THE REBAR AND SHERPA LEAD-ZINC OCCURRENCES, SHUSWAP COMPLEX (82L/10)

By T. Höy

INTRODUCTION

The Rebar and Sherpa lead-zinc occurrences are both within the Monashee Mountains just east of Mabel Lake. Sherpa is a stratabound zinc-(lead) occurrence located on the moderately west-dipping slopes above the east shore of Mabel Lake; Rebar includes a number of scattered boulders of rusty weathering massive sulphides located on the north slope of Tsuius Creek 6 kilometres to the east-southeast. A third mineralized occurrence in the immediate area, the D.S.-Rebar, is an unusual lead-quartzite deposit located 2 kilometres northeast of Rebar.

The Rebar and Sherpa claims were staked in 1982 by J. M. Leask to cover an area where high-grade sphalerite-galena-pyrite boulders had been discovered. Noranda Exploration Co., Ltd. optioned the property in 1983, and conducted a soil geochemical survey on the Sherpa claims (Bryan, 1983). During the 1984 field season, the property was mapped by Jim McDonald of Noranda, a geophysical survey was conducted (Bradish, 1984), and seven holes were drilled — three on the Sherpa claims and four on the Rebar claims. The D.S.-Rebar showing was discovered in late 1983 by I. Saunders and mapped during the 1984 season by Noranda. Continued work during the latter part of the 1985 field season included primarily surface geological mapping.

REGIONAL GEOLOGY

The Rebar-Sherpa area is within the Monashee Complex (Read and Brown, 1981) near the eastern edge of the Shuswap Metamorphic Complex. The area is underlain by rocks of the Monashee Group, a heterogeneous assemblage of dominantly gneissic rocks of unknown, but probable Precambrian and Paleozoic age (Jones, 1959; Okulitch, 1979). The Thor-Odin nappe, a late structural culmination along the eastern margin of the Shuswap Complex, lies about 15 kilometres to the east.

The geology in the immediate property area is not well known. A sequence of quartzites, calc-silicate and pelitic gneisses, marbles, and amphibolites trends generally northward and dips at various angles to the east. A pronounced foliation, essentially parallel to layering, suggests that the apparently simple homoclinal sequence that hosts the mineral occurrences is, in fact, part of a complex, isoclinally folded metasedimentary package.

MINERAL OCCURRENCES

SHERPA

Mineralization on the Sherpa property includes disseminated to massive pyrrhotite and sphalerite with minor amounts of pyrite and galena in a generally impure calcareous quartzite unit within pure to siliceous marble. The unit trends northeastward and dips moderately steeply to the southeast into the hillside; its exposed length is in excess of 500 metres. Three diamond-drill holes, spaced approximately 100 metres apart, have allowed construction of several sections through the mineralized interval (Fig. 6-1).

Hangingwall rocks include in excess of 70 metres of dominantly white, coarsely crystalline calcite marble (*see* DDH 5, Fig. 6-1). Phlogopite is common throughout the marble and fine-grained graphite is disseminated in darker bands; in less pure intervals, diopside, muscovite, tremolite, and quartz occur in variable amounts. Green to grey-coloured diopside-bearing calc-silicate gneiss layers and rare sillimanite-garnet gneiss layers occur in the hangingwall. In outcrop, marbles weather to a grey colour.

Footwall rocks are generally less calcareous than hangingwall rocks but still comprise dominantly pure and impure marbles. Sillimanite gneiss, quartz-feldspar gneiss, and calc-silicate gneiss layers also occur within the upper 10 metres of footwall in drill holes 5 and 6 (Fig. 6-1). Scattered outcrops of footwall rocks, exposed in the slopes below the mineralized interval, comprise interlayered, grey-weathering marble, green to grey calc-silicate gneiss, and somewhat graphitic quartz-feldspar gneiss. Further down slope, gneiss and impure quartzite predominate and calcareous rocks are less dominant. Concordant to crosscutting pegmatite bodies are common in both footwall and hangingwall rocks.

The mineralized interval ranges in thickness from 17 to 27 metres. It is dominated by calcareous to relatively pure quartzite with thin interlayers of unmineralized marble, quartzite, and gneiss. Mineralization consists dominantly of rounded, disseminated grains and irregular blebs of pyrrhotite and sphalerite in a medium-grained diopside-phlogopite quartzite and also of highly irregular, composite grains interstitial to the quartz grains. Locally, pyrite forms rounded, composite grains within massive pyrrhotite, and galena occurs in trace amounts. Other accessory minerals in the quartzite include tremolite, apatite, graphite, calcite, and minor amounts of plagioclase and sericitized K-feldspar. As well, pyrrhotite and sphalerite are disseminated in coarse, granular marble units that are within or along the edge of mineralized quartzite layers. Total sulphide content in both quartzite and marble ranges from trace amounts to 30 to 40 per cent.

At the top of the mineralized interval, drill holes 5 and 6 intersected a thin, very fine-grained granular quartzite that contains finely disseminated pyrrhotite and sphalerite and accessory phlogopite, calcite, albite, and partially sericitized K-feldspar. In drill holes 6 and 7 (Fig. 6-1), an unmineralized layer of granular, foliated biotite-quartz-feldspar gneiss underlain by relatively pure marble occurs within the mineralized section.

Zinc, lead, and silver values are generally low. One unusually high-grade surface grab sample contained 6.70 per cent zinc and 0.015 per cent lead (H84S-6, Table 6-1).

REBAR

Mineralization on the Rebar property consists of a number of very rusted sulphide boulders that are partially buried on a logging road and skid trails at an elevation of 1 100 to 1 200 metres on the north slope of Tsuius Creek, 7 to 8 kilometres east of Mabel Lake. The boulders are somewhat angular, in contrast to many rounded glacial boulders in the immediate vicinity, suggesting a local source. Overburden is deep, however, and a 4.2-metre-deep trench failed to uncover bedrock. The nearest outcrops are several hundred metres up slope. Four drill holes, the closest collared approximately 200 metres above and 400 metres to the west of the mineralized boulder trains, failed to intersect any significant mineralization. The boulders contain massive, coarse-grained, dark-coloured sphalerite and

TABLE 6-1
ASSAY DATA FOR SELECTED SAMPLES, REBAR AND SHERPA PROSPECTS

Sample No.	Occurrence	Pb %	Zn %	Cu %	Ag ppm	Ba* %	Pb/ Pb+Zn	Lithology
H84S-6	Sherpa	0.015	6.70	0.015	5	0.01	0.002	sulphide-rich quartzite
Rebar 1	Rebar	0.005	6.23	0.050	3	>2	<0.001	rusted 'massive' sulphide
Rebar 2	Rebar	5.57	27.50	0.016	7	0.15	0.17	rusted 'massive' sulphide
Rebar 3	Rebar	0.027	2.64	0.008	<2	0.05	0.01	sulphide-rich quartzite
Rebar 4A	D.S. Rebar	4.80	0.016	0.021	23	>2	>0.99	impure quartzite
Rebar 4B	D.S. Rebar	0.98	0.013	0.016	7	>2	0.99	impure quartzite

* Semiquantitative emission spectrographic analysis.

pyrrhotite with large quartz eyes in a strongly oxidized silicate (?) matrix (Rebar 1, Rebar 2, Table 6-1). Others include well-layered, coarse-grained quartzite with disseminated and irregular intergranular streaks and blebs of pyrrhotite, sphalerite, and lesser pyrite and galena (Rebar 3). Although these boulders have considerably higher metal values than mineralized samples from the Sherpa area, both the mineralization and the composition of the host rocks are similar.

D.S.-REBAR

The D.S.-Rebar is a rusty weathering layer of calcareous quartzite a few metres thick that is exposed in a logging road cut 2 kilometres northeast of Rebar. The layer trends east-west and dips north at 10 to 15 degrees. Subrounded grains of galena and sphalerite are disseminated through the layer and irregular grains are interstitial to a mosaic of angular quartz grains. Scattered grains of diopside, biotite partially altered to chlorite, and barite are common in the quartzite. The quartzite layer is underlain by interbedded feldspathic quartzites and calc-silicate gneiss layers, and overlain by a rusty, impure siliceous marble and calc-silicate gneiss sequence.

Two grab samples were assayed (Rebar 4A, 4B, Table 6-1) and show the variability of metal values. Pb/Pb + Zn ratios are extremely high, in contrast to those of the Sherpa and Rebar occurrences; silver is moderately high in one sample. Barite, recognized in thin section, is reflected by the high (>2 per cent) barium content.

DISCUSSION

The Rebar and Sherpa mineral occurrences are somewhat similar to other Shuswap lead-zinc deposits in the area including Colby on the west side of Mabel Lake and Big Ledge, 40 kilometres to the southeast. At Colby, pyrrhotite, sphalerite, and minor amounts of galena occur in a diopside-bearing quartzite as well as in adjacent calc-silicate gneiss and marble (Höy, 1977a). Massive sphalerite-pyrrhotite lenses at Big Ledge occur within dark graphitic schists that grade to biotite quartzite (Höy, 1977b).

The D.S.-Rebar is an unusual lead-quartzite occurrence, perhaps similar to the 'lead sandstone' deposits reviewed by Bjorlykke and Sangster (1981). These commonly contain accessory barite (and fluorite), have low silver content, and high Pb/Pb + Zn ratios. No other 'lead-quartzite' deposits in the Shuswap Complex are known to the author, but a number of these types have been recognized in Eocambrian Hamill Group quartzites in the Kootenay Arc (for example, 'Bannockburn,' Ronning, 1977).

In summary, these occurrences are interesting but not unique new discoveries in the Shuswap Complex. They are easily accessible and warrant further work.

ACKNOWLEDGMENTS

The author wishes to acknowledge the generous hospitality of Noranda Exploration Co., Ltd. while on a three-day visit to the property in June, 1984. Discussions with J. M. Leask, J. McDonald, I. Saunders, and D. Bent are gratefully acknowledged; their help and cooperation were much appreciated.

REFERENCES

Bjorlykke, A. and Sangster, D. F. (1981): An Overview of Sandstone Lead Deposits and their Relation to Red-bed Copper and Carbonate-hosted Lead-zinc Deposits, *Econ. Geol.*, 75th Anniversary Vol., pp. 179-213.

Bradish, L. (1984): Geophysical Surveys on the Mabel Property (82L/10), *B.C. Ministry of Energy, Mines & Pet. Res.*, Assessment Rept. 12779, 15 pp.

Bryan, D. (1983): Geochemical Survey on the Sherpa 1, Sherpa 2 Mineral Claims (82L/10E), *B.C. Ministry of Energy, Mines & Pet. Res.*, Assessment Rept. 11760, 7 pp.

Höy, T. (1977a): Kingfisher, Bright Star (FX, FC, Colby), *B.C. Ministry of Energy, Mines & Pet. Res.*, Geology in B.C., pp. G18-G30.

——— (1977b): Big Ledge, *B.C. Ministry of Energy, Mines & Pet. Res.*, Geology in B.C., pp. G12-G18.

Jones, A. G. (1959): Vernon Map-area, British Columbia, *Geol. Surv., Canada*, Mem. 296, 186 pp.

Okulitch, A. V. (1979): Thompson-Shuswap-Okanagan, *Geol. Surv., Canada*, Open File 637.

Read, P. B. and Brown, R. L. (1981): Columbia River Fault Zone: Southeastern Margin of the Shuswap and Monashee Complexes, Southern British Columbia, *Cdn. Jour. Earth Sci.*, Vol. 18, pp. 1127-1145.

Ronning, P. (1977): Results of a Diamond Drilling and Sampling Program in the Bannockburn Basin Area, Hall Creek, British Columbia, *B.C. Ministry of Energy, Mines & Pet. Res.*, Assessment Report 6729, 20 pp.