visited and mapped the mine in 1915 and whose notes have been freely utilized in the present description, obtained production data which show that the mine shipped about 104 tons of concentrate in 1906, yielding a net return of about \$50 a ton, and that the shipments in 1907 were about 311 tons, which yielded a net return of just over \$45 a ton. The concentrates averaged 60 cents in gold and a little less than an ounce of silver to the ton and 10 to 12 percent copper. According to Mr. Riley, some cobalt ore was shipped to the Edison Laboratory, but he was unable to state the amount or value of this shipment.

Development: "The Standard vein has been opened by an inclined shaft about 70 feet deep and by three adits at vertical intervals of about 80 feet. The upper tunnel was caved and inaccessible in 1930, but Mr. Hewett's map shows it to be 400 feet long. The middle level contains 600 feet of drifts. The lower level includes about 1700 feet of drifts and about 1000 feet of crosscuts. Part of the workings in the lower level are caved and inaccessible. There are numerous raises and stopes connecting the levels. No work has ever been done below the third level. . . .

The country rock of the Standard vein is chiefly porphyritic andesite, with some vesicular andesite, cut by dikes of granodiorite porphyry and a few of diabase. The vein itself is localized along a fault, and there are at least four distinct fault-breccia zones crossing the vein. The vein strikes persistently N. 70° E. and dips steeply south. Much of the movement along the faults has been premineral, but in one place there is a slight jog in the vein,

feet. This cuts five small veins or mineralized stringers that strike N.45°-80°E. and dip 60°-80° S.

"The Standard vein ranges in width from a few inches to 4 feet. It is not a persistent vein but rather a group of mineralized stringers with considerable replaced wall rock. The main gangue mineral is quartz, but some ferriferous dolomite and calcite are also present. The ore minerals are pyrite, chalcopyrite, arsenopyrite, cobaltite; glaucodot, bismuthinite, native bismuth, galena, and sphalerite. The glaucodot, which has been called smaltite and safflorite in other reports is present in the deeper workings. Considerable cobalt bloom, erytherite, is present in the lowest drift, and some nickel bloom (?), jarosite, and malachite also occur. The average tenor of the ore is not known.

"The fault zone nearest to the adit is called the Grover Cleveland vein and has been drifted on for about 600 feet. It strikes N.20°-40° E. and dips about 80° S. Most of this work is now caved. To the northwest of the Standard vein

another tunnel has been driven for 700 feet. This tunnel also cuts the Grover Cleveland vein, and some work was done here. The Grover Cleveland vein follows in part a dike of granodiorite porphyry and consists of a shattered and brecciated zone about 8 feet wide containing breccia, gouge, and small quantities of quartz, ferriferous dolomite, and sulphides. The ore is free-milling and carries about \$2 in gold to the ton according to Mr. Pinson, former manager of the company.

"The other fault zones that cross the Standard vein have not been followed at all. These fault zones consist of breccia and gouge and range in width from 6 inches to 3 feet. The exposures are very poor at the face, and nothing can be said regarding the fault that cuts off the vein.

"The Smuggler vein is exposed in an open cut on Dixie Creek a few hundred yards above the main Standard mine. It is a diorite dike, silicified and mineralized. Numerous spots of brownish-black tourmaline are present. The sulphides are pyrite, chalcopyrite, and bornite. The dike strikes N.60° E. and dips steeply north. The dike has been followed by the miners for over 1500 feet on the surface. The wall rock of the diorite dike is greenstone. The walls are very indefinite and irregular.

"The Juniper vein is southeast of the Standard vein, in Ella Gulch, a small branch of Dixie Creek. The vein is opened along the strike by a tunnel 900 feet long. The vein strikes N. 75°-80° E. and dips about 80° S. It ranges in width from 3 inches to about 3 feet. Sulphides, chalcedony, and quartz are the common constituents. The sulphides are pyrite, chalcopyrite, and arsenopyrite. Two spots of cobalt bloom were noticed. At the face the strike of this vein is N.80° E. and its dip 70° S. The vein swings and in one place strikes due east.

3-30/41
Preliminary work at the Standard mine in Grant County nine miles north of Prairie City, Oregon, is said to have been completed by the U. S. Vanadium Corporation. Ore values are in copper and cobalt with gold. Production is expected in the near future. John R. Van Fleet, 30 East Forty-second Street, New York, is in general charge of mining for the company.

"In the Juniper vein, as in the Standard vein, several breccia zones cross or are crossed by the vein, with very little or no offset along either one. In the Juniper drift these zones strike N.5° E. to due north and dip about 75°-80° E. They contain from a few inches to several feet of gouge and breccia. The wall rock is all meta-andesite, some so much altered as to resemble hornfels. Much tourmaline is present in it.

"The sequence of mineralization has been tentatively worked out by combining the observations of Mr. Hewett and the writers as follows:

First the andesite was altered to 'hornfelslike' masses, the joints of which were locally coated with tourmaline. Calcite, the metallic minerals (beginning with pyrite and arsenopyrite), ferriferous dolomite, quartz, a second generation of calcite and pyrite, chalcedony, and marcasite, followed in order. Of these, the chalcedony and marcasite are probably supergene".

References: Lindgren 01:711
Swartley 14:197

Parks and Swartley 16:210
Gilluly, Reed, and Park 33:101 (quoted)

State Department of Geology and Mineral Industries

1069 State Office Building
Portland 1, Oregon

STANDARD MINE (Early assay records)

Quartzburg District
Grant County

The following records of assay are for Standard Mine ore. They originate from the records of the old Baker Assay Office and were furnished by John Arthur⁽¹⁾.

June 20th, 1908 - Mr. B. S. Schlesinger.

	<u>Dry tons</u>	<u>Au</u> <u>oz/ton</u>	<u>Ag</u> <u>oz/ton</u>	<u>Cu%</u>	
Lot No. 1	3.263	0.15	1.35	21.84	Crude ore (copper)
Lot No. 2	5.073	4.98	1.00	6.85	Crude ore (cobalt)

June 11, 1910, Mr. W. E. Narkus brought in test lots.

	<u>Dry tons</u>	<u>Au</u> <u>oz/ton</u>	<u>Ag</u> <u>oz/ton</u>	<u>Cu%</u>	
Lot No. 1	1.658	0.44	1.72	15.20	Crude ore (copper)
Lot No. 2	5.112	2.88	0.50	1.90	Crude ore (cobalt)

(1) Letter from John Arthur to N. S. Wagner, December 1, 1950 (filed in Standard Mine folder at the Baker Office.)

State Department of Geology and Mineral Industries

1069 State Office Building
Portland 1, Oregon

Quartzburg District
Grant County

Standard Mine

Location: T. 12 S., R. 33 E., Section 12.

General: Ore originating from several places in the Standard Mine, but principally from a Mexican stope (underhand) on the lowest level, was milled during 1958 thru the mill belonging to the Standard Milling Company, Inc. Most of the time a bulk concentrate was made but for a while the ore was concentrated into two fractions. The fractional products consisted of a copper concentrate and a cobalt-gold concentrate, a general average for each of which is as follows:

Copper Concentrate

Copper - 27%
Gold - 3.0 ounces
Cobalt - .067%

Cobalt-Gold Concentrate

Cobalt - 15% plus
Nickel - 7% plus
Gold - 10.0 ounces plus
Copper - 0.10%

Approximately two tons of copper concentrates were recovered to one of cobalt. The ratio of concentration was 7:1 for the copper and 12 to 14:1 for the cobalt.

A flow sheet of the Standard Milling Company, Inc.'s mill is appended herewith. All information, both flow sheet and concentrate data, was furnished by Mr. Vernon Jacobson, M. E. who is one of the company principals.

Memorandum report: NSW, Aug. 3, 1958

Flow sheet of mill owned by the Standard Milling Co., Inc. and located on Dixie Creek one mile north of Prairie City, Oregon.

Coarse Ore Bin - 75 ton capacity in the clear.

↓
8" grizzly

Feeder belt to 12 x 15" jaw crusher

↓
Minus 3/4" product to fine bin 40 tons in clear

↓
Challenge 50 tons ore feeder

↓
4 x 4 heavy duty Union Ironworks ball mill

↓
8 x 12 Denver Duplex Mineral jig.

↓
Dorr 3 x 18 Duplex Rake Classifier

↓
Oversize back to ball mill

↓
Overflow to Kraut Conditioner

↓
4 Denver Equipment Co. Sub-A (28 x 28")

↓
Tails to Diester Plato tables (2) used as tailings cleaner. Middlings back to ball mill

↓
Conc to filter.

In its present form this mill has a 50 ton/24 hour capacity, but space has been left for the installation of a secondary crusher and another mill by which capacity could be doubled. Electric supply and all basic electric apparatus is capable of handling the enlarged setup.

By N. S. Wagner, July 31, 1958

Informant, Vernon Jacobson

ASSAY CERTIFICATE

A. H. WOODWELL

Sumpter, Oregon, June 9 1958

Card L. Hill

Box 908, Baker, Oregon

OWNER'S MARK ON SAMPLE	G O L D		S I L V E R		TOTAL VALUE PER TON	PERCENTAGE	
	Oz. per Tn.	Value per Ton	Oz. per Tn.	Value per Ton		Nickel	Copper
Mill heads	.47	\$ 16 45	.15	\$ 13	\$ 16 58	1.10	1.75
Jig cons	9.84	344 40	1.36	1 22	345 62	7.40	.92
Float cons	2.92	102 20	1.08	97	103 17	2.80	24.85

A. H. Woodwell

Assay

ASSAY CERTIFICATE

A. H. WOODWELL

Sumpter, Oregon, June 25

1958

Standard Mine

Prairie City, Oregon

OWNER'S MARK ON SAMPLE	G O L D		S I L V E R		TOTAL VALUE PER TON	PERCENTAGE	
	Oz. per Tn.	Value per Ton	Oz. per Tn.	Value per Ton		Copper	
16" under floor of #1 incline shaft-18" wide	.48	\$ 16 80	1.50	\$ 1 35	\$ 18 15	2.40	
floor sample 1' wide-24" in from water course	.83	29 05	1.50	1 35	30 30	5.33	
Sample from dump along track	.45	15 75	.10	09	15 84	.37	
Float cons	2.68	93 80	.10	09	93 89	22.25	
Table cons	7.00	245 00	1.00	90	245 90	2.10	

A. H. Woodwell

Ass

To:

Sheep Creek Mining Ltd.,
 6-190 Water St.,
 Nelson, B.C.



Certificate of Assay

G. S. ELDRIDGE & CO. LTD.
 ASSAYERS METALLURGISTS CHEMISTS
 INSPECTION AND TESTING ENGINEERS
 633 HORNBY ST. VANCOUVER, CANADA

CABLE ADDRESS "ELDRICO"
 FILE NO. 5022
 DATE May 4, 1961

MEMBERS OF
 CANADIAN INSTITUTE OF CHEMISTRY
 CANADIAN INSTITUTE MINING AND METALLURGY
 AMERICAN SOCIETY FOR TESTING MATERIALS
 AMERICAN SOCIETY FOR METALS
 AMERICAN CHEMICAL SOCIETY
 ASSOCIATION OF OFFICIAL ANALYTICAL CHEMISTS
 NATIONAL ASSOCIATION OF CORROSION ENGINEERS

We hereby Certify that the following are the results of assays made by us upon submitted ORE samples.

MARKED	GOLD		SILVER		LEAD (Pb)		COPPER (Cu)		COBALT (Co)		TOTAL VALUE PER TON (2000 LBS.)
	OUNCES PER TON	VALUE PER TON	OUNCES PER TON	VALUE PER TON	PER CENT.	VALUE PER TON	PER CENT.	VALUE PER TON	%	VALUE PER TON	
332	0.10	\$ 3.50	0.2	\$							
333	13.24	463.40	1.3		COARSE ORE BIN		2.95		0.07		
334	1.80	63.00	1.3		JIG	0.05	0.63				
335	0.10	3.50	0.2		COPPER CONG.		19.03		1.51		
336	2.36	82.60	0.5		TAILINGS POND		0.51		0.12		
337	2.16	75.00	0.4		FLOOR 1 LEVEL 1444		0.88		2.30		
338	0.02	0.70	1.0		NEAR FACE #5 20ft		2.16		2.09		
339	0.02	0.70	0.3		POSTER DIKE NORTH #6		0.33		0.03		
					NEAR FACE #3 50ft		2.33		0.04		

Gold calculated at \$ ^{1.00} 35.00 per ounce.
 Silver calculated at _____ per ounce.

Calculated at _____ cents per lb.
 Calculated at _____ cents per lb.

NOTE: Rejects retained one week.
 Pulps retained three months.

State Department of Geology and Mineral Industries

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Portland 1, Oregon

STANDARD MINE, GRANT COUNTY

Record of production made by Jim Kinsella during 1963, digested from smelter settlement record by N. S. Wagner.

Shipment to AS&R smelter, Tacoma — bulk ore.
Smelter contract #738 — Lot 1013
Date of settlement, June 26, 1963

Net wet weight — 32,820 lbs.
Net dry weight — 31,819 lbs.

	<u>Assay & analysis</u>	<u>Metal contents</u>
gold	0.81 oz.	12.9 ozs.
silver	1.14 oz.	18.0 ozs.
copper	20.47 %	6,513 lbs.
zinc	.80 %	
arsenic	1.83 %	
silica	14.2 %	
iron	27.8 %	
alumina	3.4 %	

(Metal quotations; Gold, \$34,9125; Silver, \$126.960; Copper, 30.3504)

Metal value per ton \$ 133.18
Gross value per ton \$2,118.90

N. S. Wagner
2-15-66

State Department of Geology and Mineral Industries

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STANDARD MINE, GRANT COUNTY

Record of production made by J. J. Kinsella, during 1963, digested from smelter settlement record by N. S. Wagner.

Shipment to AS&R smelter, Tacoma*
Smelter contract #740
Date of settlement, July 2, 1963

Net wet weight ~~—————~~ 2010 lbs.
Net dry weight ~~—————~~ 2005 lbs.

	<u>Assay & analysis</u>	<u>Metal content</u>
gold	12.34 ozs.	12.4 ozs.
silver	1.35 ozs.	1.0 ozs.
copper	2.76 %	55. lbs
zinc	—————	—————
arsenic	33.45 %	
antimony	0.80 %	
Bismuth	0.22 %	
silica	6.8 %	
cobalt	8.4 %	

(Metal quotations, gold 34.9125; copper 30.350)

Gross value per ton — \$417.01
Gross value, shipment — 418.05

* This shipment included concentrates from Nevada and the Greenhorns along with Standard material.

State Department of Geology and Mineral Industries

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STANDARD MINE, GRANT COUNTY

Record of production made by J. J. Kinsella during 1963 digested from smelter settlement records by N. S. Wagner.

Shipment No. 3 to AS&R smelter, Tacoma — bulk ore.
Smelter contract #738 — Lot 2361
Date of settlement, January 17, 1964

Net wet weight ——— 41540 lbs.
Net dry weight ——— 40427 lbs.

	<u>Assay & analysis</u>	<u>Metal content</u>
gold	0.50 ozs	10.1 ozs.
silver	0.99 ozs.	20.0 ozs.
copper	16.34 %	6,606 lbs.
zinc	0.10 %	
arsenic	1.04 %	
silica	18.6 %	

(Metal quotations, gold, \$34.9125; Silver 128.900; Copper 30.350)

Gross value per ton ——— \$ 100.44
Gross value, shipment ——— \$ 2030.23

N. S. Wagner 1/23/64

State Department of Geology and Mineral Industries

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STANDARD MINE, GRANT COUNTY

Record of production made by J. J. Kinsella, during 1964, digested from smelter settlement records by N. S. Wagner.

Shipment No. 1 to AS&R smelter, Tacoma — bulk ore.
Smelter contract #738 — Lot 1280
Date of settlement, July 18, 1964

Net wet weight ————— 50,640 lbs.
Net dry weight ————— 49,728 lbs.

	<u>Assay & Analysis</u>	<u>Metal content</u>
gold	0.42 oz.	10.4 ozs.
silver	1.17 ozs.	29.0 ozs.
copper	21.41 %	10,647 lbs.
arsenic	.58 %	
antimony	.31 %	
silica	14.3 %	
iron	25.4 %	
lime	.8 %	
sulphur	32.9 %	
alumina	4.2 %	

(Metal quotations, gold \$34.9125 ; Silver, \$128.900 ; Copper, 31.3504)

Metal value per ton ——— \$129.94
Gross value, shipment ——— 3,230.93

State Department of Geology and Mineral Industries

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STANDARD MINE, GRANT COUNTY

Record of production made by J. J. Kinsella during 1964, digested from
smelter settlement records by N. S. Wagner.

Shipment to AS&R smelter, Tacoma — bulk ore
Smelter contract #738 — Lot 1773
Date of settlement, October 20, 1964

Net wet weight ——— 50,880 lbs.
Net dry weight ——— 49,913 lbs.

	<u>Assay & analysis</u>	<u>Metal contents</u>
gold	0.57 oss.	14.2
silver	1.26 oss.	31.0
copper	20.25 %	10,107 lbs.
arsenic	0.46 %	
antimony	0.18 %	
silica	13.30 %	

(Metal quotations; Gold, \$34.9125; Silver, \$128.900; Copper, 33.3504)

Metal value per ton ——— \$ 135.86
Gross value per ton ——— 3,390.70

N. S. Wagner
2-15-66

State Department of Geology and Mineral Industries

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STANDARD MINE, GRANT COUNTY

Record of production made by J. J. Kinsella during 1964, digested from
smelter settlement records by N. S. Wagner.

Shipment to AS&R smelter, Tacoma — bulk ore.
Smelter contract #738 — Lot 1900
Date of settlement, November 5, 1964

Net wet weight ——— 15,200 lbs.
Net dry weight ——— 14,828 lbs.

	<u>Assays & analysis</u>	<u>Metal content</u>
gold	0.50 ozs.	3.7 ozs.
silver	1.27 ozs.	9.0 ozs.
copper	20.68 %	3,066 lbs
arsenic	.85 %	
silica	14.40 %	

(Metal quotations; Gold, 34.9125; Silver, \$128.900; Copper, 30.3504)

Metal value per ton — \$ 136.32
Gross value per ton \$ 1,010.70

N. S. Wagner
2-15-66

State Department of Geology and Mineral Industries

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The attached copy of A.S. & R. settlement sheet for contract 769, Lot 2389, represents the production made by L.R. Murdock from Jim Kinsella's upper tunnel on the Standard Mine, Grant County, Oregon, during 1965. Mr. Kinsella did not produce during 1965; hence the shipment by Murdock as an alternate lessee.

Procured by NSW
May 25, 1966

Property of *S. R. Munklock Box 412 Prairie City, Oregon.*
 AMERICAN SMELTING AND REFINING COMPANY

TACOMA SMELTER
 P. O. BOX 1605
 Tacoma 1, Washington

DATE 11/18/65
 SMELTER LOT NO. 2389
 MINE LOT NO. _____
 MATERIAL Bull's Creek
 DATE RECEIVED 10/26/65
 ENTRY _____
 MINE NAME _____
 CAR OR VESSEL Truck

CONTRACT NO. 769

STATEMENT OF SETTLEMENT

NAME OF SHIPPER
Clark St. Johnson
Standard Mine
General Delivery
John Day, Oregon

GROSS WEIGHT _____ LBS.
 CONTAINERS _____ LBS.
 NET WEIGHT 25420 LBS.
 MOISTURE 1.00 %
 NET DRY WEIGHT 25166 LBS.

METAL QUOTATIONS:	DATES	PRICE	LESS	NET
GOLD		<u>349.125</u>		
SILVER <u>944H</u>	<u>11/1-5</u>	<u>128.900</u>	<u>1.000</u>	<u>127.900</u>
LEAD				
COPPER <u>Customs</u>	<u>11/1-5</u>	<u>35.975</u>	<u>3.000</u>	<u>32.975</u>
COPPER				

ASSAY & ANALYSIS	METAL CONTENTS	DEBITS		CREDITS	
OLD					
SILVER	61 OZS. <u>7.7</u> OZS. @ <u>91.14%</u> Min deduct. 0.3g <u>7.0</u> OZS.				<u>244</u>
LEAD	162 OZS. <u>20</u> OZS. @ <u>95.0</u> % MIN. <u>0.5</u> OZS. <u>0</u> <u>14</u> OZS.				<u>17</u>
LEAD	% LBS. LESS UNITS @ % LBS.				
COPPER	<u>20</u> <u>29</u> % <u>5106</u> LBS. LESS <u>1.0</u> UNITS @ % <u>4854</u> LBS.				<u>1600</u>
COPPER	% LBS. LESS UNITS @ % LBS.				
ARSENIC	% LESS UNITS % @ \$				
ANTIMONY	% LESS UNITS % @				
BI	% LESS UNITS % @				
COBALT	% LESS UNITS % @				
FLUORINE	% LESS UNITS % @				
IRON	% LESS UNITS % @				
MANGANESE	% LESS UNITS % @				
NICKEL	% LESS UNITS % @				
SELENIUM	% LESS UNITS % @				
SILICA	<u>14.8</u> % LESS UNITS % @				
ZINC	<u>29.8</u> % LESS UNITS % @				
WATER	<u>6</u> % LESS UNITS % @				
SULPHUR	<u>28.2</u> % LESS UNITS % @				
ALUMINA	<u>1.3</u> % LESS UNITS % @				

SMELTING CHARGE				<u>11 00</u>
SMELTING	PER HR. \$	BASE \$	@	c FOR EA. c
SMELTING	PER DBL. \$	BASE \$	@	c FOR EA. c
TOTAL VALUE PER TON \$	<u>121</u>	<u>05</u> BASE \$ <u>100.00</u>	@ <u>10.0</u> %	<u>11.91</u>
TOTAL TREATMENT PER TON		<u>25166</u> LBS. @ \$	<u>15 81</u>	<u>198 94</u>

SAMPLING AND ASSAYING			
WEIGHT	LBS. @ \$	PER TON \$	TAXES \$
SILVER LABOR (DISCHARGING)	\$		SWITCHING \$
WAGON CHARGE	LBS. @ \$	PER TON	
SOLID BOTTOM CAR	LBS. @ \$	PER TON	
TRUCK CHARGES \$; CUSTOMS \$; REPRESENTATION \$	
DIVIDED ON			

NET	% OF \$		
DUE SHIPPER	<u>1662</u>	<u>97</u>	XXXXXXXX
DUE SMELTER	XXXXXXXX	XXXXXX	
TOTALS	<u>1862</u>	<u>91</u>	<u>1862</u>

Revised and enlarged - June, 1956

COBALT PRODUCTION FROM THE STANDARD MINE

It is generally well known that the vein system of the Standard Mine, Grant County, Oregon, is punctuated at intervals by shoots of massive, tin-white cobalt minerals. Something that isn't at all well known however is that this mine achieved a measure of world-wide notoriety at the turn of the century because of shipments of cobalt ore to customers in Germany.

This is well documented in the Hendryx file of mining news clippings, (Ore.-Bin, Vol. 17, No. 2, 1955), and it is from these clippings that the following account has been compiled.

The first reference to cobalt shipments consists simply of the matter of fact statement that, "Several shipments of cobalt ore have been made to Germany, with very good results, and it is believed that this property is the only cobalt mine in the United States." This statement appears in an article from the Blue Mountain American, October 5, 1901.

Another article from the same paper, October 25, 1902, is as follows: "Another shipment of cobalt ore is being prepared by the Standard management for the German people who received the last batch. The foreigners were so well pleased with the ore carrying the cobalt that they are eager to get all possible, and will take it as rapidly as it can be mined and shipped. Before shipment, the cobalt matrix is separated largely as possible from the copper and gold, although much gold goes with the cobalt."

Again on January 17th, 1903, the Blue Mountain American contains an article on the Quartzburg district at large. In this article the Standard is stressed as the "No. 1" property and mention is made that the management has

been using the five-stamp mill recently purchased by the Equity Company for concentrating the cobalt ore shipment intended for Germany. Two weeks later, on January 31, 1903, the same paper carried another article in which it was stated that, "The shipment of cobalt concentrates was made on time for the German interests."

A still later edition of the paper, March 7, 1903, stated that, "it was estimated in the basis for the (merger) that there was above \$500,000 of ore reasonably in sight in the three properties (Standard, Copper Ridge, and Willie Boy) and an offer of \$1.00 a pound f. o. b. the cars at Baker has been made for the cobalt in a 7% concentrate." This same article also contains the statement that, "the cobalt ore from the mine took first prize where ever exhibited in international expositions, and it was at Buffalo that the German syndicate became aware of the Standard's rare metal."

Another generally little known aspect of the Standards early history is that, "it was located back in the 60's by Juneau, a Frenchman, who afterwards explored the coast of Alaska and after whom the town of Juneau is named. The Standard was worked from the surface in those early days at a profit. Juneau and associates erected a small smelter and produced a matte which they packed on mules to The Dalles, Oregon, and from there shipped to France by steamer. Juneau and associates sold the property for \$10,000; since that time successive owners have worked it periodically but the difficulties to be overcome in transportation have been too great to afford much profit." This quote is from a clipping from the Mining Investor, May 11, 1903. A similar account in the Blue Mountain American, March 7, 1903, fails to mention Juneau's smelter, but it does specify that the material shipped to France was "cobalt".

From 1903 to 1907 the Hendryx records are incomplete due to loss in the Sumpter fire. This is more than ordinarily unfortunate as the peak of the Standard's operational activity (copper-gold production) occurred during this period for which the records are lacking. What happened to the cobalt phase of the company's production after January 31st, 1903, is unknown but it evidently continued for a while as the description of the Standard Mine in U. S. Geological Survey bulletin 846-A contains a statement to the effect that a shipment of the Standard's cobalt was reportedly made to the Edison Laboratory. In any event, it is clearly evident from the records just cited that shipments of cobalt ores and concentrates were made to foreign outlets on several different occasions during the property's early history, not counting the possible shipment to the Edison Laboratory in this country.

Report by: N. S. Wagner
Date: December, 1955

Historical Notes on the Standard Mine

N. S. Wagner

June 15, 1956

Historical Notes on the Standard Mine

The Standard Mine of Grant County is known as one of the more prominent early day eastern Oregon producers. It is also generally regarded today as a copper-gold property from which interesting specimens of cobalt minerals can be obtained. Few people realize that the mine was actually discovered and operated in the late 1860's by the man after whom the city of Juneau, Alaska, was later named. Another thing not commonly known is that the Standard achieved world-wide fame at the turn of the century for its shipments of cobalt ore to Germany. These things are nevertheless well documented in the file of mine news clippings presented to the Department by Mrs. Hendryx (ore.-Bin, Vol. 17, No. 2, 1955) and it is from these clippings and the Blue Mountain American volumes in the archives of the Oregon Historical Society, Portland, that the following account has been compiled.

The Standard's early history is best described in a clipping from the Mining Investor, May 11, 1903, as follows: "...it (the Standard Mine) was located back in the 60's by Juneau, a Frenchman, who afterwards explored the coast of Alaska and after whom the town of Juneau is named. The Standard was worked from the surface in those early days at a profit. Juneau and associates erected a small smelter and produced a matte which they packed on mules to The Dalles, Oregon, and from there shipped to France by steamer. Juneau and associates sold the property for \$10,000; since that time successive owners have worked it periodically but the difficulties to be overcome in transportation have been too great to afford much profit."

A similar account in a clipping from the Blue Mountain American, March 7, 1903, fails to mention Juneau's smelter, but does state that the material shipped to France was "cobalt."

The first reference to the cobalt production made at the turn of the century appears in a clipping from the Blue Mountain American, October 5, 1901, which states: "Several shipments of cobalt ore have been made to Germany, with very good results, and it is believed that this property is the only cobalt mine in the United States."

Another article from the same paper dated October 25, 1902 reports: "Another shipment of cobalt ore is being prepared by the Standard management for the German people who received the last batch. The foreigners were so well pleased with the ore carrying the cobalt that they are eager to get all possible, and will take it as rapidly as it can be mined and shipped. Before shipment, the cobalt matrix is separated largely as possible from the copper and gold, although much gold goes with the cobalt."

Continued cobalt production is indicated in another Blue Mountain American clipping dated January 17, 1903, in which the Standard is stressed as the "No. 1" property of the Quartzburg district and mention is made that the management has been using the five-stamp mill recently purchased by the Equity Company for concentrating the cobalt ore shipment intended for Germany. A follow-up article in the same paper, January 31, 1903, contains the statement that this "shipment of cobalt concentrates was made on time for the German interests."

The first clue to the value of cobalt at this time appears in a Blue Mountain American article dated March 7, 1903. The article states that: "It was estimated in the basis for the (merger) that there was

above \$500,000 of ore reasonably in sight in the three properties (Standard, Copper Ridge, and Willie Boy) and an offer of \$1.00 a pound f.o.b. the cars at Baker has been made for the cobalt in a 7% concentrate." This same article also contains the statement, "The cobalt ore from the mine took first prize where ever exhibited in international expositions, and it was at Buffalo that the German syndicate became aware of the Standard's rare metal."

At this point the Hendryx records are incomplete due to partial loss in the Sumpter Fire and recourse was made to the Oregon Historical Society archives, for the sake of completing the Department's file relative to the historical record of the Standard's development. Several additional references to the cobalt phase of the Standard's production were found there and selected items are summarized in digested form in the following paragraphs.

August 22, 1903. Full page ad for the Killen, Warner, Stewart Company re Standard Mine investment. This re-capitulates the Juneau phase of early history and also describes two cobalt-gold shipments to Germany as follows: "High grade cobalt-gold ores were shipped to Germany with the following results:

Koenigliches Blaufarben Werk, Germany

No. 1-Gold, 8 oz; silver, 10 oz.; copper, 25.7%; cobalt, 4.87%;

Total value per ton---\$334.50.

No. 2-Gold, 4.5 oz.; copper, 3%; nickel, 0.5%; cobalt, 11%;

Total value per ton---\$43.90."

The value listed in the No. 2 shipment is undoubtedly a misprint as the values are described as "representative of the shipping high-grade copper and cobalt ores."

December 31, 1904. This article mentions a logging contract let by the company and the installation of a sawmill for timber for a proposed reduction plant. It also reports underground development progress and describes a car of ore for mill test purposes as "about ready" for shipment. Of interest, with respect to cobalt, is a statement that (1) the Lewis and Clark Expedition was considering a special cobalt ore exhibit, and (2) the following quotation credited to Manager H. H. Nicholson: "From the three shoots that have been opened on the lower level of the Standard, and with a concentrating plant such as we expect to install in due time, I could produce for a considerable period from three to five tons of a high-grade cobalt concentrate a day. The magnitude of the product amazes the German dealers in cobalt. They do not believe such a body of cobalt has ever been found. When they come to consider one to five tons of cobalt each day for several months, they are bewildered. Hence, I have been compelled to proceed along original lines of work in marketing the cobalt product of our mine."

December 9, 1905. Under the headline "Standard Mill Will Be Installed At Once" This article proceeds to mention that the property had been visited by J. F. Traylor, "one of Denver's best known millwrights;" that the plant is to be of 50 ton capacity, but so constructed as to be enlarged to 150 tons; that concentration in "simplest form" is to be employed with the flow sheet including an "ore breaker," Elspass mill, four Wilfley tables and two slimers. The gold-copper concentrate production is described as scheduled for shipment to the Supter Smelter and the cobalt concentrate to either a New York or German firm.

August 4, 1906. Thomas A. Edison is named as the holder of what is described as "a long term contract" for cobalt output according to

an announcement by the Standard Company president, D. M. Campbell.

December 15, 1906. Mill capacity is described as increased to 100 tons daily by addition of three Allison-Chalmers rollers, and Campbell is again quoted on the subject of the Edison contract as follows:

"While I was east recently, I had a long conversation with Thomas A. Edison... He owns two cobalt mines...one in Canada and another in Tennessee, but he told me that the separation was much more difficult than from our mine. He is...anxious to get at every available supply. I have contracted to deliver him thirty tons a month after the first of the year."

Press articles on various other aspects of the Standard Mine's activity continue to appear till February, 1908, at which time the manager is reported to have been seriously hurt by a fall into the water wheel. These later articles contain no additional reference to the mine's cobalt production, however, although it is a matter of record that many shipments of copper-gold concentrates were made to the Sumpter Smelter throughout the year 1907.

How much cobalt was delivered on the Edison contract during this period is therefore not presently known, but a statement in the Standard Mine report in U. S. G. S. Bulletin 846A indicates that at least some cobalt was delivered to the Edison Laboratories during that time. In any event it is clearly evident from the records just cited that shipments of the Standard's cobalt ores and concentrates were made to foreign outlets on several different occasions during the properties' early history, not counting the possible later shipments to the Edison Laboratory in this country.

STANDARD MINE OPERATIONAL HISTORY

Secured from the Hendryx file of news clippings.
All Standard items were checked, but only the more
significant ones are reported here in digested form.

Condensed by M. S. W., December, 1955.

STANDARD MINE OPERATIONAL HISTORY

- Item 287 Evening Telegram -- December 25, 1899
- Old name -- Copper King Group -- currently operating with four men getting out smelter shipment rock for the Standard Gold & Copper Mining Company. 250 feet tunneling - 70 feet sinking
- Item 727 Sumpter Evening Miner -- May 2, 1900
- J. S. Hughes mentioned as original locator of Copper King and other claims of Standard Group.
- Item 844A Idaho Mining Journal -- June 16, 1900
- First 10 tons of ore from Standard ready for shipment to the Sumpter Smelter.
- Item 1228 Sumpter Evening Miner -- October 17, 1900
- U. S. Marshal Z. O. Houser, Portland, listed as principle owner of Standard.
- Item 1233 Sumpter Evening Miner -- October 17, 1900
- J. S. Hughes and U. S. Marshal Houser visited Sumpter Smelter on Standard Mine business.
- Item 1379 Blue Mountain American -- November 24, 1900
- U. S. Marshal Houser credited with stating that vein on the Spotted Horse claim had been drifted 260 feet and that the company had arranged to push development all winter with a crew of five men. Believed that sufficient ore would be developed to justify installing milling facilities by spring.
- Item 1468 Baker City Herald -- January 5, 1901
- "An experiment at Ballantyne's furnace plant in Sumpter with 300 pounds of ore from the Standard mines ----- demonstrated that the cobalt in the ore will pass into the matte."
- Item 1885 Oregonian -- February 20, 1901
- Two handsome specimens of rich cobalt ore from Standard given by J. F. Batchelder -- one to the National Museum at Washington at the request of Supt. Dosch who had previously been given a smaller piece and ask for a larger one. The other specimen given to the Baker Chamber of Commerce. Specimens are assayed about \$300 -- about \$100 in gold and the remainder in cobalt.

Item 1882 Sumpter Evening Miner -- February 21, 1901

U. S. Marshal Houser and J. F. Batchelder announce that a smelter is to be purchased and erected on the Standard.

Item 1893 Blue Mountain American -- February 23, 1901

Company identified as a "close corporation" with authorized capital stock at \$120,000 at 10¢ a share, but none can be sold at public sale. Zoeth Houser, president; L. B. Reeder, secretary; and C. H. Wade, treasurer.

Workings described in quotes credited to Houser digested as follows:

Principle development in Spotted Horse claim, main tunnel driven on ledge 300 feet. Cross-cut at 225 feet showed 60 foot ore width. An upraise at this point connected with an incline for ventilation showed continuous ore for the 54 foot distance so far driven. Maximum tunnel depth 150 feet. General grade, \$40. Will give 500 foot backs at 1000 feet which is planned extension.

Tunnel No. 2 in Spotted Horse claim in 40 feet^{on}/vein, 30 feet above main tunnel.

Standard claim work described as 80 foot tunnel on ledge with 1½ foot pay streak assaying \$40 to \$50 in gold and 5 to 20% copper.

Black Horse claim work described as 60 foot tunnel on ledge.

Shipment of 10 tons to Sumpter Smelter in fall of 1900 described netting company \$165 per ton after deduction of \$177 for transportation and smelter charges. Ore described as average shipping grade. Average value of tunnel ore described as \$34 to \$40.

Item 2567 Baker City Herald -- July 20, 1901

Mr. Batchelder quoted as saying Messers. Houser, Worthington, and himself had "surveyed the site for the smelter, to be removed from Sumpter and placed at the Standard and Dixie properties. Everything is all ready to begin the work. I shall return about August 1, from Portland and shall then probably know when the work of moving the smelter in to Quartzburg will begin."

Item 2703 Baker City Herald -- August 10, 1901

Suit between Standard Gold and Copper Mining Company and W. H. Johnson and Son, owners of the adjoining Grover Cleveland, over

patenting was dismissed without costs in agreement of Standard to buy the Grover Cleveland when patented for \$10,000 (230,000 shares in escrow for same in Grant County Bank and payments scheduled from January 1, 1902 to January 1, 1905.)

Item 2724 Baker City Herald -- August 14, 1901

"The work of tearing down and removing the 40 ton matte smelter from this place (Sumpter) to the properties of the Standard Gold and Copper Mining Company on Dixie Creek, above Prairie City, began this morning -----

"The Sumpter smelter was erected by the Union Smelter Manufacturing company of St. Louis, in the spring of 1900, but was never successfully operated on account of lack of funds with which to pay cash for ore. Tests of its efficiency in treating ores of this section, however, were made by short runs on samples from the Tempest, Standard, Badger and Stockton, in the Greenhorns, and on ores from the Seven Devils. It was successful in turning out high grade copper or iron matte, but attachments against the plant filed by ore sellers in various parts of the camp, forced its sacrifice at sheriff's sale. It was bought by Mr. Houser and will be used exclusively for treatment of Standard ore."

Item 3476 Blue Mountain American -- October 5, 1901

Article described claims and workings briefly and concludes with statement that "Several shipments of cobalt ore have been made to Germany, with very good results, and it is believed that this property is the only cobalt mine the the United States."

Item 3489 Blue Mountain American -- October 5, 1901

Announces erection of the Sumpter Smelter at the Standard in a building 30 x 70 feet, two stories high with 500 ton capacity bins. Scheduled to be blown in about October 10th. Will employ a crew of 16 men under direction of Captain J. J. Parker.

Item 3501 Baker City Herald -- October 9, 1901

Nine men in three shifts now, with more to be hired. Ore enough to operate smelter to capacity until extremely cold weather sets in and enforces curtailment of smelting.

Ore described as sometimes almost pure cobalt running as high as \$2,300 per ton in combined cobalt, gold, and copper values in random shoots in the deeper workings as contrasted to red oxide and chalcopryrite ore found at surface. The vein is described as

uniformly well mineralized with copper, with the chimneys of cobalt being 10 to 80 feet in length and varying from 2 to 5 feet in width, but with no winzes or raises yet to demonstrate pitch length.

Smelter described as completed and ready for blowing in and as being a Union Smelter Manufacturing Company patent deal with a 30 ton matte jacket, a furnace, radiating heating jacket, brakers, tanks, pumps housed in a good substantial building surrounded by an assay office, blacksmith shop, etc.

Item 3170 Sumpter Evening Miner -- January 8, 1902

Final payment of \$3,500 by Houser resulted in deeding to Houser and W. T. Rigby of the Fairview, Chipmunk, and Daylight quartz claims in the Quartsburg district. (Note: A private venture by various of the Standard Company officials.)

Item 3334 Blue Mountain American -- January 18, 1902

The "pyritic smelter" installed at the Standard reported as a "grand success" -- now treating between 20 and 30 tons of Standard ore daily. Last run reportedly yielded matte assaying 56 percent copper with high values in gold and cobalt.

Development described as being steadily prosecuted with lower tunnel in 320 feet and upper tunnel in 440, both on the vein and a connecting raise in progress. At 300 foot mark the lower tunnel cut the Cleveland cross vein which is 13 feet wide and assaying satisfactorily. With continuation of 80 feet the lower tunnel will be under the rich shoot being mined in upper tunnel.

Houser quoted as saying that it takes 12 to 15 tons of ore for one ton of matte and that as nearly as can be determined, nearly all values are saved.

Item 3719 Blue Mountain American -- April 19, 1902

Best ore yet described as struck in lower tunnel 160 feet below former workings and below portal of upper workings. Cobalt and gold reported higher in value at this lower level, higher than that mined from same shoot in upper workings.

Houser described as reluctant to made definite statement concerning the re-commencement of smelter operations, but mention made that some changes are needed to save all the gold.

Item 3819 Sumpter Evening Miner -- May 7, 1902

Reports unexpected discovery of 7 inch vein of pure cobaltite containing \$243 in gold at the 400 foot mark in a lower tunnel "to the surprise of the company, for it has not yet reached the ledge for which it is driving."

Item 3856 Blue Mountain American -- May 10, 1902

Reports same discovery as item 3819 but describes "lower tunnel" as being a lower drift run from a 150 foot shaft and the face as 300 feet from the shaft. Further locates the workings as on the "Standard Vein."

Article also describes the neighboring and adjacent properties.

Item 3887 Sumpter Evening Miner -- May 17, 1902

Describes exhibit of a 10 pound specimen of the Standard cobalt ore by Dr. Lon Cleaver, owner of an adjacent property having and extension of the Standard vein.

Item 3937 Blue Mountain American -- May 24, 1902

Quotes Houser as stating that development work is continuing and that the smelter problems would be settled the following month. Also that the recently discovered rich streak of cobalt and gold is continuing, coming in for 15 or 20 feet and out again for a short stretch, but that the best copper ore was known to lie ahead.

Item 44 67 Blue Mountain American -- October 25, 1902

Announcement that the matte smelter operation would be discontinued in favor of concentration, and that an enlargement of the present five-stamp milling facilities would follow.

Announcement was also made that "another shipment of cobalt ore is being prepared by the Standard management for the German people who received the last batch. The foreigners were so well pleased with the ore carrying the cobalt that they are eager to get all possible, and will take it as rapidly as it can be mined and shipped. Before shipment, the cobalt matrix is separated largely as possible from the copper and gold, although much gold goes with the cobalt." This ore originates largely from the lower tunnel.

Item 5106 Blue Mountain American -- January 17, 1903

A description of activity in the whole Quartzburg district by a Mr. C. W. Fuller who is reported as a local property owner. Standard is stressed as the No. 1 property and mention is made that the Standard has been using the five-stamp mill recently purchased by the Equity Company for concentrating the cobalt ore shipment intended for Germany.

Item 5169 Blue Mountain American -- January 31, 1903

Announces increase in capitalization for the Standard Gold & Copper Mining Company for the purpose of erecting a large modern treating plant. From \$100,000 to \$1,400,000.

Houser credited with saying that "Since the matte smelting, it is certain that water concentration will be adopted. The work in the lower tunnel continues as before. The shipment of cobalt concentrates was made on time for the German interests.

Item 5356 Blue Mountain American -- March 7, 1903

A lengthy, detailed and very comprehensively and sensibly written descriptive article under the headlines "Standard, Copper Ridge, and Willie Boy Groups united by the Killen, Warner, Stewart Company."

Announces consolidation of the above properties to a new company known as the Standard Consolidated Mines, capitalized at \$5,000,000. Twenty-six full and fractional claims involved in the merger, including a half interest in the 40-ton matte smelter, assay office, numerous bunk and boarding houses, offices and shops of the Standard property.

Concerns losing identity are listed as the Standard Gold & Copper Mining Company, the Copper Ridge Mining Company and the partnership of Reese, Nutting & Cleaver owning respectively the Standard, Copper Ridge, and Willie Boy Groups.

A detailed description of the history, production and working of all properties is given along with the following which is quoted, "The Standard's ores were first discovered by Juneau, founder of the city of the same name in Alaska, who did work there in the early 60's. He made one shipment of cobalt to France in those early days, hauling out to Umatilla landing over the mountains, a distance of about 200 miles, and netted a handsome sum over all expenses." Also that "it was estimated in the basis for the (subject merger) that there was above \$500,000 of ore reasonably in sight in the three properties and an offer of \$1 a pound f. o. b. the cars at Baker has been made for the cobalt in a 7 % concentrate."

Item 5685 The Mining Investor -- May 11, 1903

Another article, with pictures of the Standard smelter and property at large, describing the merger and the new Standard Consolidated Mines Company. Listed were Dr. Ed W. Mueller of the Killen, Warner, Stewart Company as Secretary and General Manager; Mr. T. C. Taylor, Pendleton, as president; Mr. Zoeth Houser, Pendleton, as vice-president; Mr. C. B. Wade, First National Bank of Portland, treasurer.

The article states that each of the consolidated properties had shown modest profits on their previous work; that an enormous amount of additional development was scheduled by the new company; that Mueller planned to remodel the smelter for service pending erection of a mill; that if it is found that the smelter can handle the concentrates the company will reduce its own ore, otherwise concentrates will be shipped to the Oregon Smelting and Refining Company at Sumpter (the big smelter).

A somewhat enlarged version of the early Standard history is given as follows: "The Standard lode was located back in the 60's by

Juneau, a Frenchman, who afterwards explored the coast of Alaska and after whom the town of Juneau is named. The Standard was worked from the surface in those early days at a profit. Juneau and associates erected a small smelter and produced a matte which they packed on mules to The Dalles, Oregon, and from there shipped to France by steamer. Juneau and associates sold the property for \$10,000; since that time the successive owners have worked it periodically but the difficulties to be overcome in transportation have been too great to afford much profit.

Item 5785 Sumpter Evening Miner -- July 1, 1903

Announcement by Dr. Ed. W. Mueller that definite platinum values had been encountered in some of the Standard ores and that platinum has also been found in the Spiess from the smelter "formerly" operated at the Standard.

Results of 12 samples assayed previous week reported as ranging from low of \$28.80 to \$298.40 and averaging \$60 not counting the cobalt content.

Item 5858 Blue Mountain American -- August 29, 1903

Increase in working force reported and improvement of ore showing in the crosscut from the Willie Boy drift. Credited to Mueller.

Item 5896 Blue Mountain American -- October 10, 1903

Reports that development operations were proceeding but that commencement of the mill buildings was not scheduled until the following spring.

Item 6031 Sumpter Evening Miner -- October 28, 1903

Reports a visit to the property by a Dr. C. P. Riley and other officials of the Killen, Warner, Stewart Company who is quoted as describing four miles of new road between the property and the country road as magnificent work and stating that the tunnel house was completed; that values of the Willie Boy drift from the crosscut average \$1600; that boarding and bunk houses have been repaired to the extent that the company was now in a position for energetic development work throughout the winter.

From this point in the Hendryx records are incomplete having been destroyed in the Sumpter fire. Unfortunately the largest scale phase of operation occurred during the period for which the records are missing. However, one last item is an un-indexed section of the file serves to show that there was still some active

interest in the property as late as June 1, 1907 -- (Blue Mountain American).

"John A. Traylor, Consulting Engineer, announced that systematic work during the past winter had resulted in the establishment of some 16 points from which ore can now be drawn to keep the mill busy for each 24 hours and permit the establishment of reserves that will assure continuous operations, and that 8 more stope cites were anticipated."

The following represents a continuation of the Standard Mine activity record as gleaned from the files of the Blue Mountain American in the Oregon Historical Society, Portland. These records supplement the Hendryx file data and continue for the period from 1903 to 1910.

Blue Mountain American -- August 22, 1903

Full page add for Killen, Warner, Stewart Company re Standard Mine investment. Summarizes Juneau phase of early history. Also lists two cobalt-gold shipments to Germany as:

"Highgrade cobalt-gold ores were shipped to Germany with the following results:

Koenigliches Blaufarben Werk, Germany,

No. 1 - Gold, 8 oz.; silver, 10 oz.; copper, 25.7%; Cobalt, 4.87%.

Total value per ton -- \$334.50

No. 2 - Gold, 4.5 oz.; copper, 3%; nickel, 0.5%; cobalt, 11%.

Total value per ton -- \$ 43.90 (*probably a misprint*)

The above values were described as "representative of the shipping high-grade copper and cobalt ores."

B. M. A. -- September 5, 1903

Ernest Warner describes cobalt ore face as "one of the finest cobalt-gold shoots opened in the Property".

Tunnel is a drift on the Willie Boy vein toward the Standard and "is getting under the old Juneau workings where the finest surface showings of the cobalt-gold ore was found". Less copper described in this new shoot and assays were reported as: \$300 to \$500 and cobalt percent as 10 - 15 and 20. *gold*

Blue Mountain American -- December 12, 1903

Description of a crosscut from near the face of the lower tunnel by Houser, "calculated to open the ore bodies of the Standard system proven in the upper workings, and especially the large shoot sunk on by Juneau, the original prospector of the mine".

B. M. A. -- December 26, 1903

"The largest orebody yet opened in the Standard mine -- under present management" reported by Houser. Ore opened -- is at great depth as this drift is more than 500 feet long, and is believed to be well under the point where the large Juneau shoot was proven above.

B. M. A. -- March 19, 1904

"Juneau Shoot Cut On Deepest Level" -- Headline. Subheadlines, "Crosscut from near face of Standard Lower Drift has opened what seems to be well-known body". Vein and shoot description describes crosscut as extending southward from the Lower Standard tunnel at about the 500 foot mark and shoot as beginning 87 feet from main drift. Level described as "230 feet, vertical measurement, under the level in which the Juneau shoot was mined."

B. M. A. -- April 2, 1904

"Three Working Faces at the Standard Are in Milling Ore." Article states "water in upper workings that had explored the Juneau shoot drained immediately -- when -- body of quartz porphyry -- was opened" (by lower tunnel crosscut).

B. M. A. -- August 13, 1904

Describes things in general and includes statement, "Heretofore the ore in the Willie Boy-Cleveland had been concentrating ore with an average value of \$12 per ton across its entire width of 8 feet, but the close of the week finds the drift at a depth of 275 feet in a body of high grade shipping ores assaying as high as \$96 per ton". Also mentions, "a series of raises" as being started "on the Standard vein -- the first being 300 feet from its portal at its intersection with the Willie Boy-Cleveland vein, and two others at intervals of 150 feet each".

B. M. A. -- October 29, 1904

Galena reported as found in deep Standard workings, along side of cobalt-gold streak. Raises reported as progressing nicely and "Prop. Nicholson is expected back from Denver very soon, when it is expected stoping will begin, as it is understood the results of the test treatments at the laboratories in that city has determined the proper -- process of converting the -- ores into precious metal". (first reference to proposed treatment or mining phase of activity.)

B. M. A. -- November 19, 1904

Promotional article of first water supposedly quoting three or four supposed authorities as to how extra wonderful the mine is" -- will become, when more fully developed, one of the greatest mines in the west" and that sort of thing. Also another article describing "successful" mill tests by H. H. Nicholson on 1000 pound test sample indicated 85% recovery of values by concentration. Krupps in Germany listed as one of the foreign buyers who have offered a long contract for cobalt-gold output.

B. M. A. -- November 26, 1904

Report of "full five feet" ore discovery at 700 foot mark of Standard vein. Nicholson reported as claiming \$300 to \$400 gold values and 3 to 10% cobalt. Raise No. 2 completed to 85 foot height and station and immediate drift started.

B. M. A. -- November 26, 1904

Full page stock advertisement.

B. M. A. -- December 3, 1904

"The recent strike at the Standard is even better than reported in last week's issue. When first entered at the 700 foot mark, the rich ore was but two feet wide, but in the next few feet it widened to 28 inches of solid cobalt-gold ore that runs way up into the hundreds of dollars per ton. The vein holds a uniform width of five feet". Another strike also described in the Willie Boy-Cleveland drift and drifts are reported as extending both ways on the intermediate level. Twenty men reported as employed. Also another full page ad for stock sale.

B. M. A. -- Dec. 17, 1904

Drifting in four levels to establish ore reserves for big reduction plant
---"sending car of ore to Denver to complete treatment test."

B. M. A. -- December 31, 1904

Special Exhibit of Cobalt Ores (1905 Fair). "From the three shoots that have been opened on the lower level of the Standard, and with a concentrating plant such as we expect to install in due time, I could produce for a considerable period from three to five tons of a high-grade cobalt concentrate a day. The magnitude of the product amazes the German dealers in cobalt. They do not believe such a body of cobalt has ever been found. When they come to consider one to five tons of cobalt each day for several months they are bewildered. Hence, I have been compelled to proceed along original lines of work in marketing the cobalt product of our mine." Quoting Nicholson. Lewis and Clark Exposition considered handling a special cobalt ore exhibit. More work continuation described. Logging contract let and talk of installation of a saw mill for timbers for reduction plant. Test ore shipment car described as about ready.

B. M. A. -- January 21, 1905

Car of test ore will leave early coming week. Survey of underground surface underway by assistant engineer Kuehn with objective of locating reduction site. New drift development described and Raise No. 2 reported as 126 feet high, the entire distance in fine cobalt-gold ore.

B. M. A. -- February 11, 1905

"Tests now being made at Denver would be final and machinery would be ordered for the reduction plant in accordance with the results." Box electric drills ordered for mine, energy plant, a 200kilowatt dynamo powered by a 15 H. P. gas engine. Also the usual vein description including announcement of new strike on Side-Issue vein.

B. M. A. -- March 11, 1904

Stockholders meeting described. Dr. H. H. Nicholson remains in charge of development and mine management.

B. M. A. — April 29, 1904

Standard Power Plant Delivered and being installed. Development described as intermediate drifts from two raises and start of 3rd raise. Crews reported as working on three headings.

B. M. A. — May 13, 1905

Electric drills still not delivered but delivery anticipated any day. Mill decided to be 50 tons.

B. M. A. — July 15, 1905

General routine news item describing tunnel development in glowing terms. Nothing really new except mention of raise "10".

B. M. A. — August 12, 1905

Underground development described as progressing still vigorously with encouraging results and rapid progress being made in excavating and grading for plant buildings. Saw mill in operation. The second electric drill on hand and 40 men employed.

B. M. A. — September 23, 1905

Routine progress article following usual pattern.

B. M. A. — December 9, 1905

"Standard Mill Will Be Installed at Once." Property visited by J. F. Traylor "one of Denver's best known millwrights." Plant to be 50 tons, but so constructed as to be enlargable to 150. Concentration in simplest form, crusher ("ore Breaker") to an Elspass mill and 4 Welfley tables and two slimers.

Gold-copper concentrate scheduled to Sumpter Smelter and cobalt concentrate to either a New York or German firm.

Underground description includes reference to "raises Nos. 11, 12, and 13." "In all the orebody is continuous, proving it a length of 400 feet and over 90 feet in depth — the same shoot has been proven in the old upper tunnel." Also describes new Juniper vein described as having orebody extended 110 feet, holding an average width of 4 feet with values as high as \$68 and averaging \$30 gold and 3% copper.

B. M. A. — January 20, 1906

Underground work described as devoted exclusively to continued blocking out of ore. Surface work being rushed in anticipation of delivery of concentrating plant machinery, some of which is enroute.

B. M. A. — March 17, 1906

N. F. Heath, re-elected superintendent.

B. M. A. — May 5, 1906

D. M. Campbell, lumberman and capitalist of Chicago and recently elected president of Standard, visited mine on occasion of first mill run during which a shaft broke and curtailed the show. Quoted as saying "There is at present some 6000 tons of ore ready for the mill and it will be run full capacity of 500 tons daily as soon as the adjustments are made (referring to minor changes needed as indicated by break-in run). From one of the best posted men on mills in the west, I am assured that we have as complete and modern a plant as ever erected in the west and with the services of Mr. Crowe, a prominent metallurgist of Denver, I feel that it will be a success." Also reported continued development of reserves.

B. M. A. — June 23, 1906

Nicholson — quoted as reporting Standard development of reserves continuing successfully and mill also a success with copper concentrates going to the smelter and the cobalt-gold concentrates being sacked.

B. M. A. — June 30, 1906

Announcement by Campbell of a long term contract for cobalt with Thomas A. Edison — unlimited quantity.

B. M. A. — August 4, 1906

Campbell reports the loading of the sixth ^{carload of} copper-concentrates carload after a 30 day total mill run.

B. M. A. — December 15, 1906

Mill capacity increased to 100 tons daily by addition of three Allison-Chapman rollers in replacement of the original Elspass units. Campbell quoted as saying "While I was east recently I had a long conversation with Thomas A. Edison —. He owns two cobalt mines — one in Canada and another in Tennessee, but he told me that the separation was much more difficult than from our mine. He is ———anxious to get at every available supply (of cobalt). I have contracted to deliver him thirty tons a month after the first of the year."

B. M. A. — January 26, 1907

Walkout reported by 45 workmen over poor boarding house food — walkout against boarding house and not mine management.

B. M. A. — February 8, 1907

Mr. Schlessinger succeeds N. F. Heath as superintendent. Recommended by John Traylor, Denver manufacturer and designer of Standard plant. Heath resigned. Mine reported as looking better right along from reserves standpoint. Six cars of copper concentrates are ready to ship when roads conditions permit.

B. M. A. — May 11, 1907

Several Standard Miners quit rather than to work under another appointed as foreman.

B. M. A. — June 1, 1907

-- on DOGAMI files. (See Hendryx records summary)

B. M. A. -- October 12, 1907

New crusher installed and most of crew laid off during process and until broken ore on hand was used up and renewed storage space was created.

B. M. A. — October 19, 1907

Quoting M. A. Butler, attorney and president of Stockman's Bank, Prairie City, and head of Copperopolis Mining Company, "President Campbell, of the Standard Company, handling that big Quartzburg property, and some of the larger stockholders, were not entirely satisfied with the glowing picture presented by Engineer John A. Traylor and General Manager Schlessinger of the ore and its character, and they recently had another engineer go over the property and its workings. By his report --- he found that they had a proven and fully verified ore reserve of \$176,000, ---."

B. M. A. — November 16, 1907

"Standard Re-organizes Under Another Name" (Headline). Schlessinger reported as saying reorganized company known as Comer Gold Mines Company of Grant County, Oregon. — E. O. Brigham, Chicago, new President — a new larger quartz mill scheduled.

B. M. A. — February 15, 1908

Schlessinger fell into waterwheel while starting it and was seriously hurt.

B. M. A. — July 30, 1910

"During the period of three years from November 15, 1904 to November 15, 1907, there was treated at the Sumpter Smelter of the Old Oregon Smelting and Refining Company, 19,068 ton of ore, both crude and concentrates, which at present prices of metals (1910) had a total gross value of \$1,278,172.50. The average assay of this ore was:

Gold — 2.754 oz/ton
Silver — 9.870 oz/ton
Copper — 2.800%

With gold at \$20.00/ounce; silver at 53 cents, and copper at 12 cents per pound, the average value per ton of this ore was \$67.03.

FINIS
To Dec. 31, 1910
No further reference to
Standard observed.

STANDARD CU MINE

(1)

COPPER VEINS

QUARTZBURG DISTRICT COPPER VEINS

On the East fork less than a mile above the junction, is the Standard copper mine, located on the east side of the creek, and for some few hundred feet above it. The country rock is made up of a series of old volcanic flows. In many places these have an amygdaloidal texture in which calcite is the chief filling material. Dark, finely granular dense flows are also present, made up of much andesine feldspar, and considerable uralitic hornblende, with some sericite and chlorite which probably makes it an altered uralite andesite.

On top of the ridge, above the mine workings, is a fine-grained, light-colored altered dike about 50 feet wide, which has a ground mass of badly formed intergrowth of quartz and feldspar. Its mineral composition indicates the parent granodiorite below. Its texture indicates it to be a granodiorite porphyry grading into aplite.

There are several developed veins on the property. These veins strike approximately N. 70° E. The most important are the Juniper and Standard veins. The Juniper vein is steep dipping and has a maximum width of about 2 1/2 feet, and is of the replacement type with quartz and calcite as gangue minerals in with the altered country rock in the vein. The ore minerals are chalcopryrite, pyrrhotite, pyrite and some smaltite. These sulphides occur in small lenses with chalcopryrite as the chief sulphide. It is said to carry \$3 in gold per ton. It has been developed by 120 feet of tunnel and has been traced by means of prospect pits for about 1,000 feet.

The Standard vein has a dip a little over 50° S. and in widths up to 10 feet. The mineralization of this vein is similar to that in the Juniper. It is said that lenses of sulphide 100x50x5 feet have

STANDARD CU MINE

(2)

QUARTZBURG DISTRICT COPPER VEINS

been stoped. It is developed by three tunnels about 100 feet apart, 700, 1,200 and 1,300 feet long, respectively, all of which are connected by raises.

The Willie Boy vein, farther to the eastward, contains a small rich stringer of the usual minerals, but besides the massive cobalt di-arsenide, smaltite, there are small crystals of safflorite scattered through chlorite. Safflorite is identical in composition with smaltite, but crystallizes in the orthorhombic instead of the isometric system.

It is probable that these veins were formed by hot ascending solutions which were the last action of the intrusive mass at depth. The veins are of the replacement type, and the influence of the wall rock was probably an important factor. The mineralization is unique in that cobalt minerals are present. Although the region is somewhat weathered, it is doubtful if there is much secondary enrichment.

These small veins have been practically worked out to the level of the creek. Large croppings of a lode into which these small veins lead appear to be many feet wide, but no development was observed upon them. These wide N.-S. croppings of quartz and partially replaced country rock contain bunches of chalcopryrite within a foot or two of the surface.

A great deal of money has been expended upon this property which closed down in 1907, after operating the mill for 6 months. Development work was started again in the spring of 1914 by new owners.

"Standard Mine - One of the few cobalt properties in the United States, was destroyed by fire on May 23. The mine, which has been idle for a number of years, was equipped with a 75-ton mill."

drained by Dixie Creek, which joins the John Day River at Prairie City, but Dads Creek and Ruby Creek drain parts of it.

The district is reached by way of Prairie City, the terminus of the narrow-gage Sumpter Valley Railway, which meets the through line of the Union Pacific system at Baker, 80 miles away. Prairie City lies on the John Day Highway, an excellent automobile road joining Ontario, on the Snake River, with Arlington, in the Columbia Valley. The former post office of Comer, about 6 miles north of Prairie City at the forks of Dixie Creek, has long since been abandoned.

Heavy woods clothe most of the hillsides in the district, and much of it is embraced in the Whitman National Forest.

GEOLOGY

GENERAL FEATURES

No topographic base maps of the Quartzburg district were available, and owing to the heavy forest cover of most of the district it was impossible, in the available time, to prepare a base map adequate to represent the evidently complex geology. Accordingly, the detailed geologic observations made during the writers' visit were limited to the areas within and immediately adjacent to the accessible mines, and only cursory examination was made of the intervening areas.

These observations, however, were sufficient to permit the statement that the dominant rocks of the district are meta andesite, metadiabase, and related volcanic rocks, including tuff, associated with which are small amounts of argillite. The correlation of these old sedimentary rocks must await detailed mapping, although the writers' impressions are favorable to Lindgren's correlation of them with the Carboniferous argillite series of Elkhorn Ridge.⁴⁰

Intrusive into this series of volcanic and sedimentary rocks, and doubtless in large degree the cause of their intense alteration, is a considerable variety of plutonic rocks, among which gabbro, serpentine, and diorite are most prominent. Dikes of diorite porphyry, albitized diorite, and metadiabase are associated with these plutonic rocks and are probably comagmatic with them.

Most of these rocks are considerably sheared and altered—the volcanic rocks by the development of biotite and tourmaline, the intrusive rocks by the development of talc, biotite, and tourmaline. Some of these alterations may have occurred during the later stages of consolidation of the basic intrusive rocks themselves. Others, however, seem to be attributable to a group of later intrusions represented by small stocks of quartz diorite and granodiorite that

⁴⁰ Lindgren, Waldemar, op. cit., pl. 84.

occur in the valley of Dixie Creek below the forks and near the head of Baby Creek. The numerous dikes of quartz diorite porphyry, granodiorite porphyry, and quartz monzonite porphyry that occur in many places through the district may attest a much wider distribution of these silicic rocks at depth.

These quartzose rocks are practically free from crushing and are relatively unaltered. For these reasons they are believed to be younger than the basic intrusive rocks of the district. The age of these intrusive rocks is not accurately known from local evidence, beyond the fact that they are all definitely pre-Miocene. In the Strawberry Range, across the John Day River to the south, Jurassic rocks are intruded by quartz diorite.⁴¹ This supports Lindgren's assignment of the intrusions to a post-Jurassic age. The basic intrusions may be older than this, however. The pre-Miocene age of all the intrusions is fixed by the fact that the Columbia River lava, of Miocene age, rests on an eroded surface cut across all the plutonic rocks. Lindgren⁴² believed the intrusive rocks to be of early Cretaceous age.

The Columbia River lavas crop out along the north side of the valley of the South Fork of the John Day River at Prairie City and apparently completely surround the mineralized area of the Quartzburg district. They have, however, been removed by erosion from the mineralized area itself, most of which, if not all, must once have been covered by them. No study was made of the details of the geology of the Columbia River lava, as the formation has no bearing on the geology of the mines.

Although the regional distribution of the rocks of eastern Oregon strongly suggest an eastward strike as dominating the structure of the pre-Tertiary rocks, few observations were made on the structure of the stratified rocks within the Quartzburg district. The local structure is accordingly uncertain. Observations were sufficient, however, to permit the statement that the dominant structural features of the district are those imposed by the igneous intrusions.

ORE DEPOSITS

Two types of ore deposits have been recognized in the district—quartz-carbonate-sulphide fissure veins and a quartz-tourmaline-chalcopyrite replacement body. The fissure veins are valuable chiefly for their gold, although small amounts of copper and cobalt have been won from them; the replacement body has its potential value in copper. Mineralization has occurred in nearly all the pre-Tertiary rocks. Although the observations within the district

⁴¹Lupher, R. L., oral communication, 1929.

⁴²Lindgren, Waldemar, op. cit., p. 596.

were not thorough enough to be conclusive, the ore deposits are probably derived from the quartz diorite intrusions.

The veins consist of quartz, ferriferous dolomite, and calcite as the chief gangue minerals and carry the metallic minerals, pyrite, arsenopyrite, glaucodot, cobaltite, native bismuth, bismuthinite, tetrahedrite, pyrrhotite, chalcopyrite, sphalerite, and galena. The pyrite and chalcopyrite are the most plentiful, but the cobaltiferous minerals glaucodot and cobaltite are found in several localities. Supergene minerals recognized include covellite and bornite, and the oxidation products malachite, jarosite, and limonite were seen.

The quartz-tourmaline replacement body carries disseminated chalcopyrite, pyrite, cobaltite, magnetite, hematite, bornite, and covellite.

THE MINES

DIXIE MEADOWS

Location.—The Dixie Meadows mine, owned by the Discon Mining Co., is in sec. 23, T. 11 S., R. 33 E., near the head of Ruby Creek, just north of the Dixie Creek divide. It is about 12 miles from Prairie City by wagon road. The property, at the time of visit, was in charge of R. C. Reese, of Prairie City. In July, 1930, development work was going forward under G. H. Kight, foreman.

History and production.—The mine was opened in 1900 by Messrs. Kight and Reese. A mill was built in 1903. Between 1903 and 1910 about 8,000 or 9,000 tons of ore averaging \$8 to the ton in gold was milled and about 350 tons of concentrates averaging about \$50 to the ton were shipped. The property was sold to L. Vogelstein & Co., of New York, in 1910, and a development campaign, with no attempt at production, was carried on by them for the next two years. The property was then sold to A. D. Coulter, of Seattle, and later, by combination with the Independence claim and the Sylvanite property in southern Oregon, it passed into the hands of the present owners. No production has been made since 1910 except a small amount by lessees in 1912-1914. The total production of the mine has been less than \$100,000, according to Mr. Reese.

The mine is developed by two adits, the upper of which, called the Blacksmith level, is caved and no longer accessible. About 6,000 feet of work was done in this tunnel and connecting raises, winzes, and stopes. All the production of the mine has been made from this level. The lower tunnel, about 100 feet lower than the Blacksmith level, is about 1,200 feet long. About 700 feet of this tunnel is a crosscut to the vein and the remaining 500 feet is a drift on the vein southwestward toward the old higher workings.

Geology.—The country rock of the mine is a complex of greenstone, meta-andesite, tuff, metadiorite, serpentine, and sheared quartz

to 12 percent copper. According to Mr. Riley, some cobalt ore was shipped to the Edison Laboratory, but he was unable to state the amount or value of this shipment.

There are several veins that have been partly developed—the Standard, Grover Cleveland, Juniper, and Smuggler. The bulk of the production has come from the Standard, but some ore was obtained from the Grover Cleveland.

The Standard vein has been opened by an inclined shaft about 70 feet deep and by three adits at vertical intervals of about 200 feet. The upper tunnel was caved and inaccessible in 1930, but Mr. Hewett's map (pl. 7) shows it to be about 400 feet long. The middle level contains 600 feet of drifts. The lower level includes about 1,700 feet of drifts and about 1,000 feet of crosscuts. Part of the workings in the lower level are caved and inaccessible. There are numerous raises and stopes connecting the levels. No work has ever been done below the third level. (See pl. 7.)

The country rock of the Standard vein is chiefly porphyritic andesite, with some vesicular andesite, cut by dikes of granodiorite porphyry and a few of diabase. The vein itself is localized along a fault, and there are at least four distinct fault-breccia zones crossing the vein. The vein strikes persistently N. 70°–75° E. and dips steeply south. Much of the movement along the faults has been premineral, but in one place there is a slight jog in the vein, and in the face the vein appears to be faulted off. No work has been done beyond the immediate fault contact.

There is one crosscut to the south from the Standard vein for about 400 feet. This cuts five small veins or mineralized stringers that strike N. 45°–80° E. and dip 60°–80° S.

The Standard vein ranges in width from a few inches to 4 feet. It is not a strong persistent vein but rather a group of mineralized stringers with considerable replaced wall rock. The main gangue mineral is quartz, but some ferriferous dolomite and calcite are also present. The ore minerals are pyrite, chalcocite, arsenopyrite, cobaltite, glaucodot, bismuthinite, native bismuth, galena, and sphalerite. The glaucodot, which has been called smaltite and sulfite in other reports, is present in the deeper workings. Considerable cobalt bloom, erythrite, is present in the lowest drift, and some nickel bloom(?), jarosite, and malachite also occur. The average tenor of the ore is not known.

The fault zone nearest to the adit is called the Grover Cleveland vein and has been drifted on for about 600 feet. It strikes N. 20°–40° E. and dips about 80° S. Most of this work is now caved. To the northwest of the Standard vein another tunnel has been driven for 700 feet. This tunnel also cuts the Grover Cleveland vein, and

some work was done here. The Grover Cleveland vein follows in part a dike of granodiorite porphyry and consists of a shattered and brecciated zone about 8 feet wide containing breccia, gouge, and small quantities of quartz, ferriferous dolomite, and sulphides. The ore is free-milling and carries about \$2 in gold to the ton according to Mr. Pinson, former manager of the company.

The other fault zones that cross the Standard vein have not been followed at all. These fault zones consist of breccia and gouge and range in width from 6 inches to 3 feet. The exposures are very poor at the face, and nothing can be said regarding the fault that cuts off the vein.

The Smuggler vein is exposed in an open cut on Dixie Creek a few hundred yards above the main Standard mine. It is a diorite dike, silicified and mineralized. Numerous spots of brownish-black tourmaline are present. The sulphides are pyrite, chalcopyrite, and bornite. The dike strikes N. 60° E. and dips steeply north. The dike has been followed by the miners for over 1,500 feet on the surface. The wall rock of the diorite dike is greenstone. The walls are very indefinite and irregular.

The Juniper vein is southeast of the Standard vein, in Ella Gulch, a small branch of Dixie Creek. The vein is opened along the strike by a tunnel 900 feet long. The vein strikes N. 75°-80° E. and dips about 80° S. It ranges in width from 3 inches to about 3 feet. Sulphides, chalcidony, and quartz are the common constituents. The sulphides are pyrite, chalcopyrite, and arsenopyrite. Two spots of cobalt bloom were noticed. At the face the strike of this vein is N. 80° E. and its dip 70° S. The vein swings and in one place strikes due east.

In the Juniper vein, as in the Standard vein, several breccia zones cross or are crossed by the vein, with very little or no offset along either one. In the Juniper drift these zones strike N. 5° E. to due north and dip about 75°-80° E. They contain from a few inches to several feet of gouge and breccia. The wall rock is all meta-andesite, some so much altered as to resemble hornfels. Much tourmaline is present in it.

The sequence of mineralization has been tentatively worked out by combining the observations of Mr. Hewett and the writers as follows:

First the andesite was altered to "hornfelslike" masses, the joints of which were locally coated with tourmaline. Calcite, the metallic minerals (beginning with pyrite and arsenopyrite), ferriferous dolomite, quartz, a second generation of calcite and pyrite, chalcidony, and marcasite, followed in order. Of these, the chalcidony and marcasite are probably supergene.

State Department of Geology and Mineral Industries

1069 State Office Building
Portland 1, Oregon

Quartzburg District
Grant County

Standard Mine

Location: T. 12 S., R. 33 E., Section 12.

General: Ore originating from several places in the Standard Mine, but principally from a Mexican stope (underhand) on the lowest level, was milled during 1958 thru the mill belonging to the Standard Milling Company, Inc. Most of the time a bulk concentrate was made but for a while the ore was concentrated into two fractions. The fractional products consisted of a copper concentrate and a cobalt-gold concentrate, a general average for each of which is as follows:

Copper Concentrate

Copper - 27%
Gold - 3.0 ounces
Cobalt - .067%

Cobalt-Gold Concentrate

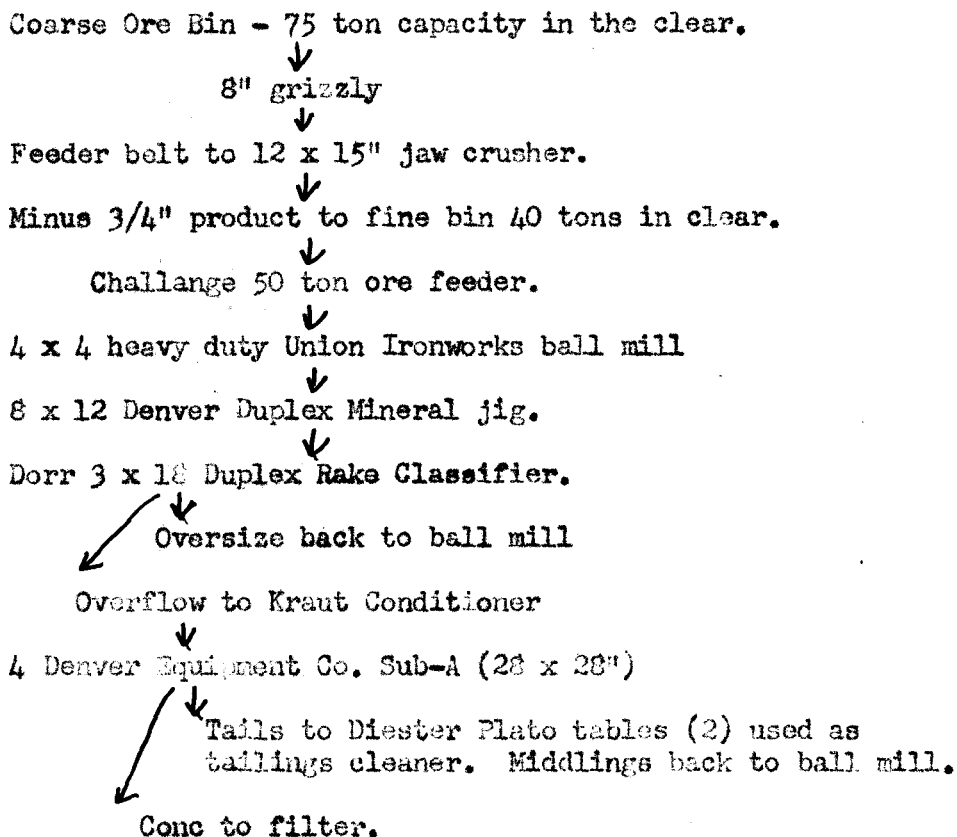
Cobalt - 15% plus
Nickel - 7% plus
Gold - 10.0 ounces plus
Copper - 0.10%

Approximately two tons of copper concentrates were recovered to one of cobalt. The ratio of concentration was 7:1 for the copper and 12 to 14:1 for the cobalt.

A flow sheet of the Standard Milling Company, Inc.'s mill is appended herewith. All information, both flow sheet and concentrate data, was furnished by Mr. Vernon Jacobson, M. E. who is one of the company principals.

Memorandum report: NSW, Aug. 3, 1958

Flow sheet of mill owned by the Standard Milling Co., Inc. and located on Dixie Creek one mile north of Prairie City, Oregon.



In its present form this mill has a 50 ton/24 hour capacity, but space has been left for the installation of a secondary crusher and another mill by which capacity could be doubled. Electric supply and all basic electric apparatus is capable of handling the enlarged setup.

By N. S. Wagner, July 31, 1958.

Informant, Vernon Jacobson

State Department of Geology and Mineral Industries

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Cobalt - .067%

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Cobalt - 15% plus
Nickel - 7% plus
Gold - 10.0 ounces plus
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Memorandum report: NSW, Aug. 3, 1958

Flow sheet of mill owned by the Standard Milling Co., Inc. and located on Dixie Creek one mile north of Prairie City, Oregon.

Coarse Ore Bin - 75 ton capacity in the clear.

8" grizzly

Feeder belt to 12 x 15" jaw crusher

Minus 3/4" product to fine bin 40 tons in clear

Challenge 50 tons ore feeder

4 x 4 heavy duty Union Ironworks ball mill

8 x 12 Denver Duplex Mineral jig.

Dorr 3 x 18 Duplex Rake Classifier

Oversize back to ball mill

Overflow to Kraut Conditioner

4 Denver Equipment Co. Sub-A (28 x 28") *FLOAT CELLS*

Tails to Diester Plato tables (2) used as tailings cleaner. Middlings back to ball mill

Conc to filter.

In its present form this mill has a 50 ton/24 hour capacity, but space has been left for the installation of a secondary crusher and another mill by which capacity could be doubled. Electric supply and all basic electric apparatus is capable of handling the enlarged setup.

By N. S. Wagner, July 31, 1958

Informant, Vernon Jacobson

ASSAY CERTIFICATE

A. H. WOODWELL

Sumpter, Oregon, June 9 1958

Mr. Ward L. Hill

8993

Box 908, Baker, Oregon

OWNER'S MARK ON SAMPLE	G O L D			S I L V E R			TOTAL VALUE PER TON		PERCENTAGE OF	
	Oz. per Tn.	Value per Ton		Oz. per Tn.	Value per Ton				Nickel	Copper
Mill heads	.47	\$ 16	45	.15	\$	13	\$ 16	58	1.10	1.75
Jig cons	9.84	344	40	1.36	1	22	345	62	7.40	.92
Float cons	2.92	102	20	1.08		97	103	17	2.80	24.85

A. H. Woodwell Assayer

ASSAY CERTIFICATE

A. H. WOODWELL

Sumpter, Oregon, June 25 1958

M Standard Mine

Prairie City, Oregon

D. OWNER'S MARK ON SAMPLE	G O L D		S I L V E R		TOTAL VALUE PER TON		P E R C E N T A G E O F	
	Oz. per Tn.	Value per Ton	Oz. per Tn.	Value per Ton			Copper	
18" under floor of #1 incline shaft-18" wide	.48	\$ 16 80	1.50	\$ 1 35	\$ 18 15		2.40	
Floor sample 1" wide-24" in from water course	.83	29 05	1.50	1 35	30 30		5.33	
Sample from dump along track	.45	15 75	.10	09	15 84		.37	
Float cons	2.68	93 80	.10	09	93 89		22.25	
Table cons	7.00	245 00	1.00	90	245 90		2.10	

A. H. Woodwell Assayer

State Department of Geology and Mineral Industries

1069 State Office Building
Portland 1, Oregon

8994

Quartzburg District
Grant County

STANDARD MINE (Early assay records)

The following records of assay are for Standard Mine ore. They originate from the records of the old Baker Assay Office and were furnished by John Arthur (1).

June 20th, 1908 - Mr. B. S. Schlesinger.

	<u>DRY TONS</u>	<u>Au</u> oz/ton	<u>Ag</u> oz/ton	<u>Cu %</u>	
Lot No. 1	3.263	0.15	1.35	21.84	crude ore (copper)
Lot No. 2	5.073	4.98	1.00	6.85	crude ore (cobalt)

June 11, 1910. Mr. W. E. Narkus brought in test lots.

	<u>DRY TONS</u>	<u>Au</u> oz/ton	<u>Ag</u> oz/ton	<u>Cu %</u>	
Lot No. 1	1.658	0.44	1.72	15.20	crude ore (copper)
Lot No. 2	5.112	2.88	0.50	1.90	crude ore (cobalt)

(k) Letter from John Arthur to
N. S. Wagner, December 1, 1950
(filed in Standard Mine folder)
(at the Baker Office.)



CABLE ADDRESS "ELDRICO"
 FILE NO. 5022
 DATE May 4, 1961

To: Sheep Creek Mines Ltd.,
 6 - 190 Baker St.,
 Nelson, B.C.

Certificate of Assay

G. S. ELDRIDGE & CO. LTD.
 ASSAYERS METALLURGISTS CHEMISTS
 INSPECTION AND TESTING ENGINEERS
 633 HORNBY ST. VANCOUVER, CANADA

MEMBERS OF
 CANADIAN INSTITUTE OF CHEMISTRY
 CANADIAN INSTITUTE MINING AND METALLURGY
 AMERICAN SOCIETY FOR TESTING MATERIALS
 AMERICAN SOCIETY FOR METALS
 AMERICAN CHEMICAL SOCIETY
 ASSOCIATION OF OFFICIAL RACING CHEMISTS
 NATIONAL ASSOCIATION OF CORROSION ENGINEERS

We Hereby Certify that the following are the results of assays made by us upon submitted ORE samples.

MARKED	GOLD		SILVER		LEAD (Pb)		COPPER (Cu)		COBALT (Co)		TOTAL VALUE PER TON (2000 LBS.)
	OUNCES PER TON	VALUE PER TON	OUNCES PER TON	VALUE PER TON	PER CENT.	VALUE PER TON	PER CENT.	VALUE PER TON	\$	VALUE PER TON	
332	0.10	\$ 3.50	0.2	\$							
333	13.24	463.10	1.3		COARSE ORE BIN	0.05			0.07		
334	1.80	63.90	1.3		JIG				0.83		
335	0.10	3.50	0.2		COPPER CONC.				19.03		
336	2.36	82.60	0.5		TAILINGS POND				0.51		
337	2.16	75.60	0.4		FLOOR #1 LEVEL	1.44%			0.88		
338	0.02	0.70	1.0		NEAR FACE #5	210ft			2.16		
339	0.02	0.70	0.3		PRIMARY DIKE POTAL #6				0.33		
					NEAR FACE #3	50ft			2.33		

The assay couldn't read my scale
 & assayed for lead on the other side of the
 1961

Gold calculated at \$ 35.00 per ounce.

Silver calculated at per ounce.

Calculated at cents per lb.

Calculated at cents per lb.

NOTE: Rejects retained one week.
 Pulps retained three months.
 Pulps and rejects may be stored for a
 maximum of one year by special
 arrangement.

H. Strang

Principal Assayer

State Department of Geology and Mineral Industries

1069 State Office Building
Portland 1, Oregon

STANDARD MINE, GRANT COUNTY

8994

Record of production made by Jim Kinsella during 1963, digested from smelter settlement record by N. S. Wagner.

Shipment to AS&R smelter, Tacoma — bulk ore.
Smelter contract #738 — Lot 1013
Date of settlement, June 26, 1963

Net wet weight — 32,820 lbs.
Net dry weight — 31,819 lbs.

	<u>Assay & analysis</u>	<u>Metal contents</u>
gold	0.81 oz.	12.9 ozs. - 449.00
silver	1.14 oz.	18.0 ozs. 23.10
copper	20.47 %	6,513 lbs. 1995.00
zinc	.80 %	2447.00
arsenic	1.88 %	
silica	14.2 %	
iron	27.8 %	
alumina	3.4 %	

(Metal quotations; Gold, \$34,9125; Silver, \$126.960; Copper, 30.350¢)

Metal value per ton \$ 133.18
Gross value per ton \$2,118.90

N. S. Wagner
2-15-66

State Department of Geology and Mineral Industries

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Portland 1, Oregon

STANDARD MINE, GRANT COUNTY

Record of production made by J. J. Kinsella, during 1963, digested from smelter settlement record by N. S. Wagner.

Shipment to AS&R smelter, Tacoma*
Smelter contract #740
Date of settlement, July 2, 1963

Net wet weight -----2010 lbs.
Net dry weight -----2005 lbs.

	<u>Assay & analysis</u>	<u>Metal content</u>
gold	12.34 ozs.	12.4 ozs.
silver	1.35 ozs.	1.0 ozd.
copper	2.76 %	55. lbs
zinc	-----	-----
arsenic	33.45 %	
antimony	0.80 %	
Bismuth	0.22 %	
silica	6.8 %	
cobalt	8.4 %	

(Metal quotations, gold 34.9125; copper 30.350)

Gross value per ton -- \$417.01
Gross value, shipment - 418.05

* This shipment included concentrates from Nevada and the Greenhorns along with Standard material.

State Department of Geology and Mineral Industries

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Portland 1, Oregon

STANDARD MINE, GRANT COUNTY

Record of production made by J. J. Kinsella during 1963 digested from smelter settlement records by N. S. Wagner.

Shipment No. 3 to AS&R smelter, Tacoma — bulk ore.
Smelter contract #738 — Lot 2361
Date of settlement, January 17, 1964

Net wet weight ——— 41540 lbs.
Net dry weight ——— 40427 lbs.

	<u>Assay & analysis</u>	<u>Metal content</u>
gold	0.50 ozs	10.1 ozs.
silver	0.99 ozs.	20.0 ozs.
copper	16.34 %	6,606 lbs.
zinc	0.10 %	
arsenic	1.04 %	
silica	18.6 %	

(Metal quotations, gold, \$34.9125; Silver 128.900; Copper 30.350)

Gross value per ton ——— \$ 100.44
Gross value, shipment ——— \$ 2030.23

N. S. Wagner 1/23/64

State Department of Geology and Mineral Industries

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STANDARD MINE, GRANT COUNTY

Record of production made by J. J. Kinsella, during 1964 digested from smelter settlement records by N. S. Wagner.

Shipment No. 1 to AS&R smelter, Tacoma — bulk ore.
Smelter contract #738 — Lot 1280
Date of settlement, July 18, 1964

Net wet weight ————— 50,640 lbs.
Net dry weight ————— 49,728 lbs.

	<u>Assay & Analysis</u>	<u>Metal content</u>
gold	0.42 oz.	10.4 ozs.
silver	1.17 ozs.	29.0 ozs.
copper	21.41 %	10,647 lbs.
arsenic	.58 %	
antimony	.31 %	
silica	14.3 %	
iron	25.4 %	
lime	.8 %	
sulphur	32.9 %	
alumina	4.2	

(Metal quotations, gold \$34.9125 ; Silver, \$128.900 ; Copper, 31.350¢)

Metal value per ton — \$129.94
Gross value, shipment — \$3,230.93

State Department of Geology and Mineral Industries

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Portland 1, Oregon

STANDARD MINE, GRANT COUNTY

Record of production made by J. J. Kinsella during 1964, digested from smelter settlement records by N. S. Wagner.

Shipment to AS&R smelter, Tacoma — bulk ore
Smelter contract #738 — Lot 1773
Date of settlement, October 20, 1964

Net wet weight ——— 50,880 lbs.
Net dry weight ——— 49,913 lbs.

	<u>Assay & analysis</u>	<u>Metal contents</u>
gold	0.57 ozs.	14.2
silver	1.26 ozs.	31.0
copper	20.25 %	10,107 lbs.
arsenic	0.46 %	
antimony	0.18 %	
silica	13.30 %	

(Metal quotations; Gold, \$34.9125; Silver, \$128.900; Copper, 33.350¢)

Metal value per ton ——— \$ 135.86
Gross value ~~per ton~~ ——— 3,390.70

N. S. Wagner
2-15-66

State Department of Geology and Mineral Industries

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Portland 1, Oregon

STANDARD MINE, GRANT COUNTY

Record of production made by J. J. Kinsella during 1964, digested from smelter settlement records by N. S. Wagner.

Shipment to AS&R smelter, Tacoma — bulk ore.
Smelter contract #738 — Lot 1900
Date of settlement, November 5, 1964

Net wet weight ——— 15,200 lbs.
Net dry weight ——— 14,828 lbs.

	<u>Assays & analysis</u>	<u>Metal content</u>
gold	0.50 ozs.	3.7 ozs.
silver	1.27 ozs.	9.0 ozs.
copper	20.68 %	3,066 lbs
arsenic	.85 %	
silica	14.40 %	

(Metal quotations; Gold, 34.9125; Silver, 128.900; Copper, 30.3504)

Metal value per ton — \$ 136.32
Gross value ~~per ton~~ \$ 1,010.70

N. S. Wagner
2-15-66

State Department of Geology and Mineral Industries

1069 State Office Building
Portland 1, Oregon

STANDARD MINE

QUARTZBURG
AREA

8994

The attached copy of A.S. & R. settlement sheet for contract 769, Lot 2389, represents the production made by L.R. Murdock from Jim Kinsella's upper tunnel on the Standard Mine, Grant County, Oregon, during 1965. Mr. Kinsella did not produce during 1965; hence the shipment by Murdock as an alternate lessee.

Procured by NSW
May 25, 1966

party of L.R. Murdoch Box 412 Prairie City, Oregon.
AMERICAN SMELTING AND REFINING COMPANY

FACT NO. 769

TACOMA SMELTER
 P. O. BOX 1605
 Tacoma 1, Washington

DATE 11/18/65
 SMELTER LOT NO. 2389
 MINE LOT NO. _____
 MATERIAL Bulk Ore
 DATE RECEIVED 10/26/65
 ENTRY _____
 MINE NAME _____
 CAR OR VESSEL Truck

STATEMENT OF SETTLEMENT

NAME OF SHIPPER Clyde D. Johnson
Standard Mine
General Delivery
John Day, Oregon

GROSS WEIGHT _____ LBS.
 CONTAINERS _____ LBS.
 NET WEIGHT 25420 LBS.
 MOISTURE 1.00 %
 NET DRY WEIGHT 25166 LBS.

METAL QUOTATIONS:	DATES	PRICE	LESS	NET
GOLD		<u>349.25</u>		
SILVER <u>H & H</u>	<u>11/1-5</u>	<u>128.900</u>	<u>1.000</u>	<u>127.900</u>
LEAD				
COPPER <u>Customs</u>	<u>11/1-5</u>	<u>35.975</u>	<u>3.000</u>	<u>32.975</u>
COPPER				

	ASSAY & ANALYSIS	METAL CONTENTS					DEBITS		CREDITS	
		OZS.	OZS. @	%	UNITS @	%				
GOLD	<u>61</u>	<u>7.7</u>	<u>91.14%</u>	<u>Min deduct. 0.3g</u>	<u>7.0</u>			<u>244</u>	<u>39</u>	
SILVER	<u>162</u>	<u>20</u>	<u>95.0% MIN.</u>	<u>0.5</u>	<u>14</u>			<u>17</u>	<u>91</u>	
LEAD										
COPPER	<u>2029</u>	<u>5106</u>	<u>1.0</u>		<u>4854</u>			<u>1600</u>	<u>61</u>	
COPPER										
ZINC	<u>3</u>	% LESS	UNITS	% @	\$					
ARSENIC	<u>31</u>	% LESS	UNITS	% @						
ANTIMONY		% LESS	UNITS	% @						
NICKEL		% LESS	UNITS	% @						
DIS H		% LESS	UNITS	% @						
TIN		% LESS	UNITS	% @						
CHLORINE		% LESS	UNITS	% @						
SILICA	<u>148</u>	% LESS	UNITS	% @						
IRON	<u>298</u>	% LESS	UNITS	% @						
LIME	<u>6</u>	% LESS	UNITS	% @						
SULPHUR	<u>282</u>	% LESS	UNITS	% @						
ALUMINA	<u>13</u>	% LESS	UNITS	% @						
BASE CHARGE								<u>11</u>	<u>00</u>	
LABOR	PER HR. \$	BASE \$	@	c FOR EA.	c					
OIL	PER BBL \$	BASE \$	@	c FOR EA.	c					
METAL VALUE PER TON \$ <u>148.05</u>						BASE \$ <u>100.00</u>	@ <u>10.0%</u>	<u>4</u>	<u>81</u>	
TOTAL TREATMENT PER TON						<u>25166</u> LBS. @ \$ <u>15</u>	<u>81</u>	<u>198</u>	<u>94</u>	
SAMPLING AND ASSAYING										
FREIGHT	LBS. @ \$	PER TON \$		TAXES \$						
SMELTER LABOR (DISCHARGING)	\$			SWITCHING \$						
SACK CHARGE	LBS. @ \$	PER TON								
IN SOLID BOTTOM CAR	LBS. @ \$	PER TON								
UMPIRE CHARGES \$		CUSTOMS \$		REPRESENTATION \$						
ADVANCED ON										
ROYALTY	% OF \$									
						DUE SHIPPER	<u>1663</u>	<u>97</u>	XXXXXXXX XXXXXX	
						DUE SMELTER	XXXXXXXX	XXXXXX		
						TOTALS	<u>1862</u>	<u>91</u>	<u>1862</u>	<u>91</u>

State Department of Geology and Mineral Industries

702 Woodlark Building
Portland 5, Oregon

STANDARD MINE

Granite District
Grant County

Owner: John Leuck, Granite, Oregon.

Location: Middle of sec. 11, T. 8 S., R. 35 $\frac{1}{2}$ E.W.M.

Area: 2 unpatented claims.

History: First discovered in the early '80s, and last worked in 1899. Leuck started reopening the workings on December 24, 1938. \$1100 is said to have been taken out of the old shaft; some of the ore was shipped, some hauled to an old arrastre.

Equipment: Tools, wheelbarrow. Winch hand made.

Development: 100 feet of crosscut and 50 feet of drift reopened in old workings. 25-foot shaft dug. Old workings said to total about 300 feet.

Geology: Country rocks granite and schist. There are two veins; one is small (up to 8 inches wide) striking NE and SW; the other larger (at least 4 feet) striking E-W. Values are said to be most at junction of veins in shaft, with up to \$25 gold and 20 ounces silver. Sulfides mostly galena and pyrite, with some arsenopyrite (?), sericite, limonite, etc. The large vein in the shaft is hard quartz at least 6 feet wide. It strikes N.65°E. and is vertical.

Miscellaneous: Distance is 9 miles to Granite; 3 miles to Granite road by forest road. Climate is fairly mild; 6-10 feet of snow in winter; season open April to December. Water is available from Crane or Little Onion creeks. Relief is insufficient to get much depth on ore body without sinking.

"Development consists of one 400-foot tunnel. Vein in quartz-mica schist. Quartz, pyrite, and arsenopyrite. No milling recorded; about 10 percent sulfides. No production."

Informant: John Leuck; J.E.A. 9/23/39.

Reference: Hewett 31:15 (quoted).

#140

Standard Mine

Granite District

Grant County

Owner: John Leuck, Granite, Oregon

Location: Middle of section 11, T 8 S, R 35 $\frac{1}{2}$ E. W. M.

Area: 2 unpatented lode claims

History: First discovered in the early '80's, and last worked in 1899. Leuck started reopening the workings on December 24, 1938. \$ 1100 is said to have been taken out of the old shaft; some of the ore was shipped, some hauled to the old arrastra.

Equipment: Tools, wheelbarrow, Winch hand made.

Development: 100 feet of crosscut and 50 feet of drift in old workings reopened. 25 feet shaft dug. Old workings said to total about 300 feet.

Geology: Country rock granite and schist. Two veins, one small (up to 8 inches wide) striking NE and SW; the other larger (at least 4 feet) striking EW. Values said to be mostly at junction in shaft, with up to \$25 gold and 20 ounces silver. Sulfides mostly galena and pyrite, with some arsenopyrite (?), sericite, limonite, etc. The large vein in the shaft strikes N. 65° E., vertical, and is hard quartz at least 6 feet wide.

Miscellaneous: Transportation 9 miles to Granite, 3 miles to Granite road by forest road. Climate fairly mild, 6 - 10 feet of snow in winter, season open April to December. Water available from Crane or Little Onion Creeks. Relief insufficient to get much depth on ore body without sinking.

Informant: John Leuck

Report by : J.E.A. 9/23/39

John Eliot Allen
State Dept. of Geology and Mineral
Industries, 702 Woodlark Bldg.,
Portland, Oregon

Standard Mine

Gold

NAME OLD NAMES PRINCIPAL ORE MINOR MINERALS

446

TBS R35 1/2 EWM Sec. 11 middle
T R S

PUBLISHED REFERENCES

Oregon Metal Mines Handbook 14B:64
Hewett 31:15

.....Grant..... COUNTY
.....Granite..... AREA
.....about 5500..... ELEVATION
..... ROAD OR HIGHWAY
.....about 25 mi. Sumpter.... DISTANCE TO
SHIPPING POINT

MISCELLANEOUS RECORDS

PRESENT LEGAL OWNER (S) ..John Leuck.....
Bert Hayes.....
.....
.....

AddressGranite, Ore.....
.....
.....
.....

OPERATOR

Name of claims	Area	Pat.	Unpat.
2 lode claims			x

Name of claims	Area	Pat.	Unpat.

EQUIPMENT ON PROPERTY
.....
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