Location/Identification

MINFILE Number: 082ESW010
National Mineral Inventory Number: 082E5 Au4
Name(s): **GRANDORO**
ORO FINO (L.1448), INDEPENDENCE (L.1449), OROFINO, GRANDORO (L.3109S), KING, JOHN, B.E.

Status: Past Producer
Mining Method Underground
Regions: British Columbia
BCGS Map: 082E022
NTS Map: 082E05E
Latitude: 49 15 44 N
Longitude: 119 40 53 W
Elevation: 1490 metres
Location Accuracy: Within 500M
Mining Division: Osoyoos
Electoral District: Yale-Lillooet
Resource District: Okanagan Shuswap Forest District
UTM Zone: 11 (NAD 83)
Northing: 5460066
Easting: 304919
Comments: The approximate location of the Upper Independence adit (Assessment Report 9933). See also Twin Lakes (082ESW011) and Orofino Mountain (082ESW113).

Mineral Occurrence

Commodities: Gold, Silver, Lead, Zinc

Minerals
Significant: Pyrite, Gold, Galena, Sphalerite
Associated: Quartz
Alteration: Chlorite
Alteration Type: Chloritic
Mineralization Age: Unknown

Deposit
Character: Vein, Discordant
Classification: Mesothermal, Hydrothermal, Epigenetic
Type: I05: Polymetallic veins Ag-Pb-Zn+/-Au, I01: Au-quartz veins
Shape: Irregular
Modifier: Faulted
Dimension: 2x0x0 metres
Strike/Dip: 105/50W
Comments: Veins at the Grandoro occurrence vary from 0.3 to 2.0 metres width. In the Orofino adit the vein strikes 105 degrees and dips 50 degrees southwest.

Host Rock

Dominant Host Rock: Plutonic

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Paleozoic-Mesozoic	Undefined Group	Shoemaker	------
Middle Jurassic	------	------	Nelson Intrusions
Jurassic	------	------	Oliver Plutonic Complex

Isotopic Age	Dating Method	Material Dated
------	------	------
------	------	-
152 +/-3 Ma	Uranium/Lead	Zircon

Lithology: Hornblende Gabbro, Biotite Hornblende Diorite, Biotite Schist, Granite, Granodiorite, Quartzite
Comments: Refer to Fieldwork 1988, pages 19-25 for age data. The Shoemaker Formation is of Carboniferous to Triassic age.

Geological Setting

Tectonic Belt: Intermontane
Physiographic Area: Okanagan Highland
Terrane: Okanagan, Plutonic Rocks

Metamorphic Type: Regional **Relationship:** Pre-mineralization

Grade: Greenschist

Inventory

Ore Zone: ADIT **Year:** 1988

Category: Assay/analysis **Report On:** N

NI 43-101: N

Sample Type: Unknown

Commodity	Grade
Gold	3.8400 grams per tonne

Comments: Sample 15631, from the Upper Independence adit.

Reference: Property File - Brightwork Resources Inc. (1988): Prospectus.

Summary Production

		Metric		Imperial	
Mined:		12,048	tonnes	13,280	tons
Milled:		10,228	tonnes	11,274	tons
Recovery	Gold	123,698	grams	3,977	ounces
	Silver	37,853	grams	1,217	ounces
	Lead	79	kilograms	174	pounds
	Zinc	5	kilograms	11	pounds

Capsule Geology

The Grandoro occurrence is located 1.5 kilometres north of the peak of Orofino Mountain, 13 kilometres northeast of Keremeos, British Columbia. It is one of three main occurrences forming the historic Orofino Mountain gold camp.

Orofino Mountain gold camp activity began shortly after the Fairview camp was discovered in the 1880s. Prospecting began in the area in the 1890s. In 1896, Watkin and Winkler trenched and excavated a 3.6-metre shaft on the Oro Fino claim. By 1898, Oro Fino Mines Ltd. had acquired the Oro Fino (Lot 1448) and Independence (Lot 1449) claims and carried out more than 122 metres of development work. A 3-stamp mill was erected and a small amount of ore was tested. The claims were Crown granted in 1900. Oro Fino Mining Co. Ltd. was formed in 1930 and the property was optioned to Somerville and associates. Opencuts and a new adit on the Independence claim intersected some high-grade ore. Grandoro Mining and Milling Co. Ltd. acquired the property in 1931. The new adit was extended and a winze sunk 73 metres. A lower adit was driven 91 metres. A small amount of ore was tested at the neighbouring Twin Lakes property (082ESW011). Grandoro Mines Ltd. acquired the property in 1934 and a winze was sunk 45.7 metres on the Oro Fino claim. A 76.2-metre west drift and a 61.0-metre east drift were driven. Ore was mined in 1934 and tested at the Twin Lakes mill in 1935. Gold Standard Fairview Mining Co. Ltd. leased the property in 1936, with additional ore milled. The property was leased again from 1938 to 1941 with ore shipped in the latter two years. Drifting intersected ore in 1941 and 15-metre section of ore was stoped. The claims, owned by M. Hatfield, and the surrounding Orofino Mountain property, owned by G. Crooker, were optioned by Brightwork Resources Inc. in 1988.

The Grandoro property is located within the Intermontane Belt near its eastern boundary with the Omineca Belt. The property is underlain by complexly deformed metamorphic rocks of the Carboniferous to Permian Kobau Group, and west and northwest trending sequences of quartzite, chert and greenstone belonging to the Carboniferous to Triassic Shoemaker and Old Tom formations. These are intruded by gabbroic to granitic rocks of the Middle Jurassic Nelson plutonic complex and Similkameen batholith, Jurassic Oliver plutonic complex and Jurassic to Cretaceous Fairview intrusion. Eocene vesicular basalts of the Marron Formation, Penticton Group are block-faulted against older rocks on the north and west sides of the property.

On the northwestern slopes of Orofino Mountain, the oldest rocks are quartzite of the Kobau Group. Light grey, massive to thinly bedded quartzites of the Shoemaker Formation form two relatively narrow bands which strike west and northwest, and dip mainly to the southwest at 70 to 80 degrees. These rocks are adjacent to altered dioritic rocks, varying from massive coarse-grained hornblende gabbros and biotite diorite, to fine-grained biotite schist. Near the quartzite-diorite contact, mineralized quartz veins strike north to northeast and dip moderately to steeply to the southeast or steeply to the west.

The best mineralized veins in the Orofino Mountain gold camp appear to strike north to northeast and dip 45 degrees southeast to near vertical.

Trenching and drilling in 1987 have revealed a complex fault pattern which displaces veins left laterally by steep northeast faults or shallow faults. The intersection of these faults with veins appears to structurally control gold values.

Fluid inclusion and stable isotope studies at the Grandoro occurrence indicate mesothermal fluids were responsible for mineralization events. The fluids are characterized by a high carbon dioxide content, temperatures of 280 to 330 degrees Celsius, salinities of 4 to 6 weight per cent NaCl and oxygen del 18 values of 4 to 6 per mil (relative to standard mean ocean water). The mineralization occurred at depths of 3 to 4 kilometres. In the 1930s, two underground workings, the Orofino adit and the Lower and Upper Independence adits, were developed. They exposed two northeasterly trending quartz veins within chloritized hornblende- rich gabbro and diorite, and fine-grained biotite schist. In the Upper Independence adit, one vein strikes 160 degrees and dips 45 degrees southwest and the other strikes 208 degrees and dips 30 degrees northwest. A shear at the south end of the adit strikes 030 degrees and dips 60 degrees southeast. In the Orofino inclined adit the quartz vein strikes 105 degrees and dips 50 degrees southwest. The vein width is variable, from 30 to 50 centimetres where exposed in the adit, but appears to pinch out in either direction. Veins are reportedly highly fractured and lenticular, varying in width from 30 centimetres to 2.0 metres. Mineralization consists of pyrite, lesser amounts of galena, and occasional rich pockets of free gold.

In 1988, six trenches were excavated near the Upper Independence adit to trace the vein along strike. Quartz veins were observed in trenches 1 and 16. The vein in Trench 16 was shear hosted and was oriented different than other veins. Samples from Trench 1 yielded the best results. Sample 16701 yielded 1.78 grams per tonne gold from a 1.0-metre channel sample of barren quartz. Sample 16702 yielded 71.86 grams per tonne gold (Property File - Brightwork Resources Inc. (1988): Prospectus). This sample, a 0.7-metre chip sample, was taken from the same location as sample K-31 in 1981 which yielded 37.71 grams per tonne gold (Property File - Brightwork Resources Inc. (1988): Prospectus). The remaining samples yielded up to 0.24 gram per tonne gold (Property File - Brightwork Resources Inc. (1988): Prospectus). Three trenches were excavated on a small quartz vein near the Orofino adit. Gold values obtained from trench samples ranged up to 0.03 gram per tonne (Property File - Brightwork Resources Inc. (1988): Prospectus). Samples from several other trenches on the property yielded values ranging from 1.06 grams per tonne gold (Property File - Brightwork Resources Inc. (1988): Prospectus).

Five samples were taken from the portal of the Lower Independence adit in 1988. The best results were from sample 16895, which yielded 1.10 grams per tonne gold (Property File - Brightwork Resources Inc. (1988): Prospectus). The sample was taken across a 10-centimetre barren quartz vein, striking 124 degrees and dipping 10 degrees southwest. The vein is intersected by a shear striking 035 degrees and dipping 10 degrees southeast. A total of 8 samples were taken from the Upper Independence adit in 1988. Three of these samples yielded significant gold values. Sample 15630 yielded 0.89 gram per tonne gold, sample 15631 yielded 3.84 grams per tonne gold and sample 15601 yielded 25.23 grams per tonne gold. Eight samples were taken from the Orofino adit in 1988. The highest gold values were from four samples taken from the northwest face of the adit. Sample 15607 yielded 4.35 grams per tonne. Sample 15623 yielded 3.02 grams per tonne; sample 15625, 7.30 grams per tonne and sample 15626, 6.99 grams per tonne (Property File - Brightwork Resources Inc. (1988): Prospectus).

Eight samples were taken from the Grandoro property in 1981. Chip sample K-31 over 0.70 metre yielded 37.71 grams per tonne gold and 3.8 grams per tonne silver (Assessment Report 9933).

Ore mined and shipped to the Trail smelter in 1933 averaged 60.68 grams per tonne gold (Minister of Mines Annual Report 1933, page 168).

Intermittent total recorded production for the Grandoro occurrence between 1899 and 1941 was 12,048 tonnes mined and 10,228 tonne milled. From this, 37,853 grams of silver, 123,698 grams of gold, 79 kilograms of lead and 5 kilograms of zinc were recovered.

Bibliography

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GSC P 37-21
GCNL #44(Mar.2),#106(June 1),#121(June 22),#134(July 12), 1990

EMPR PFD 1612, 904612, 904677, 904678, 886266, 886267, 823583, 823631, 824918, 672527, 680071

Date Coded:	1985/07/24	**Coded By:**	BC Geological Survey (BCGS)	**Field Check:**	N
Date Revised:	2007/08/01	**Revised By:**	Sarah Meredith-Jones (SMJ)	**Field Check:**	N