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MEMO TO: File

DATE: December 19, 1977

FROM: G.S.W. Bruce

SUBJECT: Arrow Joint Venture - Boyd Property - Technical (82K/13,14)

This is the last of the Arrow properties on which work was carried out in 1977.

There are lead and zinc geochemical anomalies, very closely correlated, with lead values up to 400-500 p.p.m. and zinc values up to 500-1000 p.p.m. The area of anomalous lead and zinc results is approximately 600-700 metres long. One of the underlying rock units, a limey sericite phyllite is locally anomalous in both metals (at one location rock chips assayed 0.2% Pb, 1.0% Zn).

In my opinion I think there is an excellent chance that the anomaly is caused by the sericite phyllite rock unit and I therefore do not feel that further work is justified at this time.

GSWB/ib

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ARROW PROJECT (Dome Group of 4 Companies, 47.36%) *June/77*

Field work continued on this joint venture programme in south central B.C. during June.

Reconnaissance geochemical soil sampling was carried out during the month over two areas.

Two drill holes were completed on the Slide Group during June for a total of 460 feet. One of the holes intersected a narrow, low-grade sulphide zone with minor lead-zinc values. The zone is not of economic interest.

ARROW PROJECT (Dome Group of 4 Companies, 47.36%) *July/77*

Reconnaissance geochemical soil sampling, prospecting and geologic mapping continued over three areas on this joint venture programme in south central B.C.

Drilling on the Slide Property, consisting of 3 holes totalling 700 feet, has now been completed. No economic mineralization was found.

ARROW PROJECT (Dome Group of 4 Companies, 47.36%) *Nov. 1977*

A technical report on the work carried out during the 1977 field season over the Boyd Group was received during November.

Work consisted of soil and stream sediment sampling, rock sampling, geological mapping and linecutting.

A lead-zinc anomaly, probably derived from non-economic concentrations of these metals in a phyllite bed, was outlined.

ARROW PROJECT (Dome Group of 4 Companies, 7.36%)

Sept. /76

This joint venture programme located in south-eastern British Columbia continued during September.

Work during the period consisted of staking, geochemical sampling and geophysics on three properties, and the staking of a fourth property.

Thirty claims were staked at Boyd Creek on geochemical anomalies.

30

One hundred and thirty-three claims were staked on the Slide property. Geophysical work has outlined two conductors.

130

The Cherry Creek property consists of 64 claims. Electromagnetic surveys revealed conductors which apparently coincide with geochemical anomalies.

64

Thirty-two claims were staked north of the Cottonbelt property to cover lead-zinc geochemical anomalies.

32

Field work was terminated at the end of the month due to snow at higher elevations and heavy rain elsewhere.

ARROW PROJECT (Dome Group of 4 Companies, 47.36%)

Jan. /77

During January, planning was started for the 1977 exploration programme which will involve continuing regional and detailed prospecting in south-central B.C.

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Rock Units

The latest published geological map of the Lardeau West Half Sheet (P. B. Read, 1976) shows that the Badshot Formation and formations of the Hamill Group are repeated several times at Carbonate King Creek. The Hamill Group, exposed at the head of Carbonate King Creek, forms the backbone of the rugged mountains to the northeast of Boyd Creek. Lying along the southwest side of this quartzite formation is a persistent white limestone bed which has been assigned to the Badshot Formation and will be called the "main Badshot limestone". Additional strata (phyllites and limy formations) lying southwest of this main Badshot limestone bed are also included in the Badshot Formation. Two additional limestone beds to the southwest of the main limestone bed are also interpreted as repeated horizons of the Badshot Formation.

In our mapping we have recognized the persistent main limestone unit adjacent to the Hamill quartzites (upper reaches of Carbonate King Creek) and another persistent limestone horizon which can be traced through the mineralized adits of the Kootenay Chief and adjacent crown granted claims, across Carbonate King Creek, and onto the Boyd property where it projects along the geochemical anomaly. This unit will be called the "mineralized Badshot limestone bed".

Additional beds of limestone or limy phyllite occur between the labelled two limestone beds and also southwest of the mineralized bed.

At the Kootenay Chief property, the white mineralized limestone bed is thinly banded and about 15 meters thick. It is bounded on the northeast by rusty-weathering phyllites and on the southwest by about 35 meters of black phyllites, some of which are limy.

Dolomite-Quartz Alteration

Alteration of limy formations to a dolomite-quartz rock is widespread, especially along the mineralized Badshot bed. The result is a maroon to rusty-weathering dolomite, generally grey to white on the fresh surface, and generally cut by quartz veinlets. The quartz veinlets occur in a variety of directions and, in places, are abundant enough to form a quartz stockwork. At the Kootenay Chief property some of the quartz is vuggy with drusy cavities. Some galena mineralization is associated with this type of dolomite-quartz. Alteration to dolomite-quartz is quite irregular; it obviously crosscuts the formation in many places. At the Kootenay King and in other exposed parts of the mineralized bed, the dolomatization is localized along the east side of the limestone at the contact with rusty-weathering limy phyllites; part of it is probably within these rusty phyllites. In other places (throughout the Index Formation and the remainder of the Badshot Formation) the limy phyllites

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are irregularly dolomatized and form relatively resistant exposures. Because this dolomite-quartz rock can form within or adjacent to mapped limestone units and within limy phyllites and because these limy units change sharply along strike to a non-limy lithology, it is impossible to assign individual dolomite outcrops of overburden areas to a specific horizon.

Exposures of good dolomite-quartz rock have been found in several places on the Boyd property. Near line 600 N, 150 W, a possible outcrop (or rubble) of this rock contains sparse galena. Other exposures on the property have no visible galena.

New Geochemical Work

I spent one week, assisted by two men, on the Boyd property. We attempted to delimit the geochemical anomaly and determine its origin. In addition we searched for old adits on Carbonate King Creek above the old cabins. The two collapsed cabins have hand steels and were used by prospectors. A well worn old path switch backs up the mountain side at the head of Carbonate King Creek and two small piles of old rotten lagging occur along the trail. We found sparse galena in some dolomite-quartz float; but did not find a mineralized zone or an old adit. I also made one traverse up Copper Creek but saw nothing of interest.

The following facts on geochemical data pertain to the possible explanation of the Boyd soil anomaly.

(a) A line of soil samples were taken 80 meters northwest of the Kootenay Chief adit, across a dolomatized zone. The soils are very shallow resting on the dolomite bedrock. The soils are brown and the profile is poorly developed because of a downslope creek. Sample spacing was 3 to 4 meters. The line of samples started in the rusty phyllite northeast of the dolomite and ended over the white limestone southwest of the dolomite. The dolomite contains a good quartz stockwork in places; however no galena could be found. The geochemical values increase as one goes down the slope across the dolomite. These values range from 385 ppm to 770 ppm for Zn and from 120 ppm to 332 ppm for Pb. A rock chip sample across the dolomite-quartz analyzed 46 ppm Pb and 257 ppm Zn.

(b) A chip sample across the white limestone, 500 feet southeast of the Kootenay Chief prospect returned 36 ppm Pb and 20 ppm Zn; a grab sample across the adjacent dolomite on the east analyzed 485 ppm Pb and 362 ppm Zn and a grab sample across 100 feet of the black limy slate to the southwest of the limestone analyzed 30 ppm Pb and 60 ppm Zn.

(c) A carbonate horizon crops out in the bed of Carbonate King Creek, about 300 meters southwest of the main limestone horizon. This carbonate bed is dolomatized in the central part (see Figure 18, Boyd Report, November 1976). A grab sample of the shallow soil on this dolomite-quartz outcrop analyzed 265 ppm Pb and 200 ppm Zn and a grab sample of the rock analyzed 45 ppm Pb and 65 ppm Zn.

(d) A grab sample of dolomite-quartz from a possible outcrop at line 600 N, 200 W analyzed 70 ppm Pb and 35 ppm Zn and a grab sample of similar rock from line 900 N, 200 W analyzed 47 ppm Pb and 18 ppm Zn. A soil sample off the second outcrop analyzed 72 ppm Pb and 310 ppm Zn.

(e) An outcrop area of rusty-weathering limy phyllite along "Mid Gulch" at 1050 N, 200 W from the 1976 soil samples yielded 430 ppm Pb, 450 ppm Zn. In the recent work this site was re-visited and re-sampled. An unsifted sample of soil (total material) analyzed 1400 ppm Pb, 970 ppm Zn; and a grab sample from the outcrop and talus analyzed 700 ppm Pb and 800 ppm Zn. The -80 mesh portion of a soil sample returned 750 ppm Pb and 1050 ppm Zn.

Conclusions


(a) Soils formed on many of the areas of dolomite-quartz alteration can be very anomalous in Pb and Zn. The rock itself may contain slightly high Pb (45, 47, 60, 70 ppm) but it is not highly anomalous in either Pb or Zn.

(b) The limy rusty-weathering phyllite samples on line 1050 N at 200 W are the source of the anomalous lead and zinc at that site. These are the only outstanding geochemical values found in any rocks. Thus the limy phyllites are definitely one of the sources of the metals and may be the main source.

(c) Dolomatization at the Kootenay Chief prospect occurs between the white limestone and the rusty-weathering phyllite. It is quite possible that much of this dolomite may have formed from the limy phyllites rather than from the white limestone. Certainly in other places it does form from limy phyllitic material. Thus the source of the lead and zinc within the dolomatized zone could be reconstitution of the metals contained within the limy phyllites.

In conclusion one must admit that the main source of the lead and zinc for the anomalies on Boyd Creek are the rusty-weathering limy phyllite and the dolomatized limy formations. Galena concentrations which can be recognized with the hand lens or the naked eye also will add to the anomalies; however just how much comes from this source can not be determined.

Enough rock sampling has been done on the dolomite-quartz and enough observations have been made to indicate that such zones have little chance of producing an economic lead-zinc deposit. One must, however, also contemplate the possibility of concentrations in limy phyllites. Insufficient samples have been taken to eliminate this possibility. Unfortunately the possibility was not recognized until the results of the present analytical data were received. I believe that this possibility is very remote and not worth making any separate exploration effort. However, the best places to test this possibility would be along Mid Creek (in our anomalous area) and in the better exposed strata adjacent to the Kootenay Chief prospect.



J. R. Woodcock

August 16, 1977

BOYD PROP. 82-K-13, 14

- geochem anomalies Pb & Zn.
- Pb 400-500 ppm.
- Zn 500-1000 ppm. } close correlation
- extent 600-700 metres long.
- One of the rock units
a limey sericite phyllite is locally
anomalous (.2 Pb, 1% Zn)
- there is a very good chance
that the anomaly is caused
by this rock unit.
- I don't think any further
work is warranted.

18 Dec 77

GSRB.