



MINFILE Detail Report
BC Geological Survey
Ministry of Energy, Mines and Petroleum Resources

Location/Identification

MINFILE Number: 082ENW036 **National Mineral Inventory Number:** 082E11 Mo1

Name(s): CARMI MOLY
DOE, MARY O, FAN, CA, PFC, MY, MARY, MAY, HUCK, MARC, LINDA, LAND FR., E, LAKE

Status: Developed Prospect **Mining Division:** Greenwood

Regions: British Columbia **Electoral District:** Boundary-Similkameen

BCGS Map: 082E055 **Resource District:** Selkirk Natural Resource District

NTS Map: 082E11E **UTM Zone:** 11 (NAD 83)

Latitude: 49 31 05 N **Northing:** 5487306

Longitude: 119 10 04 W **Easting:** 343100

Elevation: 0 metres

Location Accuracy: Within 500M

Comments: Location of the E Zone (Assessment Report 16102).

Mineral Occurrence

Commodities: Molybdenum, Copper, Uranium, Silver, Gold

Minerals

Significant: Molybdenite, Chalcopyrite, Bornite, Brannerite, Uraninite, Pyrite

Associated: Quartz, Pyrite, Muscovite, Fluorite, Magnetite

Alteration: Sericite, Epidote, Chlorite, Fluorite, Muscovite, Quartz

Alteration Type: Sericitic, Greisen

Mineralization Age: Unknown

Deposit

Character: Stockwork, Disseminated, Breccia

Classification: Porphyry, Hydrothermal

Type: L05: Porphyry Mo (Low F- type), D06: Volcanic-hosted U

Shape: Tabular **Modifier:** Other

Dimension: 1800x500x0 metres **Strike/Dip:** 110/00

Comments: E Zone.

Host Rock

Dominant Host Rock: Plutonic

| Stratigraphic Age | Group | Formation | Igneous/Metamorphic/Other |
|-------------------|-------|-----------|---------------------------|
| Middle Jurassic | ----- | ----- | Unnamed/Unknown Informal |
| Tertiary | ----- | ----- | Valhalla Complex |

| Isotopic Age | Dating Method | Material Dated |
|--------------|---------------|----------------|
| ----- | ----- | - |
| ----- | ----- | - |

Lithology: Granodiorite, Biotite Granodiorite, Quartz Diorite, Muscovite Biotite Quartz Monzonite, Quartz Monzonite, Breccia, Greisen, Alaskite, Feldspar Porphyry Dike

Comments: Greisen-type fracture-controlled mineralization also occurs in alaskite stocks of the Valhalla Complex.

Geological Setting

Tectonic Belt: Omineca **Physiographic Area:** Okanagan Highland

Terrane: Quesnel, Plutonic Rocks

Inventory

Ore Zone: CARMI MOLY **Year:** 2008
Category: Indicated **Report On:** Y
Quantity: 12,906,000 tonnes **NI 43-101:** Y

| Commodity | Grade |
|------------|----------------|
| Molybdenum | 0.058 per cent |

Comments: using a 0.026 per cent molybdenum cut-off grade

Reference: Ewert, W. (2008-09-25): Technical Report and Resource Estimate on the Carmi Molybdenum Deposit, Kettle River Property

Ore Zone: CARMI MOLY **Year:** 2008
Category: Inferred **Report On:** Y
Quantity: 27,385,000 tonnes **NI 43-101:** Y

| Commodity | Grade |
|------------|----------------|
| Molybdenum | 0.056 per cent |

Comments: using a 0.026 per cent molybdenum cut-off grade

Reference: Ewert, W. (2008-09-25): Technical Report and Resource Estimate on the Carmi Molybdenum Deposit, Kettle River Property

Ore Zone: E **Year:** 1985
Category: Indicated **Report On:** Y
Quantity: 17,000,000 tonnes **NI 43-101:** N

| Commodity | Grade |
|------------|-----------------|
| Molybdenum | 0.0630 per cent |

Comments:

Reference: Assessment Report 16102.

Ore Zone: LAKE **Year:** 1985
Category: Indicated **Report On:** Y
Quantity: 3,700,000 tonnes **NI 43-101:** N

| Commodity | Grade |
|------------|-----------------|
| Molybdenum | 0.0660 per cent |

Comments:

Reference: Assessment Report 16102.

Ore Zone: CARMI MOLY **Year:** 1985
Category: Indicated **Report On:** Y
Quantity: 20,700,000 tonnes **NI 43-101:** N

| Commodity | Grade |
|------------|-----------------|
| Molybdenum | 0.0640 per cent |

Comments: Total drill indicated open pitable resource is calculated as 17.0 million tonnes grading 0.105 per cent MoS₂ for the E Zone and 3.7 million tonnes grading 0.110 per cent MoS₂ for the Lake Zone. Conversion for MoS₂ to molybdenum is 0.6. Conversion for MoS₂ to molybdenum is 0.6.

Reference: Assessment Report 16102.

Capsule Geology

The CARMI MOLY deposit is located approximately 10 kilometres northwest of Beaverdell and 45 kilometres south-southeast of Kelowna.

An unnamed Middle Jurassic intrusion overlies a partially unroofed stock of the Valhalla Complex (Tertiary?). The Jurassic intrusive rocks are medium-grained foliated biotite granodiorites, cut by smaller bodies of related quartz diorite and quartz monzonite. The Valhalla Complex is a leucocratic muscovite-biotite quartz monzonite with several late-stage derivatives, including feldspar porphyry dikes and the matrix of the mineralized breccia zones.

Two mineralized breccia zones, the E and Lake zones, are localized within a thin fault-dissected cover of Nelson granodiorite.

The E zone breccia is characterized by a series of flat-lying to gently-dipping tabular breccia bodies along a 110 degree strike, over a length of 1800 metres with a width up to 500 metres. In the central part of the E zone breccia, the matrix is granodiorite intermixed with pegmatite, quartz, aplite, muscovite and biotite. Molybdenite occurs as rosettes within fragments, as thin lamellae on fragment/matrix boundaries, and as discrete flakes within the matrix. Where alteration within the breccia zone is intense, a greisen zone, consisting of quartz, muscovite, fluorite, sericite, epidote, chlorite and molybdenite, is developed in alaskite stocks of the Valhalla Complex. Pyrite, magnetite, chalcopyrite and minor bornite occur as fracture-fillings, blebs and disseminations within the mineralized zones. Associated uranium mineralization, represented by brannerite, is sporadically disseminated in the granodiorite, accompanied by purple fluorite. A drillhole (V8) intersected 0.038 per cent uranium (0.045 per cent U₃₀₈) and 0.336 per cent molybdenum over 10.7 metres (Assessment Report 5203). This intersection, from 93 to 104 metres, included a 7.6 metre intersection of 0.05 per cent uranium (0.06 per cent U₃₀₈).

The Lake Zone is about 750 metres west of the E zone. It dips steeply north and strikes 110 degrees. It is about 600 metres long, up to 150 metres wide and extends up to 400 metres depth. The matrix of the breccia consists of quartz monzonite intermixed with pegmatite, abundant quartz and aplite. Within the porphyry, quartz-sericite alteration zones form along incipient fractures. These zones average 15 centimetres in width and locally are up to 6 metres wide. Disseminated molybdenite occurs within the sericitized rock. Silver and gold values were also reported in core (Assessment Report 5203).

A third zone of molybdenite mineralization, referred to as the Pegmatite zone, is located approximately 1750 metres south east of the E zone. At the Pegmatite zone disseminated molybdenite occurs in a sheared pegmatite zone located at the top of a leucocratic quartz monzonite stock. The zone was tested by a percussion drill hole (79-P-94) in 1979 and is reported to have yielded 0.113 per cent molybdenum over 9.2 metres near surface and 0.03 per cent molybdenum over 12.2 metres at depth (Ewert, W. (2008-09-25): Technical Report and Resource Estimate on the Carmi Molybdenum Deposit, Kettle River Property).

The porphyry-breccia deposit is thought to have evolved by explosive venting of the underlying stock with breccia formation in structurally controlled cap rocks. Simultaneous magmatic emplacement of mineral phases from the stock developed in breccia voids. Subsequently, mineralized greisens formed in root zones of the stock.

Total drill indicated open pitable resource, calculated in 1985, is 17.0 million tonnes grading 0.063 per cent molybdenum (0.105 per cent MOS₂) for the E Zone and 3.7 million tonnes grading 0.066 per cent molybdenum (0.110 per cent MOS₂) for the Lake Zone (Assessment Report 16102). In 1979, the total estimated open pitable geological resource, including the drill indicated resource, was 27 million tonnes grading 0.05 to 0.10 per cent MoS₂ for the E Zone and 13 million tonnes grading 0.05 to 0.10 per cent MoS₂ for the Lake Zone (Assessment Report 16102). In addition, at depth in the Lake Zone a drill indicated resource of about 4.5 million tonnes of over 0.2 per cent molybdenum (0.33 per cent MOS₂) occurs over an average 8.5-metre width (Assessment Report 16102). This resource is not amenable to open pit mining.

In 1990, Placer Dome Inc. drilled 3 diamond-drill holes which were positioned parallel to 3 old percussion holes. The results indicated that considerable down-hole contamination took place in the original percussion drilling, especially near the hole bottoms. The impact of this on the ore reserve potential of the property is unknown. The weighted average content of uranium and thorium in the 1990 drill holes are 7.6 and 8.3 parts per million respectively (Assessment Report 20275). This is slightly higher than a normal average for uranium in an acid intrusive rock, and approximately one-half of what could be considered a normal average for thorium (Assessment Report 20275).

In 2008, Hi Ho Silver Resources Inc. reported an updated mineral resource for the Carmi Moly deposit of 12.906 million tonnes indicated grading 0.058 per cent molybdenum and 27.385 million tonnes inferred grading 0.056 per cent molybdenum, using a 0.026 per cent molybdenum cut-off grade (Ewert, W. (2008-09-25): Technical Report and Resource Estimate on the Carmi Molybdenum Deposit, Kettle River Property).

Work History

Initial work in the area was conducted by Kennco Exploration Limited following the identification of molybdenum anomalies in the Beaverdell area by a 1960 reconnaissance stream geochemical survey. Between 1961 and 1980 a major exploration effort was focused on this area by a number of independent exploration companies including International Minerals and Chemicals Limited, Husky Oil Limited, Granby Mining Corporation, Craigmont Mines Limited, Union Oil Company of Canada Limited and Vestor Explorations Ltd. Work included: detailed geological mapping and prospecting; soil, water and silt geochemistry; bulldozer trenching and chip sampling; detailed shallow and deep penetrating induced polarization, resistivity and magnetometer surveys; and percussion and diamond drilling. In 1985 Vestor Explorations Ltd. and Dynamic Oil Limited carried out a limited percussion drilling program. In 1990, Placer Dome Inc. executed a 3-hole diamond drill program. A total of approximately 21,533 metres of drilling has been carried out on the property in 140 percussion-drill holes and 48 diamond-drill holes. During 2001 through 2005, St. Elias acquired the property and staked additional claims. In 2005, Hi Ho Silver Resources Inc. optioned the property. During 2006 through 2008, Hi Ho Silver completed 32 diamond drill holes on the property.

Bibliography

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|----------------------|------------|--------------------|-----------------------------|---------------------|---|
| Date Coded: | 1985/07/24 | Coded By: | BC Geological Survey (BCGS) | Field Check: | N |
| Date Revised: | 2020/07/19 | Revised By: | Karl A. Flower (KAF) | Field Check: | N |