Bergvesenet

Postboks 3021, N-7441 Trondheim

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Tittel

Resuls of Exploration, 1998, Ogna area, Southwestern Norway

Forfatter	Dato År	Bedrift (Oppdragsgiver og/eller oppdragstaker)
Robyn, Thomas L		Amerikan Mineral Fields Inc

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Fagområde	Dokument type	Forekomster (forekomst, gruvefelt, undersøkelsesfelt)
Geologi Geokjemi Geofysikk		Homse Bjørndalsnipa Gulldragsvatn Fossfjellgruva Knuten

Råstoffgruppe	Rastofftype
Malm/metall	Ni Cu Ti

Sammendrag, innholdsfortegnelse eller innholdsbeskrivelse

To prospekter av interesse ble identifisert som et resultat av AMF\s helikoptermålinger ved Ogna. Det er Bjørndalsnipa og Gulldragsvatn.
Bjørndalsnipa er tidliger undersøkt av Sulfidmalm med tre korte hull i 1973. Denne undersøkelsen anbefaler ytterligere boring i størrelsesorden 1200m.
Gulldragsvatn prospekt representerer en mulig stor akkumulasjon av ilmenitt og sulfider , the "Goethite zone" med opptil 50% ilmenitt i breksjen. Analyser av blokker med 50% ilmenitt ga 30,04% TiO2
Gulldragsvatn prospekt kan representere en enda en Telnes-type ilmenite-nikkel- kobber forekomst
Det anbefales et 250m dyp borhull på zonen

Fil: 3

ST CONSULTING GROUP, INC.

Per Zakken Brekke, Bergmester
Bergvesenet
Leiv Eirikssons v. 39
P.b. 3021 Lade
N-7002 Trondheim

October 15, 1998

Dear Mr. Brekke:

Enclosed is the report on America Mineral Fields for its exploration activity during 1998 in the Ogna area of SW Norway. The mineral rights were applied for in February 1998 under the name of MIL Investments of Luxembourg, and subsequently transferred to AMF Holdings Two.

Two prospects of interest were located during this program, and are described in the report. As a result of the work, AMF intends to retain 94 mutinger in the area. A list of retained mutinger is shown on the attached Table. I would appreciate it if you would inform me of the cost for retaining the mutinger during 1999, at my e-mail address of tlrobyn@csn.net.

The remaining mutinger will be relinquished.

I look forward to continuing work on these prospects.

Sincerely,

Dr. Thomas L. Robyn, Senior Consultant
America Mineral Fields

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Tel: 303/841-7657 Fax: 303/841-9320

BILAG TIL JR.NR.
1867/98

AMERICA MINERAL FIELDS Retained Mutings Ogna Project, SW Norway		
Muting Area	Muting Numbers	Number of Mutings
Eikeland	125-130	6
Eikeland	137-142	6
Eikeland	149-154	6
Eikeland	161-166	6
Eikeland	173-179	7
Eikeland	186-192	7
Eikeland	199-205	7
Ognadalen	1-7	7
Ognadalen	14-20	7
Ognadalen	27-33	7
Ognadalen	40-46	7
Ognadalen	52-58	7
Ognadalen	64-70	7
Ognadalen	76-82	7
Total Number of Mutings Retained		**94**

Note: Mutings are located within the Bjerkreim 1212 II and Nærbø 1212 III 1:50,000 scale topographic map sheets.

T. L. Robyn
September 21, 1998

RESULTS OF EXPLORATION, 1998
OGNA AREA, SOUTHWESTERN NORWAY

Introduction: The Ogna project area lies in southwestern Norway, 15 km NW of Egersund. This area is underlain by the Rogaland intrusive masses, which contain large volumes of anorthosite, norite and related rocks. An area of 60 x 25 km contains several massifs of these 1000-1300 m.y. old rocks (Duchense and Michot, 1987; Duchense and Maquil, 1987). The Rogaland massifs occur where deep, NW-trending crustal structures cut the southwestern edge of Norway. The oldest massif of the complex, the Ogna-Egersund massif, contains several nickel-copper occurrences. While Ni-Cu sulfides are found in the other massifs, they are low grade and associated with ilmenite deposits.

The Ogna-Egersund massif is composed of an anorthosite-leuconorite dome, approximately 20 km in diameter that was emplaced in granulite facies paragneiss. Noritic dikes cut the foliation. foliation resulted from deformation concurrent with emplacement. A homogenous, faintly foliated leuconorite is an import phase of the massif. It is grossly concentric with the core and at an equal distance from the margin. Relatively high chromium contents in orthopyroxene indicate a basaltic composition for the parent magma.

The Ogna-Egersund massif hosts the area's largest nickel occurrence, Homse, which was test-mined on a small scale in 1871 and 1915 but had no production. About 1,000 tonnes of copper-nickel mineralized massive sulfide was stockpiled at the site. Mineralization occurs as a lode in brecciated anorthosite and dips steeply. Field examination of the occurrence indicates that is a xenolith torn from depth and carried to its present position by the brecciated intrusion (Flood and Robyn, 1995). The massive sulfide is reported to contain 1.06% Ni and 1.20% Cu (Sverdrup, 1972).

Viksnes Kobberverk flew a 5 km^2 helicopter-borne magnetic-electromagnetic survey at Homse-Ogna in 1970 which detected two anomalies, one related to the Homse occurrence and another located about 800 meters east of Homse (Bjørndalsnipa; Hovland, 1972a). Ground work was conducted at Bjørndalsnipa in 1972 which included detailed geophysical surveys (Mørk, 1974) and stream sediment geochemistry (Hovland, 1972b). Three core holes were subsequently drilled at Bjørndalsnipa and two penetrated pervasive nickel-copper mineralization with grades similar to Homse (Mørk, 1974).

America Mineral Fields in February 1998 claimed 148.5 km^2 held by 495 mutinger over the Ogna-Egersund massif in the northwestern portion of the Rogaland massif. An HEM survey at Ogna was completed in early June. SIAL Geosciences, Inc. of Quebec was the contractor. No major delays were encountered, although rain, fog and wind did cause some delays. A total of 766.3 line-km was flown. The data from the survey, on CD-ROM and paper maps, were submitted to the Bergvesenet in August 1998.

Several moderate and weak EM anomalies were detected during the airborne survey and were ground checked during June and July, and results are described below.

Geologic Observations: The Ogna area is underlain by interlayered, coarse-grained anorthosite and norite. Plagioclase and pyroxene phenocrysts up to 2-4 cm in length are common in the layers. In places, the norite layers contain two or more distinct, cross cutting norites of different grain size (see photos). Similar relationships within the anorthosite were not seen. The coarse grained anorthosite and norite underlie most of the Ogna area.

A different type of gabbro occurs in the western central portion of the area. This rock appears to have a distinctly different magnetic expression, and is associated with a prominent E-W trending magnetic high. The eastern portion of the magnetic high includes the Homse and Bjørndalsnipa prospects where bedrock is the coarse-grained anorthosite and norite.

Apart from this minor gabbro (OG98-7), the entire area is underlain by coarse-grained anorthosite and norite.

Geochemical Results: Samples were submitted for assay to determine not only nickel and copper contents, but also other elements of potential interest. Two sets of assays are given in Appendix 1. The first are results from OMAC Laboratories of Ireland, where samples of 1-2 kg size were submitted.

The second set of assays from Acme Analytical Laboratories of Vancouver was done on small samples from petrographic blocks. These assays were done in order to have results directly from samples that had been examined petrographically.

The assays show some variation in results, mainly because the samples assayed are not exactly the same. For example, OG98-10 assayed by OMAC yielded 0.76% Ni and 1.15% Cu on a larger volume sample, whereas Acme obtained 0.81% and 0.77% Ni and 0.82% Cu on the OG98-10 petrographic block. Both results are correct for the samples assayed, and demonstrate the natural variability between samples of differing volume.

Petrographic Descriptions: Several samples collected in the area were examined petrographically in order to provide a clearer understanding of rock types and mineralization in the Ogna area. Samples were sent to Spectrum Petrographics, Inc. of Winston, Oregon, USA. Descriptions of individual rocks with color microphotographs are given in Appendix 2. The locations of each sample are given in the table at the beginning of Appendix 1.

Several samples were collected in the Vetteland area because of the goethite/hematite and ilmenite mineralization seen there. The rocks are dominantly of weakly altered anorthosite with varying amounts of andesine plagioclase, pyroxene (both clinopyroxene and orthopyroxene), sericite, quartz, chlorite and trace amounts of pyrite, pyrrhotite and chalcopyrite. Ilmenite and hematite/goethite are associated with norite layers or breccia zones in the anorthosite. Ilmenite usually exhibits exsolution lamellae of specular hematite (OG98-2). About 5% of the hematite/goethite are a result of secondary alteration (weathering) of sulfide minerals.

A sample of massive sulfide from Homse (OG98-10) was examined petrographically in part to determine some metallurgical characteristics of the mineralization. The rock is dominantly pyrrhotite, pyrite, chalcopyrite, earthy hematite/goethite, and minor to trace amounts of plagioclase, orthopyroxene, chlorite, quartz K-feldspar, ferroan dolomite, apatite and pentlandite.

Samples from the Bjørndalsnipa prospect were also examined (OG9811-13). These are dominantly composed of andesine plagioclase with sericite, pyroxene and traces of hematite/goethite although traces of quartz and biotite also occur. Sample OG98-12 is taken from near the collar of Sulfidmalm's Hole #2, from an anorthosite that contains minor rusty spots.

Description of HEM Anomalies: The anomalies described below were detected during the HEM survey and ground checked with geologic traverses and rapid VLF and magnetic lines. The VLF and magnetic data from these lines are referred to in the text, but the data are not included in this report due to their limited usefulness. The locations of these anomalies are shown on Figure 1. Figure 1 is not the final, processed magnetic map and shows magnetic patterns that are not real. Analysis of the magnetic data should be done with the final SIAL data presented to the Bergvesenet separately.

Bjørndalsnipa: Nickel and copper mineralization have been known at this locality since 1972 when Sulfidmalm (a Falconbridge subsidiary) intersected sulfide minerals in two drill holes. The occurrence was located as the result of ground follow-up of an airborne EM-magnetic anomaly detected during a very limited survey covering only 5 km^2 in the vicinity of the Homse nickel deposit. Homse lies 800 meters WNW of Bjørndalsnipa. Sulfidmalm dropped the property after their drilling program.

AMF's airborne survey detected two anomalies at Bjørndalsnipa, both showing a southerly dip. Three VLF lines with magnetic readings surveyed over the vicinity of the anomalies detected strong crossovers in the area. Ground follow-up surveys with Genie and magnetic surveys located conductors in this area (Dalsegg, 1998). A strong conductor was detected near Sulfidmalm's hole #2, and weaker conductors in the vicinity of the HEM conductors. Sulfidmalm drilled the edge of the conductor but did not penetrate the body itself.

After the Genie and magnetic surveys were completed, mapping of the area revealed a contact between the sulfidic anorthosite drilled by Sulfidmalm and a younger coarse-norite intrusion that caps the anorthosite and also intrudes it as a series of narrow dikes (refer to Bjørndalsnipa maps and sections). The intrusions occasionally form "mega-breccias" of anorthosite blocks in a "matrix" of norite. The main contact is relatively flat lying, with the contact swinging from a NE strike to an almost E-W strike and with the dip of the contact swinging from WNW to N. According to the airborne data, the main conductors at this location dip to the south or southeast. The result is that the conductive body (or bodies) is truncated by the norite before reaching the surface (see photos). This explains the lack of outcrop of the mineralization drilled by Sulfidmalm.

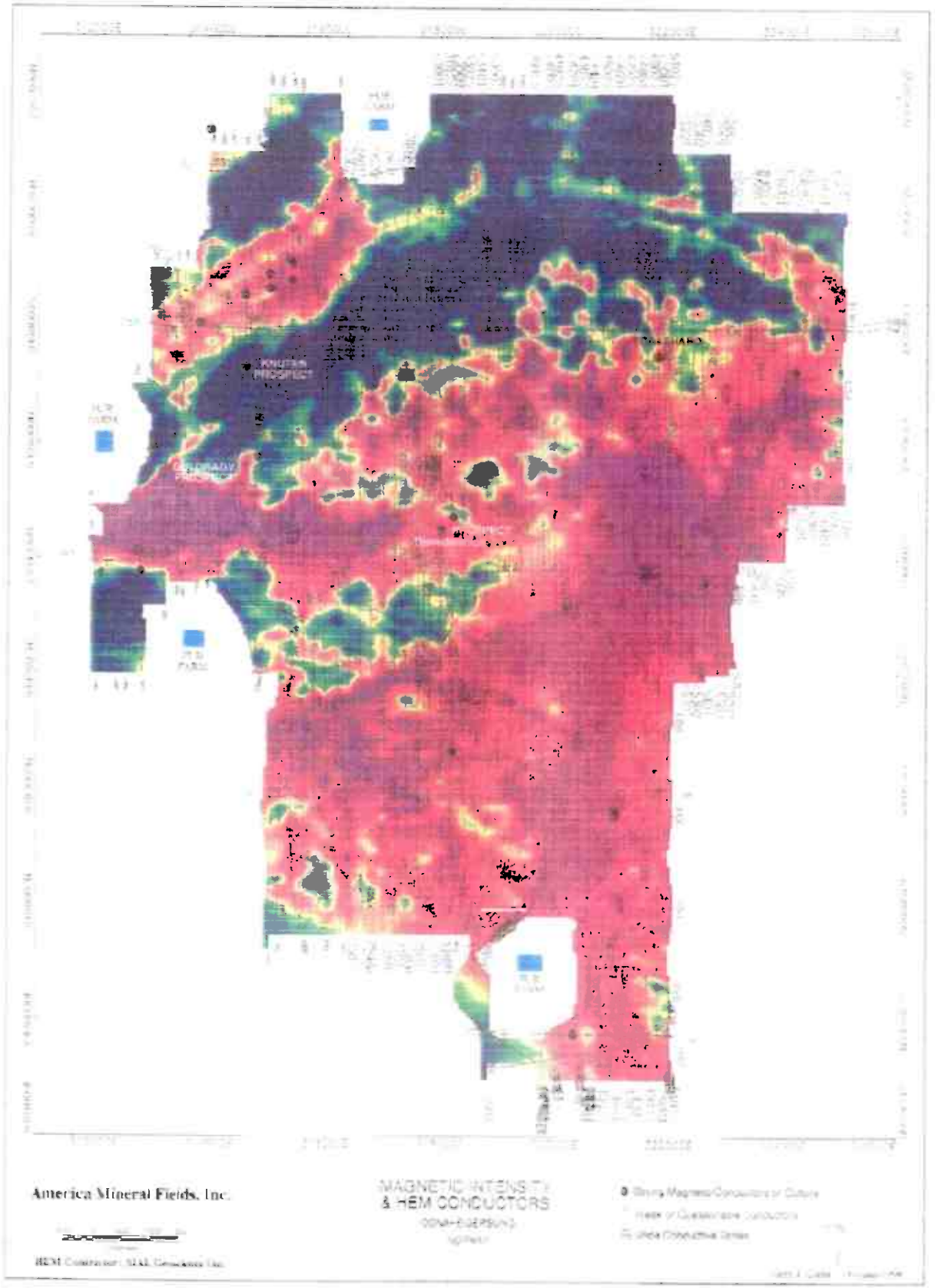
America Mineral Fields, Inc.
MAGNETIC INTENSITY
& HEM CONDUCTORS

Figure 1

A few, small rusty zones with visible pyrite and pyrrhotite occur along a cliff face, and chalcopyrite and pentlandite were encountered in Sulfidmalm's drill holes. However, no evidence has been seen on the surface that would indicate a major accumulation of sulfides. This is due to the complex crosscutting intrusive relationships of the rocks in this area. A significant body of sulfide mineralization may occur at depth and be hidden by a younger intrusion.

A norite also occurs on the top of the cliff at the site, and the outcrop pattern near the cliff's southern extension indicates that there is little to no displacement of the norite across the trend of the cliff. The cliff is therefore not a fault as mapped by Sulfidmalm, but is inferred to be a topographic reflection of glacial scouring of the more easily eroded sulfidic anorthosite that appears to host the conductor. The cliff is held up by non-sulfidic anorthosite and norite, with the effect that only a small area of the rusty anorthosite is exposed. Bogs, alluvium, and a small lake cover most of it.

An E-W trending fault is inferred from contact relations and is shown on the accompanying map and sections. The fault is an explanation of why the anomalies appear to be located only over a short distance to the south; they are truncated and down-faulted on the south side of the fault, dropping the conductors. The presence of an HEM anomaly near the fault trace indicates either a conductive fault trace or another conductor that overlies the two drilled by Sulfidmalm.

Terry Crebs, consulting geophysicist to AMF, examined data from the NGU Genie, Sulfidmalm Slingram and Sial HEM surveys and concluded the following:

1) Sulfidmalm's data indicate a conductor to the north of the area they drilled, which may be the HEM conductor. It is probably a conductor beneath the two drilled by Sulfidmalm. The result is that at least four conductors may occur here, two drilled by Sulfidmalm on their northern edges plus two others (one above and one below the drilled conductors);
2) Sulfidmalm's data also indicate that the conductors dip to the south, parallel to the direction of Sulfidmalm's drill holes, and the conductors have not been adequately drill tested;
3) the Genie survey located conductors in the vicinity of the HEM conductors and confirmed the position of the conductors;
4) the conductors at Bjørndalsnipa may trend E-W and represent separate, south-dipping conductors instead of a single conductor; and,
5) the down-dip extension of the conductors may not exceed 150 meters unless the dip of the body becomes steeper with depth, or is truncated by the E-W fault as discussed above.

Observations about the dip of the conductors are consistent with data from CP surveys done on Sulfidmalm's hole #3 as reported by Mørk. These data show a steep dip to the south of the conductors, parallel to their drill holes, and Mørk concluded more holes

should be drilled to test the mineralization. However, due to Sydvaranger's withdrawal from exploration at that time the holes were never drilled.

The result is that the mineralization has not been drill tested, although Sulfidmalm's drilling indicates pervasive mineralization. The target is a massive Ni-Cu sulfide body hosted by multiple conductors within a zone of disseminated mineralization. The zone of disseminated mineralization could be very extensive and represent an open-pitable "nickel porphyry" deposit of very large tonnage and economic grade. It is also possible that the mineralized body is truncated at depth by other norite intrusions, as it is near the surface. If so, the tonnage potential would be limited. Drilling is the only way to test the extent of this potentially economic prospect.

Gulldragsvatn: This anomaly represents a major accumulation of ilmenite and hematite/goethite after sulfide. The anomaly zone is approximately 800 meters long, trends roughly NE and lies about 500 meters NW of Heresvela in the northwestern part of the area. The southwesternmost anomaly is the strongest and indicates a northwest dip of the causative body. The intensity of conductivity gradually decreases to the northeast. A single-point anomaly called Gulldragsvatn South, located about 200 meters NE of Heresvela, may be related to this zone.

Ground checks of the anomalies revealed extensive amounts of ilmenite and hematite/ goethite in their vicinity. Pyrite and pyrrhotite can be seen within goethite grains in a texture that indicates replacement of sulfide minerals by goethite. Ilmenite and goethite in this area occur as disseminations in anorthosite, in layers of norite with variable width and strike length, and as breccia filling (see photos). The layers dip to the northwest, which is consistent with the dip of the conductor determined from airborne data.

Rocks with extensive amounts of ilmenite and goethite do not form natural outcrops and are only exposed in drainage ditches or road cuts constructed by farmers working the area. Meadows and mires along the anomaly trend have massive to semi-massive goethite and ilmenite exposed in these cuts. Loose boulders of massive to semi-massive goethite and ilmenite that have been brought to the surface by excavation also occur along ditches and near road cuts.

These features are best seen in the vicinity of Høgevarden, at the western end of the Gulldragsvatn anomaly where the strongest airborne anomaly occurs. This part of the Gulldragsvatn anomaly is referred to as the Høgevarden zone.

Ilmenite and goethite are concentrated in the vicinity of the airborne anomalies, and are absent or very limited away from the anomalies.

The "goethite zone" associated with the Gulldragsvatn anomaly has been traced on the ground for a distance of 1,800 meters, with the zone still open to the east (see Aeromagnetics & Prospects Map). It reaches a maximum width of 200 meters on the northeastern end of the airborne anomaly, but continues on strike for at least another 300 meters. The Gulldragsvatn South anomaly lies south of the widest part of the goethite

zone and may be associated with it. Goethite and ilmenite can be seen in the vicinity of the southern anomaly, but exposure is limited where they occur.

The Gulldragsvatn anomalous zone a~~nd its associated goethite were~~ was unreported prior to the airborne survey. The associated ilmenite/goethite mineralization extends for at least 1,800 meters and possibly much further, and represents a significant mineralization.

The Gulldragsvatn and Knuten anomalies have a similar type of geophysical response, and the Fossfjellet nickel-copper occurrence (hosted in pyrrhotite) is associated with the Knuten anomaly. The Knuten anomaly is adjacent to the Fossfjellgruva nickel-copper occurrence (0.37% Ni and 0.17% Cu).

The goethite zone is a concentration of ilmenite and hematite/goethite after sulfides. Petrographic examination of several samples from the oxidized zone demonstrates that up to 50% ilmenite occurs in breccia fragments in the goethite zone. An assay of the petrographic block with 50% ilmenite yielded 30.04%TiO_2 (OG98-2; Acme Labs assay). Petrographic examination also shows abundant specular hematite exsolution lamellae in about 95% of the ilmenite. This is inferred to indicate that the original magmatic phase was a homogenous ferrian-ilmenite solid solution that formed exsolution lamellae upon cooling below the solidus. About 5% of the hematite/goethite that is the oxidation product of weathering of pyrite and pyrrhotite lacks any exsolution lamellae and shows other textural evidence of its secondary origin. Traces of chalcopyrite have also been seen within hematite/goethite, but the amount of chalcopyrite relative to pyrite and pyrrhotite cannot be determined with the existing data.

The geophysical signature of the HEM survey is consistent with a mineralized body of hematite-ilmenite with trace amounts of sulfide minerals. The Gulldragsvatn anomaly may represent another Tellnes-type ilmenite-nickel-copper deposit. The Tellnes ilmenite deposit occurs 50 km to the SE within a younger portion of the Rogaland massifs.

Ilmenite and hematite/goethite are concentrated in norite layers within the Ogna anorthosite. The layers dip to the northwest, as does the conductor zone. The depth to the top of the conductor (about 50 meters) is the same depth at which layers of different dip would intersect. The conductor zone probably represents an increase in ilmenite-hematite plus sulfide minerals at the intersection of the layers.

Grades of the target mineralization will be similar to that of Tellnes, although the TiO_2 values may be higher at Gulldragsvatn. The tonnage depends on the down-dip extent of the conductor body, but a deposit of 50 to 150 million tonnes is not unreasonable given the 800-meter-long strike of the conductor and the width of the "goethite zone".

Knuten: This anomaly is located 1,200 meters north of the Gulldragsvatn anomaly and also trends NE. The strongest, westernmost anomaly has a northerly dip. A minor nickel occurrence, Fossfjellgruva, lies 300 meters north of the anomaly trend.

Ilmenite and goethite in norite layers have been located on Knuten hill, which trend NE and dip to the northwest. The amount of ilmenite and goethite is considerably less than that at Gulldragsvatn. A VLF survey along the trend of the anomaly detected weak crossovers in the vicinity of the airborne anomalies. Mineralization at Fossfjellgruva is fracture-controlled and may be the result of sulfides being remobilized from a sulfide accumulation related to the Knuten anomaly.

The eastern portion of the Gulldragsvatn anomaly changes trend from N60E to N30E, and if it continues along this trend for another 800 meters it would intersect the Knuten anomaly and create one, very extensive zone of ilmenite and sulfide accumulation.

Torskard: This anomaly is located in the northeastern portion of the area approximately 3,000 meters WNW of Eikeland, and was detected on two lines. A wide area in the vicinity of the conductor was examined and minor occurrences of ilmenite and goethite were seen. No significant mineralization is present and the conductor's location coincides with the occurrence of a new, galvanized fence grounded in a bog.

There is sufficient outcrop in the vicinity of the anomaly to indicate that even if a sulfide body is present, its tonnage would be too small to be attractive.

The lack of significant mineralization and the presence of the fence indicate that the survey detected the fence. No further work is recommended on this anomaly.

Skipaskardet: This 500-meter-long zone of three anomalies lies 500 meters NW of the Høgevarden zone and 1,500 meters SW of and on strike with the Knuten anomaly. The middle anomaly shows a southerly dip.

This anomaly was checked as a result of observations made at Høgevarden. Skipaskardet may be an equivalent of either Høgevarden (down-dip) or Knuten (lateral).

A zone of ilmenite and goethite occurrences 50-100 meters wide is exposed on the southwestern end of the zone which trends N50-70E. The layers with ilmenite and goethite show a vertical to northerly dip. The zone can be followed for about 400 meters before it disappears under cover in both directions. The conductors associated with this zone occur where the zone disappears under a wide meadow that continues for the entire length of the anomaly. The rocks examined along the sides of the meadow do not show any evidence of ilmenite and goethite, but they may occur beneath the meadow.

Power lines and fences also occur along the trend of conductors, and may be the cause of the anomalies.

No further work is recommended on this anomaly at this time. However, if significant mineralization is located at Høgevarden, alternative exploration methods should be considered at Skipaskardet.

Øyestad: This cluster of anomalies lies 1,500 meters north of Knuten. One of the anomalies attracted Terry Crebs' attention and the area was examined for their causes.

The weak anomaly at Fjellheim is probably due to fences and power lines, where two houses and a large barn lie in a small area. A stronger anomaly located 200 meters ESE of Fjellheim occurs exactly at the intersection of two power lines. Bedrock is exposed in a road cut in a knob of anorthosite and no evidence of mineralization was seen. These anomalies are believed caused by cultural features.

Three anomalies occur along an 800-meter-long, WNW trend from Heia to Øyestad. The middle anomaly shows a southerly dip. Bedrock is exposed in knobs and an old quarry, where a fault plane is exposed. The fault is strongly chloritized, trends WNW and dips to the south. The oxidation of chlorite along the fault zone causes the bedrock to weather a distinctive pale brown, and this coloration can be seen to extend for several kilometers. No evidence of mineralization, such as goethite, was seen in the area. The three anomalies in this trend are probably related to the fault.

The strong, single anomaly located 400 meters ENE of Øyestad occurs over a large area underlain by mire and meadow. A few fences are present, but are not detected on other lines in this vicinity. No evidence of mineralization was observed in outcrops near the area, and no cause for the anomaly can be determined. It may be due to conductive mire, but appears to be too strong for that to be a reasonable explanation.

No further work is recommended on this anomaly at this time.

Summary and Conclusions: Two prospects of interest have been identified as a result of AMF's airborne survey at Ogna. These are:

Bjørndalsnipa: The Bjørndalsnipa Prospect was first identified by Sulfidmalm in 1972. They drilled 3 shallow core holes in 1973 to test a coincident VLF-Slingram-magnetic anomaly. Combined nickel-copper grades of 1.0-1.5% were intercepted over drill widths of 7 to 10 meters. However, two of the holes were drilled parallel with the dip of the conductors and near their northern edges. Sulfidmalm later recognized this, but changes in the industry at that time prevented the additional recommended drilling. The interpretations of AMF's airborne and ground geophysics indicate that Sulfidmalm's holes were not drilled in the correct orientation to evaluate the south dipping mineralization.

The attached maps and cross sections show the Bjørndalsnipa area, which is underlain by layers of norite and anorthosite. The conductors drilled by Sulfidmalm do not crop out because younger norite and anorthosite layers truncate them.

Compilation of all geophysical data results in the recognition of four magnetic-conductors, only two of which have been drilled. The other two weak magnetic-conductors have yet to be tested. Disseminated mineralization between the magnetic-

conductors may also be present, but drilling is required to test this additional or upside potential.

The grade of nickel-copper mineralization at Bjørndalsnipa can be inferred from the grades drilled by Sulfidmalm and grades from Homse. The grades in massive mineralization can therefore be expected to be 2-3% combined nickel and copper, while in disseminated mineralization could range between 0.6 and 1.0% combined.

Tonnage can be inferred from the presence of massive and disseminated mineralization and Homse and Bjørndalsnipa. It is possible that the Homse mega-xenolith of massive sulfide was torn from a deeper, western extension of the Bjørndalsnipa mineralization. Realistic estimates for the dimensions of massive and disseminated mineralization are: a combined width of +20 meters; depth extents of +200 meters; strike length of +500 meters; and, specific gravity of 4.4 metric-tonnes/m^3 yield tonnage estimates ranging from 5 to 15 million metric tonnes. Results from the recommended drilling program will much better determine tonnage and grades.

A minimum of five core holes from three sites totalling approximately 1200 meters is recommended to test the four magnetic-conductors and additional disseminated mineralization. The locations of the holes are shown on the maps and sections. Depending on results, more holes may be recommended.

Gulldragsvatn: The Gulldragsvatn Prospect represents a potentially major accumulation of ilmenite and sulfides. The "goethite zone" is defined by presence of goethite (as a weathering product after sulfides) and the presence of ilmenite. The prospect was initially defined by four HEM magnetic-conductors yielding a strike-length of +800 meters. This HEM zone trends NE and is about 500 meters NW of Heresvela in the northwestern part of the Ogna area. Interpretation of the HEM data suggests the magnetic-conductors dip to the northwest and weaken to the northeast. HEM-apparent-resistivity maps indicate the prospect area to be broad zone of low resistivity. A "goethite zone" was mapped encompassing this HEM anomaly zone and is shown on the accompanying aeromagnetic overlay map. The aeromagnetic image suggests a connection with the goethite zone of the Knuten anomaly which is adjacent to the Fossfjellgruva nickel-copper showing (samples average 0.37% Ni and 0.17% Cu).

Petrographic examination of several samples from the oxidized zone demonstrates that up to 50% ilmenite occurs in breccia fragments in the goethite zone. An assay of the petrographic block with 50% ilmenite yielded 30.04% TiO_2. Traces of chalcopyrite have also been seen within hematite/goethite, but the amount of chalcopyrite relative to pyrite and pyrrhotite cannot presently be determined.

AMF's interpretation of the HEM responses is consistent with a mineralized body of hematite-ilmenite with trace amounts of sulfide minerals. The Gulldragsvatn prospect may represent another Tellnes-type ilmenite-nickel-copper deposit.

At both Tellnes and Gulldragsvatn, ilmenite and hematite/goethite are concentrated in norite layers within anorthosite. The Gulldragsvatn layers dip to the north, as does the conductor zone. The depth to the interpreted top-of-conductor (~50 meters) is approximately the same depth at which layers of different dip would intersect. The conductive zone probably represents an increase in ilmenite plus sulfide minerals at the intersection of the layers.

Grades of Ni-Cu mineralization will be similar to that of Tellnes, but the TiO_2 values may well be higher at Gulldragsvatn. The Gulldragsvatn tonnage depends on the down-dip extent of the mineralized body, but a deposit of 50 to 150 million metric tonnes is not unreasonable given the +800-meter-long strike of the conductor and the width of the "goethite zone".

One borehole of 250 meters drill-depth is proposed to test the prospect near Høgevarden. Its location is shown on the Gulldragsvatn anomaly map. This hole will demonstrate what minerals are conductive and indicate whether additional drilling is justified.

Dr. Thomas L. Robyn, Senior Consultant
America Mineral Fields
ST Group, Inc., Agent
1551 Prairie Owl Road
Parker, CO 80138 USA
October 14, 1998

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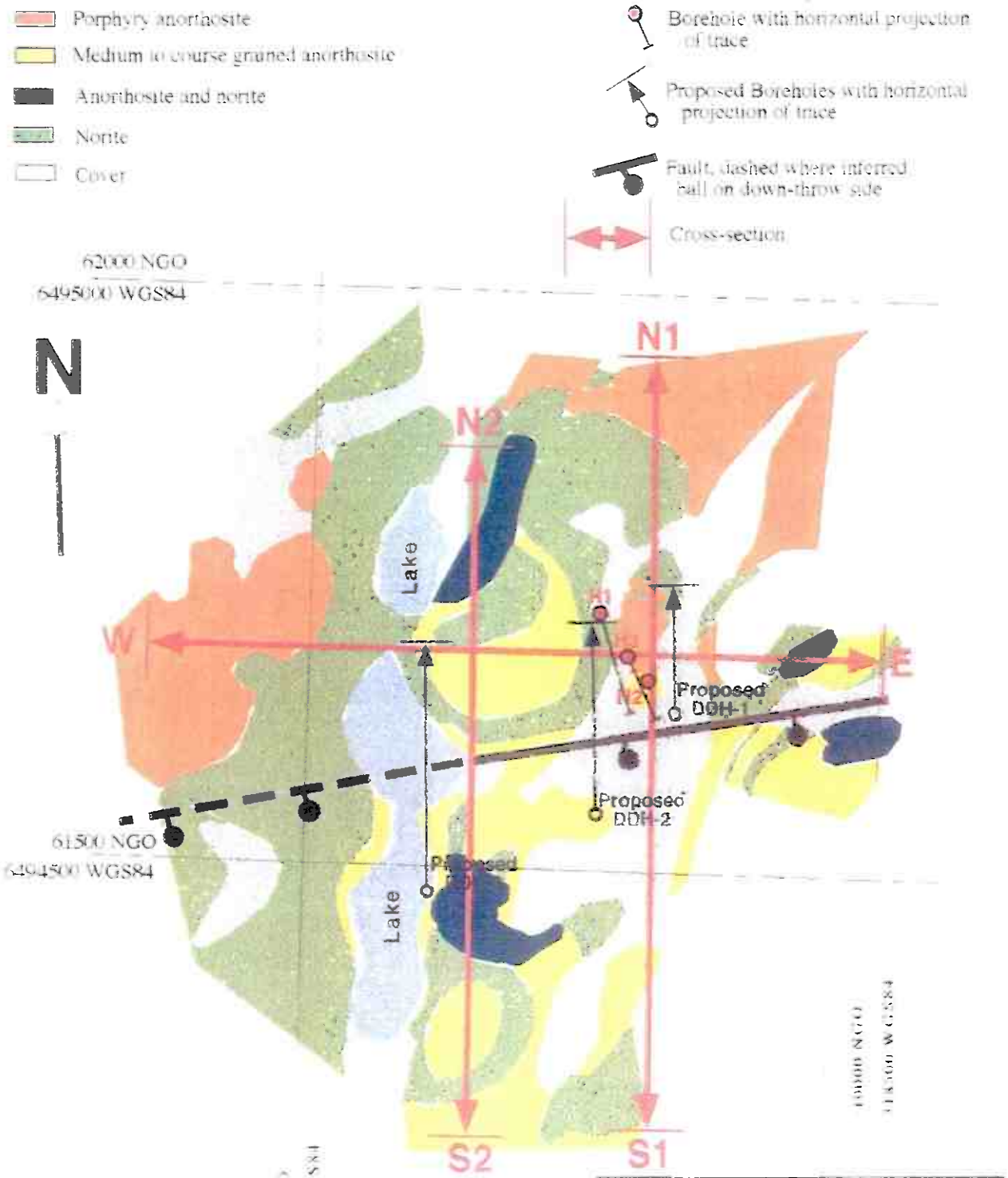
Geologic Map of Bjørndalsnipa



America Mineral Fields, Inc	
Geology Mapped by M. Dyvik, 6-Aug-98 Modified by T.L. Rogvn, 29-Aug-98	
Terry J. Crabb	September 1998

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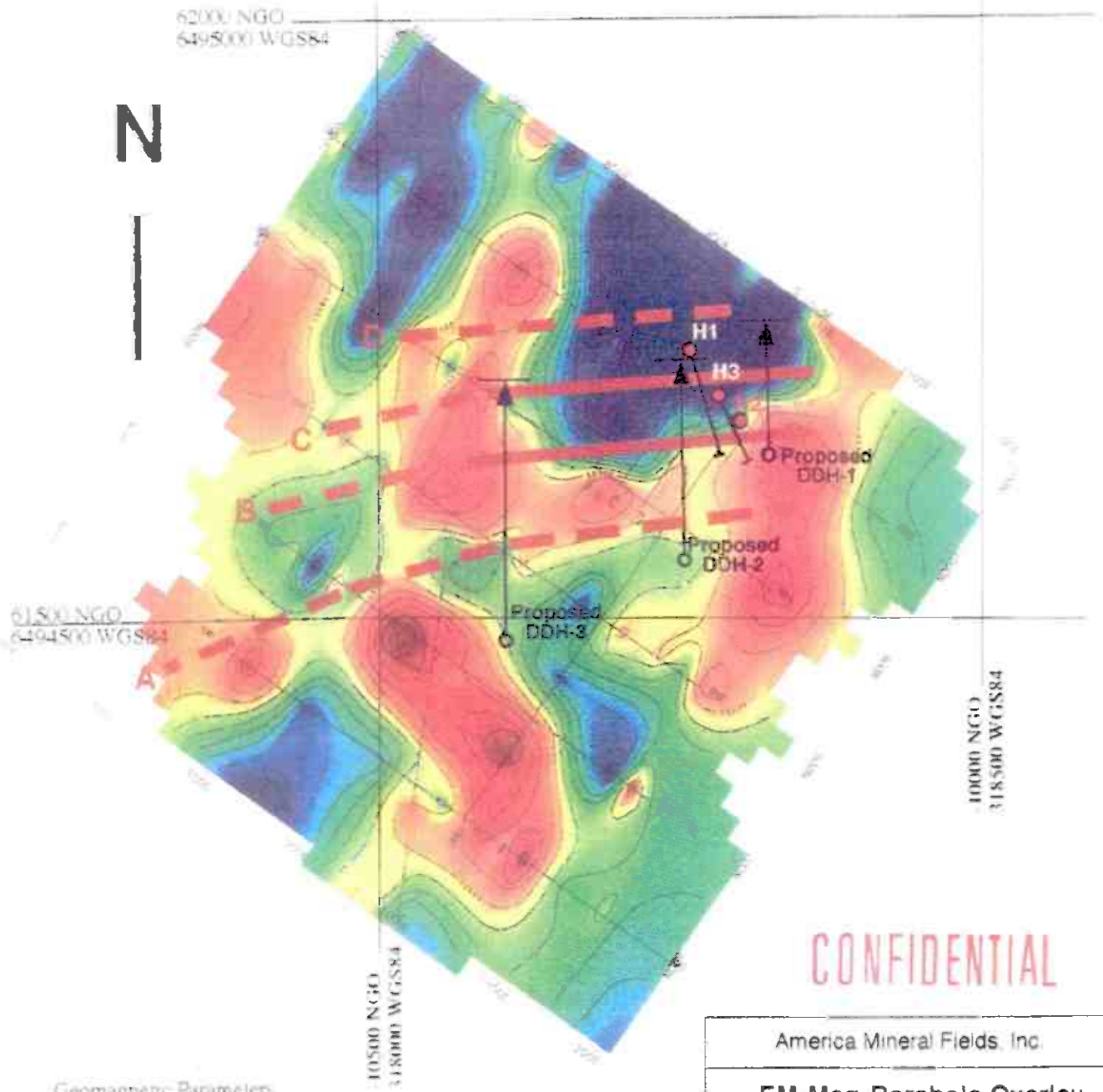
Bjørndalsnipa Ground-Mag Contours and EM Conductor Trends

Borehole with horizontal projection of trace

Proposed Borehole with horizontal projection of trace

Surface Trace of interpreted Slingram electromagnetic conductor – dashed where weak or questionable. Conductors A, B, C, and D are interpreted to have shallow-to-moderate South dip



Geomagnetic Parameters
Declination 1°E
Inclination 72° N
Intensity 0.505 gauss

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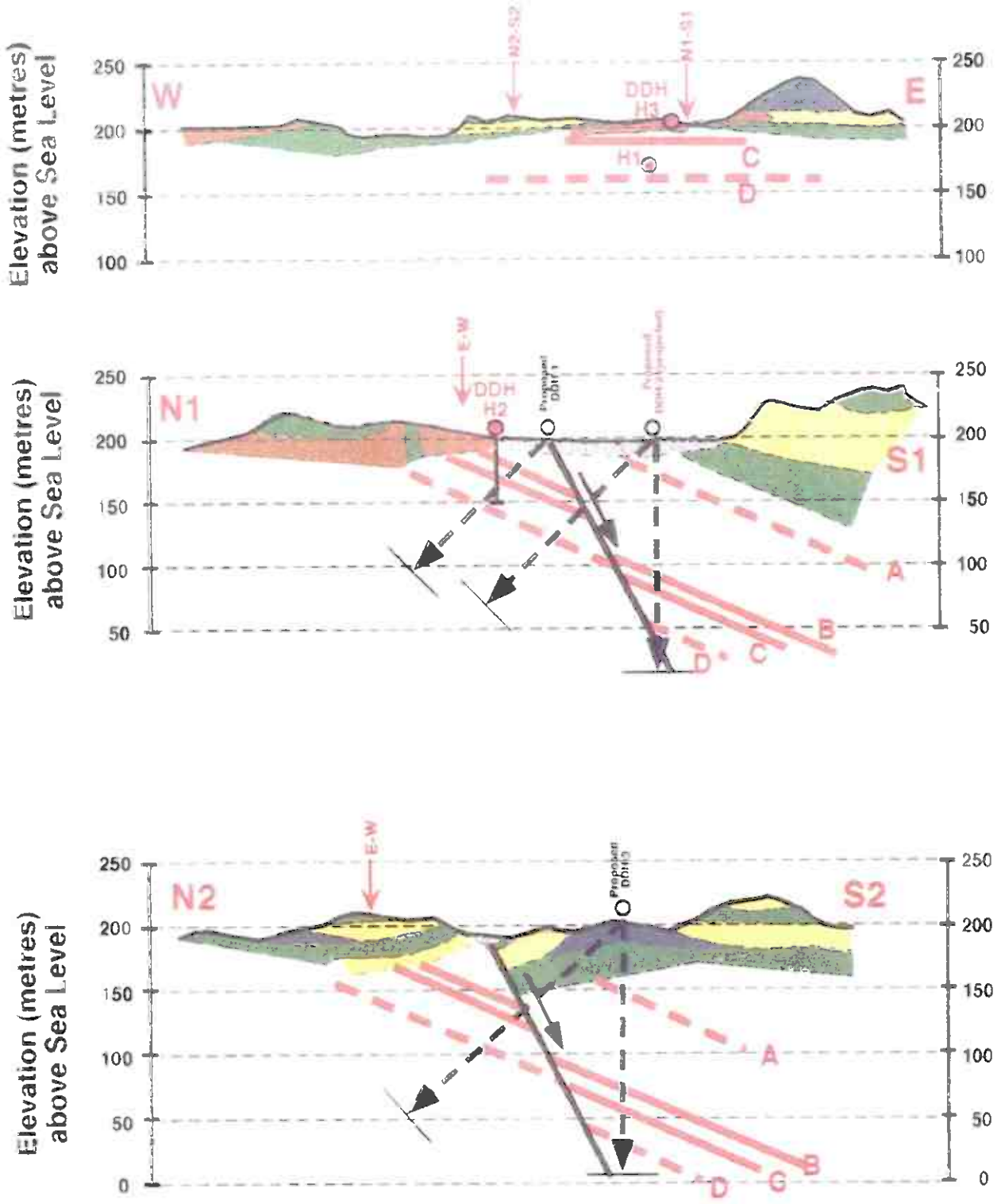
America Mineral Fields, Inc.

EM-Mag-Borehole Overlay

Contour Interval - 100 nT

Terry J. Crebs September 1998

Bjørndalsnipa Geological & Geophysical Cross-Sections



America Mineral Fields, Inc.

Cross-sections

Geology by M. Oyvik, 6-Aug-98
Modified by T.L. Robyn, 29-Aug-98
Geophysics by Crebs, 10-Aug-98

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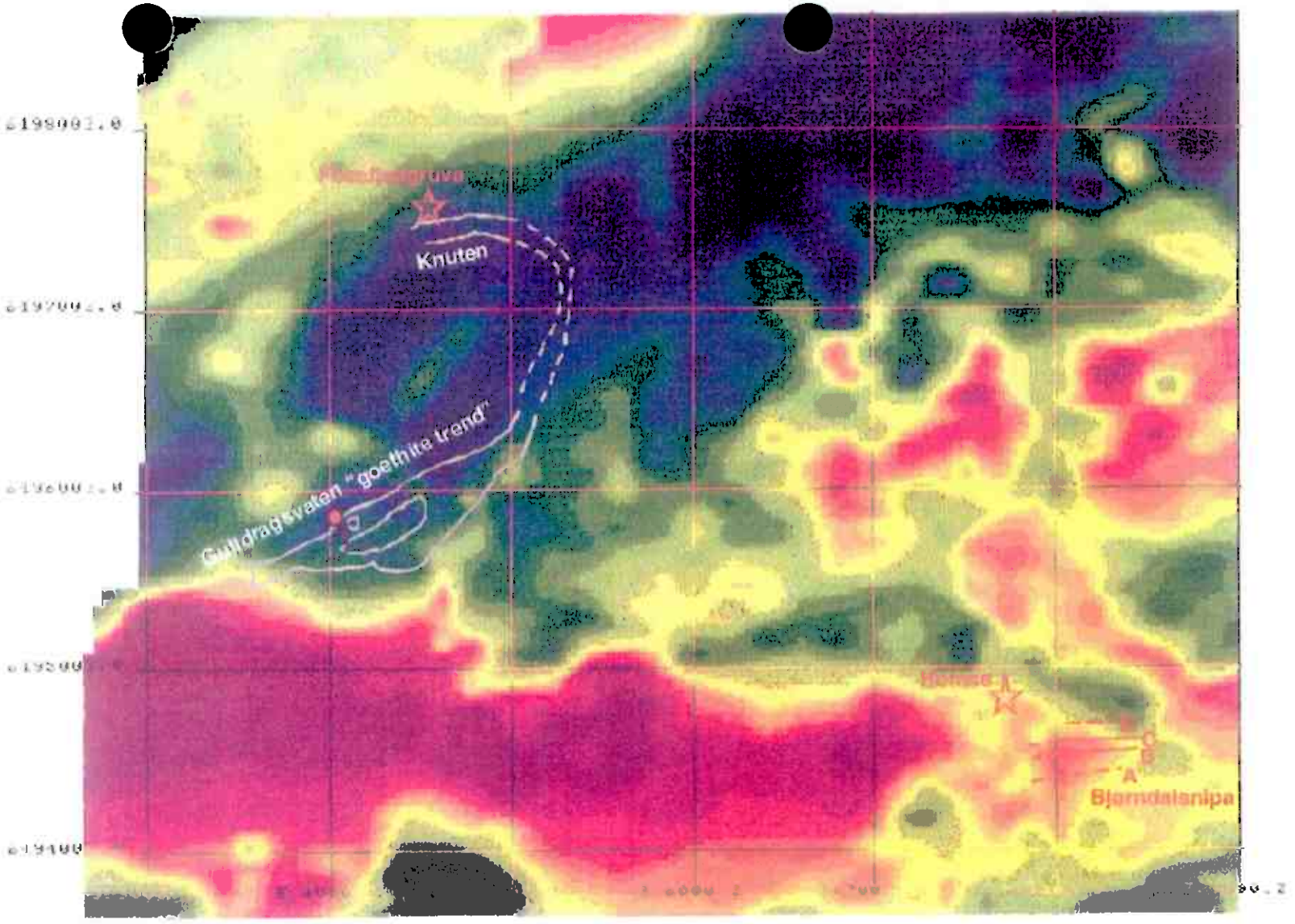

Proposed borehole with horizontal projection of trace

1 Kilometer (WGS84 Grid)

Nickel-Copper Deposit (Blonse) or Showing (Fossfjellgruva)

Prospect goethite contacts (mapped by Robyn; Jul-98)

Ground EM Conductor Trends (Bjorndalsnipa) – Dashed where weak or inferred –

America Mineral Fields, Inc.

Aeromagnetics & Prospects

Total Field Intensity
Warm-Color Highs & Cool-Color Lows

Terry J. Clebs — October 1998

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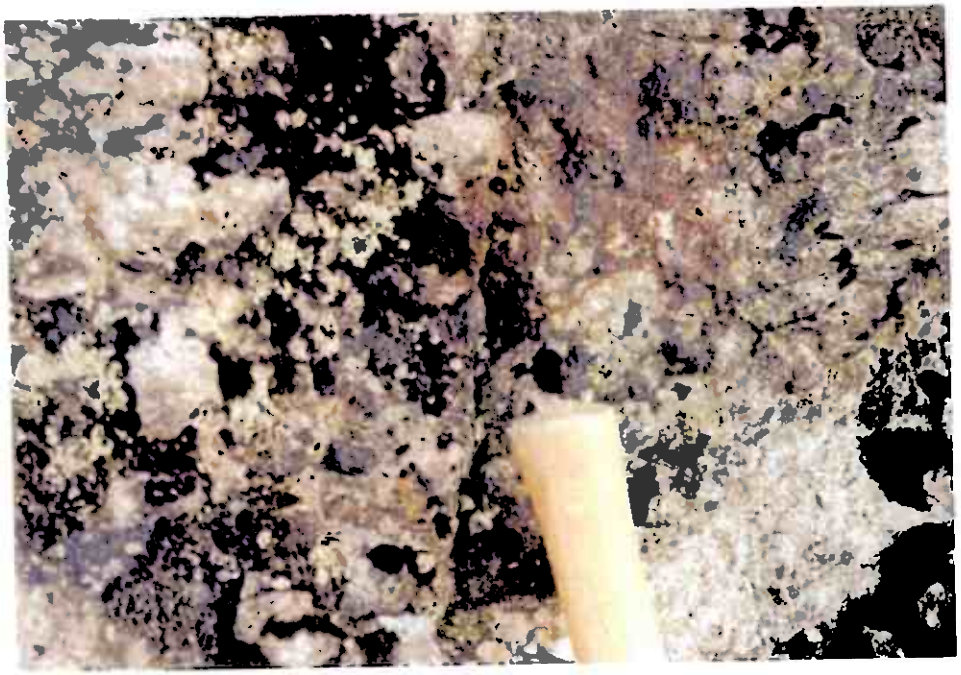
Contact between anorthosite (bottom) and coarse norite west of Sulfidmalm's drill holes. The norite truncates the anorthosite and is the reason that the conductive zone does not crop out. The HEM conductor is about 25 meters below the backpack.

View of norite unit, showing cross-cutting relations within the unit. Several norites of various grain size and orientation of crystals can be discerned through contacts such as this. The Bjørndalsnipa conductors may be truncated by these and other intrusions at depth and along strike, but only drilling can determine this relationship.

View of heterolithic breccia in Høgevarden area with matrix of massive hematite/ goethite. This breccia lies in the basal portion of the northern arm of the "goethite trend".

Another heterolithic breccia in the basal portion of the goethite trend. The massive goethite matrix thickens in areas of dilational openings.

Anorthosite breccia in the western Høgevarden zone, near Fuglestad. The dark areas are zones of hematite/goethite filling openings in an incipient breccia. The breccia is in the upper portion of the goethite zone.



Close-up view of hematite/goethite in the matrix of a breccia zone. Individual grains reach 1-2 cm in size.

APPENDIX 1

Geochemical Data

OGNA ROCK SAMPLES

Sample # and type	1:5,000 Map Sheet	NGO X coord.	NGO Y coord.	Nickel ppm	Copper ppm	Platinum ppm	Palladium ppm	Sample Description
OG98-1 rock chip	Vetteland AL014-5-4	62505	-14770	135	159	<0.005	<0.005	goethite in anorthosite
OG98-2 rock chip	Vetteland AL014-5-4	62665	-14450	155	118	<0.005	<0.005	goethite in anorthosite
OG98-3 rock chip	(?, Torskard) AM014-5-4	64385	-6536	85	87	<0.005	<0.005	goethite in anorthosite
OG98-4 rock chip	Vetteland AL014-5-4	62675	-14390	29	22	<0.005	<0.005	goethite in anorthosite
OG98-5 rock chip	Vetteland AL014-5-4	62675	-14390	54	33	<0.005	<0.005	goethite in anorthosite
OG98-6 rock chip	Vetteland AL014-5-4	62740	-14375	20	19	<0.005	<0.005	goethite in anorthosite
OG98-7 rock chip	Vetteland AL014-5-4	62435	-13880	2	26	<0.005	<0.005	unmineral. norite
OG98-8DS deep soil	Vetteland AL014-5-4	62675	-14425	14	8	<0.005	<0.005	soil in trench
OG98-9F float	Vetteland AL014-5-4	62570	-14605	41	33	<0.005	<0.005	cobbles from trench
OG98-10 Homse dump	Hedlevatna AM013-5-1	61885	-10970	7558	11485	<0.005	<0.005	dump rock with cpy
OG98-11 rock chip	Hedlevatna AM013-5-1	61605	-10130	24	18	<0.005	<0.005	massive anorthosite
OG98-12 rock chip	Hedlevatna AM013-5-1	61675	-10190	52	49	<0.005	<0.005	rusty anorthosite
OG98-13 rock chip	Hedlevatna AM013-5-1	61700	-10250	17	4	<0.005	<0.005	coarse norite

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Athenry Road, Loughrea, Co. Galway, Ireland.
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Fax: 353-91-842146
e mail: 100104.3405@compuserve.com

CERTIFICATE OF ANALYSIS 6/7/98

TO: Geologiske Tjenester A/S., INVOICE: Same

ATTN: B. Flood

CODE: EV1 - OG-98-4 **Aqua Regia ICP**

BATCH NO. EF49
NO. SAMPLES 7 Rock/Tailings

LAB. NO.	SAMPLE NO.	ppm Ag	% Al	ppm As	ppm B	ppm Ba	ppm Be	ppm Bi	% Ca	ppm Cd	ppm Ce	ppm Co	ppm Cr	ppm Cu	% Fe	ppm Ga	ppm Ge	ppm Hg	% K	ppm La	ppm Li	% Mg	ppm Mn	ppm Mo
4	OG 98-1	<.5	1.32	<5	5	21	<1	<5	0.66	<1	<2	24	3	159	2.59	<5	<2	<1	0.04	<2	3	0.52	190	<1
5	OG 98-2	<.5	0.47	<5	<5	11	<1	<5	0.51	<1	13	36	85	118	5.56	<5	<2	<1	0.02	4	<2	0.24	141	<1
6	OG 98-3	<.5	1.42	<5	<5	25	<1	<5	0.79	<1	<2	23	14	87	3.07	<5	<2	<1	0.07	<2	5	0.58	189	<1
7	OG 98-4	<.5	1.56	<5	<5	23	<1	<5	0.86	<1	4	16	11	22	1.81	<5	<2	<1	0.06	<2	<2	0.50	141	<1
Upper Calibration Limit		500.0	12.50	20000	500	5000	500	500	25.00	500	500	2500	5000	20000	40.00	500	500	500	12.50	500	5000	12.50	50000	500

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CERTIFICATE OF ANALYSIS 6/7/98

TO: Geologiske Tjenester A/S.,

INVOICE: Same

ATTN: B. Flood

CODE: EV1 - OG-98-4

Aqua Regia ICP

BATCH NO. EF49
NO. SAMPLES 7

Rock/Tailings

LAB. NO.	SAMPLE NO.	% Na	ppm Nb	ppm Ni	% P	ppm Pb	ppm Rb	% S	ppm Sb	ppm Sc	ppm Sn	ppm Sr	ppm Te	ppm Th	ppm Ti	ppm Tl	ppm U	ppm V	ppm W	ppm Y	ppm Zn	ppm Zr
4	OG 98-1	0.20	<5	135	0.005	10	<50	0.22	<5	4	<5	45	<5	<5	2959	<5	<5	61	<5	2	41	2
5	OG 98-2	0.08	<5	155	0.108	7	<50	0.21	<5	3	<5	21	<5	<5	13033	<5	<5	355	<5	9	20	4
6	OG 98-3	0.16	<5	85	0.007	12	<50	0.11	<5	3	<5	41	<5	<5	6325	<5	<5	95	<5	1	46	2
7	OG 98-4	0.30	<5	29	0.035	7	<50	0.04	<5	2	<5	71	<5	<5	1780	<5	<5	42	<5	3	26	2
Upper Calibration Limit		12.50	500	2500	5.000	20000	5000	12.50	500	500	500	5000	500	500	10000	500	500	500	250	500	20000	5000

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CERTIFICATE OF ANALYSIS 6/7/98

TO: Geologiske Tjenester A/S., INVOICE: Same

ATTN: B. Flood

CODE: EV1 - OG-98-4

BATCH NO. EF49
NO. SAMPLES 7 Rock/Tailings

		Fire Assay/ICP		
LAB. NO.	SAMPLE NO.	ppm Au	ppm Pd	ppm Pt
4	OG 98-1	<0.005	<0.005	<0.005
5	OG 98-2	<0.005	<0.005	<0.005
6	OG 98-3	<0.005	<0.005	<0.005
7	OG 98-4	<0.005	<0.005	<0.005

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CERTIFICATE OF ANALYSIS 6/8/98

TO: Geologiske Tjenester A/S.. INVOICE: Same

ATTN: B. Flood

CODE: OG98-5 - ET98-15 **Aqua Regia ICP**

BATCH NO. EG20
NO. SAMPLES 14 Rock

LAB. NO.	SAMPLE NO.	ppm Ag	% Al	ppm As	ppm B	ppm Ba	ppm Be	ppm Bi	% Ca	ppm Cd	ppm Ce	ppm Co	ppm Cr	ppm Cu	% Fe	ppm Ga	ppm Ge	ppm Hg	ppm In	% K	ppm La	ppm Li	% Mg	ppm Mn	ppm Mo
1	OG98-5	<.5	1.71	<5	<5	36	<1	<5	1.19	<1	16	21	13	33	3.44	<5	<2	<1	<2	0.11	6	4	0.70	376	<1
2	OG98-6	<.5	1.37	<5	<5	23	<1	<5	0.73	<1	3	17	4	19	2.64	<5	<2	<1	<2	0.08	<2	5	0.54	192	<1
3	OG98-7	<.5	1.15	<5	<5	44	<1	<5	2.68	<1	139	14	<2	26	4.65	8	<2	<1	<2	0.07	57	<2	0.21	237	3
4	OG98-8DS	<.5	1.50	<5	<5	43	<1	<5	0.71	<1	45	8	17	8	2.52	<5	<2	<1	<2	0.12	19	6	0.30	297	<1
5	OG98-9F	<.5	1.22	<5	<5	27	<1	<5	1.12	<1	27	25	16	33	4.38	<5	<2	<1	<2	0.04	11	<2	0.52	199	<1
6	OG98-10	1.8	0.17	<5	<5	<2	<1	<5	0.07	<1	6	937	13	11485	42.33	<5	<2	3	<2	<.01	<2	<2	0.09	82	2
7	OG98-11	<.5	2.11	<5	<5	33	<1	<5	1.11	<1	<2	6	10	18	0.96	<5	<2	<1	<2	0.09	<2	3	0.48	111	<1
8	OG98-12	<.5	1.95	<5	<5	26	<1	<5	0.85	<1	<2	6	5	49	0.71	<5	<2	<1	<2	0.08	<2	3	0.20	44	<1
9	OG98-13	<.5	1.84	<5	<5	19	<1	<5	0.84	<1	<2	8	25	4	1.63	<5	<2	<1	<2	0.09	<2	6	0.71	208	<1
Upper Calibration Limit		500.0	12.50	20000	500	5000	500	500	25.00	500	500	2500	5000	20000	40.00	500	500	500	500	12.50	500	5000	12.50	50000	500

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e mail: 100104.3405@compuserve.com

CERTIFICATE OF ANALYSIS 6/8/98

TO: Geologiske Tjenester A/S., INVOICE: Same

ATTN: B. Flood

CODE: OG98-5 - ET98-15 **Aqua Regia ICP**

BATCH NO. EG20
NO. SAMPLES 14 Rock

LAB. NO.	SAMPLE NO.	% Na	ppm Nb	ppm Ni	% P	ppm Pb	ppm Pb	% S	ppm Sb	ppm Sc	ppm Se	ppm Sn	ppm Sr	ppm Ta	ppm Te	ppm Th	ppm Ti	ppm Tl	ppm U	ppm V	ppm W	ppm Y	ppm Zn	ppm Zr
1	OG98-5	0.28	<5	54	0.128	19	<50	0.15	<5	4	<10	<5	65	<2	<5	<5	1555	<5	<5	42	<5	10	31	2
2	OG98-6	0.22	<5	20	0.012	10	<50	0.02	<5	4	<10	<5	53	<2	<5	<5	5055	<5	<5	97	<5	2	32	2
3	OG98-7	0.25	<5	2	0.798	8	<50	0.17	<5	3	<10	<5	98	<2	<5	<5	2597	<5	<5	36	<5	83	69	4
4	OG98-8DS	0.15	<5	14	0.052	9	<50	<.01	<5	3	<10	<5	49	<2	<5	<5	1323	<5	<5	39	<5	15	26	4
5	OG98-9F	0.22	<5	41	0.221	10	<50	0.03	<5	3	<10	<5	60	<2	<5	<5	4187	<5	<5	127	<5	19	33	3
6	OG98-10	0.02	<5	7558	0.007	8	<50	8.33	<5	<1	<10	<5	6	<2	<5	<5	274	<5	<5	21	<5	1	98	15
7	OG98-11	0.45	<5	24	0.002	10	<50	0.04	<5	<1	<10	<5	121	<2	<5	<5	168	<5	<5	11	<5	<1	7	<1
8	OG98-12	0.45	<5	52	0.002	10	<50	0.01	<5	<1	<10	<5	120	<2	<5	<5	349	<5	<5	6	<5	<1	12	<1
9	OG98-13	0.29	<5	17	0.001	14	<50	<.01	<5	2	<10	<5	70	<2	<5	<5	399	<5	<5	25	<5	<1	25	<1
Upper Calibration Limit		12.50	500	2500	5.000	20000	5000	12.50	500	500	500	500	5000	500	500	500	10000	500	500	500	250	500	20000	5000

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CERTIFICATE OF ANALYSIS 6/8/98

TO: Geologiske Tjenester A/S., INVOICE: Same

ATTN: B. Flood

CODE: OG98-5 - ET98-15

BATCH NO. EG20
NO. SAMPLES 14 Rock

		Fire Assay/ICP		
LAB. NO.	SAMPLE NO.	Auppm	Pdppm	Ptppm
1	OG98-5	.005	<.005	<.005
2	OG98-6	<.005	<.005	<.005
3	OG98-7	<.005	<.005	<.005
4	OG98-8DS	<.005	<.005	<.005
5	OG98-9F	<.005	<.005	<.005
6	OG98-10	.119	<.005	<.005
7	OG98-11	<.005	<.005	<.005
8	OG98-12	<.005	<.005	<.005
9	OG98-13	<.005	<.005	<.005

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)-1716
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GEOCHEMICAL ANALYSIS CERTIFICATE

Spectrum Petrographics, Inc. File # 9803422

2 - 499 Dillard Gardens R, Winston OR U.S.A. 97496 Submitted by: Michael DePangher

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	Al %	Na %	K %	W ppm	Zr ppm	Sn ppm	Y ppm	Nb ppm	Be ppm	Sc ppm
OG98-12	<2	160	5	16	5	198	23	108	1.25	<5	<10	<4	2	727	5	5	<5	6	5.15	.010	3	3	.20	273	.08	12.03	4.51	.96	<4	<2	2	2	2	<1	<1
OG98-2	<2	30	<5	208	4.0	63	50	1608	22.23	<5	<10	<4	<2	138	1.4	<5	<5	512	1.51	.043	5	149	1.94	97	8.35	2.36	.81	.16	<4	10	<2	12	9	<1	35
OG98-4	<2	24	6	104	<.5	50	42	1083	7.93	<5	<10	<4	2	446	1.0	<5	<5	162	4.38	.041	3	44	3.57	187	1.03	8.23	2.57	.50	<4	14	<2	8	<2	<1	15
OG98-5	<2	43	10	81	.5	65	26	743	5.35	<5	<10	<4	<2	485	.6	<5	<5	76	4.65	.112	7	18	1.91	251	.58	10.30	3.08	.89	<4	10	<2	13	<2	<1	10
OG98-7	3	31	7	392	1.0	8	27	2144	15.71	<5	<10	<4	<2	538	.5	<5	<5	41	5.60	.748	59	4	1.47	722	1.62	6.77	2.10	.94	<4	26	<2	108	32	1	28
OG98-10	4	8215	<5	64	1.0	8094	1564	220	53.82	7	<10	<4	5	12	<.4	<5	16	16	.10	.006	<2	10	17	22	.05	.36	.05	.05	<4	<2	<2	3	2	<1	1
OG98-11	<2	7	<5	15	.5	18	6	123	96	<5	<10	<4	<2	890	.5	<5	<5	17	6.73	.009	<2	8	.62	126	.09	12.21	3.92	.52	<4	<2	<2	<2	<2	<1	1
OG98-13	<2	15	<5	66	<.5	44	23	602	4.03	<5	<10	<4	<2	557	.4	<5	<5	56	4.77	.009	<2	48	2.47	200	.12	10.60	3.41	.66	<4	2	<2	2	<2	<1	8
RE OG98-13	2	15	5	69	<.5	49	24	613	4.12	<5	<10	<4	<2	572	.4	<5	<5	57	4.88	.009	<2	51	2.53	205	.12	10.89	3.52	.66	<4	2	<2	2	<2	<1	8
STANDARD CT3	26	65	42	186	6.1	40	12	958	4.07	59	24	<4	27	241	22.2	23	25	135	1.63	.099	25	254	.98	1052	.40	7.21	1.91	2.07	32	48	21	17	18	5	11
STANDARD G-2	<2	5	17	50	.7	9	4	723	2.28	<5	<10	<4	7	764	<.4	<5	<5	53	2.89	.092	23	73	.72	984	.24	8.17	2.72	3.21	<4	7	<2	18	17	1	6

ICP - .250 GRAM SAMPLE IS DIGESTED WITH 10ML HCLO4-HNO3-HCL-HF AT 200 DEG. C TO FUMING AND IS DILUTED TO 10 ML WITH DILUTED AQUA REGIA. THIS LEACH IS PARTIAL FOR MAGNETITE, CHROMITE, BARITE, OXIDES OF AL,W,ZR & MN AND MASSIVE SULFIDE SAMPLES. AS, CR, SB, AU SUBJECT TO LOSS BY VOLATILIZATION DURING HCLO4 FUMING.
- SAMPLE TYPE: ROCK Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 12 1998 DATE REPORT MAILED: Aug 20/98 SIGNED BY ..... D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

Data___ FA ___

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WHOLE ROCK ICP ANALYSIS

Spectrum Petrographics, Inc. File # 9803422

2 - 499 Dillard Gardens R, Winston OR U.S.A. 97496 Submitted by: Michael DePangher

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Ni ppm	Sr ppm	Zr ppm	Y ppm	Nb ppm	Sc ppm	LOI %	C/TOT %	S/TOT %	FeO %	SUM %
OG98-12	56.18	26.24	1.98	.35	7.03	5.48	1.09	.13	.05	.02	.017	289	160	802	11	<10	<10	<10	1.2	.03	.07	1.36	99.92
OG98-2	16.79	4.70	43.06	3.40	2.21	1.04	<.04	30.04	.28	.26	.064	105	184	142	27	<10	21	29	-2.2	.03	.07	25.70	99.71
OG98-4	52.52	16.21	12.08	6.14	6.22	3.25	.48	1.82	.12	.15	.020	181	52	457	17	<10	<10	11	.8	.13	.07	8.18	99.90
OG98-5	52.73	20.29	8.28	3.25	6.47	4.02	.88	1.07	.22	.11	.016	243	55	498	17	<10	<10	<10	2.5	.17	.23	5.78	99.93
OG98-7	46.87	12.58	22.89	2.41	7.75	2.66	.60	2.79	1.89	.30	.026	659	37	562	143	81	14	20	-1.1	.10	.24	6.98	99.85
OG98-10	3.14	.68	75.68	.19	.15	.10	.07	.10	.20	.02	<.001	34	7717	14	<10	<10	<10	<10	17.4	.02	36.18	56.44	98.72
OG98-11	54.14	26.99	1.53	1.09	9.26	4.97	.52	.19	.01	.02	.017	134	20	940	<10	<10	<10	<10	1.1	.11	<.01	.86	99.97
OG98-13	54.98	21.19	6.19	4.19	6.68	4.40	.77	.19	.02	.08	.025	196	49	582	<10	<10	<10	<10	1.1	.03	.07	4.26	99.91
RE OG98-13	55.33	21.20	6.24	4.21	6.71	4.39	.64	.19	.03	.08	.024	199	43	584	<10	<10	<10	<10	.8	.03	.06	4.36	99.94
STANDARD SO-15/CSA	49.27	12.74	7.33	7.26	5.89	2.42	1.86	1.64	2.71	1.40	1.064	1959	62	398	710	16	13	<10	5.9	3.95	5.09	2.20	99.86

.200 GRAM SAMPLES ARE FUSED WITH 1.5 GRAM OF LIBO2 AND ARE DISSOLVED IN 100 MLS 5% HNO3. OTHER METALS ARE SUM AS OXIDES.
TOTAL C & S BY LECO (NOT INCLUDED IN THE SUM). FEO BY DICHROMATE TITRATION.

- SAMPLE TYPE: ROCK Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 12 1998 DATE REPORT MAILED: Aug 20/98 SIGNED BY. . . . . D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

Data___ FA ___

APPENDIX 2

Petrographic Descriptions

Petrographic Report #HMZ

September 8, 1998

for

Thomas L. Robyn
ST Group, Inc.
1551 Prairie Owl Rd.
Parker, CO 80134

by

Michael DePangher, Ph.D.
Spectrum Petrographics, Inc.

Comments

"OG" Samples

The presence of abundant specular hematite exsolution lamellae in about 95% of the ilmenite (both phases confirmed by microprobe) in these samples strongly suggests that the original magmatic phase was a homogeneous ferrian-ilmenite solid solution that formed exsolution lamellae upon cooling below the solidus. It is difficult to imagine how these crystallographically oriented exsolution lamellae could have formed by any process involving alteration from a sulfide precursor. Hematite/goethite that is in the process of oxidizing from pyrite or pyrrhotite -- about 5% of the hematite/goethite in these samples -- lacks any exsolution lamellae and shows other clear textural evidence of its secondary origin.

However, the existence of massive sulfide in sample OG98-10 shows that "primary" oxides at the surface do not preclude the possibility of sulfides at depth.

Plagioclase compositions were measured on a flat stage using the a-normal method. Combined Carlsbad-Albite twins were not observed in any sample.

Lithogeochemical Analyses

As noted in the original analysis certificates, the "geochemical" analyses involved a digestion procedure that is probably incomplete for certain minerals in some types of samples. The lithium metaborate fusion and digestion achieves complete breakdown of all minerals and is therefore the better of the two when comparing "geochemical" versus "whole rock ICP" analyses for a single element.

Key to Petrographic and Photomicrographic Descriptions

Clay minerals common in altered rocks must often be identified by X-ray diffraction either because their optic properties are not diagnostic or because they are too fine grained to be reliably identified by optical methods. The term "clay" is used herein to denote fine grained phyllosilicates in general. Under ideal conditions, it is often possible to optically discriminate between 4 major groups: kaolinite, smectite, mica (including illite), and chlorite. This is done whenever conditions permit.

The term "sericite" is applied to fine grained colorless phyllosilicates that show upper 2nd order maximum interference colors. These could include muscovite, illite, paragonite, lepidolite, margarite, clintonite, pyrophyllite, and talc. The term "intermediate clay" is applied to fine grained very pale or colorless phyllosilicates that show upper 1st order maximum interference colors. These are probably dominated by chlorite, smectite, and mixed-layer illite/smectite.

The term "opaques" is used to refer to all materials opaque (and sometimes semi-opaque) to transmitted light. The term "FEOH" is herein used to indicate fine grained, yellowish to reddish brown, earthy materials of varying opacity in transmitted light. FEOH is probably mostly Fe oxy-hydroxides but may sometimes include sphalerite, realgar, orpiment, jarosite, a number of Mn oxy-hydroxides, and organic matter.

Particle size distributions are given as (A-B-C μm), where A, B, and C are the smallest, median, and largest particle sizes, respectively, in microns. A question mark (?) in the position of A, B, or C indicates that the value of A, B, or C was indeterminate, probably because of excessively large or small particle size or statistically insignificant numbers of particles.

Mineral abundances are visual estimates. For multi-lithologic materials (cuttings, etc...), mineralogy, textures, and alteration are described only for the dominant lithology.

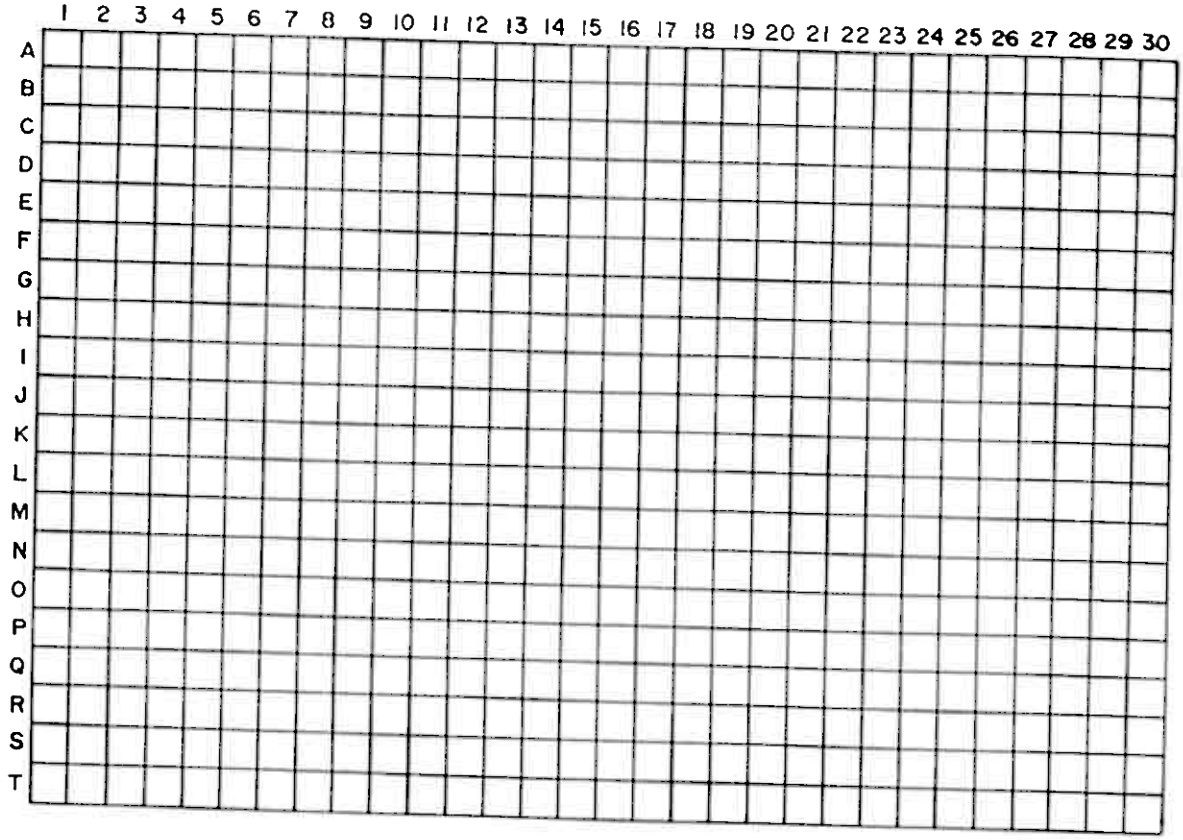
Section preparation codes are as follows: (1) Format: 27 x 46 mm, 51 x 76 mm, or 1" round; (2) Finish: standard lapping (STD) or polished (POL); (3) Stains: sodium cobaltinitrite (SCN), alizarin red S (ARS), potassium ferricyanide (PF), and barium chloride + potassium rhodizonate (BCPR); and (4) Cover: none, permanent Loctite acrylic (PLA), or removable Canada Balsam (RCB).

Photomicrograph captions/labels contain the following items of information in consecutive order separated by forward slashes: (1) sample identification, (2) film roll number, (3) frame number, (4) type of illumination, (5) field of view (FOV) or the magnification on the color print, which is given as the number of times actual size (ie., 32X), and (6) the job identification number. "PPL" indicates plane-polarized light; "XPL indicates cross-polarized light. "R" indicates reflected light. "550" means that a 550 nanometer wavelength plate was inserted to highlight features of extremely low birefringence. "C" indicates that the substage condenser was in (sometimes used for Fe-oxides). "O" indicates substage condenser in an oblique position. These various illuminations can be combined. "CON" indicates conoscopic illumination. For normal photography of hand specimens, the focal length of the lens used is given rather than the magnification. POL means that a polarizing filter was used with the lens, and DAY means the sample was photographed in diffused daylight.

Features on photomicrographs can be located by overlaying the accompanying orthogonal plastic grid. A block of squares is marked by referencing the uppermost left and lowermost right corners of the block, ie. A6-E15. Linear features are marked by designating the extent of the feature from beginning to ending points, ie. B6 to L19.

A question mark after a rock or mineral name in a petrographic description means that there is some degree of uncertainty about the identification of that rock or mineral.

The size of an alteration selvege around a vein is given as a half-width (the width of a selvege on one side of the vein) expressed as a fraction of the associated vein width (vw).



For proper photo grid registration, align the top and left sides of the grid with the top and left sides of the photo.

SAMPLE # OG98-2 September 8, 1998

ROCK NAME GABBRO -- probably formed by weak alteration (secondary hematite/goethite) of a fine to medium grained gabbro intrusive rock. The hand specimen is very weakly magnetic.

MINERALS Hemo-ilmenite (50%) + plagioclase (An 38) (25%) + clinopyroxene (22%) + orthopyroxene (3%) + pyrite (<1%) + hematite/goethite (<1%). Hemo-ilmenite shows extremely fine exsolution lamellae of specular hematite. SEM analysis shows that hemo-ilmenite is composed of specular hematite exsolution lamellae surrounded by an ilmenite host and that a Zr-rich phase may commonly occur as a very thin grain boundary layer between plagioclase and hemo-ilmenite. Rock chemistry does not support the quantity of Zr that the SEM implies, so there may be a problem of overlapping peaks between Zr and another element.

TEXTURES Phaneritic, holocrystalline, equigranular, allotriomorphic, fine to medium grained, non-directed fabric.

ALTERATION The following alteration features are also present but of indeterminate relative ages: (1) pyrite moderately altered to hematite/goethite.

SECTIONING Format: 27 x 46 mm Finish: STD Stains: SCN + ARS + PF Cover: PLA
Format: 27 x 46 mm Finish: POL Stains: none Cover: none

PHOTOS OG98-2/98017/09/DAY/3X/HMZ GABBRO showing typical appearance of hand specimen with abundant ilmenite (M5).

OG98-2/98020/12/XPL/28X/HMZ GABBRO showing typical appearance of plagioclase (D12, R18), orthopyroxene (J19, M25), clinopyroxene (C25), and hemo-ilmenite (opaque).

OG98-2/98020/13/PPL+R/227X/HMZ GABBRO showing typical appearance of hemo-ilmenite exsolution composed of ilmenite host (darker gray) and exsolved specular hematite (lighter gray oriented blebs).

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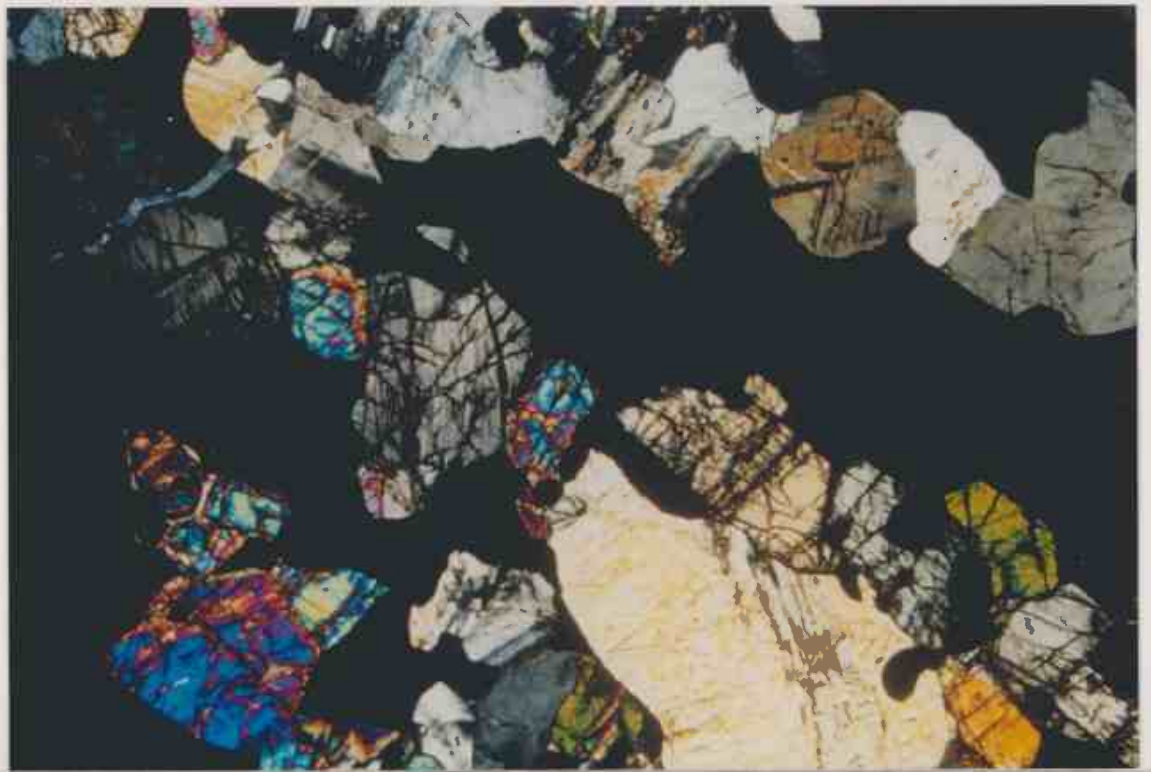


OG98-2/98017/09/DAY/3X/HMZ
GABBRO showing typical appearance of hand specimen with abundant ilmenite (M5).

OG98-2/98020/12/XPL/28X/HMZ
GABBRO showing typical appearance of plagioclase (D12, R18), orthopyroxene (J19, M25), clinopyroxene (C25), and hemo-ilmenite (opaque).

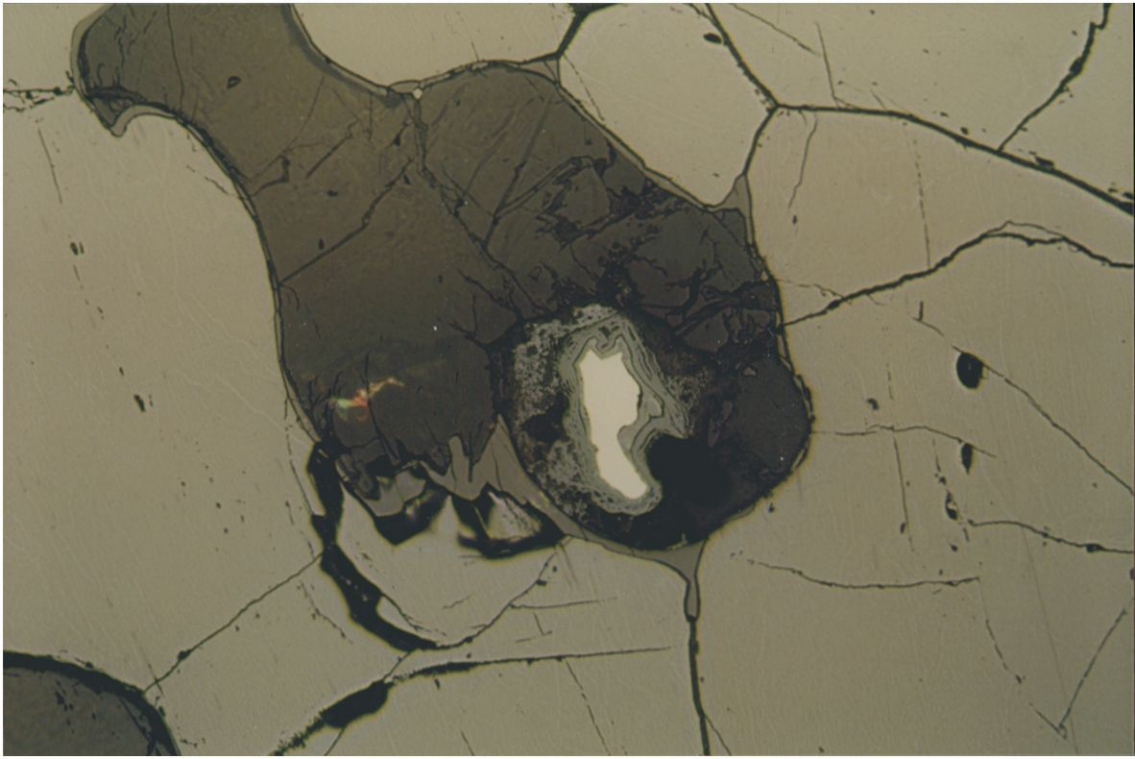
< >035
61610** 1 N N N 102(037)

OG98-2/98020/13/PPL+R/227X/HMZ
GABBRO showing typical appearance of hemo-ilmenite exsolution composed of ilmenite host (darker gray) and exsolved specular hematite (lighter gray oriented blebs).

< >038
61610** 1 N N-1-162(037)

SAMPLE # OG98-2 continued September 8, 1998

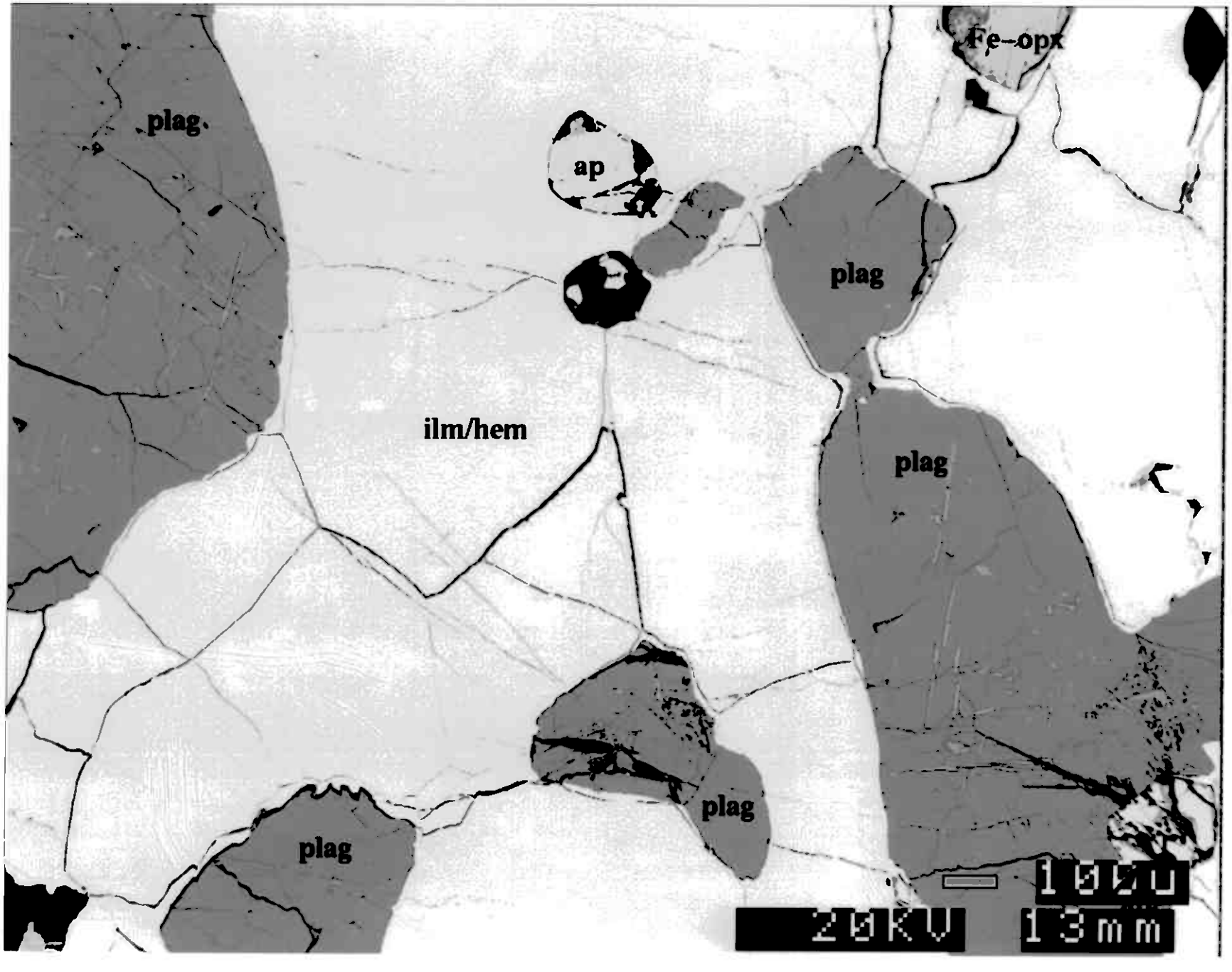
PHOTOS OG98-2/98020/14/PPL+R/114X/HMZ GABBRO showing typical appearance of pyrite (K16) moderately altered to and rimmed by hematite/goethite (L17).



OG98-2/98020/14/PPL+R/114X/HMZ
GABBRO showing typical appearance of pyrite (K16) moderately altered to and rimmed by hematite/goethite (L17).

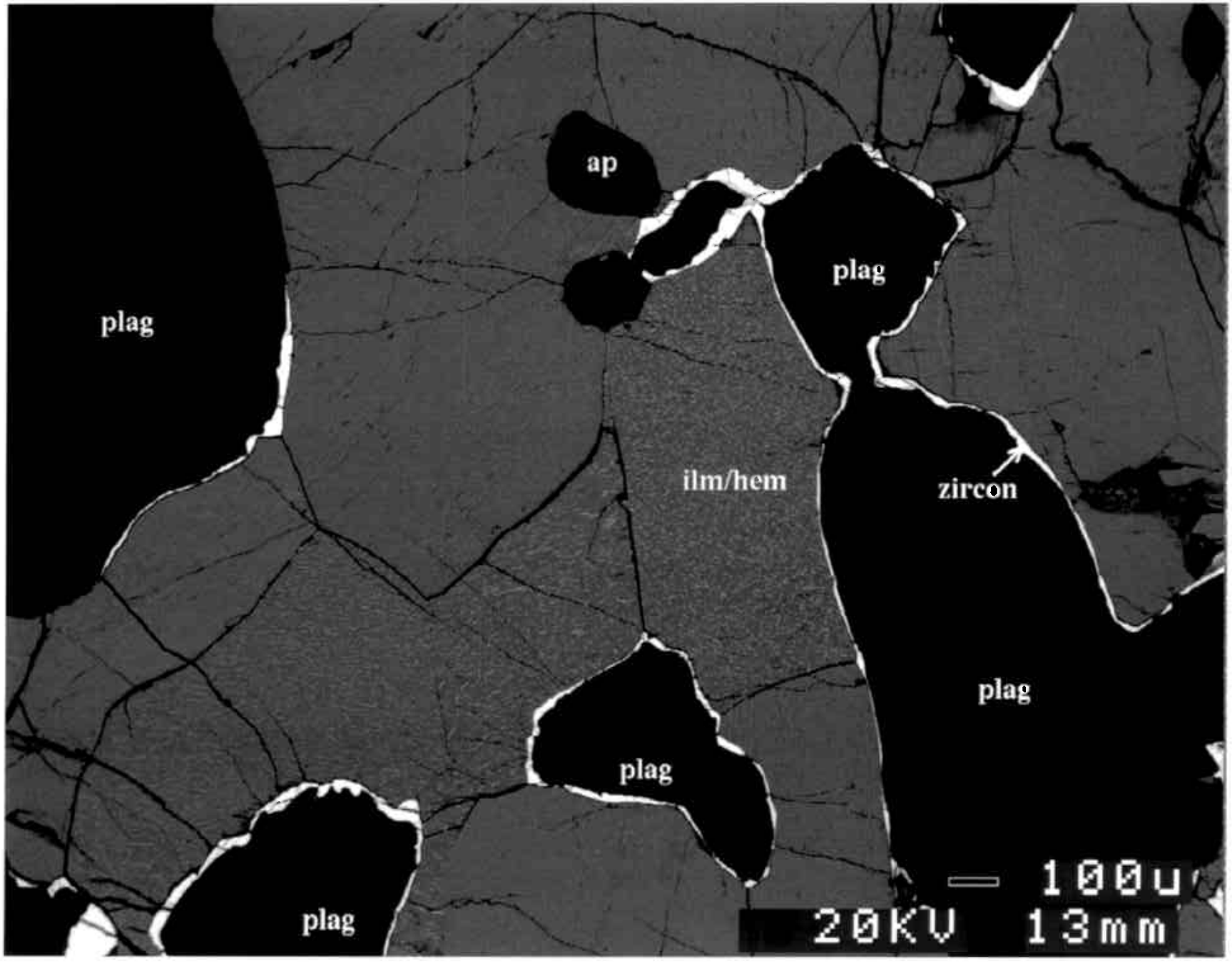
SAMPLE # OG98-2 continued September 8, 1998

PHOTOS SEM backscatter image at high gain showing distribution of mineral phases.


Fe-opx
plag
ap
plag
ilm/hem
plag
plag
plag
100u
20KV
13mm

SAMPLE # OG98-2 continued September 8, 1998

PHOTOS SEM backscatter image at low gain showing distribution of mineral phases.


ap
plag
plag
ilm/hem
zircon
plag
plag
plag
100u
20KV 13mm

SAMPLE # OG98-4 September 8, 1998

ROCK NAME ALTERED GABBRO -- probably formed by weak alteration (secondary K-feldspar + sericite + ferroan dolomite + hematite/goethite) of a fine to medium grained gabbro intrusive rock. The hand specimen is non-magnetic.

MINERALS Plagioclase (An 39) (60%) + clinopyroxene (20%) + orthopyroxene (10%) + hemo-ilmenite (3%) + K-feldspar (3%) + sericite (3%) + pyrite (1%) + ferroan dolomite (<1%) + apatite (<1%) + hematite/goethite (<1%) + pyrrhotite (<1%). Hemo-ilmenite shows extremely fine exsolution lamellae of specular hematite.

TEXTURES Phaneritic, holocrystalline, equigranular, allotriomorphic, fine to medium grained, non-directed fabric.

ALTERATION The following alteration features are present but of indeterminate relative ages: (1) plagioclase weakly altered to K-feldspar + sericite + ferroan dolomite; and (2) pyrite and pyrrhotite weakly altered to hematite/goethite.

SECTIONING Format: 27 x 46 mm Finish: STD Stains: SCN + ARS + PF Cover: PLA
Format: 27 x 46 mm Finish: POL Stains: none Cover: none

PHOTOS OG98-4/98017/10/DAY/3X/HMZ ALTERED GABBRO showing typical appearance of hand specimen.

OG98-4/98020/15/XPL/28X/HMZ ALTERED GABBRO showing typical appearance.

OG98-4/98020/16/PPL+R/227X/HMZ ALTERED GABBRO showing typical appearance of hemo-ilmenite exsolution composed of ilmenite host (darker gray) and very finely exsolved specular hematite (lighter gray oriented blebs).

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0G98-4/98017/10/DAY/3X/HMZ
ALTERED GABBRO showing typical appearance of hand specimen.

0G98-4/98020/16/PPL+R/22X/HMZ
ALTERED GABBRO showing typical appearance of heav-ilmenite association composed of ilmenite host (darker gray) and very finely exsolved specular hematite (lighter gray oriented blebs).

0G98-4/98020/15/XPL/28X/HMZ
ALTERED GABBRO showing typical appearance.

SAMPLE # OG98-4 continued September 8, 1998

PHOTOS OG98-4/98020/17/PPL+R/114X/HMZ ALTERED GABBRO showing typical appearance of hemo-ilmenite (I10) and [pyrite (L20) weakly altered to hematite/goethite].

OG98-4/98020/17/PPL+R/114X/HMZ
ALTERED GABBRO showing typical appearance of hemo-ilmenite (I10) and [pyrite (L20) weakly altered to hematite/goethite].

SAMPLE # OG98-5 September 8, 1998

ROCK NAME ALTERED GABBRO -- probably formed by alteration (secondary sericite + hematite/goethite + chlorite) of a fine to medium grained gabbro intrusive rock. The hand specimen is very weakly magnetic.

MINERALS Plagioclase (An 54) (70%) + clinopyroxene (8%) + sericite (7%) + hematite/goethite (4%) + pyrite (3%) + orthopyroxene (2%) + quartz (2%) + chlorite (2%) + hemo-ilmenite (2%) + pyrrhotite (<1%) + chalcopyrite (<1%). Hemo-ilmenite has very fine exsolution lamellae of specular hematite.

TEXTURES Phaneritic, holocrystalline, equigranular, allotriomorphic, fine to medium grained, non-directed fabric.

ALTERATION The following alteration features are present but of indeterminate relative ages: (1) plagioclase weakly altered to sericite; (2) clinopyroxene weakly altered to chlorite + sericite + earthy hematite/goethite; (3) pyrite and pyrrhotite weakly altered to hematite/goethite; (4) hemo-ilmenite moderately altered to specular hematite; and (5) veins of chlorite.

SECTIONING Format: 27 x 46 mm Finish: STD Stains: SCN + ARS + PF Cover: PLA
Format: 27 x 46 mm Finish: POL Stains: none Cover: none

PHOTOS OG98-5/98017/11/DAY/3X/HMZ ALTERED GABBRO showing typical appearance of hand specimen with vein (C10 to S17) of chlorite.

OG98-5/98020/18/XPL/28X/HMZ ALTERED GABBRO showing typical appearance.

OG98-5/98020/19/PPL+R/114X/HMZ ALTERED GABBRO showing typical appearance hemo-ilmenite (K10) and [pyrite (N21) weakly altered to hematite/goethite (K21)].

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0G98-5/98017/11/DAY/3X/HMZ
ALTERED GABBRO showing typical appearance of hand specimen with vein (C10 to S17) of chlorite.

0698-5/98020/18/XPL/28X/HMZ
ALTERED GABBRO showing typical appearance.

0G98-5/98020/19/PPL+R/11X/HMZ
ALTERED GABBRO showing typical appearance haemo-ilmenite (X10) and pyrite (N21) weakly altered to hematite/goethite (X21).

SAMPLE # OG98-7 September 8, 1998

ROCK NAME ALTERED DIORITE (?) -- probably formed by alteration (secondary hematite/goethite + sericite + pyrite + pyrrhotite + chalcopyrite) of a fine to medium grained diorite (?) intrusive rock. The hand specimen is moderately magnetic.

MINERALS Plagioclase (An 36-50) (coarse antiperthite) (36%) + clinopyroxene (20%) + orthopyroxene (15%) + K-feldspar (coarse perthite) (10%) + hemo-ilmenite (5%) + apatite (5%) + hematite/goethite (4%) + quartz (3%) + sericite (1%) + pyrite (1%) + zircon (<1%) + pyrrhotite (<1%) + chalcopyrite (<1%). Hemo-ilmenite shows extremely fine specular hematite exsolution lamellae.

TEXTURES Phaneritic, holocrystalline, equigranular, allotriomorphic, fine to medium grained, non-directed fabric.

ALTERATION The following alteration features are present but of indeterminate relative ages: (1) plagioclase weakly altered to sericite; and (2) hemo-ilmenite moderately altered to specular hematite which is subsequently weakly altered to [pyrrhotite + pyrite + chalcopyrite] which are subsequently weakly altered to earthy hematite/goethite.

SECTIONING Format: 27 x 46 mm Finish: STD Stains: SCN + ARS + PF Cover: PLA
Format: 27 x 46 mm Finish: POL Stains: none Cover: none

PHOTOS OG98-7/98017/12/DAY/3X/HMZ ALTERED DIORITE (?) showing typical appearance of hand specimen with locally altered plagioclase (white, J4).

OG98-7/98020/20/XPL/28X/HMZ ALTERED DIORITE (?) showing typical appearance.

OG98-7/98020/21/PPL/114X/HMZ ALTERED DIORITE (?) showing typical closeup appearance of coarse antiperthitic texture of plagioclase host (clear) and K-feldspar exsolution lamellae (stained yellowish brown).

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0698-7/98017/12/DAY/3X/HMZ
ALTERED DIORITE (?) showing typical appearance of hand specimen with locally altered plagioclase (white, J4).

0698-7/98020/20/XPL/28X/HMZ
ALTERED DIORITE (?) showing typical appearance.

0698-7/98020/21/PPL/14X/HMZ
ALTERED DIORITE (?) showing typical closeup appearance of coarse antiperthitic texture of plagioclase host (clear) and K-feldspar exsolution lamellae (stained yellowish brown).

SAMPLE # OG98-7 continued September 8, 1998

PHOTOS OG98-7/98020/22/PPL+R/227X/HMZ ALTERED DIORITE (?) showing typical appearance of hemo-ilmenite (D12), pyrite (J14), and pyrrhotite (M15).

OG98-7/98020/22/PPL+R/227X/HMZ
ALTERED DIORITE (?) showing typical appearance of hemo-ilmenite (D12), pyrite (J14), and pyrrhotite (M15).

SAMPLE # OG98-10 September 8, 1998

ROCK NAME MASSIVE SULFIDE -- probably formed by alteration (secondary earthy hematite/goethite + chlorite + K-feldspar + ferroan dolomite) of a fine to medium grained gabbro intrusive rock. The sample is moderately magnetic.

MINERALS Pyrrhotite (80%) + pyrite (8%) + chalcopyrite (2%) + earthy hematite/goethite (2%) + plagioclase (1%) + orthopyroxene (1%) + chlorite (1%) + quartz (<1%) + K-feldspar (<1%) + ferroan dolomite (<1%) + apatite (<1%) + pentlandite (<1%). The presence of an Fe-rich Fe-Ni-S mineral (pentlandite or bravoite) was confirmed by microprobe. It does not occur as classic "flame structures" but instead as very small irregular but discrete domains within pentlandite.

TEXTURES Massive, non-directed fabric.

ALTERATION The following alteration features are present but of indeterminate relative ages: (1) plagioclase moderately altered to K-feldspar + ferroan dolomite + chlorite; and (2) orthopyroxene strongly altered to chlorite.

SECTIONING Format: 27 x 46 mm Finish: STD Stains: SCN + ARS + PF Cover: PLA
Format: 27 x 46 mm Finish: POL Stains: none Cover: none

PHOTOS OG98-10/98017/13/DAY/3X/HMZ MASSIVE SULFIDE showing typical appearance of hand specimen dominated by pyrrhotite (J3-Q9) with minor pyrite (Q17).

OG98-10/98020/24/PPL+R/28X/HMZ MASSIVE SULFIDE showing typical appearance of textures in pyrrhotite.

OG98-10/98020/23/PPL+R/57X/HMZ MASSIVE SULFIDE showing typical appearance of pyrrhotite (K22-T30), pyrite (M11, C23), and chalcopyrite (I16).

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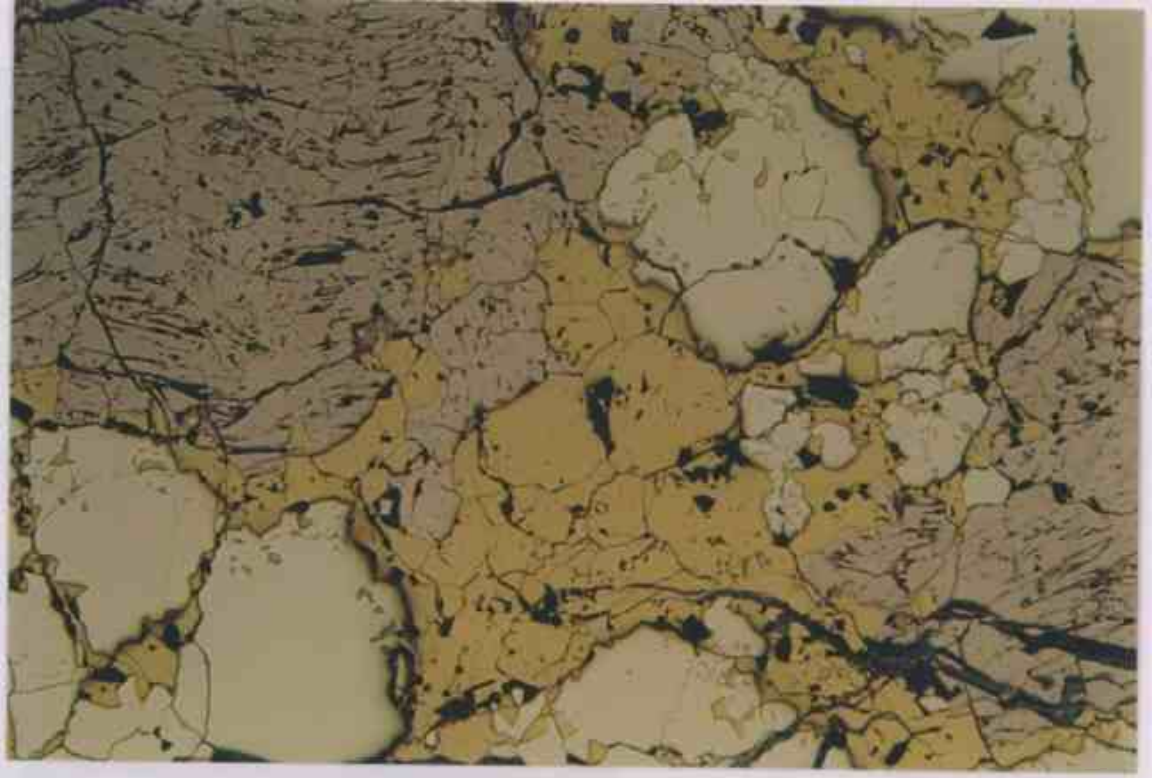
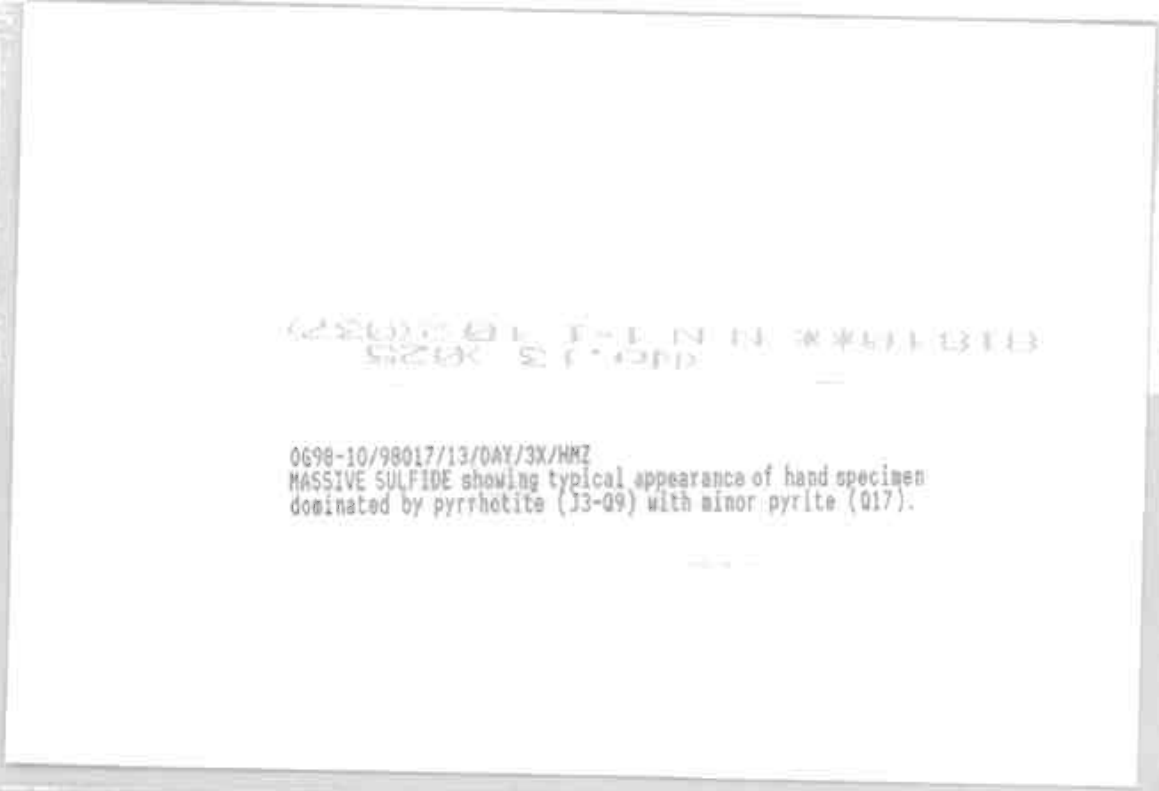




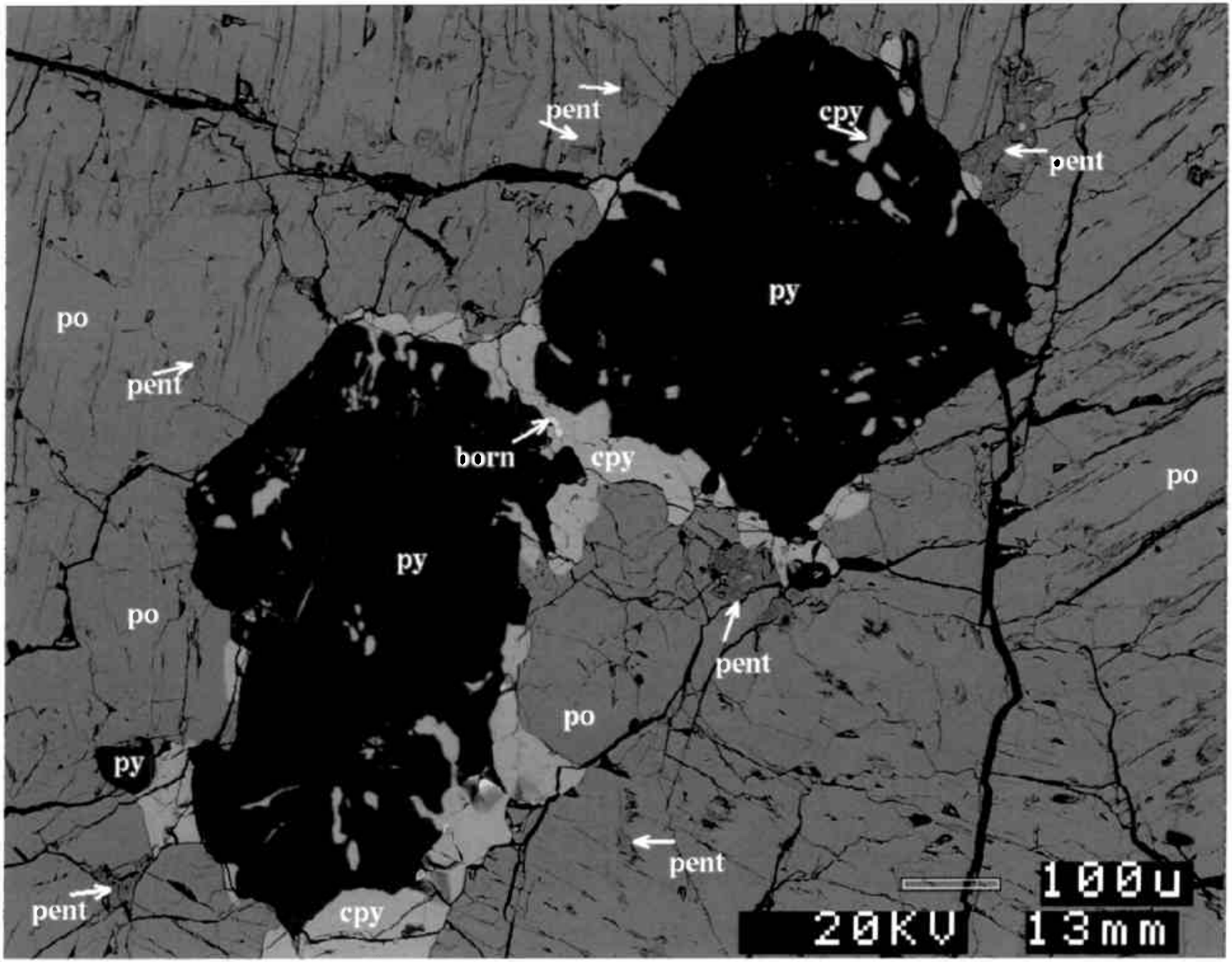
0698-10/98017/13/0AY/3X/HMZ
MASSIVE SULFIDE showing typical appearance of hand specimen dominated by pyrrhotite (J3-Q9) with minor pyrite (Q17).

0698-10/98020/24/PPL+R/20X/HMZ
MASSIVE SULFIDE showing typical appearance of textures in pyrrhotite.

0698-10/98020/23/PPL+R/57X/HMZ
MASSIVE SULFIDE showing typical appearance of pyrrhotite (K22-T30), pyrite (M11, C23), and chalcopyrite (T16).

SAMPLE # OG98-10 continued September 8, 1998

PHOTOS SEM backscatter image showing distribution of mineral phases. Notice that Fe-rich pentlandite/bravoite (pent) occurs as tiny irregular domains within pyrrhotite as opposed to classic "flame" structures.


pent
cpy
pent
py
po
pent
born
cpy
po
py
po
pent
po
py
pent
cpy
100u
20KV
13mm

SAMPLE # OG98-11 September 8, 1998

ROCK NAME ALTERED GABBRO/ANORTHOSITE -- probably formed by alteration (secondary sericite + hematite/goethite) of a fine to medium grained gabbro/anorthosite intrusive rock. The hand specimen is non-magnetic.

MINERALS Plagioclase (An 48) (91%) + sericite (5%) + orthopyroxene (2%) + clinopyroxene (1%) + hematite/goethite (1%) + hemo-ilmenite (<1%). Hemo-ilmenite shows extremely fine specular hematite exsolution lamellae.

TEXTURES Phaneritic, holocrystalline, equigranular, allotriomorphic, fine to medium grained, non-directed fabric.

ALTERATION The following alteration features are present but of indeterminate relative ages: (1) plagioclase weakly altered to sericite; (2) pyroxene moderately altered to sericite; (3) very tiny veinlets of sericite; and (4) hemo-ilmenite strongly altered to hematite.

SECTIONING Format: 27 x 46 mm Finish: STD Stains: SCN + ARS + PF Cover: PLA
Format: 27 x 46 mm Finish: POL Stains: none Cover: none

PHOTOS OG98-11/98017/14/DAY/3X/HMZ ALTERED GABBRO/ANORTHOSITE showing typical appearance of hand specimen.

OG98-11/98021/18/XPL/28X/HMV ALTERED GABBRO/ANORTHOSITE showing typical appearance of plagioclase + clinopyroxene.

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0698-11/98017/14/DAY/3X/HMZ
ALTERED GABBRO/ANORTHOSITE showing typical appearance of
hand specimen.

0698-11/98021/18/XPL/28X/HMV
ALTERED GABBRO/ANORTHOSITE showing typical appearance of
plagioclase + clinopyroxene.

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74010** 1 N N-1 A4 2(A57)

SAMPLE # OG98-12 September 8, 1998

ROCK NAME ALTERED GABBRO/ANORTHOSITE -- probably formed by alteration (secondary sericite + chlorite + biotite + hematite/goethite + ferroan dolomite) of a fine to medium grained anorthosite intrusive rock. The hand specimen is non-magnetic.

MINERALS Plagioclase (An 38-53) (90%) + sericite (5%) + quartz (2%) + chlorite (2%) + biotite (1%) + hemo-ilmenite (<1%) + hematite/goethite (<1%) + ferroan dolomite (<1%). Hemo-ilmenite shows exsolution lamellae of specular hematite.

TEXTURES Phaneritic, holocrystalline, seriate, allotriomorphic, fine to medium grained, non-directed fabric.

ALTERATION The following alteration features are present but of indeterminate relative ages: (1) plagioclase weakly altered to sericite + ferroan dolomite; (2) primary biotite (?) completely altered to chlorite + hematite/goethite; (3) tiny veinlets of sericite; (4) very tiny veinlets of secondary biotite; and (5) hemo-ilmenite strongly altered to hematite/goethite.

SECTIONING Format: 27 x 46 mm Finish: STD Stains: SCN + ARS + PF Cover: PLA
Format: 27 x 46 mm Finish: POL Stains: none Cover: none

PHOTOS OG98-12/98017/01/DAY/3X/HMZ ALTERED GABBRO/ANORTHOSITE showing typical appearance of hand specimen.

OG98-12/98019/29/XPL/28X/HMZ ALTERED GABBRO/ANORTHOSITE showing typical appearance dominated by plagioclase weakly altered to [sericite (A23-H29) + ferroan dolomite].

OG98-12/98019/30/PPL+R/114X/HMZ ALTERED GABBRO/ANORTHOSITE showing typical appearance of hemo-ilmenite strongly altered to hematite/goethite.

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0698-12/98019/29/XPL/28X/HMZ
ALTERED GABBRO/ANORTHOSITE showing typical appearance dominated by plagioclase weakly altered to [sericite (A23-H29) + ferroan dolomite].

0698-12/98019/30/PPL+R/114X/HMZ
ALTERED GABBRO/ANORTHOSITE showing typical appearance of hemo-ilmenite strongly altered to hematite/goethite.

0698-12/98017/91/DAY/3X/HMZ
ALTERED GABBRO/ANORTHOSITE showing typical appearance of hand specimen.

SAMPLE # OG98-13 September 8, 1998

ROCK NAME ALTERED GABBRO/ANORTHOSITE -- probably formed by alteration (secondary sericite + K-feldspar + quartz + chlorite + hematite/goethite) of a fine to medium grained gabbro/anorthosite intrusive rock. The hand specimen is non-magnetic.

MINERALS Plagioclase (An 40) (84%) + sericite (4%) + clinopyroxene (4%) + K-feldspar (3%) + quartz (2%) + chlorite (2%) + hematite/goethite (1%) + orthopyroxene (<1%) + hemo-ilmenite (<1%). Hemo-ilmenite shows fine specular hematite exsolution lamellae.

TEXTURES Phaneritic, holocrystalline, equigranular, allotriomorphic, fine to medium grained, non-directed fabric.

ALTERATION The following alteration features are present but of indeterminate relative ages: (1) plagioclase weakly altered to sericite + chlorite + K-feldspar + quartz; (2) pyroxene moderately altered to sericite + chlorite + hematite/goethite; and (3) hemo-ilmenite strongly altered to hematite/goethite.

SECTIONING Format: 27 x 46 mm Finish: STD Stains: SCN + ARS + PF Cover: PLA
Format: 27 x 46 mm Finish: POL Stains: none Cover: none

PHOTOS OG98-13/98017/15/DAY/3X/HMZ ALTERED GABBRO/ANORTHOSITE showing typical appearance of hand specimen.

OG98-13/98020/26/XPL/28X/HMZ ALTERED GABBRO/ANORTHOSITE showing typical appearance.

OG98-13/98020/27/PPL+R/227X/HMZ ALTERED GABBRO/ANORTHOSITE showing typical appearance of hemo-ilmenite (H14-K16).

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0G98-13/98017/15/BAY/3X/HMZ
ALTERED GABBRO/ANORTHOSITE showing typical appearance of hand specimen.

0698-13/98020/26/XPL/28X/HMZ
ALTERED GABBRO/ANORTHOSITE showing typical appearance.

0G98-13/98020/27/PPL+R/227X/HMZ
ALTERED GABBRO/ANORTHOSITE showing typical appearance of hemo-ilmenite (H14-K16).