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Rapportarkivet

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Tittel Kleivåsen Magnetic Anomali, Nissedal, Summary report 1998				
Forfatter		Dato År 7 nov 1997	Bedrift (Oppdragsgiver og/eller oppdragstaker) Mindex ASA	
Kommune Nissedal	Fylke Telemark	Bergdistrikt	1: 50 000 kartblad 16133	1: 250 000 kartblad Skien
Fagområde Geologi	Dokument type	Forekomster (forekomst, gruvefelt, undersøkelsesfelt) Søftestad Kleivåsen		
Råstoffgruppe Malm/metall	Råstofftype Fe Au Ce			
Sammendrag, innholdsfortegnelse eller innholdsbeskrivelse Olympic Dam type deposit? For detaljer vises til BV				

Kleivåsen Magnetic Anomaly, Nissedal.

Summary report March 1998.

304657

Background.

In 1996 Jon S Petersen presented a memo, enclosed, comparing the Olympic Dam-type deposit with similar geological setting and a large aeromagnetic anomaly in the Kleivåsen area in Nissedal, South Norway, located about 3 km north of Søftestad magnetite deposit. Some reconnaissance geological work was done in 1996 and 1997 as well as ground magnetics along 18,3 profilekm in nine profiles.

Geology.

The Olympic Dam-type Fe-Cu-Au deposits comprises of the typical geologic features as follows:

- Shallow, extensional environments: Cratonic or Continental Margin.
- Mid-Proterozoic age: 1,1-1,8 Ga.
- Large igneous-hydrothermal systems tapped by deep crustal structures.
- Associated with low-Ti, high-P, iron-deposits (~Kiruna type).
- Oxides dominated by magnetite in deep levels and hematite in high levels.
- Alteration of host rock generally associated with intense Fe-metasomatism.
- Ore forms discordant veins and breccias to massive concordant horizons with disseminated Fe-Cu-Au minerals.

The Kleivåsen aeromagnetic anomaly exhibits a large and strong circular anomaly which peaks at more than 51500 gammas. It is nearly symmetrical in all directions and has an outline of more than 2 km² when measured by the 50500 gamma contour. This is the geometrical signature of an upright cylinder or pipe rich in magnetite. The fact that several magnetite veins and crosscutting magnetite-quartz breccias occur in and around the Kleivåsen area which consists of Proterozoic supracrustal rocks, points to a possible analogy with the setting of Olympic Dam deposits. The recent recognition of disseminated Cu and iron-oxide mineralization at Kleivåsen therefore makes the comparison with Olympic Dam-type deposits a particularly attractive possibility, as a giant magnetite replacement orebody with disseminated Cu and possibly Au.

The Kleivåsen target characteristics may be summarised as follows:

- Occur in a major, shallow extensial environment with abundant volcanic supracrustals (Telemark Supergroup, Nissedal Group)
- Mid-Proterozoic age ~1.2-1.6 Ga.
- Søftestad Fe-Mine 3km S of Kleivåsen is a Kiruna-type high-P, iron deposit.
- The Søftestad ore is a massive magnetite (-hematite) deposit.
- Highly altered host rocks are ceriticized and silicified with intensive Magnetite impregnation.
- Abundant disseminated chalcopyrite and magnetite occurs in a variety of rocks ranging from metabasalt, andesite tuffs and grey arkosic metasandstones in the MAG-anomalous area.

Field work 1997.

Magnetic ground survey: (Kristian S. Jensen, Univ. Of Aarhus)

A magnetic ground survey was carried out over the area the first half of September 1997 and a total of 18,3 pkm was measured in nine NNW-SSE-trending profiles with individual interval of 400 metres and with readings for each 10 metres.

So far the geological investigations in the area has not been able to identify a suitable sourcerock for the large aeromagnetic anomaly over Kleivåsen. Four major rocktypes comprises the target area:

- **Gabbro** showing the lowest magnetic intensity, approximately 51.000nT, which is believed to represent a source rock with a susceptibility at about half the normal average value for gabbro.
- **Basalt** shows intensities around 52.000nT with a susceptibility clearly lower than the normal average value for basalt.
- **Finegrained volcanic rocks** show a more inconsistent magnetic signature with varying susceptibilities generally above the average values for rhyolitic rocks.
- **Pegmatite**. Another source for the high magnetic anomalies is pegmatite.

The highly magnetised zones seems to be relatively narrow, 25 to 50 metres wide. One anomaly on profile 4E at around 1100m peaking above 56.000 nT could originate from an almost 100m wide formation.

Mineral exploration in Kleivåsen area, Nisservatnet, Southern telemark, Norway. (Tonny B. Thomsen and Søren Gamst, Univ. Of Aarhus)

Stream sediments.

A number of 22 stream sediment samples are collected. Some problems with the laboratory has delayed the results of the samples.

Geology, results of rock chip samples.

Three rock samples are anomalous in Cu, Ag and Au with copper contents 860 to 1560ppm, silver contents from 0,5 to 2,2ppm and gold contents from 10 to 53ppb.