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Røysivangen Gold-Copper, final report

Introduction and executive summary

The Røysivangen concession comprises four claims in the Eidsvold gold district SE of lake Mjøsa in S-Norway. Previous ground geophysical surveying isolated several shallow conductors comparable to the geophysical pattern known from the sub-economic Brustad gold mines 4 km's to the north.

This similarity, the fact that *in situ* samples at the south termination of the anomaly yielded up to 31 g Au/t and the 300 meters extend of the anomaly warranted an exploratory drilling campaign to verify or falsify a correlation between the geophysical anomaly pattern and gold mineralizations.

Systematic drilling of 430 m's in 3 holes from the W towards E and one hole from E towards W verified a pervasive hydrothermal vein system associated with characteristic sericitic and argillic alteration of the country rock lithologies.

Alteration patterns as well as the vein system and the presence of a carbonic mineral known as coalblende is a close copy of the features characterising the Brustad gold mines and other gold occurrences in the area. However, in Røysivangen, chemical analysis of 193 m's of core string distributed amongst 116 samples yielded rare maximum values of 0.05 g/t gold and 81 g/t silver.

Given the high drilling and sampling density and the absence of encouraging grades, Røysivangen is not a fertile deposit and further prospecting is not warranted. Based on our prospecting and previous campaigns in the area, it is also concluded that the mineralising hydrothermal vein system is easy to recognize and sample but the patchy appearance of gold mineralizations requires an unreasonably high density of exploratory drill holes to render intersection with the patchy gold mineralizations.

This being concluded, the Eidsvold area comprise a large area with a fertile hydrothermal vein system that may be more densely mineralised at depth and with the known Au-Cu-Mo-W associations, may even connect to a porphyry-cu like magmatic system. Verification of this most hypothetical model as well as mineralizations at depth require near *green field* prospecting with a backbone of depth penetrating helicopter geophysics (i.e. TEM) followed by deep drilling and a prize tag in the millions.

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Detailed results

An IP ground survey (Dalsegg 1990) of the Røysivangen area gave clear anomalies over the western part of a E-W trending auriferous vein, and for more than 300 m along the Holsjøen-Lesja fault zone (fig 1 and 2) trending N-S. The current exploration program aimed at testing this ≥ 300 m long, N-S running IP anomaly.

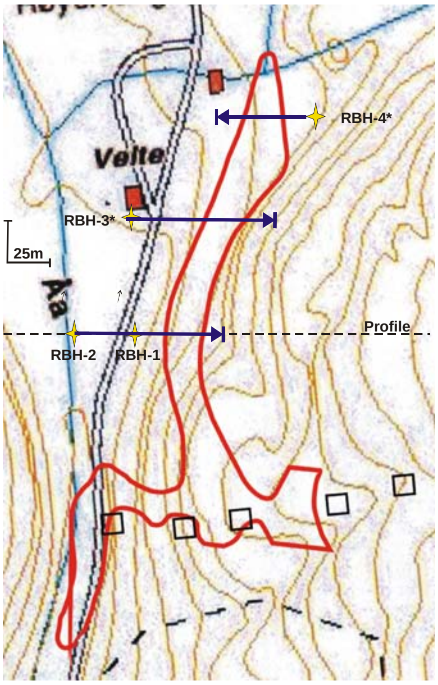

Fig 1. IP anomaly and drill hole locations at Røysivangen.

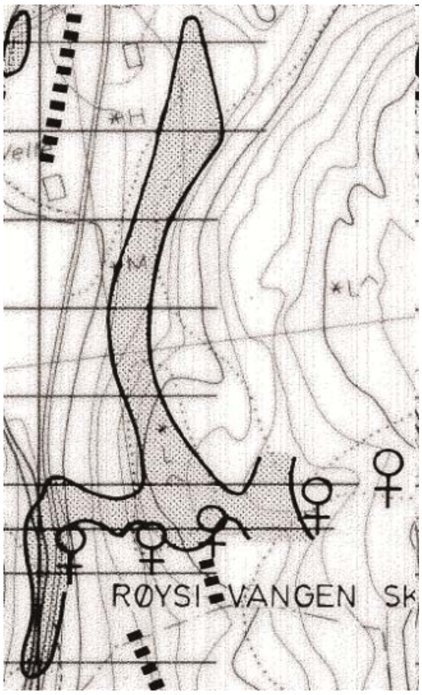

Fig 2. IP anomaly map Røysivangen..

Entreprenørservice AS drilled four holes with a 42 mm core diameter in the period 5/2-6/5 2008. Drill hole data are given in table 1.

RBH-1 went to 31,7 m where it stuck in loose brecciated rock. A cement casing was formed to 15,5 m, before drilling commenced. The new hole deviated from the original and continued along a new course from 12,3 m depth (called RBH-1B).

RBH-2 failed at 93,5 m where the rods were pinched and 48 m's of rods were left in the hole. RBH-3 and RBH-4 were drilled according to plan, except for a significant core loss at the 47,90-51,45 m interval in RBH-4.

Table 1. Drill hole data Røysivangen

Drill hole data Røysivangen 2008

Drill hole no	Core size	x UTM	y UTM	Azimuth	Dip	Length	Overburden
RBH-1	42mm	630106	6698378	100º	45º	31,70m	5,00m
RBH-1B	42mm	630106	6698378	100º	45º	99,50m	12,30m
RBH-2	42mm	630076	6698384	90º	55º	93,50m	12,00m
RBH-3	42mm	630104	6698455	90º	35º	102,20m	4,25m
RBH-4	42mm	630206	6698530	270º	65º	102.70m	10,60m

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Sampling logging and splitting commenced in Hurdal. Half of the core is stored at NGU, Løkken. The other half was crushed to > 70 % less than 2 mm and combined in assay sections of variable length (0,5-3,4 m, in one case 0,15 m due to core loss above and below).

A split of 250 g from each sample was shipped to ALS Chemex for preparation and chemical analysis. Each of two sample batches included two international standards, two cleaners, and one duplicate split every tenth sample. For assaying, ALS Chemex method ME-MS61 Ultra Trace Level Method using ICP-MS and ICP-AES, was applied. For gold assaying, ALS Chemex method Au-AA25 using fire assay and AAS, was applied.

Totally 192,95 m of core, distributed in 116 samples, including 9 duplicates (sample list in appendix 2), were assayed.

The following lithologies comprise the drill holes:

Coarse-grained augen gneiss (CAG): More or less foliated, with up to 3 cm sized red K-feldspar augen or megacrysts in a groundmass of quartz, feldspar, biotite, subordinate chlorite and amphibole, and accessory pyrite, magnetite, hematite and ilmenite.

Medium-grained augen gneiss (MAG) is paler in colour, medium- to fine-grained, and comprise feldspar, quartz, biotite and muscovite.

Fine-grained silicious gneiss (FSG) is grey to reddish or greenish, in places with leucosome bands.

Less ubiquitous are hornblende gneiss (HBG) which is encountered in RBH-3, fine-grained gneiss (FGG) in RBH-4, and quartz-feldspar-muscovite gneiss (QFM) dikes intersecting FSG in RBH-2.

Significant alteration zones (ALT, fig 3-9) were located in hole 1, 2 and 3 and are distinguished in the log sheets as they may be fertile with Au-Ag-Cu mineralizations. They are light yellowish with occasional red (hematitization) and ochre staining, and pervasively to moderately clay-sericite-silica altered, and occasionally brecciated. They include quartz veining, varying from more or less parallel, repeated veins to a network of irregular veins. The vein thickness is generally in mm- to few-cm scale, except in RBH-3 where one vein intersection is 1,20 m. Quartz-calcite vugs are common. The sulphide content is generally low, but pyrite is enriched in restricted areas as fine-grained disseminations, both within and adjacent to the quartz veins, and in areas of more diffuse silification (fig 3). These alteration zones also include some few-cm wide zones of hydrothermal coal blende.

From information obtained by redrilling the cemented RBH-1A by the deviating RBH-1B, it is assumed that the easternmost quartz veined alteration zone is dipping eastwards. Due to technical problems RBH-2 was too short to intersect this zone at depth. Location and direction of RBH-4 was chosen due to the possibility of an east-dipping anomaly cause.

Potentially gold-mineralized veins and structures encountered in the holes are without exception included in assay sections. These are:

- The quartz veined alteration zones
- Quartz (± pyrite ± calcite) veins (± sericite envelope)
- Breccia veins (± pyrite ± coal blende ± altered wall rocks)
- Coal blende-pyrite-coated fissures and –veins
- Leucosomes with pyrite-dissemination (probably early, deformed quartz vein)

Photos of drill cores illustrating quartz- and breccia veins:

Fig 3. Pyrite enrichment in silicified gneiss, RBH-1, 7,90 m.

Fig 4. Quartz vein alteration zone in RBH-1B,


Fig 5 and 6 Quartz vein + alteration zone in RBH-2


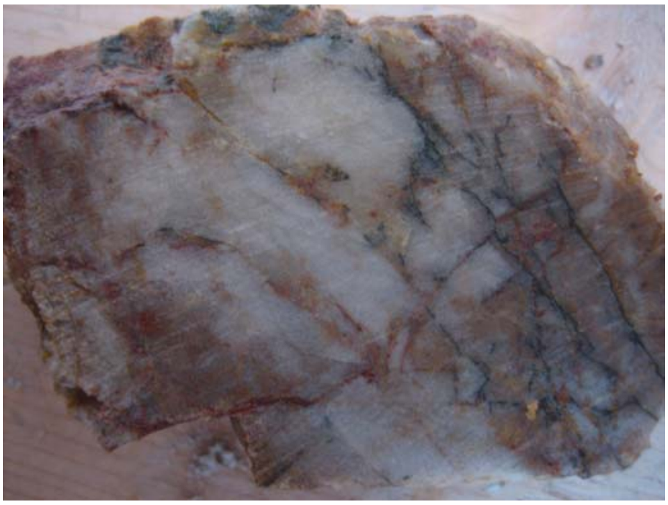

Fig 7 and 8. Quartz vein alteration zone, RBH-2.

Fig 9. Parallel quartz veins and vugs in the quartz vein alteration zone, RBH-3.

Most of the sampled sections returned below detection limit at 10 ppb Au, or slightly above. The highest assay was 50 ppb Au between 25-27 m in RBH-1, of an ordinary coarse-grained augen gneiss with no veins.

Another anomalous section of medium-grained augen gneiss is 18,10-21,50 m in RBH-4, which assayed 203 ppm Mo, 173 ppm Cu, 134 ppm W and 81 ppm Ag.

The two meter-sections between 88-90 m in RBH-3, where pyrite-chalcopyrite-dissemination was observed, assayed 584 and 245 ppm Cu.

The interval 15,50-17,50 m of unaltered fine-grained siliceous gneiss in RBH-1 was anomalous in Pb (168 ppm).

Magnetic susceptibility

The magnetic susceptibility was measured by every 10 cm of the core and was averaged to meter sections.

The susceptibility is a function on both primary features in the lithologies, and the degree of alteration that again may be associated with gold mineralizations. Even weak alteration may decompose magnetite, and in cases of strong alteration, the susceptibility is approaching zero.

Some general features arte distinguished. Although variable, the coarse-grained augen gneiss yield the highest susceptibility due to disseminated magnetite. Medium-grained augen gneiss is relatively high, while fine-grained silicic gneiss is low. The susceptibility decreases abruptly even at weak alteration as demonstrated in RBH-1B, where it goes from 1000-2000 in fresh coarse-grained augen gneiss to 10-20 where the feldspar augens are slightly altered.

While susceptibility in hole 1-3 varies between zero in the quartz veined alteration zones to rather high in fresh rock, the entire RBH-4 is low, due to weak clay(±sericite) alteration.

This important geophysical observation warrant that deep penetrating ground and helicopter based electromagnetic surveys (EM and particularly TEM) efficiently recognise significant alteration zones. However, as demonstrated at Røysivangen, even strong alteration do not imply gold mineralization, and the known auriferous veins in Gullverket are accompanied by very limited alteration envelopes.

Radiation was measured continuously along the cores with a Knirps scintillometer to check potential variations from U, Th and K (f ex sericitization could affect the potassium level). Only insignificant variations were registered, the levels being low, between 1-2.

Conclusions

Four drill holes of 430 metres with 116 analysis of 193 metres falsified a systematic correlation between gold mineralizations and IP anomalies. Both primary and secondary pyrite occurs in small amounts throughout the drill cores. The eastern quartz veined alteration zone encountered at the top of RBH-1, however, is assumed to be slightly more conductive than the surrounding rocks, due to its pyrite and coal blende contents, as well as weak hematitization. Curiously, this zone does not coincide with the Røysivangen IP anomaly. The frequent graphite-pyrite-coated fissures and thin veins encountered in RBH-4 may possibly effectuate an IP anomaly and offers an explanation of the Røysivangen IP anomaly. Even at higher sulphide content than in RBH-2, the western quartz vein alteration zone, or other potential sulphide enrichments in the valley, does not yield an IP-signal. Perhaps due to the high conductivity of the Holsjøen-Lesja fault zone in generel (Dalsegg 1990).

Given the high drilling and sampling density and the absence of encouraging grades, Røysivangen is not a fertile deposit and further prospecting is not warranted.

Based on our prospecting and previous campaigns in the area, it is positively concluded that the mineralising hydrothermal vein system is easy to recognize and sample but the patchy appearance of gold mineralizations require an unreasonably high density of exploratory drill holes to render intersection with the patchy gold mineralizations.

The strong correlation between hydrothermal alteration zones and low magnetic susceptibility may encourage a regional prospecting campaign based on the new electromagnetic techniques deisgned for helicopter geophysics (TEM) that may penetrate to much greater depth and provide a more genuine 3-D image of the low and high conducting regions. After all, the Eidsvold area comprises a large fertile hydrothermal vein system covering tens of Km^2 that may be more densely mineralised at depth. With the known Au-Cu-Mo-W associations it may hypothetically connect to a porphyry-cu like magmatic system. Verification of this model as well as mineralizations at depth require near *green field* prospecting with a backbone of depth penetrating helicopter geophysics (i.e. TEM) followed by deep drilling and a has prize tag in the millions.

Trondheim, July 1, 2008

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