

Evaluation of the occurrence of massive sulphide boulders at Famnvatnet and Rössvatnet in Norway.

Summary

Practically all the massive sulphide boulders found at the shore of Rössvatnet are interpreted as derived from an area close to the Skjelmoen farm, at the eastern edge of the Famnvatnet Lake and 15-20 km from the source. Boulders and outcrops of pyrite-dominated massive sulphide were already investigated by the Boliden Company in 1967-1969, resulting in the discovery of a massive sulphide mineralization of 0.3 meter width in one of the trenches (Tverrelva). The mineralization was exposed over a length of 6 meters and contained **0.7% Cu, 14.1% Zn, 1.6% Pb, 135 g/t Ag and 0.4 g/t Au** (with an in-situ value of about 3 000 SEK/tonne with present commodity prices) This is to compare with Boliden assays of 10 different mineralized boulders, containing in average **1.38% Cu, 8.77% Zn, 2.92% Pb, 133 g/t Ag and 1.6 g/t Au**. It is not known if the mineralized outcrop was drilled, but at that time the exploration team had access to a small drilling machine (personal communication). The mineralization was regarded as too narrow and the area was later abandoned. The average of the zinc-rich pyrite boulders found by Geopartners at the western shore of Rössvatnet is quite comparable: **2.40% Cu, 8.31% Zn, 3.26% Pb, 135 g/t Ag and 1.47 g/t Au**

It is recommended to further investigate the mineralized zone with modern ground geophysics, geochemistry of organically material from bogs, detailed geological and structural mapping and finally drilling. The aim is to find out if the prospective target zone increases in width along its structural trend and at depth.

Brief description

After preparation and discussions with the staff of Scandinavia Resources AB at the Malå office, the target area of Rössvatnet and Famnvatnet was visited and evaluated together with Jörgen Lindsköld and Stellan Burman. It soon became clear that the mineralized boulders at the eastern shore of Rössvatnet are mixed with other rounded boulders (the fine material from the till is washed out along the shores of Rössvatnet) from different sources and thus can be interpreted as relatively long transported. An exception is the lead-rich quartz breccia boulders, which are locally derived and considered as a non-economic type of mineralization found in quartz segregations and boudinaged quartz veins in outcropping schist. A closer look at a mineralized boulder found in the 1960s and located near the road to Varntresk and 1 500 meters NW of Skjelmoen farm, exhibited a similarity to the other massive sulphide boulders at the Rössvatnet shores. Calculating with an ice transport towards N75W - the boulders all fall on a line - more dispersed towards the West and thus forming a classical boulder train fan (blocksvans). The massive sulphide boulders at Famnvatnet site (about 1 km north of the westernmost edge of Famnvatnet) are located within the same boulder train. The hypothesis was further strengthened by reading the Boliden annual reports from 1967-69, which were translated and handed over to Scandinavian Resources by Rune Wilberg (29 May 2011). The boulders at the eastern shore of Rössvatnet have travelled about 15 km from their source area - a relatively short distance.

In 1967 the Boliden prospectors found 10 boulders of massive pyrite and sphalerite east of Famnvatnet and westwards along the eastern and northern shores of Famnvatnet. An average of three assayed boulders - which formed a fan pointing to a source east of Famnvatnet - was **0.8% Cu, 16% Zn, 3.5% Pb, 190 g/t Ag and 35% S**. In 1968 more boulders of the same type were found further to the west, giving the boulder train a greater width. In the source direction new boulders were discovered in diggings east of the earlier found boulders and north of Skjelmoen. A geochemical till sampling revealed a strong and continuous Cu-anomaly further eastwards. The anomaly direction was **N68W** almost coincident with ice flow direction (**N74W or 286°**) and the direction of the boulder train (**N72W**). The boulders are related to sericite schist and lenses of black schist. Blackschist horizons occur in all formations within the area.

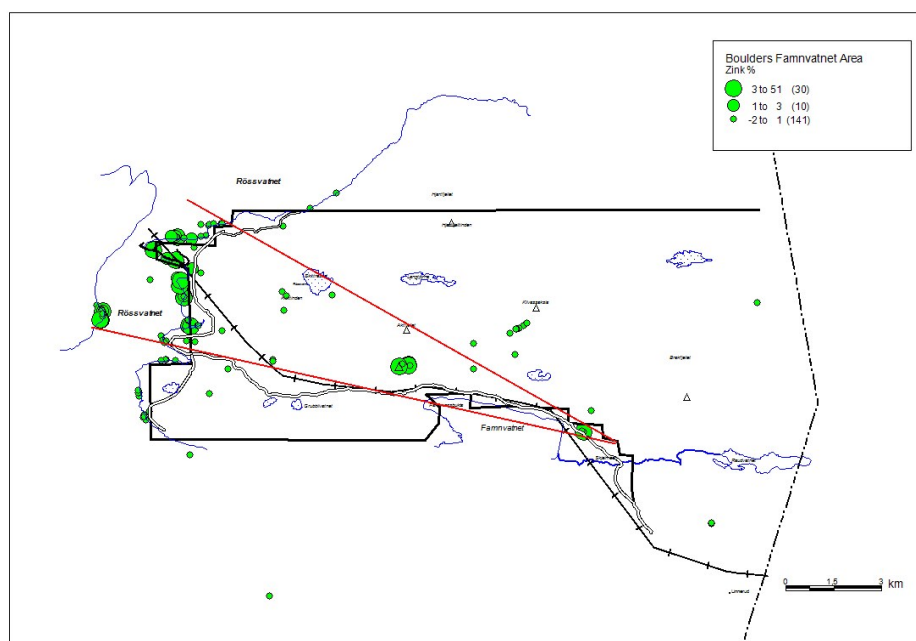
The boulder fan, discovered by Boliden, was > 10 km long, suggesting that the boulders might emanate from more than one source. The average of ten of the new boulders gave the following assay: **8.77% Zn, 1.38% Cu, 2.92% Pb, 133 g/t Ag, and 1.6% Au**. It was demonstrated that the boulders were located along a straight line and the deviations from this was no more than 200 meters.

A geophysical ground survey (probably Mag and Slingram) took place over 6 square kilometre large area.

In 1969 a massive mineralization of 0.30 m width was found in the bedrock in one of the trench excavations (named Tverelva) and exposed along 6 meters length.

Another since long time known mineralization (north of Sivertgården) is hosted by limestone and the schist underneath the carbonates. This mineralization has a high Zn-Pb content (together >40%) but the mineralized zone was found too thin. This area was later investigated by ASPRO/LKAB, including drilling (*NGU's Malmdatabas, Forekomst 1826-020*).

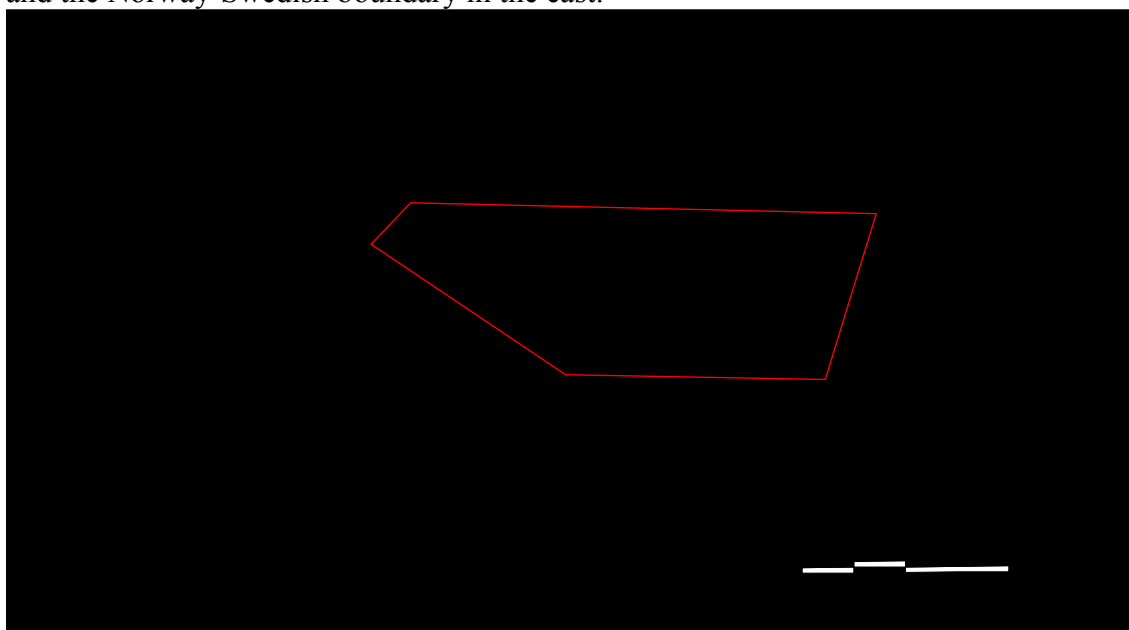
Our interpretation on the origin of the boulders at Famnvatnet and Rössvatnet coincides with the conclusions from the Boliden investigation.



The trenches of Boliden were re-filled but are still visible in the terrain. It is not clear if drilling took place or not, but it is said that they only disposed of a small drilling rig and left the area believing that the mineralized horizons were too thin to become economic.

Recommendations

The 2010 Scandinavian Resources AB drill campaign was based on airborne geophysics and – at that time - without a clear idea of the source area for the mineralized massive sulphide boulders. A continued exploration should be focussed on the valley area limited by the Brakfjellet in the north and Jofjellet in the south, Famnvatnet in the west and the Norway-Swedish boundary in the east.



The present concept should include the possibility that more than one massive sulphide horizon might occur. The natural starting point is the earlier exposed zone of massive sulphide in one of the trenches done by Boliden in the 1960s. From this exposure the geophysical signature could be established. It should be taken into consideration that the Caledonian sulphide ores could have a very complicated structural pattern including refolding, faulted and overthrust portions etc. The geophysical ground survey should be complemented by geochemistry of the organic material at the margins of the wetlands and a detailed geological mapping – focussing on alterations zones and structural trends. The Caledonian Ore Deposits mostly have an intimate relation with silicified sericite schist and black schist within the Kõli Nappe unit.

Additional remarks

All of the Scandinavian Resources land holdings in this part of Norway ought to be evaluated with regard to the possibilities to find economic deposits and establish priorities. It is recommended to evaluate all the surrounding mineral prospects and rapidly exclude the areas with low probability to host economic mineral resources in order to select the most promising target area. Stellan Burman has suggested drill-hole sites at two target horizons close to the Bleikvassli Mine. These areas should be seriously

considered as *Stellan Burman* has a long experience from geological mapping of the former mine.

Jörgen Lindsköld has taken part in the field work, and constructively contributed in the discussions, conclusions and recommendations.

Appendix 1 – Time Schedule

15th of June

Visits to the Skjelmoen boulder and the boulders along the eastern shore of Lake Rössvatnet.

16th of June

Field visit to the Skjelmoen area and location of old trenches from Boliden's exploration in 1969. Visit to the Famnvatnet project area.

17th of June

Visit to the Zn-rich boulders on the western shore of Lake Rössvatnet.
Visit to the Bleikvassli Sulphide Deposit.

18th of June

Field visits with Jörgen Lindsköld and Amanda Arrowsmith

19th to 20st of June

Compilation of the final report.

Appendix 2:
Table over the mineralized boulders in the Rössvatnet and Farnvatnet area.

Locality	Id-number	E-coord	N-coord	size in cm	Zinc	Lead	Copper	Silver	Gold	Remark
Skjelmoen	KS08301	475505	7298154	1 m ³	14.95	0.64	0.27	73	0.07	Large boulder found by Boliden in fg glacial sediments (Skjelmoen Boulder)
Rössvatnet E	SB10042	461839	7298649			27.7		348	0.05	Locally derived till and quartz breccia Pb-boulders
Rössvatnet E	SB10043	461834	7298653			>30		407	0.15	Locally derived till and Pb-boulders
Rössvatnet E	SB10044	461830	7298650			23.2		280	0.36	Locally derived till and Pb-boulders
Rössvatnet E	KS10046	461817	7298958			>30		423	0.19	Locally derived till and Pb-boulders
Rössvatnet E	KS10056	463517	7301437	40x30x15					1.49	Long transported till boulders, massive py
Rössvatnet E	JLD10001	462271	7301399	30x15x15	3.38	1.89	1.22	171	1.45	Rich massive sulphide boulder
Rössvatnet E	KS10057	463235	7301433		9.95	9.40	0.75	151	0.55	Not relocated (under water), massive py and po
Rössvatnet E	SB10050	463219	7301577		tr	tr	0.22	tr	0.02	Large boulders of foliated gneiss, massive py
Rössvatnet E	KS10021	463090	7302370	60x30x30	0.68	0.12	3.05	21	0.29	Massive py boulder
Rössvatnet E	KS10022	463087	7302335	65x90x>30	2.59	0.38	1.28	25	0.38	Fg banded pyrite
Rössvatnet E	KS10023	463093	7302307	90x60x?	2.36	1.64	0.48	62	0.28	Fg banded pyrite
Rössvatnet E	SB10032	462952	7302662	40x20x20	2.44	0.64	0.68	39	0.23	Massive py boulder
Rössvatnet E	KS10018	462824	7302852	50x50x10	1.04	0.59	1.35	22	0.28	Gossan and massive sulphide
Rössvatnet E	KS10012	462865	7304184	20x25x30	5.34	1.03	1.22	53	0.19	Massive py boulder
Farnvatnet	JSO10	470070	7300194		13.00	1.32	tr	15		Rich massive sulphide boulder
Farnvatnet	JSO11	469796	7300162		8.05	3.00	1.87	105	0.82	not located when Farnvatnet visited
Farnvatnet	FAM09008	469795	7300166		10.35	3.63	2.13	114	0.79	not located when Farnvatnet visited
Rössvatnet W	KS10006	460475	7301606	20x20x5	4.60	2.34	4.60	78	0.34	Massive pyrite
Rössvatnet W	KS10005	460483	7301617	20x20x10	4.81	2.43	4.81	81	0.90	Massive pyrite and sphalerite
Rössvatnet W	SB10040	460468	7301606	35x35x20	12.75	3.85	1.88	102	1.74	Coarse-grained pyrite
Rössvatnet W	KS10030	460554	7301793	25x14x8	11.65	5.84	0.72	166	2.97	Zn-rich boulder
Rössvatnet W	KS10003	460540	7301890	80x40x30	14.75	3.48	1.04	110	1.96	Massive sphalerite (3 small boulders)
Rössvatnet W	KS10004	460505	7301933	25x20x20	1.32	1.63	1.32	116	0.9	Rounded edges
		6 boulders		average	8.31	3.26	2.40	109	1.47	