Husvika Zn – Pb occurrence

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June 2011

For Scandinavian Resources AB

Husvika

Scandinavian Resources AB was granted exploration licenses at the Husvika Zn-Pb occurrence in 2011. This is a brief summary of historical work.

Mining and exploration history

1897-1900:	Mining. The Alliance Syndicate.
1911-1914:	Mining. A/S Husvik Gruber.
1948:	Geophysical survey. Geofysisk Malmleting.
1951:	Geophysical survey. Geofysisk Malmleting.
1948-1951:	Mining. Bagøien.
1964-1974:	Geochemistry. NGU
1974:	Geophysical survey. NGU.
1974-1975:	Geological mapping. NGU.
1990-1991:	Rock sampling. NGU.
2000-2001:	Diamond drilling. Falkhammar A/S.

Geology and mineralisation

The Husvika Zn-Pb deposit is hosted by Mezoproterozoic rocks of the Helgeland Nappe Complex in the Caledonian Uppermost Allochton comprising of mixed calcareous and pelitic metasedimentary units, which are intruded by the granodioritic Andalshatten Pluton.
The mineralisation can be followed as lensoid bodies, plunging 30° to the south, for about 1.5 km along an almost vertical, north-south oriented fault zone (Birkeland & Bjørlykke 1993). This is probably the length that was considered mineable – according to Vik (1975) the mineralisation has an extent of 3-4 km which is followed by workings and diggings.
The mineralisation is hosted in a 5-40 m thick heterogeneous unit of calcareous mica schist, marble, quartzite and amphibolite, which is intruded by porphyritic granodiorite sills, generally concordant to foliation and bedding but occasionally cross-cutting and proving to be younger than mineralisation.
Both the metasedimentary and granitoid rocks are metasomatically altered, and the mineralisation occurs in association with skarn.
The relatively coarse-grained sulphides are contained in three main lenses (Torgersen 1928, Cramer et al. 1974), which are exploited by a number of workings. Total extracted tonnage is between 8 and max 11 thousand tons of crude ore.
The narrow, but high-grade ore zone has sharp contacts to the wallrock (Vik 1975) and average thickness is 0.5 m, varying between a few cm up to 1-2 m.
The sulphide mineralisation is of three different types: massive ore, dissemination in the altered host rocks, and quartz-sulphide veins (Birkeland & Bjørlykke 1993). The ore minerals are sphalerite, galena, chalcopyrite, pyrrhotite, arsenopyrite, magnetite and a number of accessory minerals (Vik 1975).

Total tonnage is estimated at 100 000 t to a depth of 74 m, with approximately 24 % Zn, 10 % Pb and 300 g/t Ag (Torgersen 1928). Another estimate by Støre (1928) is 500 000 t at 13 %

Zn, 5 % Pb and 70 g/t Ag. Based on available information, my estimates would be closer to Støre`s regarding grades of Pb and Ag. Although, my judgement of grades is based only on the 59 assays published in the Ore Database:
Real massive ore samples (judged from S and Fe content) collected from the ore dumps assay no more than 2.4-4.0 % Pb and > 10 % Zn (which is the upper limit of the assay method). As contents varies between 0.05-5.3 %, Cu between 0.02-0.3 %, silver between 31-313 g/t, and gold 19-305 ppb.
Among the 30 assays of semimassive and massive ore, the highest Pb grade is 6.1 % and the highest Cu value is 1.3 %. Among these 30 assays silver varies between 2 and 313 g/t, with 50 % of the samples assaying > 80 g/t. Gold content is up to 601 ppb, frequently between 2 and 100 ppb only.

Even if the reports emphasises the sharp (massive-) ore contacts, it is not quite clear if that means generally no sulphide dissemination in the adjacent wallrocks. In the description in the Ore Database it is described to occur in some of the workings, and Vik (1975) says it is minor weak sulphide dissemination in the wallrocks.
In the Ore Database 5 samples are collected from outcropping sulphide impregnated wallrocks, one of them (HU91137) shows good grades: 1.65 % Zn, 1.51 % Pb, 0.06 % Cu, 69.3 g/t Ag and 0.44 % As. It is collected from one of two parallel half-meter thick layers.
Sample HU91139 is collected from 0.5 m thick sulphide impregnated wallrock and assays 0.23 % Zn, 0.13 % Pb, 0.12 % Cu, 8.4 g/t Ag and 0.44 % As. HU91140 (0.3 m thickness of wallrock) assays 0.25 % Cu and low in other elements.
28(-29) Ore Database samples represent sulphide dissemination. It is uncertain if some of them could have added width to the ore zone as sulphide disseminated wallrock, though, because none of the bedrock samples are described as wallrock samples (apart from the above mentioned), while others are from the ore piles. Among the 28 samples, 17 assayed below 0.1 % in all base-metals, <3 ppm Ag and < 8 ppb Au, but assays as high as in HU91119, from outcrop of 1 m thick quartz-sericite schist with sulphide dissemination, occur: 0.40 % Zn, 1.59 % Pb, 0.12 % Cu, 212 ppm Ag and 2.56 % As.
As thick as 2 m impregnation is represented by HU91110: 0.15 % Zn, 0.43 % Pb and 5.7 g/t Ag.

Conclusively, to what extent the sulphide impregnations are calculated into ore thickness, and if they can contribute significantly with their metal content, is uncertain, but that is an open question that should be checked.
Let`s say that impregnation zones contribute to a total ore thickness of 1 m, with still high grades, over 1500 m length and down to 70 m depth, that will yield 3-400 000 t, and the deposit is open towards depth. Indications of deeper parts are obtained by geophysical measurements but due to the low conductivity of the main ore mineral, sphalerite, the surveys are of low predictability.

Recent exploration in 2000-01 by a private person concluded `if the ore holds similar quality all over, then it`s definitely viable. The project is possibly already sold`. The work consisted of excavation and diamond drilling of 14 holes totalling about 400 m. The report to DirMin (Søyland 2001) contains only one page plus 4 drill hole profiles (including 9 holes) and a map of drill hole locations.
5 holes intersected `ore`, 5 sulphide impregnation, 2 were blank and 2 were interrupted.

2 of the drill profiles indicate `ore` of 0.44-0.52 m thickness, the other two, only impregnation.
Søyland calculates probable ore to 150 000 t.

No drill cores from Husvika are stored at Løkken. However, it should be possible to locate the ones from 2000-01.

Recommendations

The mineralisation is high-grade but very thin. It is open towards depth.
It should be a low-priority target but a reconnaissance within the larger claim area is warranted.
At the Husvika deposit a brief field check along the 3-4 km strike length to check if possible sulphide impregnation extends into the wallrock should be sufficient.

Selected references

Birkeland, A. & Bjørlykke, A. 1993: Pb isotopic constraints on the origin of the Husvika Zn-Pb deposit in Nordland, north-central Norway. NGT, v. 73, 43-54.
Bjørlykke, H. 1948: Rapport over bly- og sinkforekomstene ved Husvika, Tjøtta. NGU rep BA 4234.
Cramer, J., Dalsegg, E., Eidsvik, P. & Staw, J. 1974: Malmundersøkelser I Husvik. NGU rep 1252/3.
Søyland, J. 2001: Rapport om prospekteringsarbeider i Husvika 2000-2001. DirMin rep 4777.
Torgersen, J.C. 1928: Sink- og blyforekomster på Helgeland. NGU no 131.
Vik, E. 1975: En malmgeologisk undersøkelse av Husvika bly sink forekomst I Alstadhaug. Thesis, NTH.