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Forfatter
Author R. Sivertsen, Ø. Mjelde, F. Nixon

Tittel/Title

INVESTIGATIONS ON THE KOLSVIK GOLD PROPERTY, BINDAL, NORDLAND, NORWAY.

Resyme/Summary

Investigations on the Kolsvik gold property in 1981 have consisted of detailed mapping, sampling, drilling and metallurgical testing.

Gold mineralization is associated with quartz and arsenopyrite in faults, shears and joints along the granite /wallrock contact. Gold values have been obtained over a zone of some 800 m strike length with an elevation difference of some 180 m. Mimimum depth indicated by drilling is 90 m below surface.

From the information available it seems to be reasonably well established that a structurally controlled mineralized zone is trending from the F area to the Seksa area - a distance og some 550 m. Between F and C (400 m) areas mineralized structures both on surface and in drill holes are seen to have a fairly steep dip to the east and vary in width from 0.5 - 5 m. A tentative "tonnage" potential of some 500.000 tons down to 100 m is indicated for this area. Gold values are erratic but metallurgical tests on head samples running 7.77 g/t Au are encouraging.

Between C and Seksa (150 m) on the west side of the Bogdal River, spectacular assay values have been obtained both from the main C zone fault and from zones within the footwall granite (23 g/t Au over 12.5 m). At the present time however our information is insufficient to make deductions regarding tonnage and grade for this area, but with the presence of both flat and steeply dipping mineralized structures, possibilities for outlining larger volumes of mineralization do exist and further drilling is recommended.

Metallurgical tests on the C - Seksa type mineralization which seems to carry more free gold than the F type are also positive.

Gold values are also obtained some 300 m north of Seksa on the B zone. The ground between Seksa and B is heavily scree covered and has to date not been investigated.

Andre relevante rap
Other relevant rep:

513.28.81

522.28.81

Kommentarer/Comments

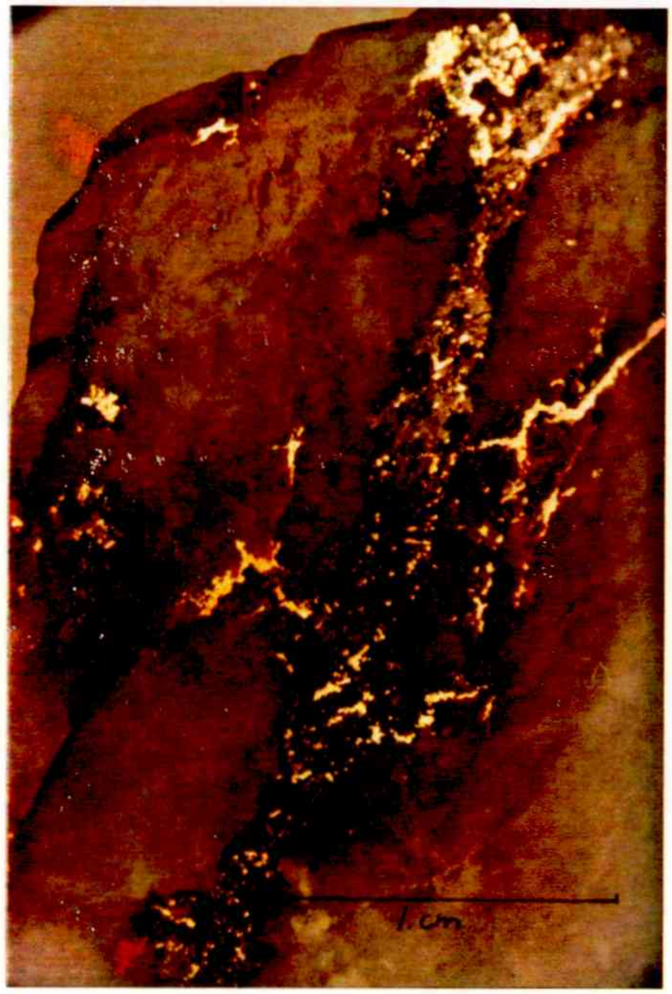
Fordeling
Distribution

- [ ] Canada
- [ ] Nikkelverket
- [ ] Kristiansand
- [ ] Oslo
- [x] Felt kopi
- [ ]
- [ ]
- [ ]

INVESTIGATIONS ON THE KOLSVIK GOLD PROPERTY BINDAL NORDLAND NORWAY

1981

R. Sivertsen
Ø. Mjelde
F. Nixon



Native gold and arsenopyrite in quartz. C zone Kolsvik.

CONTENTS

MAPS AND ENCLOSURES

SUMMARY

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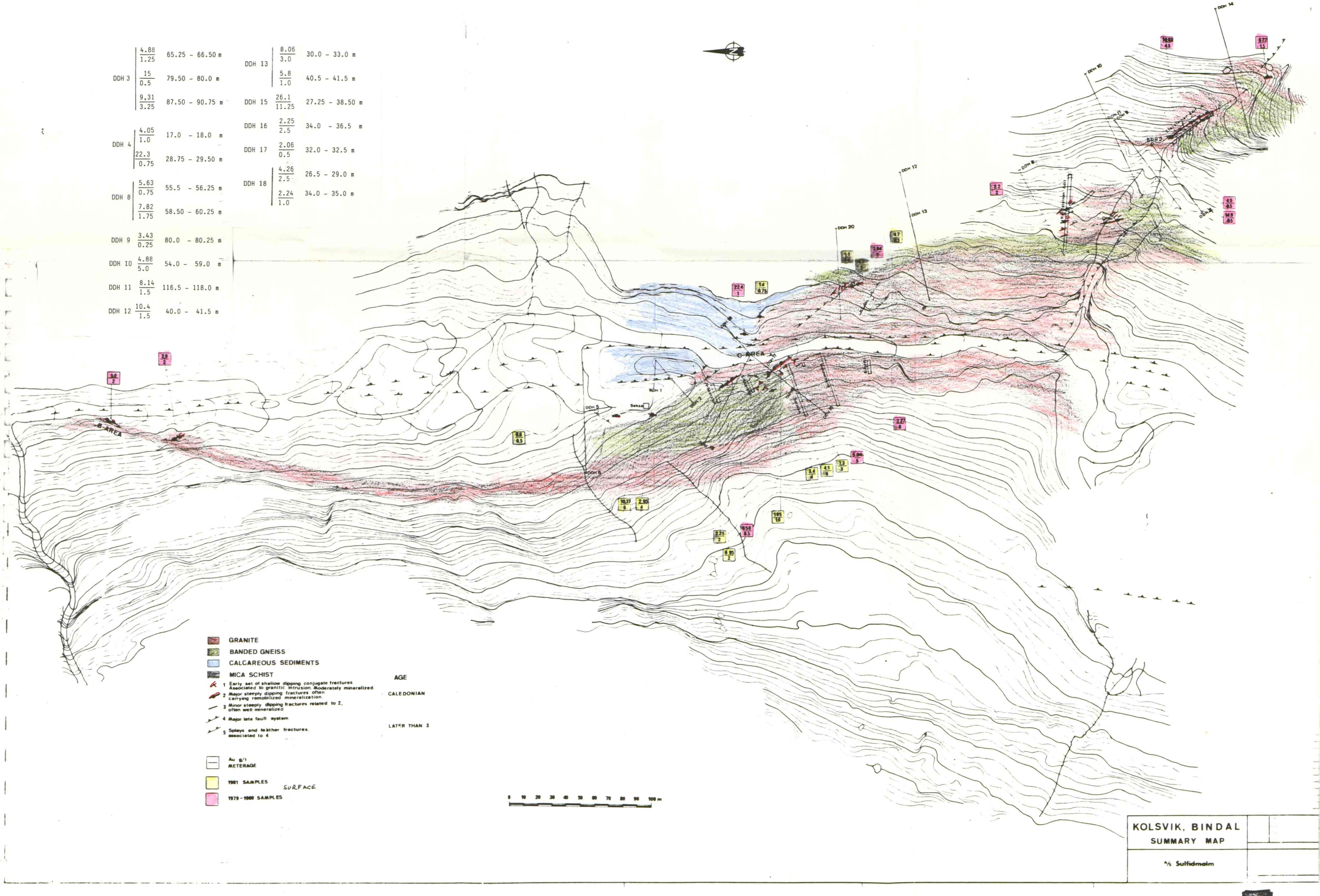
	Au g/t / meterage	Interval
DDH 3	4.88 / 1.25	65.25 - 66.50 m
	15 / 0.5	79.50 - 80.0 m
	9,31 / 3.25	87.50 - 90.75 m
DDH 4	4.05 / 1.0	17.0 - 18.0 m
	22.3 / 0.75	28.75 - 29.50 m
DDH 8	5.63 / 0.75	55.5 - 56.25 m
	7.82 / 1.75	58.50 - 60.25 m
DDH 9	3.43 / 0.25	80.0 - 80.25 m
DDH 10	4.88 / 5.0	54.0 - 59.0 m
DDH 11	8.14 / 1.5	116.5 - 118.0 m
DDH 12	10.4 / 1.5	40.0 - 41.5 m
DDH 13	8.06 / 3.0	30.0 - 33.0 m
	5.8 / 1.0	40.5 - 41.5 m
DDH 15	26.1 / 11.25	27.25 - 38.50 m
DDH 16	2.25 / 2.5	34.0 - 36.5 m
DDH 17	2.06 / 0.5	32.0 - 32.5 m
DDH 18	4.26 / 2.5	26.5 - 29.0 m
	2.24 / 1.0	34.0 - 35.0 m



A) INTRODUCTION

Investigation and evaluation of gold mineralization in the Bindal area was started by Sulfidmalm in 1979.

For details of the investigations in the period 1979-80 and details of the regional geological setting the reader is referred to reports 503.28.80 and 513 28 81, although a brief summary will be presented here.

Mapping of the quaternary deposits in the Kolsvik area with regard to their gold potential has been reported in report 522.28.81.

In 1981 Superior Oil became involved in the Kolsvik project and covered the costs of the 1981 investigations thereby earning a 25 % interest in the project.

B) SUMMARY OF PREVIOUS INVESTIGATIONS

A/S Sulfidmalm started evaluation of gold/arsenopyrite mineralization associated to tectonic zones within the contact zone of the late Silurian Bindal Batholith in 1979. Several of the gold showings were explored during the 1930's but no production has taken place.

Work in 1979 consisted of initial location, mapping and sampling of several areas of gold/arsenopyrite mineralization in the region. The showings at Kolsvik were considered to be of greatest interest and the major part of the work was carried out at this property.

Work in 1980 consisted of regional mapping and geochemical sampling in the general area and detailed mapping, sampling and limited diamond drilling at Kolsvik (4 holes totalling 390.35 m).

C) GEOLOGICAL SETTING

The rocks in the Bindal region belong to the Helgeland Nappe which is the highest tectono stratigraphic unit in the northern part of Norway.

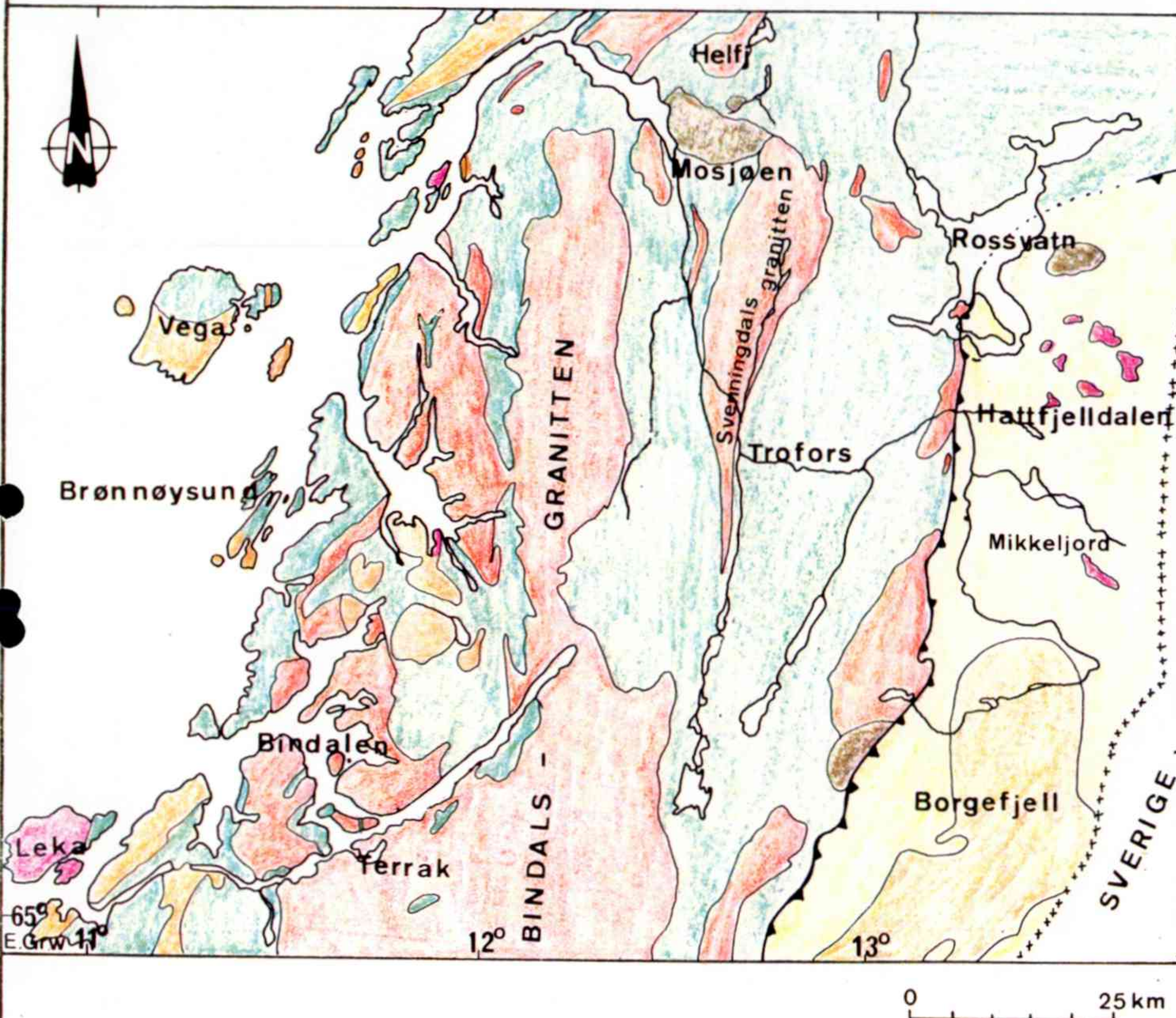
The plutonic rocks of the Bindal Batholith have been emplaced into a sequence of predominantly supracrustal rocks of cambro-silurian age.

Within the protolith to the Batholith the following rock types have been recognized:

a) Precambrian ? migmatites.

b) Ophiolite complex fragments: - ultramafics, gabbros, pillow lavas and associated sediments.

c) Shelf sediments: limestone-marble, orthoquartzites mica schists, various



- High grade cambrian-silurian sediments
- Low grade - " - " - " - " - " - " -
- Caledonian granites, granodiorites, diorites.
- Hypersthene monzodiorite
- Ultrabasics
- Cabbro
- Precambrian rocks
- Thrust

A/S SULFIDMALM			
GEOLOGICAL MAP SØR HELGELAND			
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DATE	3.82	TRACED	AKB

banded and augened gneisses. Skarn development is common in lime rich rocks.

Within the Batholith several types of plutonic rocks have been recognized and include

Granite - fine gr. varieties, coarse two-mica granites and porphyritic varieties.
Granodiorites
Tonalite
Diorite
Quartz diorite
Monzonite
Monzodiorite

Granites and granodiorites are the most dominant types and xenolith relationships indicate that the more basic rocks (diorites, monzonites) have been intruded first.

Gold mineralization associated with quartz and arsenopyrite occurs in the Kolsvik area near the western contact of the Bindal Batholith and it is on this property that the detailed investigations have been carried out.

Gold values have been obtained over a zone of some 800 m strike length from the F to B zones as shown on fig. 2.

The mineralization is tectonically controlled occurring in fractures and breccia zones.

D) WORK CARRIED OUT

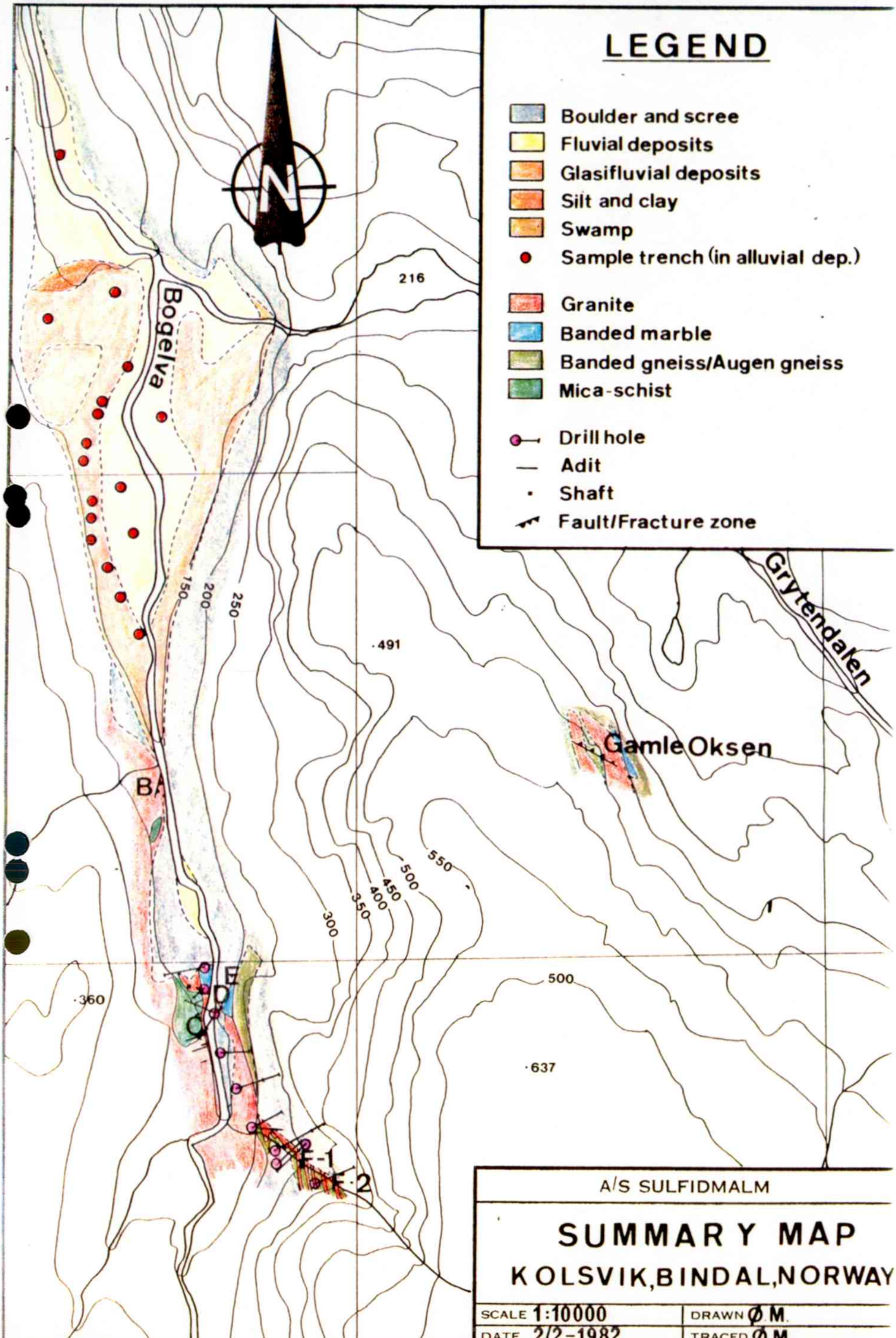
The following has been carried out in 1981:

a) Detailed geoligical mapping in the Kolsvik area.
b) Detailed structural interpretation - fracture analysis of the Kolsvik area.
c) Diamond drilling. 1.516,3 m in 15 holes.
d) Detailed sampling of surface showings and adits.
e) Detailed mapping and sampling of alluvial and glaciofluvial deposits north of the Kolsvik showing.
f) Metallurgical testing og the Kolsvik mineralization.

E) GEOLOGY

During 1980 and 1981 detailed mapping, diamond drilling and some trenching were carried out.

The geological survey in the area was based on a 1:800 scale with inter-


LEGEND
Boulder and scree
Fluvial deposits
Glasifluvial deposits
Silt and clay
Swamp
Sample trench (in alluvial dep.)
Granite
Banded marble
Banded gneiss/Augen gneiss
Mica-schist
Drill hole
Adit
Shaft
Fault/Fracture zone
Bogelva
Grytendalen
Gamle Oksen
216
491
150
200
250
300
350
400
450
500
550
360
637
BA
E
D
C
F-1
F-2
A/S SULFIDMALM
SUMMARY MAP
KOLSVIK, BINDAL, NORWAY
SCALE 1:10000
DRAWN Ø.M.
DATE 2/2-1982
TRACED Ø.M.

esting areas being detailed on 1:200.

The major litholigies found are:

1) Granite
2) Augen gneiss / banded gneiss (altered monzonite ?)
3) Diorite gneiss
4) Marble
5) Mica schists

I. Granite

The notable feature of the granite in the Kolsvik area is its general lack of mafic constituents. In many cases its composition is simply quartz and feldspar (orthoclase, oligoclase, microcline). More biotite rich phases are only seen locally.

The granite is usually without any planar structure, but dark variants may show a weak biotite foliation.

In Kolsvik the granite often shows alteration in the vicinity of tectonic zones, where carbonate, sericite, muscovite and chlorite are common. A characteristic pinkish alteration is also developed along joints. These joints are often lined with secondary minerals such as desmin, lammonite, ankerite, calcite and quartz. Especially quartz- and carbonate veining is common.

Disseminated arsenopyrite is frequently seen in the vicinity of tectonic structures and is usually accompanied by alteration products. The quartz-gold and arsenopyrite bearing veins and segregations are usually limited to the granite. Good Aspy- and Au mineralization is often seen to be related to highly altered red granite, especially in the C-area.

II. The gneisses

The gneisses in the Kolsvik area vary in composition and texture from augen-/banded gneisses and dioritic gneisses to more schistose mica variants of these.

The augen-/banded gneiss structurally overlies the other rocks and can be seen especially in the F- and Kaffisteinen areas. It is a biotite rich rock with augen or bands of plagioclase and quartz. A planar structure is well developed and shows a constant N-S strike and steep dip towards E.

The diorite gneiss is usually more massive, but occasionally it shows foliation in more mica rich parts. The contacts between diorite gneiss and other gneisses and schists are generally diffuse, especially in sheared areas. Definite intrusive diorite is seen at several locations (especially in drill holes) but texturally similar rocks are also seen in sequences assumed to be metasediments.

In pol-thin section several of the augen and dioritic gneisses are shown to have a quartz monzonite composition, and often the more massive varieties, although having a distinct augen texture in hand specimen, exhibit a granitic texture in section with scattered coarse flakes of biotite and muscovite occuring in a coarse mosaic of feldspar, - both sodic and potassic and quartz.

The gneisses are cut by a great number of veins and at least three phases of granitic veins are noted, the earliest veins being highly deformed. Aspy mineralization is rare, but can be seen in some quartz and granitic veins. Py is a common mineral in both dioritic- and augen/banded gneisses.

III. The marble

The marbles (dominantly calcite marble) are all highly deformed rocks. They vary in composition and texture from banded marble, containing thin bands of pelitic composition which are often folded to highly deformed fragment rich marble, now showing a breccia texture.

A rapid interchange between marble and carbonate rich mica schists is seen in drill holes from the C-area.

Skarn (diopside-garnet) mineralization is frequently developed in the marble, especially in contact relations to younger crosscutting granite.

IV. Mica schists

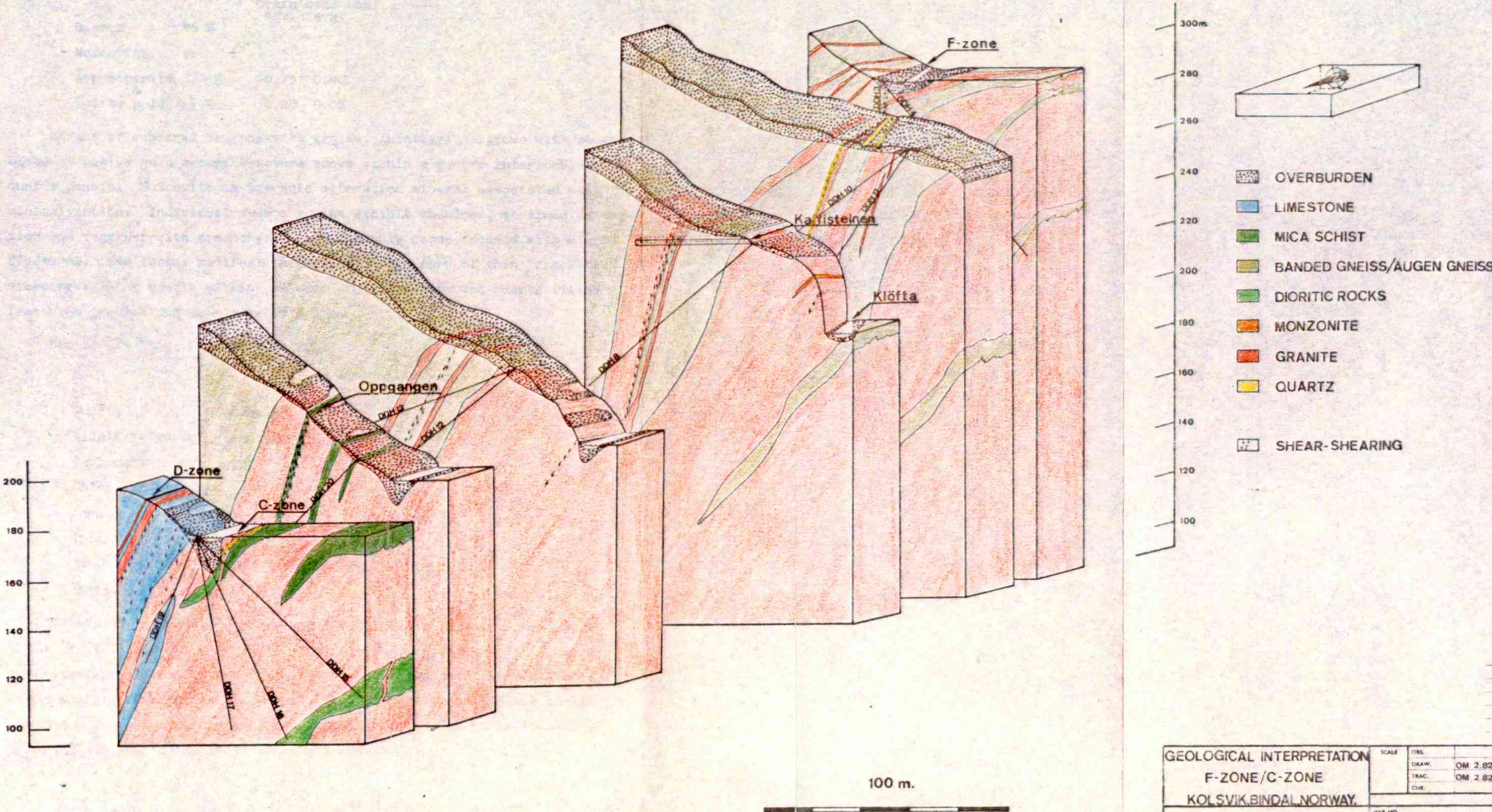
The mica schists vary from fine to medium grained, mostly strongly sheared biotitic rocks. They are mainly found in or adjacent to shear zones, especially well developed in the C-area.

The mineralogical and textural variations of the schists are thought to represent both a primary change in the sequence and a strongly variable deformation of the rocks.

V. Mineralization

The gold and arsenopyrite mineralization occurs dominantly in granite near the contact zone with gneisses and metasediments. The mineralization is typically tectonically controlled and related to such structures as

a) Quartz vein fillings in fractures, shears and joints.
b) Quartz segregations in or associated to the above structures.
c) Quartz/Asp matrix fill in breccias.



GEOLOGICAL INTERPRETATION
F-ZONE/C-ZONE
KOLSVIK,BINDAL,NORWAY.

SCALE		
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MAP NO.

Å SULFIDMALM

MAP SHEET 1525 II

d) Massive Asp zones in fractures and shears.

e) Joint smearings of Asp.

Relationships of tectonics and mineralization and extent of mineralization will be treated later in this report.

Two typical quartz vein type mineralizations show the following in polished thin section

Sample PTS 5629 C zone vein type

		Grain size (mm) max.	avg.
Quartz	95 %		
Muscovite	tr.		
Arsenopyrite	3-4 %	0.75	0.40
Native gold	1 %	0.25	0.05

Masses of euhedral arsenopyrite grains, locally intergrown with coarse blebs of native gold occupy fracture zones within a coarse interlocking quartz mosaic. Muscovite is the sole alteration mineral associated with the mineralization. Individual quartz grains exhibit undulose, strained extinction and together with arsenopyrite are commonly cross-crossed with microfractures. The latter manifest themselves in the form of thin "tracks" of microcrystalline quartz within the coarser vein quartz and quartz filled fractures transecting arsenopyrite grains.

Sample PTS 5630 C zone vein type

		Grain size max.	avg.
Quartz	55-60 %		
Alkali feldspar	4-5 %		
Carbonate	tr.		
Chlorite. Biotite	tr.		
Arsenopyrite	35-40 %	massive	
Galena	tr.		
Native gold	tr.	0.006	0.006
Rutile	tr.		

Texturally this sample is similar to PTS 5629. From a mineralogical point of view, however, subtle yet distinct differences exist. In place of muscovite an alteration assemblage of carbonate and chlorite/biotite is found associated with the arsenopyrite in fracture zones. Minor coarse grained K feldspar joins the quartz gangue and occurs both as localized grain aggregates and as isolated single crystals.

These two samples represent typical vein type mineralization which is common through the property. Another type of mineralization in the area and common in the F zone is a "breccia type". A typical PTS shows the following

Sample PTS 5631 F zone breccia type

		Grain size (mm) max.	avg.
Quartz	15-20 %		
K Feldspar Plagioclase (Albite)	65-70 %		
Chlorite	‹1		
Apatite	tr.		
Sericite	tr.		
Arsenopyrite	5-10 %	3.00	1.50
Rutile	‹1		
Zircon	tr.		
Native gold	tr.	0.006	0.006

Here masses of arsenopyrite together with associated chlorite alteration occur within fracture zones. The granitic host rock which has been strongly shattered consists of predominantly coarse interlocking K feldspar and albite grains with lesser interstitial (=primary) and fracture-filling (=secondary) quartz.

Scheelite has been noted in several of the gold bearing veins and detrital cassiterite has been found in glaciofluvial deposits north of the area.

F) STRUCTURAL OBSERVATIONS

I. Summary

The Kolsvik valley to which the gold property is located is a deeply glaciated valley, the course of which is influenced by the strong shattering assocaited with a major fault zone with a north south trend extending along the valley floor. This fault zone is a dominant structural feature, can be traced for some tens of kilometers and is readily seen on ERTS satellite images.

The lithological assemblage of the area has been variably affected by late Caledonian and subsequent formation as revealed in fault, shears and joint systems. It is these faults, shears and joints which provided the passage for mineral-bearing solutions or the redistribution and concentration of metals.

Several categories of fracture characterize the late tectonic fabric of the Kolsvik district.

1) Shear zones and faults marked by zones of crush and or shear.
2) Joints.
3) Later joints and shear zones - possibly non Caledonian.
4) Rebound joints i.e. parallel to the ground surface.

Categories 1 and 2 are Caledonian in age and relate to granite emplacement and subsequent Caledonian tectonics.

Gold mineralization appears to occur chiefly in shear fractures, faults or joints together with arsenopyrite or in association with a gangue of quartz in which arsenopyrite can occur as fine disseminations, veinlets or irregular segregations. Native gold is commonly seen in the area and is most common in association with quartz. The arsenopyrite and/or quartz arsenopyrite veins usually occur as thin discontinuous veins or less regular elliptical bodies within the fractures. Vein quartz - sometimes Asp and Au bearing also occurs in systems of tension gash veins associated to some of the minor faults.

The most conspicuous development of sulphide occurs in very brittle rocks which become more heavily broken or diced up with successive fracture systems. Massive arsenopyrite fills the fractures, frequently giving the rock the appearance of a fault breccia.

Mineralization has been found on surface over an intermittent strike length of some 800 m from the F zone in the south through the C zone to B in the north. Diamond drilling has been concentrated between and around the F and C zones. Integrating the data from zones F, C and B brings out several features which are summarized below:

1) Each zone displays a rational but somewhat different pattern, indicating they are near coherent sub areas of a large tectonic framework.
2) Two systems of fractures seem to be significant in the distribution of mineralization in the area. In chronological sequence these are
   a) Conjugate system of gentle to moderately inclined shears and joints with an average 160° strike. The hanging wall in each case moves downwards indicative of a sub horizontal extension of the rocks. Tension gash veins of quartz are associated with these fractures in the more brittle rocks. These flat shears often contain development of massive Asp or elliptical vein quartz with Asp and Au. This conjugate

system is well seen in the C zone adits and the Kaffistein adit.

b) Steep shears-faults and joints with an average SE-NW trend (strike spread 90°-170°). They are well developed in the F zone, inner Kaffistein adit and in the C zone. The fractures frequently exhibit a suite of associated tension gash veins. The relative age relationships between the fracture systems can be seen in the C zone (Boliden adit) and in the Kaffistein adit where NNW-SSE and N-S fractures postdate the flat conjugate system.
These "B" type shears are quite dominant and some can be traced for several tens of meters as in the F and C zones.

3) The conjugate system of flat shears is compatible with sub-horizontal extension of the rocks i.e. distension above a rising plutonic mass of granite.

4) Stereographic plots indicate that despite their temporal difference the "A" and "B" systems belong to the same orogenic cycle.

5) The earliest phase of mineralization was emplacement of sulphide and sulphide-metal bearing vein quartz along the conjugate system of flat to moderately inclined fractures of "normal" type i.e. hanging-wall moves downwards.

6) Later faulting has affected redistribution of sulphides, in some cases producing a conspicuous increase in porosity and potential mineral sinks. In several places such as the F zone dramatic breakage occurs and when impregnated with massive sulphide the rock mass has the appearance of a breccia.

7) The major fault zone in the valley floor is a later event. It has effected disturbance of the mineralization and its associated fractures but the fault itself seems to carry no gold and is characterized by a low temp mineral assemblage.

8) Continuity of the various tectonic units can be established in places from surface observations and sporadic continuity can be intrepreted from drill holes. Within the tectonic units the general pattern appears to be one of somewhat erratic distribution of mineralization as demonstrated by assay results.

G) MINERALIZATION AND TECTONICS

The earliest mineralization seen is related to low angle conjugate joints supposedly related to granite intrusion. The most dominating mineralized structures in the area however are several easterly dipping and NW-SE (90°-170°) striking faults and shears with related minor fractures, shears and tension cracks. Brecciated zones are often developed as in the F zone.

Mapping and drilling in 1980/81 has indicated a "structurally controlled zone" extending from the F_2 area in the south to the B area in the north, a distance of some 900 m. The northernmost 300 m between Seksa and the B zone is completely covered by scree and offers no exposure and has not been drill tested.

The elevation difference between F_2 and B is 180 m.

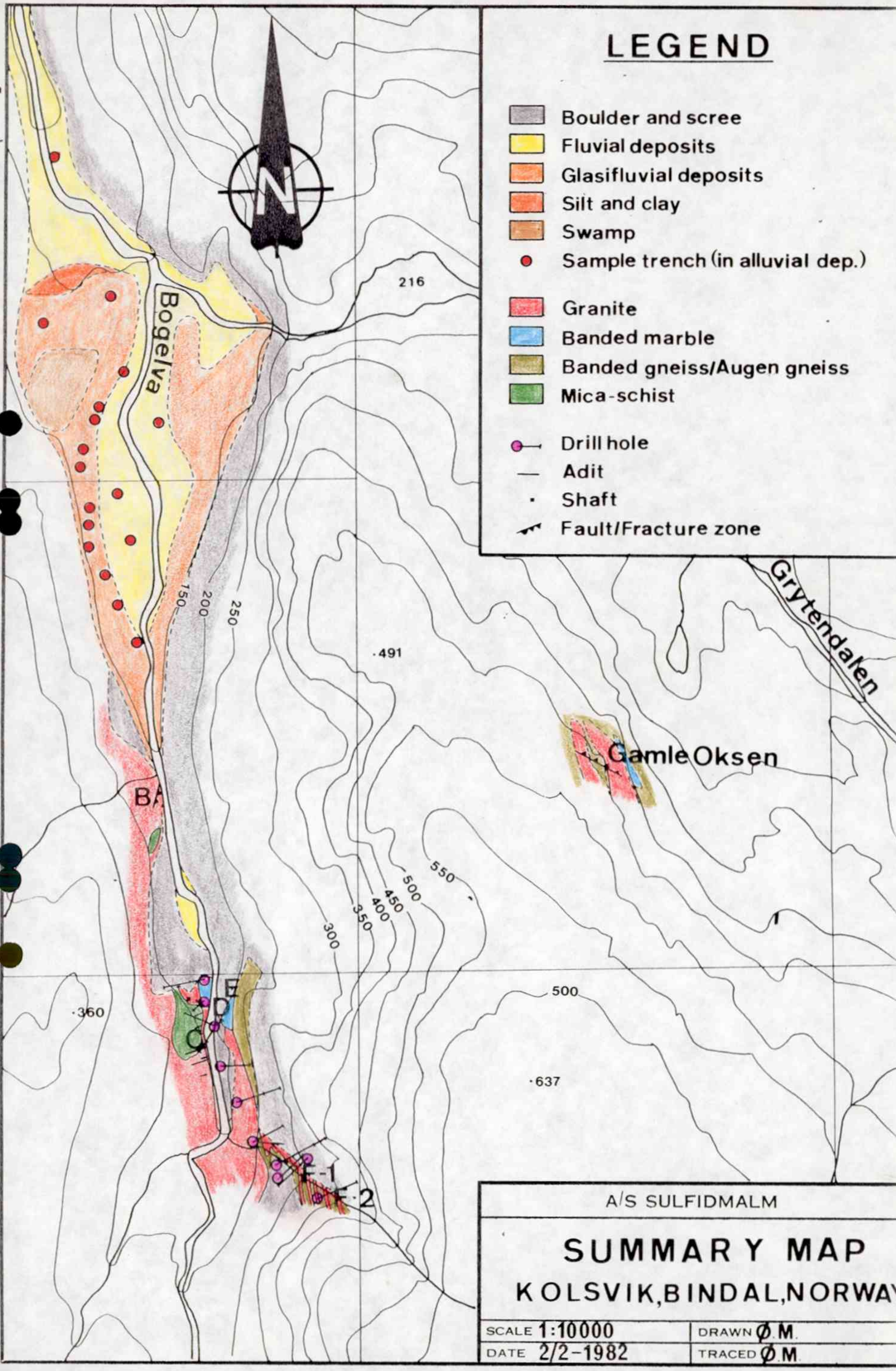
This mineralized zone is cut by the late major N/S fault system in the valley floor - the Bogdalen fault. Splays on this fault parallel earlier NW-SE trending fractures and have caused minor re-orientation (dragging) and/or displacement. No evidence of major displacement has been established.

For purposes of description the property can be divided into two areas: - the area from F to C zones and the C zone to B zone area.

a) The F - C area

Mineralization in this area can be studied on surface in the Storstein adit, the Kaffistein adit and in the Ottar, Oppgangen and Nebba areas. The following drill holes are also located in this area: DDH 3, 4, 8, 9, 10, 11, 12, 13, 14 and 20.

The F-zone on which the Storstein adit is located consists of two major steep faults with an undulating trend. At the mouth of the adit the distance between the two faults is some 5 m narrowing to the south where they converge some 28 m within the adit again opening up further south. The granitic rocks between these fractures are well mineralized with arsenopyrite chlorite-quartz along steep fractures trending 120° and 180° - this gives a marked breccia appearance to the rock. Massive arsenopyrite occurs intermittently near the footwall of the easternmost fault. In the footwall to the westernmost fault related minor fractures and joints carrying arsenopyrite and quartz are present over a distance of some 20 m. Surface sampling has returned 10.63 Au g/t from bulk channel sampling over the easternmost 4.5 m of the zone at the mouth of the adit. The footwall mineralization to the west has been sampled but is not yet returned.



LEGEND
Boulder and scree
Fluvial deposits
Glasifluvial deposits
Silt and clay
Swamp
Sample trench (in alluvial dep.)
Granite
Banded marble
Banded gneiss/Augen gneiss
Mica-schist
Drill hole
Adit
Shaft
Fault/Fracture zone
N
Bogelva
Grytendalen
Gamle Oksen
216
491
360
637
150
200
250
300
350
400
450
500
550
BA
E
D
C
F-1
F-2
A/S SULFIDMALM
SUMMARY MAP
KOLSVIK, BINDAL, NORWAY
SCALE 1:10000
DATE 2/2-1982
DRAWN Ø.M.
TRACED Ø.M.

esting areas being detailed on 1:200.

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The gneisses are cut by a great number of veins and at least three phases of granitic veins are noted, the earliest veins being highly deformed. Aspy mineralization is rare, but can be seen in some quartz and granitic veins. Py is a common mineral in both dioritic- and augen/banded gneisses.

III. The marble

The marbles (dominantly calcite marble) are all highly deformed rocks. They vary in composition and texture from banded marble, containing thin bands of pelitic composition which are often folded to highly deformed fragment rich marble, now showing a breccia texture.

A rapid interchange between marble and carbonate rich mica schists is seen in drill holes from the C-area.

Skarn (diopside-garnet) mineralization is frequently developed in the marble, especially in contact relations to younger crosscutting granite.

IV. Mica schists

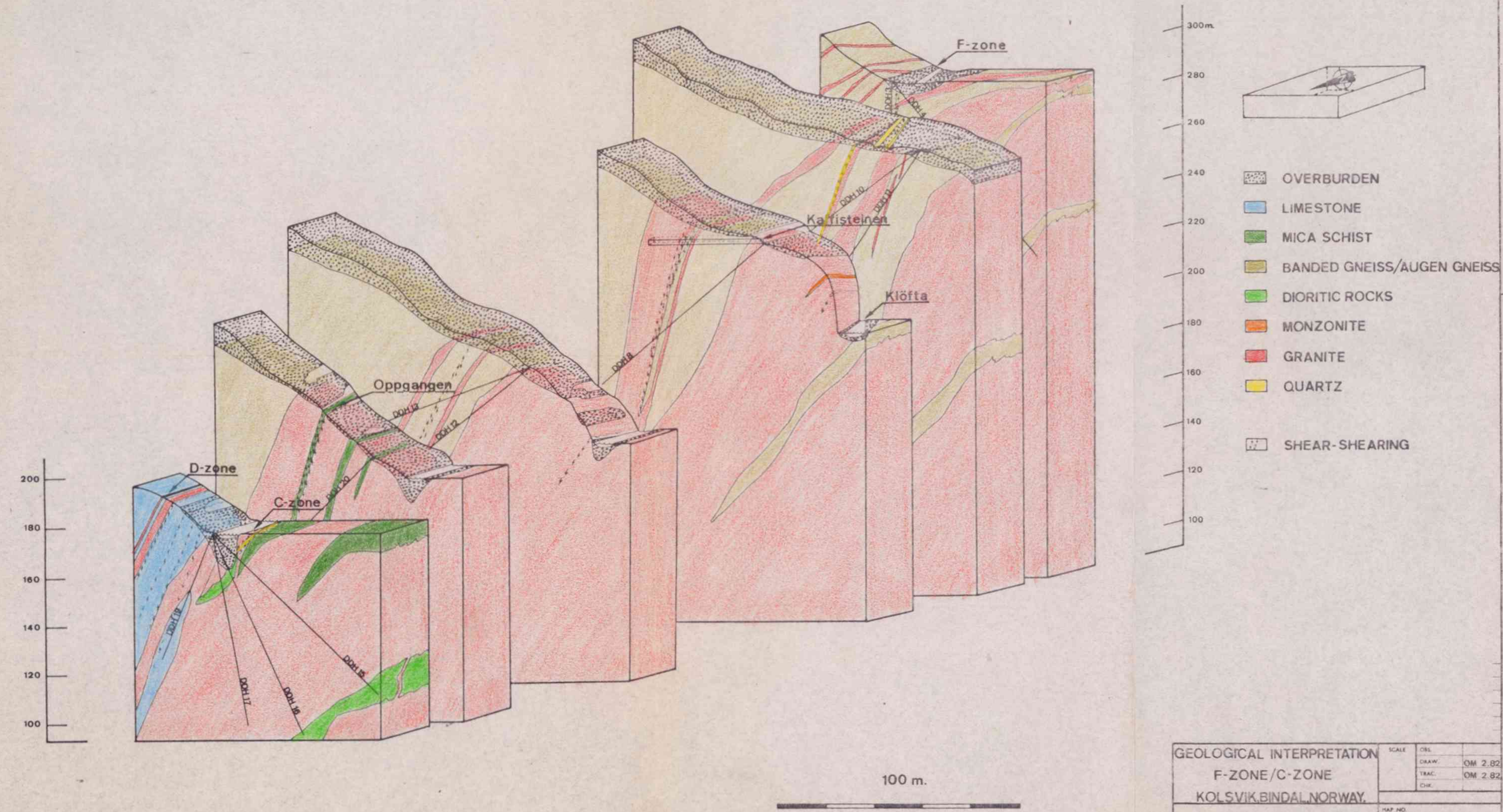
The mica schists vary from fine to medium grained, mostly strongly sheared biotitic rocks. They are mainly found in or adjacent to shear zones, especially well developed in the C-area.

The mineralogical and textural variations of the schists are thought to represent both a primary change in the sequence and a strongly variable deformation of the rocks.

V. Mineralization

The gold and arsenopyrite mineralization occurs dominantly in granite near the contact zone with gneisses and metasediments. The mineralization is typically tectonically controlled and related to such structures as

a) Quartz vein fillings in fractures, shears and joints.
b) Quartz segregations in or associated to the above structures.
c) Quartz/Asp matrix fill in breccias.



GEOLOGICAL INTERPRETATION F-ZONE/C-ZONE KOLSVIK,BINDAL,NORWAY.	SCALE	OBS.	
		DRAW.	OM 2.82
		TRAC.	OM 2.82
		CHK.	
⅓ SULFIDMALM	MAP NO.		
	MAP SHEET 1525 II		

d) Massive Asp zones in fractures and shears.

e) Joint smearings of Asp.

Relationships of tectonics and mineralization and extent of mineralization will be treated later in this report.

Two typical quartz vein type mineralizations show the following in polished thin section

Sample PTS 5629 C zone vein type

		Grain size (mm) max.	avg.
Quartz	95 %		
Muscovite	tr.		
Arsenopyrite	3-4 %	0.75	0.40
Native gold	1 %	0.25	0.05

Masses of euhedral arsenopyrite grains, locally intergrown with coarse blebs of native gold occupy fracture zones within a coarse interlocking quartz mosaic. Muscovite is the sole alteration mineral associated with the mineralization. Individual quartz grains exhibit undulose, strained extinction and together with arsenopyrite are commonly cross-crossed with microfractures. The latter manifest themselves in the form of thin "tracks" of microcrystalline quartz within the coarser vein quartz and quartz filled fractures transecting arsenopyrite grains.

Sample PTS 5630 C zone vein type

		Grain size max.	avg.
Quartz	55-60 %		
Alkali feldspar	4-5 %		
Carbonate	tr.		
Chlorite. Biotite	tr.		
Arsenopyrite	35-40 %	massive	
Galena	tr.		
Native gold	tr.	0.006	0.006
Rutile	tr.		

Texturally this sample is similar to PTS 5629. From a mineralogical point of view, however, subtle yet distinct differences exist. In place of muscovite an alteration assemblage of carbonate and chlorite/biotite is found associated with the arsenopyrite in fracture zones. Minor coarse grained K feldspar joins the quartz gangue and occurs both as localized grain aggregates and as isolated single crystals.

These two samples represent typical vein type mineralization which is common through the property. Another type of mineralization in the area and common in the F zone is a "breccia type". A typical PTS shows the following

Sample PTS 5631 F zone breccia type

		Grain size (mm)	
		max.	avg.
Quartz	15-20 %		
K Feldspar Plagioclase (Albite)	65-70 %		
Chlorite	‹1		
Apatite	tr.		
Sericite	tr.		
Arsenopyrite	5-10 %	3.00	1.50
Rutile	‹1		
Zircon	tr.		
Native gold	tr.	0.006	0.006

Here masses of arsenopyrite together with associated chlorite alteration occur within fracture zones. The granitic host rock which has been strongly shattered consists of predominantly coarse interlocking K feldspar and albite grains with lesser interstitial (=primary) and fracture-filling (=secondary) quartz.

Scheelite has been noted in several of the gold bearing veins and detrital cassiterite has been found in glaciofluvial deposits north of the area.

F) STRUCTURAL OBSERVATIONS

I. Summary

The Kolsvik valley to which the gold property is located is a deeply glaciated valley, the course of which is influenced by the strong shattering assocaited with a major fault zone with a north south trend extending along the valley floor. This fault zone is a dominant structural feature, can be traced for some tens of kilometers and is readily seen on ERTS satellite images.

The lithological assemblage of the area has been variably affected by late Caledonian and subsequent formation as revealed in fault, shears and joint systems. It is these faults, shears and joints which provided the passage for mineral-bearing solutions or the redistribution and concentration of metals.

Several categories of fracture characterize the late tectonic fabric of the Kolsvik district.

1) Shear zones and faults marked by zones of crush and or shear.
2) Joints.
3) Later joints and shear zones - possibly non Caledonian.
4) Rebound joints i.e. parallel to the ground surface.

Categories 1 and 2 are Caledonian in age and relate to granite emplacement and subsequent Caledonian tectonics.

Gold mineralization appears to occur chiefly in shear fractures, faults or joints together with arsenopyrite or in association with a gangue of quartz in which arsenopyrite can occur as fine disseminations, veinlets or irregular segregations. Native gold is commonly seen in the area and is most common in association with quartz. The arsenopyrite and/or quartz arsenopyrite veins usually occur as thin discontinuous veins or less regular elliptical bodies within the fractures. Vein quartz - sometimes Asp and Au bearing also occurs in systems of tension gash veins associated to some of the minor faults.

The most conspicuous development of sulphide occurs in very brittle rocks which become more heavily broken or diced up with successive fracture systems. Massive arsenopyrite fills the fractures, frequently giving the rock the appearance of a fault breccia.

Mineralization has been found on surface over an intermittent strike length of some 800 m from the F zone in the south through the C zone to B in the north. Diamond drilling has been concentrated between and around the F and C zones. Integrating the data from zones F, C and B brings out several features which are summarized below:

1) Each zone displays a rational but somewhat different pattern, indicating they are near coherent sub areas of a large tectonic framework.
2) Two systems of fractures seem to be significant in the distribution of mineralization in the area. In chronological sequence these are
   a) Conjugate system of gentle to moderately inclined shears and joints with an average 160° strike. The hanging wall in each case moves downwards indicative of a sub horizontal extension of the rocks. Tension gash veins of quartz are associated with these fractures in the more brittle rocks. These flat shears often contain development of massive Asp or elliptical vein quartz with Asp and Au. This conjugate

system is well seen in the C zone adits and the Kaffistein adit.

b) Steep shears-faults and joints with an average SE-NW trend (strike spread 90°-170°). They are well developed in the F zone, inner Kaffistein adit and in the C zone. The fractures frequently exhibit a suite of associated tension gash veins. The relative age relationships between the fracture systems can be seen in the C zone (Boliden adit) and in the Kaffistein adit where NNW-SSE and N-S fractures postdate the flat conjugate system.
These "B" type shears are quite dominant and some can be traced for several tens of meters as in the F and C zones.

3) The conjugate system of flat shears is compatible with sub-horizontal extension of the rocks i.e. distension above a rising plutonic mass of granite.

4) Stereographic plots indicate that despite their temporal difference the "A" and "B" systems belong to the same orogenic cycle.

5) The earliest phase of mineralization was emplacement of sulphide and sulphide-metal bearing vein quartz along the conjugate system of flat to moderately inclined fractures of "normal" type i.e. hanging-wall moves downwards.

6) Later faulting has affected redistribution of sulphides, in some cases producing a conspicuous increase in porosity and potential mineral sinks. In several places such as the F zone dramatic breakage occurs and when impregnated with massive sulphide the rock mass has the appearance of a breccia.

7) The major fault zone in the valley floor is a later event. It has effected disturbance of the mineralization and its associated fractures but the fault itself seems to carry no gold and is characterized by a low temp mineral assemblage.

8) Continuity of the various tectonic units can be established in places from surface observations and sporadic continuity can be intrepreted from drill holes. Within the tectonic units the general pattern appears to be one of somewhat erratic distribution of mineralization as demonstrated by assay results.

G) MINERALIZATION AND TECTONICS

The earliest mineralization seen is related to low angle conjugate joints supposedly related to granite intrusion. The most dominating mineralized structures in the area however are several easterly dipping and NW-SE (90°-170°) striking faults and shears with related minor fractures, shears and tension cracks. Brecciated zones are often developed as in the F zone.

Mapping and drilling in 1980/81 has indicated a "structurally controlled zone" extending from the F_2 area in the south to the B area in the north, a distance of some 900 m. The northernmost 300 m between Seksa and the B zone is completely covered by scree and offers no exposure and has not been drill tested.

The elevation difference between F_2 and B is 180 m.

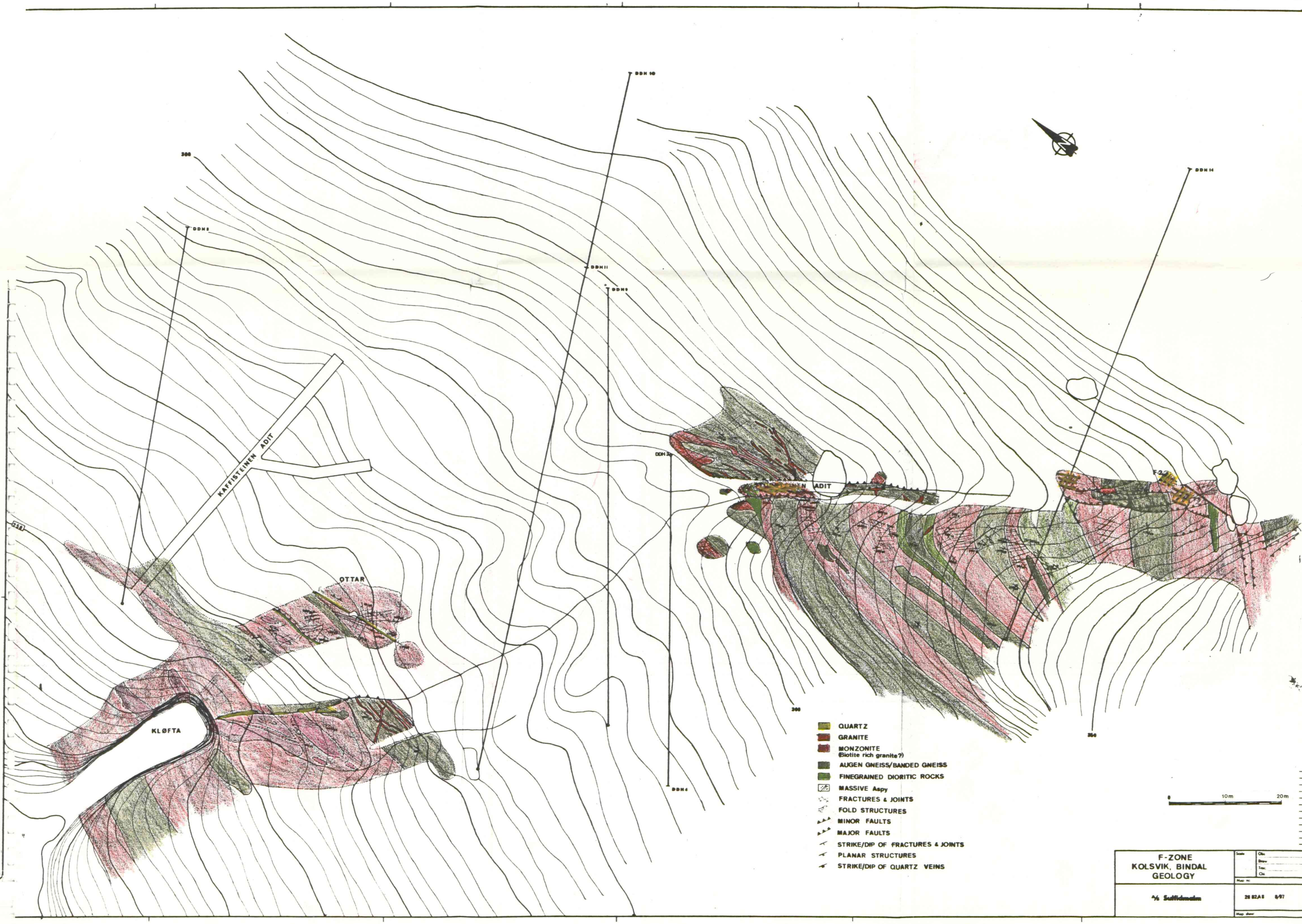
This mineralized zone is cut by the late major N/S fault system in the valley floor - the Bogdalen fault. Splays on this fault parallel earlier NW-SE trending fractures and have caused minor re-orientation (dragging) and/or displacement. No evidence of major displacement has been established.

For purposes of description the property can be divided into two areas: - the area from F to C zones and the C zone to B zone area.

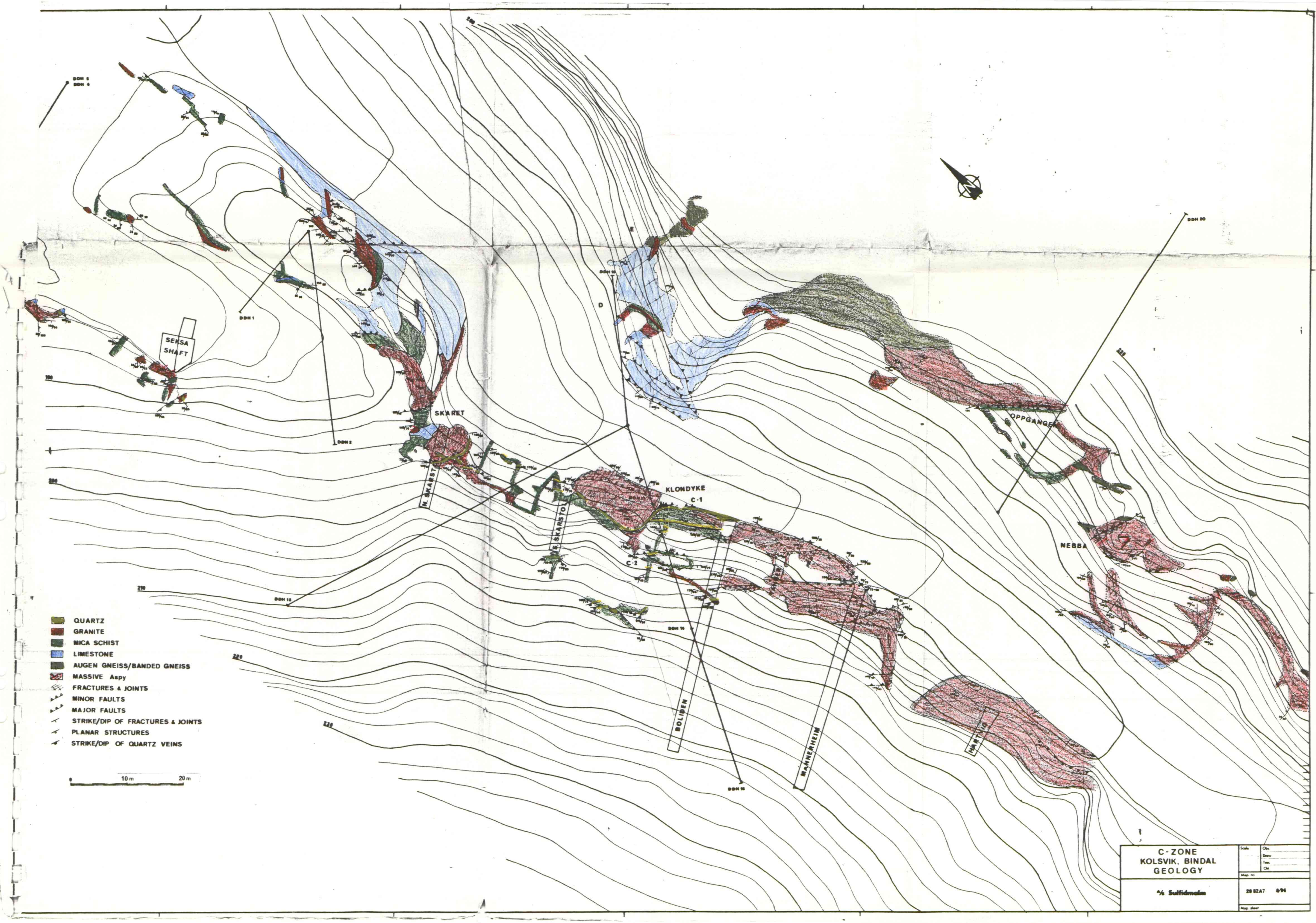
a) The F - C area

Mineralization in this area can be studied on surface in the Storstein adit, the Kaffistein adit and in the Ottar, Oppgangen and Nebba areas. The following drill holes are also located in this area: DDH 3, 4, 8, 9, 10, 11, 12, 13, 14 and 20.

The F-zone on which the Storstein adit is located consists of two major steep faults with an undulating trend. At the mouth of the adit the distance between the two faults is some 5 m narrowing to the south where they converge some 28 m within the adit again opening up further south. The granitic rocks between these fractures are well mineralized with arsenopyrite chlorite-quartz along steep fractures trending 120° and 180° - this gives a marked breccia appearance to the rock. Massive arsenopyrite occurs intermittently near the footwall of the easternmost fault. In the footwall to the westernmost fault related minor fractures and joints carrying arsenopyrite and quartz are present over a distance of some 20 m. Surface sampling has returned 10.63 Au g/t from bulk channel sampling over the easternmost 4.5 m of the zone at the mouth of the adit. The footwall mineralization to the west has been sampled but is not yet returned.



DDH 10
DDH 14
DDH 8
DDH 11
DDH 9
DDH 3
DDH 4
KAFFISTEINEN ADIT
ADIT
OTTAR
KLØFTA
F-2
300
350
QUARTZ
GRANITE
MONZONITE
(Biotite rich granite?)
AUGEN GNEISS/BANDED GNEISS
FINEGRAINED DIORITIC ROCKS
MASSIVE Aspy
FRACTURES & JOINTS
FOLD STRUCTURES
MINOR FAULTS
MAJOR FAULTS
STRIKE/DIP OF FRACTURES & JOINTS
PLANAR STRUCTURES
STRIKE/DIP OF QUARTZ VEINS
0
10m
20m
F-ZONE
KOLSVIK, BINDAL
GEOLOGY
A/S Sulfidmalm
Scale
Obs
Draw
Trac
Chk
Map no
28 82A8 8/87
Map sheet



SEKSA
SHAFT
SKARET
N. SKARST
S. SKARST
KLONDYKE
C-1
C-2
BOLIDEN
MANNERHEIM
OPPGANGEN
NEBBA
E
D
DDH 1
DDH 2
DDH 15
DDH 20
QUARTZ
GRANITE
MICA SCHIST
LIMESTONE
AUGEN GNEISS/BANDED GNEISS
MASSIVE Aspy
FRACTURES & JOINTS
MINOR FAULTS
MAJOR FAULTS
STRIKE/DIP OF FRACTURES & JOINTS
PLANAR STRUCTURES
STRIKE/DIP OF QUARTZ VEINS
0
10 m
20 m
C-ZONE
KOLSVIK, BINDAL
GEOLOGY
A/S Sulfidmalm
Scale
Obs
Draw
Trac
Chk
Map no
28 82A7
8/96
Map sheet

The F_2 showing located some 30 m to the SE and 40 m higher elevation returned 6.22 Au g/t over 1.5 m.

The Ottar showing located some 30 m below the F zone is interpreted as the western fault observed in the F zone. Two grab samples from Ottar sampled in 1980 indicate 4.5 g/t Au and 14.9 g/t Au over 0.5 m.

In the Kaffistein adit two well mineralized (Asp, Quartz) zones are seen with related joint and fracture mineralization. Low conjugate fracture sets of the earliest generation are also seen in this area to predate the later fractures. The zone of mineralization is of the order of 15 m.

The Oppgangen and Nebba areas are extremely poorly exposed but early conjugate fractures have been recognized being cut by later NW/SE fractures. Surface sampling has been shown 5.1 g/t over 1 m (Oppgangen) and 3.04 g/t over 7 m (Nebba).

Small surface showings have also been located at the D zone 22.4 g/t over 1 m and below the collar of DDH 12/13 4.7 g/t over 0.3 m.

A total of 11 drillholes have been drilled in this area. The topography is extremely difficult with the trace of the zone trending across a steep ruggy valley side with most of the area being covered by large masses of scree and boulders. This necessitated most of the holes being drilled from the "wrong" side i.e. footwall side of the zone.

Two holes DDH 3 and 4 were put down on the F zone in 1980. DDH 3 proved the depth down to at least 90 m with the best values of 9.3 g/t over 3.25 m. DDH 4 intersected 22.4 g/t over 0.75 m which is interpreted as footwall mineralization. (See report 513.28.81).

The geology and assays of the 9 holes in 1981 are shown on sections and the enclosed block diagram. All of the holes intersected structurally controlled arsenopyrite/quartz mineralization and visible gold was noted from DDH 8, 12 and 13.

DDH 9, 10, 11 were put down to test the northward continuation of the F zone. DDH 9 returned only traces of gold (3.4 g/t over 0.25 m). DDH 10 gave 5.63 g/t Au over 4.0 m. DDH 11 returned 3.7 g/t Au over 4 m (8.14 g/t over 1.5 m).

DDH 8 drilled to confirm the supposed northerly extension of the Kaffistein adit mineralization gave 3.89 g/t Au over 4.75 m (5.63 g/t Au / 0.75 m - 7.8 g/t / 1.75 m.

DDH 12, 13 were drilled to test the northerly continuation of the DDH 8 mineralization. DDH 12 hit 10.40 g/t Au over 1.5 m whereas in DDH 13 two zones were intersected - 8.06 g/t Au / 3 m and 5.8 g/t Au / 1 m.

DDH 20 intersected only minor gold values over 0.5 m.

TABLE 1

DDH's drilled in F - C area.

DDH	LOCATION	DIP	LENGTH	MINERALIZATION FROM	TO	LENGTH	Au g/t
3	348 S 172 E	90°	94.20 m	60.0	70.25	10.25	1.7
				76.25	80.0	3.75	2.6
				87.5	90.75	3.25	9.3
4	348 S 172 E	50°	93.05 m	17.0	18.0	1.0	4.05
				28.75	29.5	0.75	22.3
8	254 S 85 E	40°	88.30 m	55.5	56.25	0.75	5.63
				58.5	60.25	1.75	7.80
				(55.5)	60.25	4.75	3.89)
9	333 S 123 E	349°	94.60 m	63.75	64.0	0.25	2.4
10	318 S 102 E	36°	144 m	54.0	59.0	5.0	4.88
11	318 S 102 E	55°	159.30 m	116.5	118.0	1.5	8.14
				(114.0	118.0	4.0	3.7)
12	160 S 57 E	38°	124.50 m	40.0	41.5	1.5	10.4
13	160 S 57 E	20°	63.70 m	30.0	33.0	3.0	8.07
				40.5	41.5	1.0	5.8
14	377 S 185 E	42°	120.80 m	-	-	-	-
20	101 S 45 E	45°	89.80	17.5	18.0	0.5	1.5

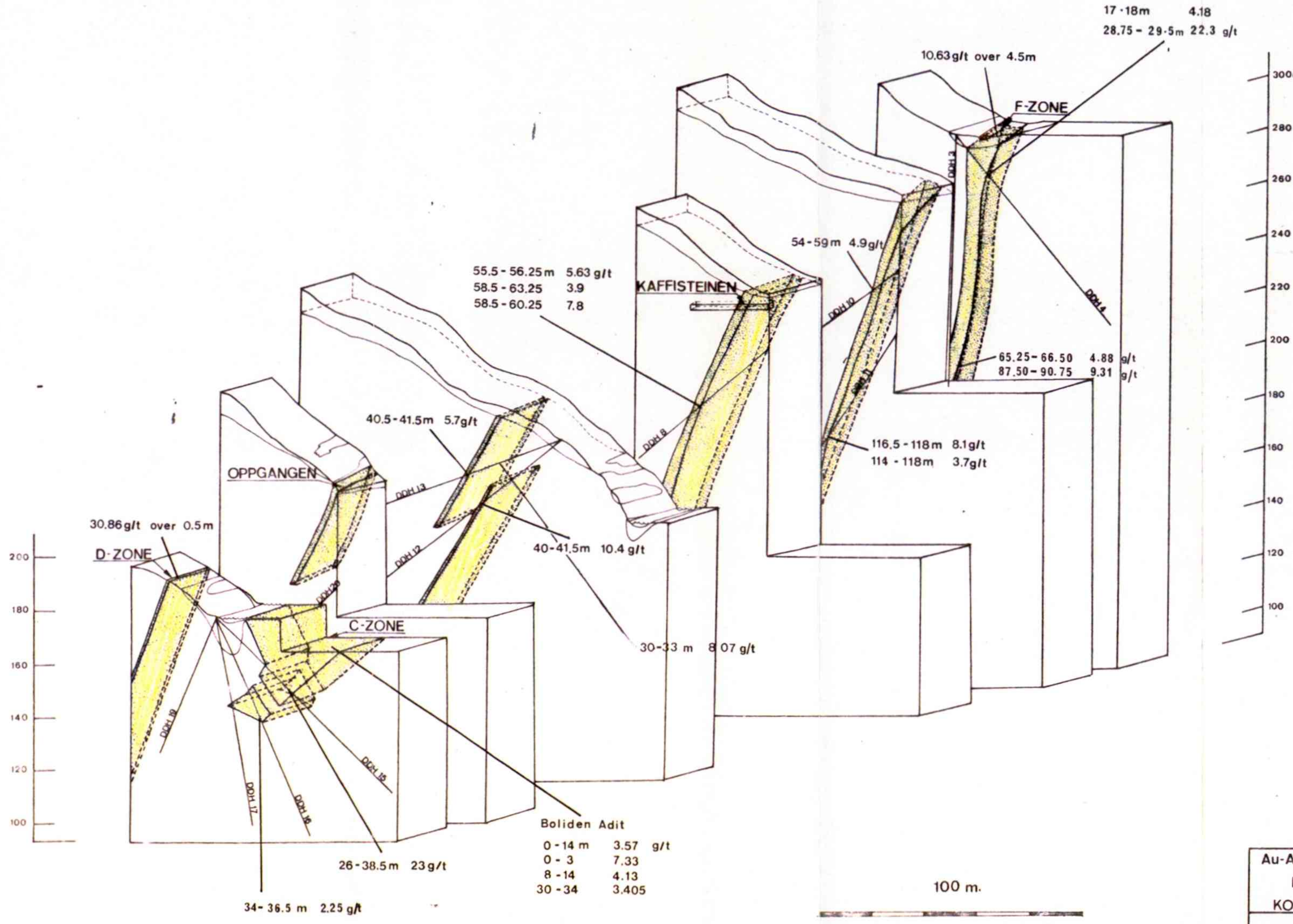
From the available surface information and drill hole data an overall continuous "mineralized zone" extending from F to the C area is indicated.

DDH 3 has indicated a minimum depth of 90 m.

b) The C area

The C area is dominated by strong shearing/faulting with a NNW-SSE direction and a steep easterly dip. The main fault zone follows the contact between the granite and the country rocks.

The fault zone can be traced for some 125-150 m along strike. Coincident and partly enclosed in the fault zone are quartz-arsenopyrite veins and irregular bodies - in places up to 1.5 m wide. These can be



Au-Aspy MINERALIZATION F-ZONE/C-ZONE KOLSVIK, BINDAL, NORWAY.	SCALE	OBS. DRAW OM 2.82 TRAC. OM CHK.
% SULFIDMALM		MAP NO. 28 82 A16 7C42 MAP SHEET

traced sporadically along the lenth of the fault zone and often are seen to carry free gold.

Several adits are driven into the footwall of the major fault in the C area and both detailed mapping and sampling of the adits indicate several zones of mineralization in the footwall granite.

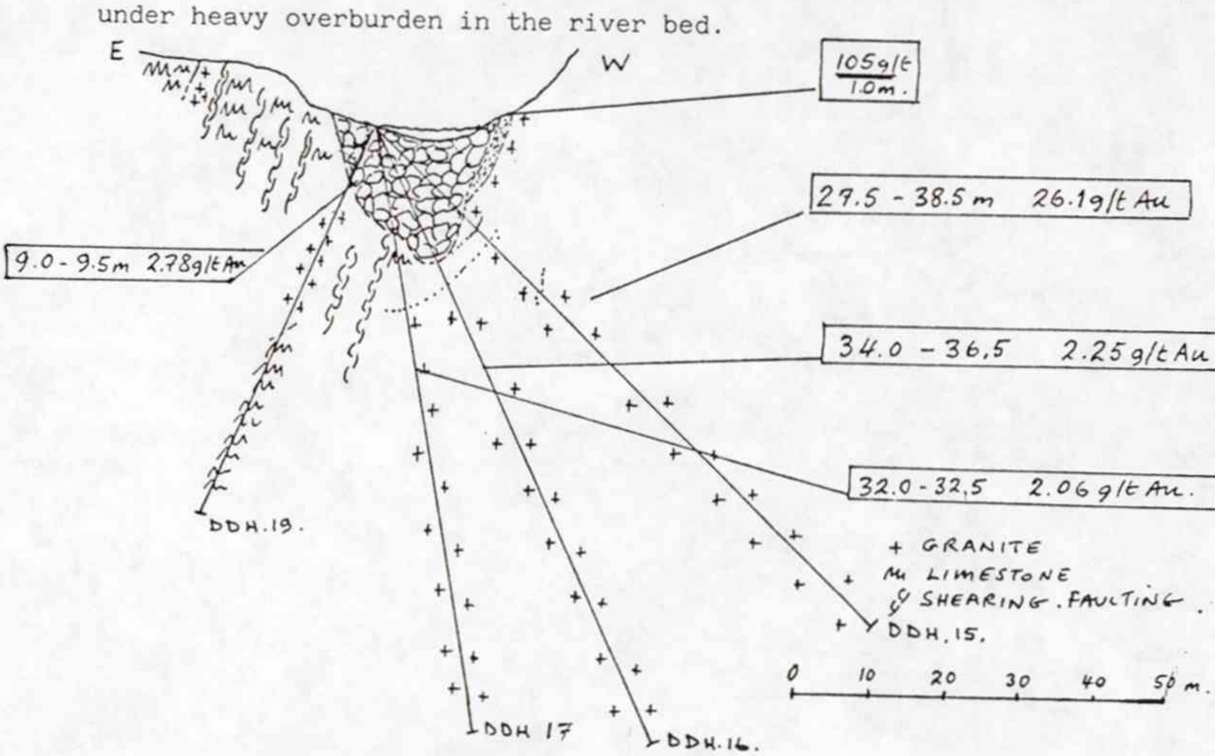
In the Boliden adit three separate zones occur giving 7.3 g/t Au / 3 m - this correlates with the main C vein/fault. Further 4.1 g/t Au / 6 m from 7.0 - 13.0 m and finally 3.4 g/t Au / 4 m from 30.0 - 34.0 m.

Values from the other adits on the zone were however poor.

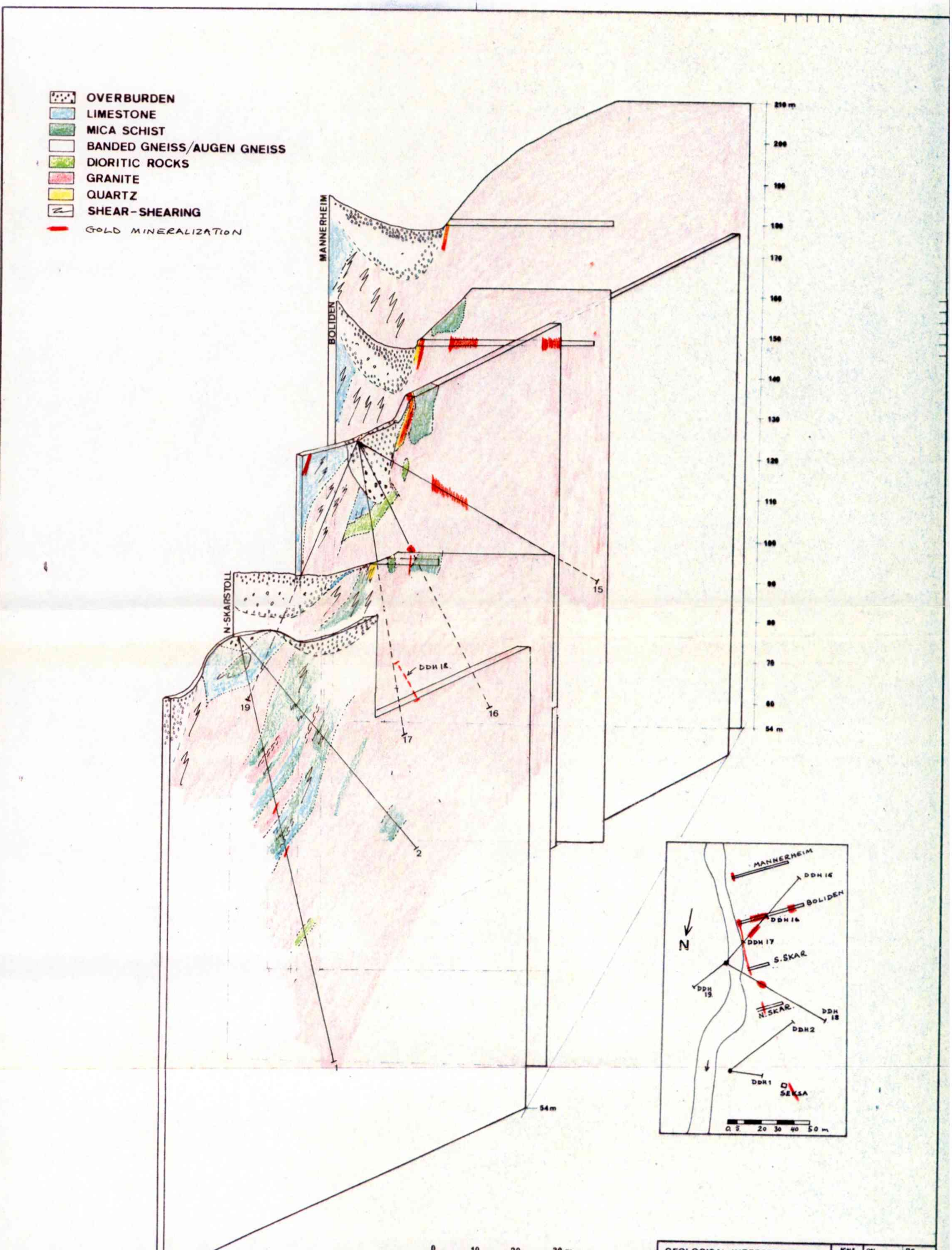
Two different joint sets carrying quartz $\pm$ Au and Asp have been mapped in the adits: - a) steep easterly dipping and b) low angle conjugate. The low angled fractures being the earliest.

Five drill holes were drilled in this area in 1981, DDH 15, 16, 17, 18, 19.

DDH 15 which was put down to investigate the main C zone fault at depth intersected a well mineralized zone some 20-25 m below the Boliden adit giving 23.0 g/t Au over 12.5 m. In core the mineralization is seen to relate to joints and shears - with two sets being developed at right angles to each other. This mineralized zone is not correlated to the main C zone vein - this has not been intersected and probably outcrops under heavy overburden in the river bed.



DIAGRAMMATIC SECTION OF DDH 15, 16, 17, 19 ON C ZONE



GEOLOGICAL INTERPRETATION C-ZONE AREA KOLSVIK, BINDAL, NORWAY	SCALE	OBS.		RS
		DRAW.	3.82	RS
		TRAC.	3.82	AB
		CHK.		
% SULFIDMALM	MAP NO. 28 82 A1			7C25

DDH 16 and 17 put down on the same profile but lower than DDH 15 intersected only weak mineralization with DDH 16 giving 2.25 g/t Au over 2.5 m.

DDH 18 intersected 4.26 g/t Au over 2.5 m. It is uncertain whether this can be correlated to the main C zone fault or not.

To the north bulk chip sampling has returned 10.37 g/t Au over 6 m behind the old Seksa shaft and a newly discovered shear zone some 20 m north of Seksa returned 8.8 g/t Au over 0.5 m.

From this point to the B area some 400 m to the north, no outcrops occur and the area is covered by large amounts of boulder and scree. Two drill holes, DDH 5 and 6, were drilled close to Seksa during the early part of the 1981 season but are now thought to be located to far east to give significant information.

TABLE 2

DRILL HOLES ON THE C ZONE

DDH	LOCATION		BEARING	DIP	LENGTH	MINERALIZATION			
						FROM	TO	LENGTH	Au g/t
15	32 S	22 E	215°	44°	93.45 m	26.0	38.5	12.5	23.0
16	32 S	22 E	215°	65°	89.95 m	34.0	36.5	2.5	2.25
17	32 S	22 E	215°	80°	80.60 m	32.0	32.5	0.5	2.1
18	32 S	22 E	295°	45°	97.00 m	26.5	29.0	2.5	4.26
19	32 S	22 E	048°	66°	56.30 m	9.0	9.5	0.5	2.9

TABLE 3

ASSAYS FROM ADITS ON C ZONE   1981 sampling

ADIT	BEARING	LENGTH	SIGNIFICANT MINERALIZATION			
			FROM	TO	LENGTH	Au g/t
NORTH SKAR	247°	15 m				
SOUTH SKAR	265°	13 m	10.0	11.0	1.0	3.90
BOLIDEN	253°	42.2 m	÷ 1.0	2.0	3.0	7.33
			7.0	13.0	6.0	4.128
			30.0	34.0	4.0	3.405
MANNERHEIM	256°	37 m	0	1.0	1.0	2.12

H) MINERALOGICAL AND METALLURGICAL EXAMINATIONS

I. Mineralogical investigations

Fourteen drill core samples of various lithologies from the Kolsvik area and four surface samples of mineralization have undergone petrographic examination and qualitative spectrographic analysis. The results are shown in appendix no. 4.

Six hand samples from the "C" and "F" areas have also been examined by R. Buchan for the relationship between gold and arsenopyrite. Two polished sections from each hand sample were prepared and examined using a high magnification objective of the polarizing microscope.

Gold was observed in three of the samples in four habits: as grains completely enclosed in Aspy, as blebs and elongate grains within fractures or shatter cracks in Aspy and as isolated grains in gangue.

Distribution af 68 grains observed in the three samples indicate that over 70 % (by estimated volume) occur enclosed in massive arsenopyrite, about 10 % within fractures in arsenopyrite and 20 % within gangue. Grain sizes range from sub-micron, barely visible specks up to about 15 x 25 μm with an average grain size about 6-7 μm diameter.

The actual grain size distribution of the 68 grains is as follows

Grain size (diameter in μ m)	No of grains
<1	7
1-3	27
3-5	18
5-10	9
>10	7

This distribution is in contrast to certain areas of the C zone where very coarse grains occur and average grain size is estimated at about 50 μ m diameter.

TABLE 4

NATIVE GOLD DISTRIBUTION IN SAMPLES FROM BINDAL

		ASSOCIATION OF GOLD GRAINS No of grains (Est. % by volume)			
Sample	No of grains	Enclosed Aspy	Along grain boundaries of Asp	Within cracks in Aspy	In gangue
C 1	25	16 (49 %)	4 (40%)	5 (11 %)	-
C 2	18	13 (17 %)	1 (17%)	1 (33 %)	3 (63%)
C 3	0	-	-	-	-
F 1	0	-	-	-	-
F 2	25	8 (61 %)	6 (26%)	11 (13 %)	-
F 3	0	-	-	-	-
All samples	68	37 (43%)	11 (28 %)	17 (9%)	3 (20 %)

II. Metallurgical investigations

An investigation into the recovery of gold from samples taken from F and C zones has been carried out by Lakefield Research of Canada Limited. A summary of their results is given below:

S U M M A R Y

1. Head Analysis

Representative samples were removed from C and F zone ore for analysis.

Element	C Zone	F Zone
Au (g/t)	39.1* (40.9)	7.77**(7.89)
Ag (g/t)	3.3	2.3
As (%)	7.71 (7.26)	10.9 (10.8)
Fe (%)	6.13	9.26
S (%)	3.39 (3.25)	5.05 (4.97)

* average of 32.9, 42.0, 42.4 g/t Au from three head samples

** average of 8.75, 4.97 and 9.60 g/t Au from three head samples

( ) average from testwork

XRF Semi-Quantitative Analysis

Element	C Zone	F Zone
Titanium	ND	T
Chromium	ND	FT
Manganese	T	FT
Iron	LM	M
Cobalt	ND	ND
Nickel	FT	FT
Copper	ND	FT
Zinc	FT	FT
Arsenic	MH	MH
Bismuth	ND	ND
Lead	ND	ND
Uranium	ND	ND
Thorium	ND	ND
Yttrium	FT	FT
Columbium	ND	ND
Molybdenum	ND	ND
Silver	ND	ND
Cadmium	ND	ND
Tin	ND	ND
Antimony	ND	ND

Code:

H - 10% plus

MH - 5-15%

M - 1-10%

LM - .5-5%

L - .1-1%

TL - .05-.5%

T - .01-.1%

FT - Less than .01

ND - Not detected

Summary - Continued

2. Mineralogy

The mineralogy of the gold-arsenopyrite ores was described in a letter from Mr. Frank Nixon to Lakefield Research, dated December 18, 1981.

C Zone High grade gold mineralization was associated with arsenopyrite in quartz veins. Native gold was intergrown with masses of arsenopyrite grains and as free grains. A few gold inclusions were observed in arsenopyrite grains, which were strongly fractured.

F Zone The granite host rock was cut by arsenopyrite veins which were associated with chlorite alteration along fracture zones. The granite which had been strongly shattered consisted of coarse interlocking feldspars with lesser interstitial and fracture filling quartz. Very little visible gold was observed.

3. Gold Association

The gold association in both ores was determined by a sequential amalgamation and leaching procedure. Each ore was ground to approximately 50 and 80 percent minus 200 mesh. The ground pulp was amalgamated and cyanided to recover available gold. The cyanide residue was leached with HCl and cyanided to determine the gold associated with carbonates. The cyanide residue was leached with HCl and $SnCl_2$ and cyanided to determine the gold associated with iron and metal oxides. The cyanide residue was finally leached with aqua regia to determine the gold associated with sulphides. Gold in the residue from the aqua regia leach was associated with silicates.

The results are presented in Table No. 1. At a grind of about 80% minus 200 mesh a total of 94% of the gold in Sample C was available for recovery by amalgamation/cyanidation. Only 4% was associated with sulphides. At a similar grinding size on Sample F, a total of 88% of the gold was available for recovery by amalgamation/cyanidation. 10% of the gold was associated with sulphides.

Summary - Continued

3. Gold Association - Cont'd

At a coarser grind of about 50 % minus 200 mesh the amount of gold locked into a sulphide matrix increased to 17 % in Sample F.

Table No. 1 - Gold Association

Sample	Zone C		Zone F	
Grind % -200 mesh	46	77	47	82
Available by amalgamation	45	68	41	56
Available by cyanidation	42	26	39	32
Associated with carbonates	6	1	2	2
Associated with iron oxides etc.	1	<1	1	<1
Associated with sulphides	6	4	17	10
Associated with silicates	<1	1	<1	<1

4. Cyanidation

Cyanidation tests were conducted on both samples at three grinding sizes in bottle tests on rolls (1 g/L NaCN, 33 % solids, pH 10.5-11.5, 2 x 24 h). The results are presented in Table No. 2.

A total of 93 % of the gold in Sample C could be recovered by cyanidation at a primary grind of 70 % minus 200 mesh leaving a residue assaying 2.5 g/t Au. A finer grind to 98 % minus 200 mesh reduced the residue assay to 2.1 g/t Au.

A total of 80 % of the gold in Sample F could be recovered by cyanidation at a primary grind of 76 % minus 200 mesh leaving a residue assaying 1.6 g/t Au.

Summary - Continued

4. Cyanidation - Cont'd

Cyanide consumption ranged from 2.6 to 3.4 kg/t and reducing powers ranged fro 200 to 260 mL 0.1 N $KMnO_4$/L pregnant solution.

Additional tests are being conducted to examine various methods of reducing th cyanide consumption.

NB Subsequent cyanidation tests on sample C have shown substantial reductions in Na Cn consumption with preaeration to about 1 kg/t Na Cn and 2.5 - 3 kg/t Ca O. Gold extraction is 93-95 % with straight cyanidation.

Table No. 2 - Cyanidation of Ore

Test No.	Sample Zone	Grind % -200 mesh	Reagent Cons.		Gold Ext'n %	Residue Assay Au, g/t	Head Assay Au g/t	Reducing Power*	pH Range
			NaCN kg/t	CaO kg/t					
27	C	40	1.5	1.2	90	3.70	37.1	120	10.3-11.[illegible]
28	C	70	2.9	1.2	93	2.47	36.8	200	10.3-11.[illegible]
29	C	98	3.4	1.5	94	2.06	36.0	220	10.3-11.[illegible]
30	F	45	1.3	1.2	73	1.72	6.32	122	10.1-11.[illegible]
31	F	76	2.8	2.0	80	1.57	7.76	218	10.1-11.2
32	F	99	3.0	2.1	80	1.37	6.76	259	10.0-11.1

*mL 0.1 N $KMnO_4$/L pregnant solution

5. Flotation

Flotation tests were conducted on both samples at two grinding sizes (approximately 80 and 98 % minus 200 mesh).

Sample C: A primary grind of 80 % minus 200 mesh produced a flotation tailing which repre ted 75 % of the feed weight and assayed 1.5 g/t Au. The rougher concentrate assayed 170 Au, 26 % As, and 12 % S at 98 % gold recovery.

Increasing the grinding fineness to 98 % minus 200 mesh did not significantly reduce gold losses in the flotation tailing.

Summary - Continued

5. Flotation - Cont'd

Cleaning tests reduced the concentrate weight by about 50 % with a loss of about 6 % of the gold. The cleaner concentrate from Test 9 represented 13 % of the feed weight and assayed 306 g/t Au, 41 % As, and 19 % S at 92 % gold recovery.

Sample F: A primary grind of 80 % minus 200 mesh produced a flotation tailing which represented 65 % of the feed weight and assayed 0.5 g/t Au. The rougher concentrate assayed 19 g/t Au, 28 % As, and 13 % S at 96 % gold recovery.

Increasing the grinding fineness did not reduce gold loss in the flotation tailing.

Cleaning tests reduced the concentrate weight by about 50 % with a loss of abou 10 % of the gold in the cleaner tailings. The cleaner concentrate from Test 10 represent 19 % of the feed weight and assayed 32 g/t Au, 40 % As, and 19 % S at 86 % gold recovery

The flotation test conditions and results are contained in Table No. 3. Gold grade versus recovery cleaning curves are illustrated in Figures 1 and 2.

Table No. 3 - Flotation Test Conditions and Results

Conditions

Test No.	Sample	Grind %-200 mesh	Rougher Flotation			Regrind min	Cleaner Flotation			Cleaner Feec % -200 mesh
			AX350 g/t	AP208 g/t	Time min.		Stages	AX350 g/t	AP208 g/t	
5	C Zone	77	40	40	12	–	–	–	–	–
9	C Zone	77	40	40	12	–	3	5	5	92
11	C Zone	77	40	40	12	10	3	15	15	99
13	C Zone	97	70	70	15	–	3	10	10	99
15*	C Zone	–	40	40	12	–	3	5	5	–
7	F Zone	82	40	40	12	–	–	–	–	–
10	F Zone	82	40	40	12	–	3	5	5	92
12	F Zone	82	40	40	12	15	3	20	20	99
14	F Zone	97	70	70	15	–	3	10	10	99
16*	F Zone	–	40	40	12	–	3	5	5	–

*10 kg charge for concentrate production

Table No. 3 - Flotation Test Conditions and Results - Cont'd

Results

Test No.	Cleaner Concentrate							Rougher Concentrate							Rougher Tailing						
	Wgt. %	Assay %,g/t			% Dist.			Wgt. %	Assay %,g/t			% Dist.			Wgt. %	Assay %,g/t			% Dist.		
		Au	As	S	Au	As	S		Au	As	S	Au	As	S		Au	As	S	Au	As	S
5	-	-	-	-	-	-	-	27.4	140	25.9	11.3	98	96	97	72.6	1.27	0.39	0.13	2	4	3
9	13.3	306	40.8	19.2	92	77	78	25.4	170	26.0	12.0	98	93	96	74.6	1.46	0.63	0.29	3	7	7
11	9.1	362	39.8	18.7	86	50	53	31.7	118	21.5	9.6	98	95	95	68.3	1.32	0.55	0.26	2	5	6
13	12.0	324	40.2	19.1	93	67	70	36.3	113	18.8	8.7	98	94	95	63.8	1.27	0.69	0.27	2	6	5
15	11.7	303	43.5	19.8	89	69	71	21.3	179	32.2	14.4	96	93	94	78.7	1.90	0.68	0.26	4	7	6
7	-	-	-	-	-	-	-	36.0	20.8	28.5	13.0	97	95	95	64.0	0.42	0.93	0.38	4	6	5
10	19.2	31.5	39.6	18.9	86	72	74	34.7	19.3	28.4	13.3	96	93	94	65.3	0.47	1.10	0.44	5	7	6
12	12.8	51.9	40.7	18.9	75	48	49	40.2	21.0	25.4	11.5	95	94	95	59.8	0.78	1.07	0.44	5	6	5
14	16.7	38.9	37.9	18.9	84	60	63	46.8	15.9	21.0	10.1	96	93	94	53.2	0.54	1.37	0.57	4	7	6
16	17.5	29.8	39.9	19.0	76	64	65	30.5	20.8	32.2	15.2	92	89	91	69.5	0.77	1.69	0.67	8	11	9

FIGURE No 1

ORE ZONE C GOLD GRADE VS RECOVERY

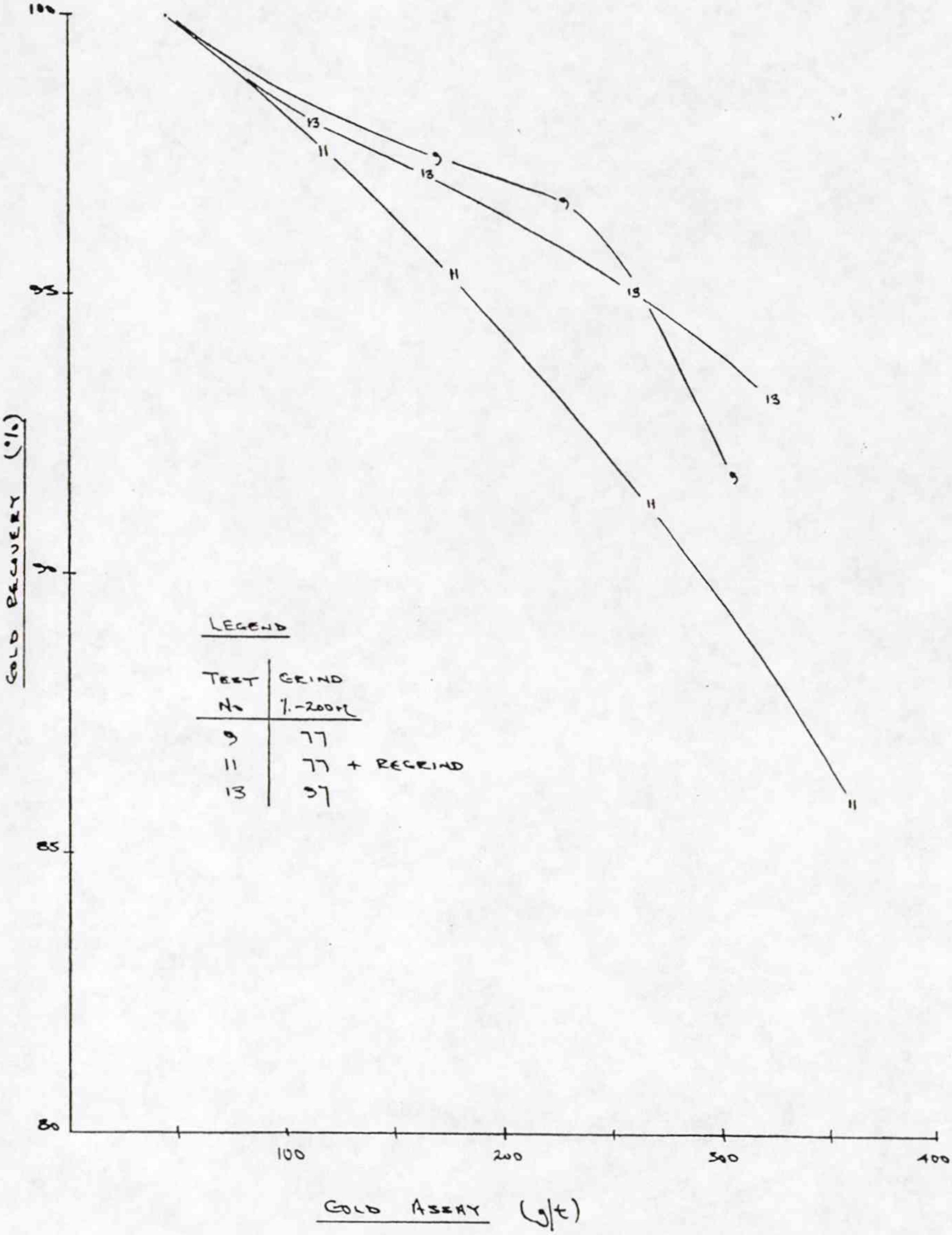
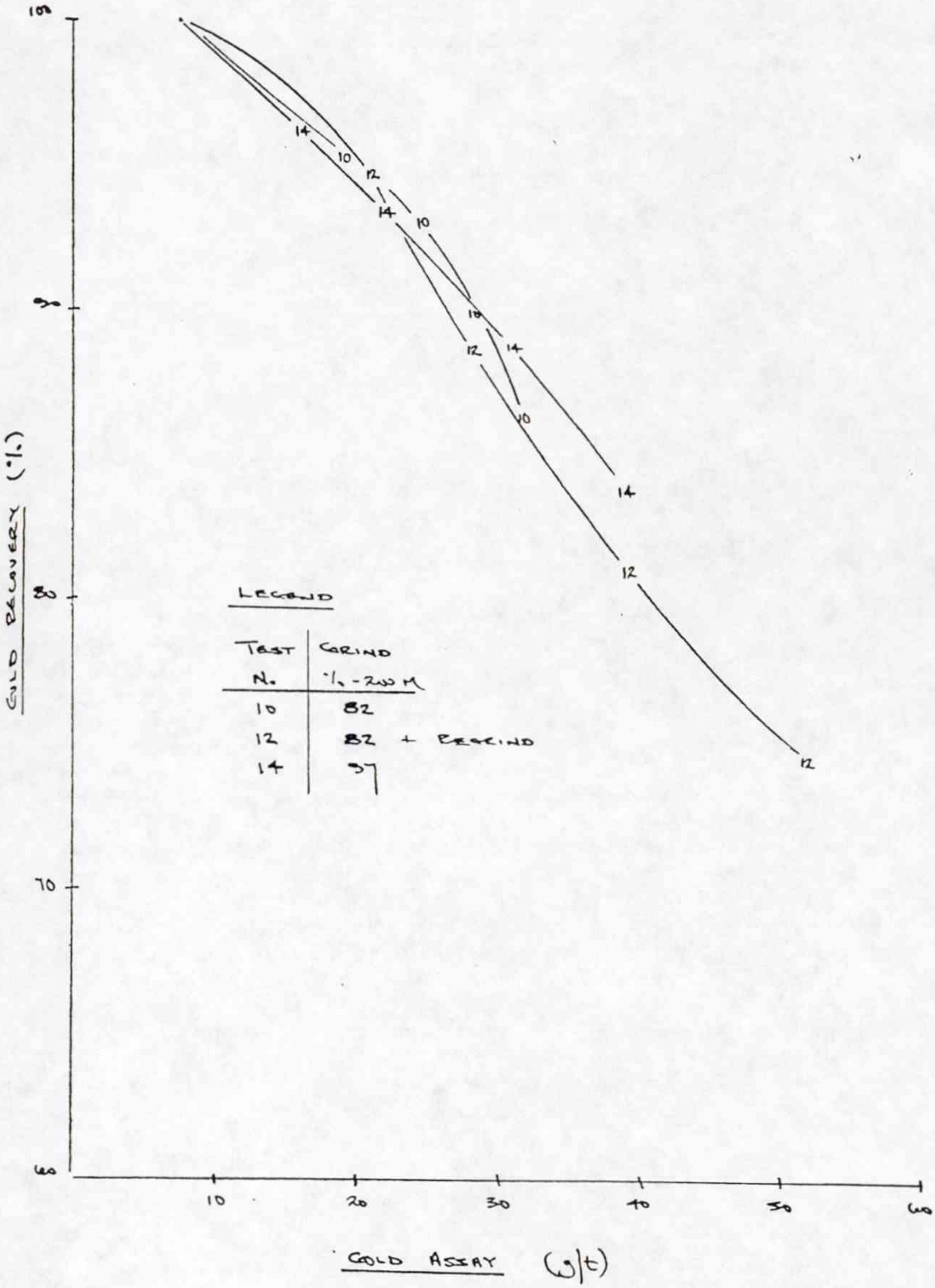


FIGURE No. 2

ORE ZONE F   GOLD GRADE VS RECOVERY



Summary - Continued

6. Cyanidation of Flotation Products

Cyanidation tests were conducted on the cleaner concentrate, combined cleaner tailing, and rougher tailing from flotation tests on both samples C and F. The test conditions were 1 g/L NaCN, 33 % solids, pH 10.5-11.5, 2 x 24 h, in bottle test on rolls.

The results which are contained in Table No. 4 showed 85 % gold extraction from the cleaner concentrate, 90 % gold extraction from the rougher concentrate and 93 % overal gold extraction from Sample C.

Sample F produced 64 % gold extraction from the cleaner concentrate, 73 % gold extraction from the rougher concentrate and 76 % overall gold extraction.

Cyanide consumption was significantly lower than cyanide tests on both ground ores. This phenomenon will be examined in further tests.

Table No. 4 - Cyanidation of Flotation Products

Test No.	Sample Zone	Flotation Product	Reagent Cons.*		Gold Ext'n % Au		Residue Assay Au, g/t	Head Assay Au, g/t
			NaCN kg/t	CaO kg/t	Ind.	O'all		
17	C	Cleaner Conc.	0.07	0.07	96	85	13.2	303
19	C	Cleaner Tail.	0.09	0.14	76	5	6.2	29
6	C	Rougher Tail.	0.20	0.30	74	3	0.5	1.9
18	F	Cleaner Conc.	0.15	0.13	85	64	5.6	30
20	F	Cleaner Tail.	0.08	0.13	57	9	3.6	8.7
8	F	Rougher Tail.	0.20	0.30	42	3	0.4	0.8

*overall

Summary - Continued

7. Roasting and Cyanidation of Flotation Products

The cleaner concentrates and combined cleaner tailings from flotation tests on both Samples C and F were roasted in a muffle furnace in two stages at 575°C and 625°C eliminate the arsenic and exfoliate the sulphides to expose the gold for recovery by cyanidation.

Efficient arsenic and sulphur elimination was achieved in the tests. Gold recovery from Sample C increased by 2 % from the cleaner concentrate and by 3 % from the rougher concentrate. This data confirmed the gold association testwork in Section 3 which showed approximately 4 % of the gold associated with sulphides.

Gold recovery from Sample F increased by 6 % from the cleaner concentrate and by 9 % from the rougher concentrate. This data also confirmed the gold association result in Section 3 which showed approximately 10 % gold association with sulphides at a primary grind of about 80 % minus 200 mesh.

The results are tabulated in Table No. 5.

Table No. 5 - Effect of Roasting in Cyanide Recovery

Test No.	Sample Zone	Flotation Product	Treatment	Reagent Cons.*		Gold Ext'n % Au		Residue Assay		
				NaCN kg/t	CaO kg/t	Ind.	O'all	Au g/t	As %	S %
17	C	Cleaner Conc.	As Rec'd	0.07	0.07	96	85	13.2	43.5	19.8
21	C	Cleaner Conc.	Roasted	0.10	0.19	97	87	15.0	1.1	<0.1
19	C	Cleaner Tail.	As Rec'd	0.09	0.14	76	5	6.2	18.4	7.7
23	C	Cleaner Tail.	Roasted	0.05	0.08	87	6	3.8	3.3	0.5
18	F	Cleaner Conc.	As Rec'd	0.15	0.13	85	64	5.6	39.9	19.0
22	F	Cleaner Conc.	Roasted	0.16	0.33	93	70	5.0	1.3	<0.1
20	F	Cleaner Tail.	As Rec'd	0.08	0.13	57	9	3.6	21.7	10.0
24	F	Cleaner Tail.	Roasted	0.16	0.25	70	12	3.3	3.3	0.2

*overall

CONCLUDING REMARKS, DISCUSSION AND RECOMMANDATIONS

From the information available it seems to be reasonably well established that a structurally controlled mineralized zone is trending along the contact zone between granite and more ductile country rocks from the F area down through C area to Seksa. Information between Seksa and B is not available but it would seem reasonable to assume that this area is also gold bearing.

The mineralization is controlled by a complicated system of early low angle fractures and a set of steeper later fractures and related joints.

The Bogdalen fault and its splays have probably to some extent broken up and displaced the mineralization, especially in the C - B area where a range of cataclastic low-temperature rocks are developed.

Between the F_2 and C area mineralized structures both on surface and in drill holes are seen to have a fairly steep dip to the east and vary in width from 0.5 - 5 m. In some areas (DDH 13) several zones have been intersected with barren ground between.

Also in certain areas i.e. F_1 erratic footwall mineralization occurs in the form of quartz $\pm$ Asp, Au joints and veins well into the footwall. Some of these joints have given high gold numbers.

Minimum depth of mineralization in this area is 90 m below surface in DDH 3. The difference in high elevation between F_2 and the C area is 140 m.

Based on the available data a tentative tonnage potential of the "F" to "C" area would be in the range of 400.000 - 500.000 tons down to 100 m and with an average width of 4 m.

It seems reasonable to assume that the zone continues to depth.

Assays from surface outcrops and drill cores within the zone vary considerably - (which is to be expected with this type of mineralization - especially in drill samples) and calculation of an average grade has not been attempted. The best sampled section from the F zone where several hundred kilograms were collected for metallurgical tests averaged 7.77 g/t Au in head analysis.

Metallurgical tests have shown fairly good results from this ore type - at a grind of about 80 % minus 200 mesh a total of 88 % of the gold was available for recovery by amalgamation/cyanidation. 10 % of the gold was associated with sulphides.

In the "C" area spectacular assay values have been obtained, both from the main C zone fault and from zones within the footwall granite. At the present time however our information is insufficient to make deductions regarding tonnage and grade. The grades and widths vary considerably but with the presence of both flat and steeply dipping structures possibilities for outlining larger volumes of mineralization do exist and drilling is recommended to test the extent both of the main C zone structure on strike and at depth and also to determine the geometry of the excellent intersection in DDH 15 and the zones picked up in the Boliden adit.

Metallurgical testing indicate good results for this ore type.

The success of this follow up drilling will influence any work in the area between Seksa and B.

The initial program recommended for the area consists then of outlining the geometry of the C zone mineralization by diamond drilling - both by a pack sack machine operating in the adits and a conventional machine on surface.

Depending on these results a drill program should be planned to test the possible strike continuation between "C" and "B" zones.

It is recommended that one or two holes be drilled from the river under the F zone area test the depth extent down to 200 - 300 m.

In addition other gold "showings" in the general area will be checked.

A P P E N D I X 1

Diamond drill record and assays

HOLE	CO-ORDINATES[1]	BEARING	DIP	LENGTH[2]	ASSAYS ppm Au							
					FROM	TO	LENGTH	Au	FROM	TO	LENGTH	Au
1.	30 N - 16 E	274°	80°	117.80 m	13.5	16.0	4.5	‹0.5				
					28.0	29.0	1.0	‹0.5				
					45.0	45.75	0.75	‹0.4				
					45.75	46.0	0.25	6.7				
					46.0	47.0	1.0	‹0.5				
					50.0	52.0	2.0	‹0.5				
					56.7	60.0	3.3	‹0.5				
					60.0	60.25	0.25	0.8				
					60.25	61.25	1.0	‹0.4				
					61.25	61.50	0.25	18				
					61.50	64.75	3.25	‹0.4				
					66.25	69.20	3.05	‹0.5				
					94.0	95.0	1.0	‹0.5				
					112.0	112.5	0.5	‹0.5				
2.	30 N - 16 E	227°	55°	85.30	5.25	6.0	0.75	‹0.4				
					13.0	18.0	5.0	‹0.5				
					36.0	37.0	1.0	‹0.5				
					37.0	37.3	0.3	1.9				
					44.0	48.0	4.0	‹0.5				
3.	348 S - 172 E		90°	94.20	8.0	12.0	4.0	‹0.7				
					18.0	19.0	1.0	‹0.6				
					20.0	22.5	2.5	‹0.6				
					22.5	22.75	0.25	2.7				
					22.75	23.0	0.25	2.2				
					23.0	30.0	7.0	‹0.8				
					34.0	38.25	4.25	‹0.4				
					38.25	38.50	0.25	1.6				
					38.50	38.75	0.25	1.2				
					38.75	41.0	2.25	‹0.6				

[1] Reference point 0|0 = Skaret

[2] . . . .

HOLE	CO-ORDINATES[1]	BEARING	DIP	LENGTH[2]	ASSAYS ppm Au FROM	TO	LENGTH	Au	FROM	TO	LENGTH	Au
3	348 S - 172 E		90°	94.20 m	53.0	57.0	4.0	<0.4				
					58.0	59.0	1.0	<0.4				
					60.0	60.25	0.25	5.7				
					60.25	60.50	0.25	4.7	60.0	61.0	1.0	3.3
					60.50	60.75	0.25	1.8				
					60.75	61.0	0.25	1.0				
					61.0	61.5	0.50	<0.6				
					61.5	61.75	0.25	1.4				
					61.75	62.0	0.25	<0.4				
					62.0	62.25	0.25	1.3				
					62.25	62.50	0.25	28	62.0	62.5	0.5	2.05
					62.50	65.25	2.75	<0.9				
					65.25	65.50	0.25	10.6				
					65.50	65.75	0.25	3.9				
					65.75	66.0	0.25	2.8	65.25	66.50	1.25	4.88
					66.0	66.25	0.25	5.5				
					66.25	66.5	0.25	1.6				
					66.5	67.25	0.75	<0.6				
					67.25	67.5	0.25	5.3				
					67.5	67.75	0.25	0.6				
					67.75	68.0	0.25	<0.4				
					68.0	68.25	0.25	1.7				
					68.25	68.5	0.25	1.0				
					68.5	68.75	0.25	3.4				
					68.75	70.0	1.25	<0.8				
					70.0	70.25	0.25	1.0				
					70.25	76.25	6.0	<0.4				
					76.25	76.50	0.25	1.0				
					76.50	77.25	0.75	<0.6				
					77.25	77.50	0.25	1.7				
					77.50	79.50	2.0	<0.8				
					79.50	79.75	0.25	15				
					79.75	80.0	0.25	15	79.50	80.0	0.5	15
					80.0	87.50	7.50	<0.4				

[1] Reference point 0|0 = Skaret

HOLE	CO-ORDINATES[1]	BEARING	DIP	LENGTH[2]	ASSAYS ppm Au							
					FROM	TO	LENGTH	Au	FROM	TO	LENGTH	Au
3					87.50	87.75	0.25	3.3				
					87.75	88.0	0.25	2.0				
					88.0	88.25	0.25	37				
					88.25	88.50	0.25	1.9				
					88.50	88.75	0.25	3.5				
					88.75	89.00	0.25	6.7	87.50	90.75	3.25	9.31
					89.0	89.25	0.25	9.6				
					89.50	90.0	0.50	<0.5				
					90.0	90.25	0.25	9.0				
					90.25	90.5	0.25	13.9				
					90.5	90.75	0.25	14.8				
					90.75	93.0	2.25	<0.6				
4	348 S - 172 E	226°	50°	93.05 m	13.75	14.75	1.0	<0.6				
					14.75	15.0	0.25	1.0				
					15.0	17.0	2.0	<0.6				
					17.0	17.25	0.25	1.0				
					17.25	17.50	0.25	7.0				
					17.5	17.75	0.25	7.4	17.0	18.0	1.0	4.05
					17.75	18.0	0.25	0.8				
					18.0	18.25	0.25	<0.3				
					18.25	18.50	0.25	1.9				
					18.50	19.75	1.25	<0.5				
					21.25	28.75	7.5	<0.5				
					28.75	29.0	0.25	2.9				
					29.0	29.25	0.25	63	28.75	29.5	0.75	22.3
					29.25	29.5	0.25	1.2				
					29.5	33.0	3.50	<0.5				
5.	76 N - 13 E	082°	45°	122.0 m								
6.	76 N - 13 E	082°	65°	92.0 m								
7.	ABANDONED IN OVERBURDEN AT 22 m.											

[1] Reference point 0|0 = Skaret

KOLSVIK, BINDALEN. DIAMOND DRILL RECORD.

HOLE	CO-ORDINATES[1]	BEARING	DIP	LENGTH[2]	ASSAYS ppm Au							
					FROM	TO	LENGTH	Au	FROM	TO	LENGTH	Au
8.	254 S 85 E	060°	40°	88.30 m	51.0	51.25	0.25	<0.01				
					54.0	55.5	1.5	<0.4				
					55.5	55.75	0.25	2.5				
					55.75	56.0	0.25	1.4	55.5	56.25	0.75	5.63
					56.0	56.25	0.25	13				
					56.25	58.50	2.25	<0.6				
					58.50	58.75	0.25	3.6				
					58.75	59.0	0.25	28				
					59.0	59.25	0.25	4.7				
					59.25	59.50	0.25	8.8	58.50	60.25	1.75	7.82
					59.50	59.75	0.25	6.1				
					59.75	60.0	0.25	1.4				
					60.0	60.25	0.25	2.2				
					60.25	61.75	0.50	<0.4				
					61.75	62.25	0.50	1.03				
					62.25	79.0	17.75	<0.3				
9.	333 S 123 E	052°	34.9°	94.6 m	40.25	43.0	2.75	<0.6				
					45.0	45.75	0.75	<0.1				
					48.0	63.75	15.75	<0.5				
					63.75	64.0	0.25	2.4				
					64.0	68.0	4.0	<0.2				
					68.0	68.25	0.25	1.1				
					68.25	80.0	11.75	<0.2				
					80.0	80.25	0.25	3.43				
					80.25	80.50	0.25	–				
					80.5	80.75	0.25	1.03				
					80.75	84.0	3.25	<0.2				
10.	318 S 102 E	062°	36°	144. m	40.0	43.0	3.0	<0.1				
					50.0	54.0	4.0	<0.1				
					54.0	55.0	1.0	9.29				
					55.0	56.0	1.0	9.29	54.0	59.0	5.0	4.88
					56.0	57.0	1.0	2.75				
					57.0	58.0	1.0	2.06				
					58.0	59.0	1.0	1.03				
					59.0	70.0	11.0	<0.3				

[1] Reference point 0|0 = Skaret

OLSVIK, BINDALEN. DIAMOND DRILL RECORD.

HOLE	CO-ORDINATES[1]	BEARING	DIP	LENGTH[2]	ASSAYS ppm Au FROM	TO	LENGTH	Au	FROM	TO	LENGTH	Au
10.					80.0	88.0	8.0	<0.2				
11.	318 S 102 E	062°	55°	159.3 m	94.0	103.0	9.0	<0.7				
					103.0	103.5	0.5	1.03				
					103.5	114.0	10.5	<0.7				
					114.0	114.5	0.5	1.38				
					114.5	115.0	0.5	1.72				
					115.0	115.5	0.5	1.72				
					115.5	116.0	0.5	0.17				
					116.0	116.5	0.5	0.34				
					116.5	117.0	0.5	4.47				
					117.0	117.5	0.5	16.86	116.5	118.0	1.5	8.14
					117.5	118.0	0.5	3.10				
					120.0	121.5	1.5	<0.1				
12.	160 S 57 E	072°	38°	124.50	40.0	40.5	0.5	28.8				
					40.5	41.0	0.5	1.4	40.0	41.5	1.5	10.4
					41.0	41.5	0.5	1.0				
					41.5	45.0	3.5	<0.4				
					84.0	103.0	19.0	<0.4				
13.	160 S 57 E	072°	20°	63.7 m	30.0	30.5	0.5	19				
					30.5	31.0	0.5	<0.4				
					31.0	31.5	0.5	25	30.0	33.0	3.0	8.06
					31.5	32.0	0.5	1.2				
					32.0	32.5	0.5	<0.3				
					32.5	33.0	0.5	3.2				
					33.0	40.5	7.5	<0.4				
					40.5	41.0	0.5	2.7				
					41.0	41.5	0.5	8.92	40.5	41.5	1.0	5.8
14.	377 S 185 E	075°	42°	120.8 m								

[1] Reference point 0|0 = Skaret

HOLE	CO-ORDINATES[1]	BEARING	DIP	LENGTH	ASSAYS ppm Au							
					FROM	TO	LENGTH	Au	FROM	TO	LENGTH	Au
15.	32 S 22 E	215°	44°	93.45 m	22.0	24.0	2.0	<0.5				
					24.0	24.25	0.25	4.6				
					24.25	24.50	0.25	0.5				
					24.50	25.50	1.0	<0.5				
					25.50	25.75	0.25	1.1				
					25.75	26.0	0.25	0.3				
					26.0	26.25	0.25	1.7				
					26.25	26.50	0.25	<0.3				
					26.50	26.75	0.25	0.6				
					26.75	27.0	0.25	<0.3				
					27.0	27.25	0.25	<0.3				
					27.25	27.50	0.25	7.8				
					27.50	27.75	0.25	55				
					27.75	28.0	0.25	5.9				
					28.0	28.25	0.25	2.1				
					28.25	28.50	0.25	35				
					28.50	28.75	0.25	40				
					28.75	29.0	0.25	28				
					29.0	29.25	0.25	5.6				
					29.25	29.50	0.25	17				
					29.50	29.75	0.25	11				
					29.75	30.0	0.25	8.2				
					30.0	30.25	0.25	0.7				
					30.25	30.5	0.25	6.4				
					30.50	30.75	0.25	1.6				
					30.75	31.0	0.25	2.5	27.25	38.50	11.25	26.1
					31.0	31.25	0.25	0.5				
					31.25	31.50	0.25	0.3				
					31.30	31.75	0.25	< 0.4				
					31.75	32.0	0.25	2.5				
					32.0	32.25	0.25	5.7				
					32.25	32.50	0.25	<0.3				
					32.50	32.75	0.25	<0.2				
					32.75	33.0	0.25	21				
					33.0	33.25	0.25	<0.3				
					33.25	33.50	0.25	0.3				
					33.50	33.75	0.25	<0.3				

[1] Reference point 0|0 = Skaret

KOLSVIK, BINDALEN. DIAMOND DRILL RECORD.

HOLE	CO-ORDINATES[1]	BEARING	DIP	LENGTH[2]	ASSAYS ppm Au							
					FROM	TO	LENGTH	Au	FROM	TO	LENGTH	Au
15.					33.75	34.0	0.25	5.9				
					34.0	34.25	0.25	3.3				
					34.25	34.50	0.25	0.2				
					34.50	34.75	0.25	5.5				
					34.75	35.0	0.25	11				
					35.0	35.25	0.25	777				
					35.25	35.50	0.25	2.0				
					35.50	35.75	0.25	0.9				
					35.75	36.0	0.25	6.0				
					36.0	36.25	0.25	0.5				
					36.25	36.50	0.25	0.4				
					36.50	36.75	0.25	0.6				
					36.75	37.0	0.25	33				
					37.0	37.25	0.25	0.8				
					37.25	37.50	0.25	2.7				
					37.50	37.75	0.25	0.4				
					37.75	38.0	0.25	1.2				
					38.0	38.25	0.25	6.4				
					38.25	38.50	0.25	4.9				
					38.50	39.0	0.5	<0.3				
16.	32 S 22 E	215°	65°	89.95 m	23.0	23.25	0.25	<0.3				
					23.25	23.50	0.25	1.2				
					23.50	32.0	8.5	<0.3				
					32.0	32.50	0.5	1.4				
					32.50	34.0	1.5	<0.3				
					34.0	34.5	0.5	5.1				
					34.5	35.0	0.5	2.9				
					35.0	35.5	0.5	1.72	34.0	36.5	2.5	2.25
					35.5	36.0	0.5	0.17				
					36.0	36.5	0.5	1.37				
					36.5	37.0	0.5	0.17				
					37.0	37.50	0.5	0.17				
					37.50	38.0	0.5	0.07				
					38.0	38.5	0.5	1.37				
					38.5	41.5	3.0	<0.4				
					41.5	42.0	0.5	2.06				

[1] Reference point 0|0 = Skaret

KOLSVIK, BINDALEN. DIAMOND DRILL RECORD.

HOLE	CO-ORDINATES[1]	BEARING	DIP	LENGTH[2]	ASSAYS ppm Au							
					FROM	TO	LENGTH	Au	FROM	TO	LENGTH	Au
16.					42.0	43.5	1.5	<0.2				
					43.5	44.0	0.5	1.72				
					44.0	51.0	7.0	<0.7				
17.	32 S 22 E	215°	80°	80.60 m	24.5	32.0	7.5	<0.2				
					32.0	32.5	0.5	2.06				
					32.5	34.5	2.0	<0.2				
					48.0	50.0	2.0	<0.5				
18.	32 S 22 E	295°	45°	97.0 m	16.6	22.0	5.4	<0.6				
					26.5	27.0	0.5	1.26				
					27.0	27.50	0.5	6.84				
					27.5	28.0	0.5	4.14	26.5	29.0	2.5	4.26
					28.0	28.5	0.5	7.86				
					28.5	29.0	0.5	1.20				
					29.0	32.5	3.5	<0.9				
					32.5	33.0	0.5	3.25				
					33.0	34.0	1.0	<0.2				
					34.0	34.5	0.5	1.96	34.0	35.0	1.0	2.24
					34.5	35.0	0.5	2.53				
					35.0	38.0	3.0	<0.1				
19.	32 S 22 E	048°	66°	56.3 m	7.5	9.0	1.5	<0.2				
					9.0	9.5	0.5	2.87				
					9.5	15.0	5.5	<0.8				
20.	101 S 45 E	087°	45°	89.8 m	15.0	17.5	2.5	<0.2				
					17.5	18.0	0.5	1.53				
					18.0	22.0	4.0	<0.1				
					24.0	26.0	2.0	<0.1				
					34.0	38.0	4.0	<0.1				
					47.0	67.0	20.0	<0.4				

[1] Reference point 0|0 = Skaret

A P P E N D I X 2

Diamond drill logs

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 30 m N - 16 m E
LOGGED BY: ØM / KK
CASING:
CORE SIZE: 32 mm

BEARING: 082° DIP: 45° HOLE NO: 5/81 SHEET NO: 1
STARTED: May -81 PROPERTY Kolsvik, Bindal.
FINISHED: May -81
TESTS (CORRECTED):

From	To		Description
0	5.70		Overburden
5.70	6.00		Mica schist rich in carbonate
6.00	6.30		Loss of core
6.30	22.75		Sequence of mica schist. Strong variation in carbonate and quartz-fld content. Mostly foliated (foliation 34°-45°). Fractures parallel/subparallel foliation
			14.70 -15.50 Finegrained, dark zone rich in sulfides, mostly pyrite.
			20.55 - 22.75 Schist rich in quartz/fld. eyes.
22.75	29.00		Granite. Pink alteration. Weak brecciation in quartzrich parts. Aspy on some joint surfaces.
			25.80 - 25.85 Aspy in shearzone.
29.00	31.75		Marble
			29.00 - 30.50 Carbonate breccia (Marble with fragments of mica schist)
			30.50 - 31.75 Recrystallized limestone.
31.75	37.50		Reddish altered granite with some carbonate fractures.
			34.50 - 37.50 Weak brecciation and much muscovite on fractures.
37.50	39.40		Marble with fragments of mica schist.
39.40	42.40		Reddish altered granite. Some Aspy near the 39.40 contact.
42.40	46.40		Foliated marble with fragments of schist.
46.40	47.70		Finegrained mica schist. Foliation 50°. 47.50-contact crushed.
47.70	56.30		Marble with fragments of schist.
56.30	60.00		Skarn. Rich in epidote, garnet, amphibole and chlorite. Zone cut by several granitic veins.
60.00	60.50		Granite
60.50	61.80		Mica schist
61.80	62.50		Granite
62.50	63.00		Mica schist
63.00	64.20		Granite. Some subparallel fractures.
64.20	66.10		Mica schist. Foliation 51°.
66.10	66.40		Granite. Breccia texture. Traces of Aspy.
66.40	67.20		Mica schist.
67.20	67.30		Granite. Breccia texture.
67.30	69.15		Mica schist. Foliation 55°.
69.15	69.70		Granite
69.70	72.20		Mica schist. The sequence is broken and fractured. Most fractures 65°. Breccia texture in more quartz/fld.rich zones. Some carbonate veining.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 30 m N - 16 m E   BEARING: 082°   DIP: 45°   HOLE NO: 5/81   SHEET NO: 2

LOGGED BY: ØM / KK   STARTED: May -81   PROPERTY Kolsvik, Bindal.

CASING: FINISHED: May -81

CORE SIZE: 32 mm   TESTS (CORRECTED):

From	To		Description
72.20	72.55		Granite. Rich in quartz and good brecciation.
72.55	73.05		Mica schist.
73.05	73.60		Granite. Rich in quartz and good brecciation.
74.40	88.45		Granite.
			74.40 - 75.70 Reddish alteration
			75.70 - 76.40 Increasing amount of dark minerals
			76.40 - 88.45 Massive graphite with some fractures (parallel core)
			77.60 - 77.90: good Aspy mineralization on fractures. Also some chalcopyrite.
			86.00: Aspy associated with pyrite & chalcopyrite on fractu
88.45	89.25		Diorite. Medium-grained and rich in mica. No foliation.
89.25	91.20		Granite
91.20	91.35		Diorite
91.35	91.80		Granite
91.80	92.80		Diorite
92.80	94.40		Granite
94.40	97.55		Diorite
97.55	97.80		Granite
97.80	99.55		Diorite
99.55	100.00		Granite
		100.00	End of hole.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 30 m N - 16 m E BEARING: 082° DIP: 65° HOLE NO: 6/81 SHEET NO: 1

LOGGED BY: ØM / KK STARTED: May -81 PROPERTY Kolsvik, Bindal.

CASING: FINISHED: May -81

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
0	8.00		Overburden
8.00	11.80		Marble with fragments of schist.
11.80	12.60		Mica schist. Well-foliated (30°)
12.60	14.30		Granite. Dominantly massive with no major shear or fracture zones Some thin carbonate lined fractures.
14.30	18.30		Metasedimentary sequence. Mostly mica schist, but also horizons o marble. Foliation approximately 50°-60°. Well-sheared from 16.50 till 16.90 and from 17.50 till 17.70. Fractures and shearzones mostly parallel and subparallel foliation.
18.30	18.60		Marble
18.60	20.95		Well-foliated mica schist (foliation 55°)
20.95	29.40		Granite. Rich in quartz and variable reddish alteration. Occasionally rich in chlorite. Aspy on some fractures and as scattered grains.
29.40	30.90		Well-foliated mica schist. Foliation approximately 60°.
30.90	32.60		Marble
32.60	32.95		Granite, dominantly massive.
32.95	33.35		Marble
33.35	33.60		Granite.
33.60	34.80		Marble. From 34.60 good skarn mineralization, rich in diopside and garnet.
34.80	37.00		Granite. Dominantly massive with no major shear or fracture zones
37.00	41.45		Marble 37.00 - ab. 40.00 Marble with fragments of mica schist. Foliation 57°
41.45	41.80		Well-fractured mica schist.
41.80	42.25		Marble
42.25	42.60		Granite
42.60	42.85		Marble
42.85	43.05		Granite
43.05	44.30		Marble
44.30	47.20		Mica schist 45.00 - 45.80 Extremely well-sheared 45.80 - 47.20 Well fractured and brecciated. Dominating fractures are 27°.
47.20	54.15		Marble 47.20 - ab. 49.10: breccia ter. 49.10 - 54.15: foliated marble

A/S SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 30 m N - 16 m E BEARING: 082° DIP: 65° HOLE NO: 6/81 SHEET NO: 2

LOGGED BY: KK / ØM STARTED: May -81 PROPERTY Kolsvik, Bindal

CASING: FINISHED: May -81

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
54.15	56.90		Granite. Dominantly massive with no major shear or fracture, but some crushing near the 56.90 contact.
56.90	65.60		Mica schist
			56.90 - 62.70 Well-foliated mica schist. Foliation variable between 25° and 60°.
			62.70 - 63.00 Shearzone
			63.50 - 63.70 Shearzone
			64.80 - 65.00 Skarn mineralization
65.60	67.20		Granite
67.20	68.85		Well-fractured mica schist.
68.85	69.95		Brecciated granite. Chlorite and epidote on breccia texture.
69.95	70.20		Well-fractured mica schist.
70.20	75.10		Granite. Local brecciation, particularly near the contacts.
75.10	78.10		Mica schist. Foliation 70°.
78.10	78.80		Brecciated granite.
78.80	79.30		Mica schist, fractured near the contact zones.
79.30	90.00		Granite
			79.30 - 80.00 Brecciated granite.
			80.00 - 90.00 Massive medium grained granite.
		90.00	End of hole.

A/S SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 254 m S - 85 m E
BEARING: 060° DIP: 40° HOLE NO: 8/81 SHEET NO: 1
LOGGED BY: ØM
STARTED:
PROPERTY Kolsvik, Bindal
CASING:
FINISHED:
CORE SIZE: 32 mm
TESTS (CORRECTED):

From	To		Description
0	2.00		Overburden
2.00	13.20		Granite 2.00 - 10.00 Medium grained granite. Some fractures and thin quartz veins are cutting. Aspy on some fractures, also pyrite. 10.00 - 10.25 Granite rich in quartz. Some Aspy mineralization 10.25 - 13.20 Medium grained granite. Some fractures and quart: veining. Good Aspy-mineralization on fracture at 11.10 m.
13.20	16.10		Gneiss. Gneiss rich in biotite, varying from augen to banded appearance. Foliation (40°-50°) is cut by quartz-veins near the 13,20 contact. Some pyrite is seen in gneiss.
16.10	16.80		Granite rich in muscovite. Disseminated pyrite on Aspy on quartz vein near 16.80 contact.
16.80	17.10		Augen gneiss.
17.10	18.70		Granite. Muskovite-granite cut by quartz veins. Aspy, py, cpy on vein parallel core.
18.70	19.70		Gneiss 18.70 - 19.40 Foliated banded gneiss (foliation 40°) 19.40 - 19.70 Finegrained, biotite rich gneiss. Foliated diorite (foliation 25°).
19.70	20.00		Loss of core
20.00	20.15		Finegrained dioritic gneiss.
20.15	20.65		Medium grained granite, white in colour.
20.65	27.90		Augen gneiss. Good foliation (45°). Most fractures parallel/ subparallel foliation. Disseminated pyrite and Aspy, Aspy especially in quartz-eyes.
27.90	28.75		Granite, white in colour.
28.75	32.30		Foliated augen gneiss, cut by small granite veins, Py on some fractures.
32.20	33.00		Granite. Aspy at the 33.00-contact.
33.00	34.80		Banded, fine grained gneiss.
34.80	35.05		Granite.
35.05	40.00		Foliated, banded gneiss. Quartz/fld bands are folded. Alteratio (zeolite mineralization) along some fractures. Py on fractures.
40.00	40.70		Fine grained, foliated dioritic gneiss, cut by granite veins.
40.70	46.05		Gneiss. Mostly augen texture, but also more fine grained dioritic horizons. Foliation varying from 10° to 60°. Ab 41.00: massive Aspy.
46.05	46.10		Quartz vein cutting nearly parallel foliation.
46.10	46.70		Fine grained dioritic gneiss.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 254 m S - 85 m E | BEARING: 060° | DIP: 40° | HOLE NO: 8/81 | SHEET NO: 2.

LOGGED BY: ØM | STARTED: | PROPERTY: Kolsvik, Bindal.

CASING: | FINISHED:

CORE SIZE: 32 mm | TESTS (CORRECTED):

From	To		Description
46.70	46.80		Granite rich in biotite.
46.80	47.15		Quartz.
47.15	50.00		Granite. Dominantly massive, Aspy on fracture at 49.80.
50.00	50.05		Quartz vein. Aspy mineralization in 50.05-contact zone.
50.05	54.45		Gneiss. Granite veins are cutting foliation.
54.45	55.80		Granite. 54.45 - ab 55.50 Granite containing some biotite. Some Aspy veinin on fractures and near 54.45 contact. ab 55.50 - 55.80. Brecciated granite. Little dark minerals. Aspy on breccia texture. Visible Au at 55.65.
55.80	58.55		Gneiss 55.80 - 57.00 Brecciated and fractured augen gneiss. 57.00 - 58.55 Fractured augen gneiss, no breccia texture.
58.55	59.40		Brecciated granite. Late fractures are cutting breccia texture. Good Aspy mineralization. Visible Au at 58.90.
59.40	59.90		Foliated augen gneiss (foliation 30°). Contacts are crushed.
59.90	64.55		Granite. 59.90 - 60.70: Weak breccia tex. in quartz/fld-rich granite. Scattered Aspy mineralization. 60.70 - 61.50 More biotite, no brecciation. 61.50 - 64.55 Well-fractured and weakly brecciated granite. Some Aspy mineralization.
64.55	65.05		Fine grained and foliated dioritic gneiss.
65.05	71.45		Granite 65.05 - 67.10 Quartz/fld-rich granite. Breccia texture at contacts. 67.10 - 67.50 Massive granite 67.10 - 71.45 Brecciated quartz/fld-rich granite. Aspy mineralization. Occasionally rich in epidote.
71.45	74.00		Brecciated and sheared augen gneiss.
74.00	74.20		Fractured granite.
74.20	74.40		Sheared augen gneiss.
74.40	77.70		Brecciated and sheared granite. Aspy, especially from 74.40 - 76.00
77.70	78.20		Sheared augen gneiss.
78.20	78.60		Granite containing fragments of gneiss show brecciations. Only epidote chlorite on breccia texture.
78.60	78.90		Sheared augen gneiss.
78.90	79.30		Brecciated granite. Scattered Aspy minerals

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 254 m S 85 m E BEARING: 060° DIP: 40° HOLE NO: 8/81 SHEET NO: 3.

LOGGED BY: ØM STARTED: PROPERTY Kolsvik, Bindal

CASING: FINISHED:

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
79.30	82.00		Foliated augen gneiss. ..oliation varying from 5° till 30°. Quartz veins cutting foliation show weak brecciation, otherwise little deformation.
82.00	88.30		Gneisses. Changing between fine grained dioritic gneisses and augen gneiss. 82.00 - 84.00 Fine grained, biotite rich dioritic gneiss. Some quartz veins. Fracturing parallel core. 84.00 - 84.25 Augen gneiss 84.25 - 84.60 Fine grained dioritic gneiss. 84.60 - 85.35 Augen gneiss. Well sheared last 30 cm. Fractures parallel core. 85.35 - 85.60 Fine grained dioritic gneiss. 85.60 - 86.00 Foliated augen/banded gneiss. Foliation 5°, and some fractures parallel core. 86.00 - 86.50 Fine grained dioritic gneiss. 86.50 - 88.30 Augen gneiss.
		88.30	End of hole.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 333 m S - 123 m E BEARING: 052° DIP: 34.9° HOLE NO: 9/81 SHEET NO: 1.
LOGGED BY: ØM STARTED: PROPERTY Kolsvik, Bindal.
CASING: FINISHED:
CORE SIZE: 32 mm TESTS (CORRECTED):

From	To			Description
0	1.80			Overburden
1.80	2.20			Granite, rich in biotite. Rather massive.
2.20	2.40			Fine grained dioritic gneiss.
2.40	3.30			Granite, rich in biotite. Some crushing at 3.30 contact.
3.30	4.45			Gneisses. Varying from augen gneisses till fine grained dioritic gneisses.
4.45	14.45			Granite. Still rich in biotite and massive.
14.45	18.30			Loss of core.
18.30	20.00			Granite
20.00	20.35			Loss of core.
20.35	21.30			Granite.
				20.35 - 20.75 Some fracturing 20.75 - 21.30 Rather massive.
21.30	21.55			Loss of core.
21.55	22.10			Granite. Massive and rich in biotite.
22.10	22.55			Loss of core.
22.55	35.00			Granite
				22.55 - 23.50 Some fracturing 23.50 - 27.75 Massive and dark granite. 27.75 - 30.00 Less dark minerals as previous section. Some weak brecciation and green epidote mineralization. 30.00 - 35.00 Massive granite, but varying biotite content, decreasing from ab. 33.00.
35.00	36.00			Loss of core
36.00	36.95			Massive granite
36.95	38.15			Loss of core
38.15	39.00			Massive granite.
39.00	40.15			Loss of core.
40.15	41.55			Granite. 40.15 - 40.20 Breccia texture in quartz rich granite. Aspy on the texture. 40.20 - 41.50 Aspy on fractures in grey granite. 41.50 - 41.55 Brecciated granite. Rich in quartz and Aspy.
41.55	42.00			Loss of core.
42.00	42.90			Granite. Varying breccia texture in quartz/fld rich granite. Aspy on breccia texture and fractures 90° core.
42.90	45.00			Loss of core
45.00	45.80			Brecciated granite 45.00 - 45.70 Weak brecciation and scattered Aspy mineralization 45.70 - 45.80 Aspy on breccia textures and fractures 70° core.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 333 m S - 123 m E BEARING: 052° DIP: 34.9° HOLE NO: 9/81 SHEET NO: 2.

LOGGED BY: ØM STARTED: PROPERTY Kolsvik, Bindal.

CASING: FINISHED:

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
45.80	48.00		Loss of core
48.00	59.10		Granite 48.00 - 48.80 Biotite rich granite. Disseminated Aspy. 48.80 - 51.60 Brecciated granite. Aspy on breccia texture and fractures. 51.60 - 52.30 No breccia texture and Aspy. 52.30 - 59.10 Good breccia texture and Aspy mineralization. Best mineralization on fractures 90° core.
59.10	60.15		Extremely sheared augen gneiss. (Maybe the F-1 fault ?)
60.15	64.00		Granite 60.15 - 62.00 Brecciated granite with Aspy 62.00 - 64.00 Brecciated granite, extremely rich in quartz. Aspy mineralization.
64.00	64.60		Highly sheared augen gneiss.
64.60	66.20		Foliated augen gneiss. Some fractures parallel|subparallel folia
66.20	66.40		Granite
66.40	68.50		Foliated augen gneiss. Cut by quartz veining containing scattere Aspy. Shear near the lower contact.
68.50	71.10		Brecciated quartz rich granite. Good Aspy mineralization.
71.10	71.70		Sheared, fine grained dioritic gneiss.
71.70	78.10		Brecciated granite. Generally little or no Aspy mineralization, apart from 74.50 - 75.00 interval.
78.10	78.30		Fine grained dioritic gneiss.
78.30	78.60		Granite, rather massive.
78.60	79.10		Fine grained dioritic gneiss.
79.10	83.00		Granite showing varying brecciation and Aspy mineralization. 79.10 - 80.00 Weak brecciation, no Aspy mineralization. Texture cut by quartz veining. 80.00 - 81.00 Breccia texture with Aspy. 81.00 - 82.70 Weak brecciation, scattered Aspy mineralization. 82.70 - 83.00 Epidote and zenolite mineralization. Greenish colour.
83.00	87.50		Foliated diorite. Foliation 20°.
87.50	90.50		Granite, rather massive. Some pyrite crystals.
90.50	91.35		Fine grained dioritic gneiss. Rich in pyrite. Cut by granite veining.
91.35	94.60		Granite. Rather massive. From 92.20 extremely rich in biotite
		94.60	End of hole.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 318 m S - 102 m E BEARING: 062° DIP: 36° HOLE NO: 10/81 SHEET NO: 1.
LOGGED BY: ØM STARTED: PROPERTY Kolsvik, Bindal.
CASING: FINISHED:
CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
0	3.95		Overburden
3.95	7.30		Foliated augen gneiss, rich in biotite. Foliation 35°.
7.30	7.60		Granite, rather massive.
7.60	12.10		Foliated augen gneiss. Foliation between 30° and 0°.
12.10	12.50		Granite. Contacts (35°) are cutting gneiss foliation.
12.50	14.05		Foliated augen gneiss. Foliation 25°.
14.05	15.50		Granite. Contacts (35°) are parallel gneiss foliation.
15.50	16.70		Foliated augen gneiss. Foliation between 15° and 25°.
16.70	19.60		Granite. More biotite near the lower contact.
19.60	20.20		Gneiss, more banded that previous sections.
20.20	22.30		Granite.
22.30	22.60		Quartz.
22.60	26.30		Granite. Some fractures.
26.30	31.00		Banded gneiss. Foliation 15°-45°. Some fractures parallel/sub-parallel foliation. Slickensides can be seen on some fracture surfaces.
31.00	31.45		Granite.
31.45	40.40		Foliated augen gneiss. Foliation 15°-45°. Gneisses cut by granite veining. From 37.00 some Aspy on late fractures.
40.40	41.30		Brecciated granite. Good Aspy mineralization. Dominating direction of mineralization is 50°.
41.30	43.00		Brecciated quartz. Epidotite on breccia texture.
43.00	44.70		Fine grained dioritic gneiss. Gneiss is fractured and rich in bioti
44.70	47.10		Foliated augen gneiss. Foliation 45°-30°.
47.10	48.50		Brecciated granite. Pink alteration colour. Good Aspy mineralizati between 48.00 - 48.30, especially on 65° fractures.
48.50	49.75		Foliated augen gneiss.
49.75	53.70		Granite. In places red alteration colour. From 51.00 two distinctive directions of fractures (both 45°) make a brecciated texture. Good Aspy on all fracture. Lower contact is highly fractured.
53.70	54.00		Highly sheared gneisses.
54.00	57.30		Brecciated quartz. Good Aspy mineralization. In places massive Aspy veining (thickness 5 cm).
57.30	82.60		Granite. Usually brecciated but varying Aspy mineralization. In places quartz rich. Occasionally deformed fragments of augen gneisses. Lower two meters green epidote & chlorite mineralization on breccia textures and little Aspy mineralization.
82.60	83.20		Highly fractured and foliated augen gneiss.

A/S SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 318 m S - 102 m E BEARING: 062° DIP: 36° HOLE NO: 10/81 SHEET NO: 2

LOGGED BY: ØM STARTED: PROPERTY Kolsvik, Bindal.

CASING: 32 mm FINISHED:

CORE SIZE: TESTS (CORRECTED):

From	To		Description
83.20	105.60		Granite.
			83.20 - 88.00 Brecciated, quartz rich granite, rich in chlorite & epidote and just spots of Aspy.
			88.00 - 90.00 Granite with sericite. Aspy on some fractures.
			90.00 - 98.00 Dark granite (rich in biotite) showing foliation (foliation 30°)
			98.00 - 100.00 Dominantly white in colour.
			100.00 - 104.50 Granite, rich in quartz. Some spotted Aspy minera
			104.50 - 105.60 Dark granite, cut by white granite veining.
105.60	106.35		Highly sheared, green looking augen/banded gneiss. Rich in epidot & chlorite.
106.35	112.50		Granite.
			106.35 - 110.00 Dark granite cut by light granite veining.
			110.00 - 112.50 Biotite rich granite showing weak foliation (foliation 35°).
112.50	112.70		Foliated dioritic gneiss.
112.70	144.00		Granite
			112.70 - 115.10 Foliated dark granite
			115.10 - 117.00 Light granite. Higher and lower contacts cut fol ation in darker granite.
			117.00 - 144.00 Foliated dark granite. Foliation 40°-45°. At 119.00 - 119.10 Aspy on fractures cutting foliation.
		144.00	End of hole.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 318 m S 102 m E BEARING: 062° DIP: 55° HOLE NO: 11/81 SHEET NO: 1.

LOGGED BY: ØM STARTED: PROPERTY Kolsvik, Bindal.

CASING: FINISHED:

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
0	4.40		Overburden
4.40	26.90		Foliated augen gneiss. Foliation 10°-30°. Foliation cut by discordant granitic veins. From 20.00 till 24.00 lenses of fine grained dioritic gneisses, rich in pyrite.
26.90	28.45		Fine grained, biotite rich dioritic gneiss. Pyrite mineralization. Lower and upper contacts are parallel foliation.
28.45	51.05		Foliated augen gneiss. Foliation 30°-40°. Foliation cut by discordant granitic veins. All granites rich in quartz-fld.
51.05	61.90		Granite. Some fractures, often filled with quartz and rich in muscovite, chlorite and epidote. From ab. 55.00 Aspy veining on fractures.
61.90	69.60		Foliated augen gneiss. Foliation ab. 25°.
69.60	73.05		Fine grained dioritic gneiss. Weakly foliated.
73.05	79.20		Foliated augen gneiss. Foliation varying from 6° till 33°.
79.20	82.60		Granite 79.20 - 80.70 Some fractures parallel/subparallel core. Disseminate Aspy. 80.70 - 82.60 Breccia texture in quartz-fld rich granite. Aspy min ralization seems to be concentrated on ≈ 22° direction
82.60	89.40		Foliated augen gneiss. Fractures at 82.60 contacts and at 85 and 86
89.40	101.50		Granite 89.40 - ab. 94.00 Rather massive granite. 94.00 - 97.00 Breccia texture and more quartz than previous section Aspy from 95.00 - 97.00 in well fractured zone.
101.50	102.75		Foliated augen gneiss. Foliation 8°. Some Aspy mineralization on crosscutting fractures.
102.75	108.35		Granite. Breccia texture and also foliated in more biotite rich zones. Dominating direction of fractures and mineralization is 65°.
108.35	117.50		Quartz. Breccia texture over the whole sequence, but varying Aspy mineralization. 108.35 - 110.00 Poor mineralization 110.00 - 112.50 Good mineralization, especially from 116.50 m. Lower ½ m nearly massive Aspy.
117.50	120.00		Extremely sheared and broken augen gneiss.
120.00	120.40		Brecciated granite. Rich in quartz and good Aspy mineralization.
120.40	120.80		Highly sheared augen gneiss. Disseminated Aspy mineralization.
120.80	121.50		Brecciated granite. No mineralization.
121.50	134.40		Foliated augen gneiss. Foliation 6° - 38°. Some thin shearzones. Most fractures subparallel core. Occasionally rich in py, but also traces of Aspy.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 318 m S 102 m E BEARING: 062° DIP: 55° HOLE NO: 11/81 SHEET NO: 2

LOGGED BY: ØM STARTED: PROPERTY Kolsvik, Bindal.

CASING: 32 mm FINISHED:

CORE SIZE: TESTS (CORRECTED):

From	To		Description
134.40	135.05		Foliated, fine grained dioritic gneiss.
135.05	139.75		Granite containing fragments of gneisses. Aspy on fractures.
139.75	140.10		Foliated augen gneiss
140.10	141.30		White looking granite
141.30	145.05		Foliated augen gneiss. Foliation 20°-25°.
145.05	145.40		Granite, rich in quartz. Some Aspy.
145.40	147.10		Foliated augen gneiss. Foliation 28°. Aspy mineralization in some discordant fractures. Also some Aspy at lower contact.
147.10	152.00		Granite. Strong variation in quartz and biotite content. Brecciated and mineralized from 147.50-147.80. In lower part foliated granite.
152.00	154.05		Foliated augen gneiss
154.05	156.50		Granite. Rather massive.
156.50	156.90		Fine grained, foliated dioritic gneiss.
156.90	159.30		Massive granite.
		159.30	End of hole.

A/S SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 160 m S 57 m E BEARING: 072° DIP: 38° HOLE NO: 12/81 SHEET NO: 1

LOGGED BY: ØM STARTED: PROPERTY Kolsvik, Bindal.

CASING: FINISHED:

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
0	5.00		Overburden
5.00	30.50		Granite. Strong variation in biotite content. Darker variants show weak foliation. Scattered Aspy mineralization, mostly isolated grai on late fractures.
30.50	30.80		Quartz.
30.80	46.80		Gneisses. 30.80 - 37.50 Foliated augen gneiss, foliation 10°-25°, cut by quar /granite veining. Most veins parallel/subparallel foliation. Near 30.80 contact a lot of epidote mineralization. Traces of Aspy in quartzveins. 37.50 - 40.00 Foliated augen gneiss 40.00 - 42.30 Deformed and brecciated augen gneiss. Breccia textur best developed in quartz rich parts, but also quartz eyes show deformation textures. Occasionally lesser shear/shearzones. Very little Aspy mineralization, but visible Au near 40.00 contact. 42.30 - 46.80 Foliated augen gneiss. Foliation 35°-50°.
46.30	47.00		Granite
47.00	52.70		Foliated augen gneiss, foliation 35°-50°.
52.70	54.60		Granite. Scattered Aspy, mostly related to late fracturing.
54.60	60.00		Dioritic gneiss. Gneisses are rich in biotite and show good foliati Some quartz/fld.-veins cutting the foliation.
60.00	60.50		Foliated augen gneiss.
60.50	60.80		Granite, rather rich in biotite
60.80	61.70		Foliated augen gneiss. Foliation 25°.
61.70	61.95		Granite, rather rich in quartz and showing traces of Aspy mineraliza
61.95	72.90		Gneisses, mostly augen gneisses, but some horizons of fine grained, biotite rich rocks. From 67.50 - 69.00 extremely sheared augen gnei Foliation 25°-35°.
72.90	74.45		Granite. Rich in quartz and showing weak breccia texture. Some Asp and quartz filling on 28° fractures.
74.45	85.10		Foliated augen gneiss, foliation 5°-30°. Occasionally good chlorite epidote mineralization, especially related to fractures, Near lower contact some skarn minerals. Strong shearing latest 0.65 m.
85,10	102.50		Granite 85.10 - ab 88.00 Quartz rich granite showing breccia texture with Aspy. Aspy is not related to any special direction, but chlorite & epidote are concentrated on 57°-62° fractures. Upper contact strongly sheared. 88.00 - 99.00 Brecciated granite containing some Aspy and chlorite & epidote mineralization. 99.00 - 102.50 Quartzrich granite with good brecciation and Aspy mineralization.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 160 m S 57 m E BEARING: 072° DIP: 38° HOLE NO: 12/81 SHEET NO: 2.

LOGGED BY: Ø.M. STARTED: PROPERTY Kolsvik, Bindal.

CASING: FINISHED:

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
102.50	113.40		Gneisses, probably a metasedimentary sequence varying from augen gneisses till strongly sheared/deformed dioritic gneisses. Some breccia texture in augen gneisses near upper contact. From 112 m granitic veining, nearly parallel core.
113.40	119.30		Granite. Varying quartz content and always showing brecciation. Strong fracturing with 50°-60° as dominating direction, but in latest 1.5 m ≈ parallel. No Aspy mineralization on breccia textures.
119.30	121.50		Foliated dioritic gneiss. Foliation 28°.
121.50	121.80		Granite
121.80	123.30		Dioritic gneiss; no foliation.
123.30	124.45		Granite.
		124.45	End of hole.

A/S SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 116 m S 57 m E BEARING: 072° DIP: 20° HOLE NO: 13/81 SHEET NO: 1

LOGGED BY: Ø.M. STARTED: PROPERTY Kolsvik, Bindal.

CASING: FINISHED:

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
0	6.00		Overburden
6.00	10.50		Granite rich in mica, specially biotite but also muscovite.
10.50	18.60		Gneisses. Strongly varying textures from fine grained till augen gneisses. All textures show foliation (60°-70°) Occasionally skarn mineralization. Also zones rich in epidote and chlorite.
18.60	18.80		Granite. Some scattered Aspy, usually together with py.
18.80	20.70		Foliated augen gneiss. Foliation 40°.
20.70	21.15		Granite. Aspy veining near upper contact.
21.15	25.70		Gneiss. Texturally strong variation (as previous section), but all variants show foliation (55°). Granite veining cut this foliation, and from 22.50 till 24.70 much diopside and garnet mineralization can be seen.
25.70	29.50		Granite. Rich in biotite and some disseminated Aspy, mostly near lower contact.
29.50	31.10		Dioritic gneiss. Fine grained, showing good foliation (40°) and containing py minerals.
31.10	33.65		Granite. Weakly brecciated but Aspy mineralization on breccia texture only from 33.40 m. Upper contact strongly deformed. Some Aspy on late fractures and visible Au on quartz vein at 32.60.
33.65	36.00		Foliated augen gneiss (Foliation 20°) Some Aspy over 10 cm near upper contact.
36.00	36.20		Granite. Weak breccia texture with scattered Aspy mineralization. Near lower contact, and parallel this, 1 cm Aspy.
36.20	36.65		Augen gneiss showing skarn mineralization.
36.65	36.80		Granite. Showing some disseminated Aspy.
36.80	38.60		Foliated augen gneiss, foliation 50°-60°. From 37.75 extremely rich in quartz and showing brecciation texture without mineralizati
38.60	40.00		Foliated dioritic gneiss. Foliation 55°. Upper contact highly sheared.
40.00	40.90		Foliated augen gneiss. Foliation 60°.
40.90	41.50		Quartz. Massive, coarse grained Aspy on fractures. Dominating direction ab. 20°. Mineralization seems to cut a weak breccia texture without mineralization. Also some py can be seen.
41.50	48.70		Gneisses. Varying from fine grained, biotite rich till augen gneis Augen gneiss is dominating from about 46.50. Foliation 50°-60°. Aspy mineralization on some fractures parallel/subparallel foliatic Also some granite veining cutting gneisses nearly parallel foliatic
48.70	52.95		Granite. Poor in mica, but rich in chlorite and epidote, giving a green colour. Only disseminated Aspy.
52.95	58.70		Gneisses. Dioritic texture and no foliation. Fracturing at lower contac

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 160 m S 57 m E
BEARING: 072°
DIP: 20°
HOLE NO: 13/81
SHEET NO: 2

LOGGED BY: Ø.M.
STARTED:
PROPERTY Kolsvik, Bindal.

CASING:
FINISHED:

CORE SIZE: 32 mm
TESTS (CORRECTED):

From	To		Description
58.70	60.30		Brecciated granite. Mostly epidote on breccia texture and some scattered Aspy on fractures.
60.30	63.70		Augen gneiss, occasionally sheared.
		63.70	End of hole.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 377 m S - 185 m E BEARING: 075° DIP: 42° HOLE NO: 14/81 SHEET NO: 1

LOGGED BY: Ø.M. STARTED: PROPERTY Kolsvik, Bindal

CASING: FINISHED:

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
0	4.00		Overburden
4.00	17.60		Granite. Massive granite with some variable biotite content.
17.60	19.55		Diorite. Fine grained and rich in biotite, Granite veining is cutting a weak foliation (55°)
19.55	21.00		Granite. Some alteration (zeolitization) along fractures.
21.00	29.70		Diorite. Mostly fine grained showing a weak biotite foliation, but occasionally augen gneiss. Foliation 45°-55°. Between 22.30 - 24.25 and 28.30 - 29.70 granitic veins and cutting gneiss.
29.70	30.35		Granite.
30.35	32.20		Foliated diorite. Foliation 18°. Some py can be seen.
32.20	33.25		Granite.
33.25	34.35		Augen gneiss, showing foliation (10°). Some granite veining, nearly parallel ore. Lower contact, from 34.00, is crushed.
34.35	34.75		Granite. Breccia texture containing epidote and chlorite.
34.75	37.30		Foliated dioritic gneiss (foliation 37°) cut by granite veining.
37.30	37.80		Granite. Rich in biotite and showing foliation (35°).
37.80	38.25		Dioritic gneiss.
38.25	40.20		Granite, rather massive.
40.20	72.75		Augen gneiss. Mostly changing between augen and banded textures, but occasionally also fine grained dioritic rocks. Foliation 15°-25
72.75	78.95		Granite. Very rich in quartz, in places pure quartz. Usually brecc texture, but only scattered Aspy mineralization can be seen.
78.95	86.90		Augen gneiss. As previous section changing between augen - and band textures. Foliation 10°-40°. From 84.10 - 84.50 cut by granite veining.
86.90	100.00		Dioritic gneiss, rich in biotite and showing weak foliation (foliati 20°-50°). Occasionally much chlorite and epidote. Upper 3 m cut by quartz veining. 95.40 - 95.60 granite 96.25 - 96.55 granite showing weak breccia texture. Traces of Asp on a single fracture.
100.00	103.00		Dioritic gneiss.
103.00	103.45		Granite.
103.45	103.90		Dioritic gneiss
103.90	114.00		Granite. Little biotite, giving a bright colour. From ab. 110 m fra ments of augen gneiss.
114.00	114.80		Dioritic gneiss, showing foliation (47°)
114.80	115.20		Granite.
115.20	120.80		Foliated dioritic gneiss, cut by granite veining. Foliation 45° and veining nearly parallel core.
	-	120.80	End of hole.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 32 m S - 22 m E
BEARING: 215° DIP: 44° HOLE NO: 15/81 SHEET NO: 1
LOGGED BY: Ø.M.
STARTED:
PROPERTY Kolsvik, Bindal
CASING:
FINISHED:
CORE SIZE: 32 mm
TESTS (CORRECTED):

From	To		Description
0	18.60		Overburden
18.60	18.80		Granite. Pink colour. Some epidote and chlorite on fractures.
18.80	21.55		Foliated dioritic gneiss. Foliation 40°-60°. Some quartz and carbonate veining and scattered Aspy on quartz veins. Generally much py in the rock.
21.55	22.45		Granite, rich in biotite. Carbonate veining and red zeolitization on fractures.
22.45	22.80		Greenschist cut by quartz and granite veining, showing breccia texture. Texture rich in epidote, chlorite and py, but also Aspy is observed.
22.80	26.25		Granite. Red colour and breccia texture. Cut by quartz veining concentrated to 43° direction. Good Aspy mineralization on breccia texture. Visible Au at ab 26.10.
26.25	26.90		Greenschist. Rich in biotite but not showing any planar structure.
26.90	31.10		Granite. As previous section. Red in colour, brecciated and cut by quartz veining. Good Aspy mineralization and visible Au at ab 29.
31.10	32.05		Quartz. Pure quartz showing deformation structures, but no mineralization.
32.05	33.70		Granite. Red altered, brecciated and cut by quartz veining. Good Aspy mineralization and visible Au at 32.80.
33.70	33.85		Quartz. Deformation textures but no mineralization.
33.85	36.90		Granite. 33.85 - ab. 35.80: Brecciated red granite cut by quartz veining. Good Aspy mineralization on texture. From 33.85 till 33.95 scattered Au mineralization in sheared greenschist and granite. ab. 35.80 - 36.90: Red granite. Good Aspy mineralization, specially on fractures.
36.90	37.10		Quartz. Visible Au at upper contact.
37.10	49.70		Granite. 37.10 - ab. 38.40: Red altered granite, rich in quarts veining. Good Aspy mineralization. ab. 38.40 - 41.69: Decreasing red colour and quartz veining compared with previous sections. Some scattered Aspy minerals associated with fractures. 41.69 - 41.72: Quartz vein. Direction 43° and rich in Aspy. 41.72 - 49.70: Pink granite. Varying quartz veining. Only scattere Aspy mineralization, but widespread zeolitization.
49.70	50.12		Quartz. Scattered Aspy mineralization, specially near lower contact.
50.12	70.60		Granite. 50.12 - 62.70: Pink granite. Some carbonate veining and zeolitizati on fractures. 62.70 - 63.80: Fractures and brecciated purple granite, Much carbonate and zeolite minerals on fractures and breccia te ture.

A/S SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 32 m S - 22 m E BEARING: 215° DIP: 44° HOLE NO: 15/81 SHEET NO: 2.

LOGGED BY: Ø.M STARTED: PROPERTY Kolsvik, Bindal.

CASING: FINISHED:

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
			63.80 - 70.60: Pink granite. Only traces of disseminated Aspy mineralization.
70.60	71.60		Dioritic gneiss showing biotite foliation. Contains some py.
71.60	72.90		Granite. Purple colour and fracture fillings are mostly carbonate and zeolite minerals but also some quartz.
72.90	75.80		Foliated dioritic gneiss (Foliation 70°) Granite veining is cutting and this is cut by later quartz veins.
75.80	86.80		Granite. Mostly pink coloured but also more grey variants.
86.80	93.45		Fine grained, biotite rich dioritic gneiss. Foliation (76°) is cut by some granite veining.
		93.45	End of hole.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 32 m S - 22 m E BEARING: 215° DIP: 65° HOLE NO: 16/81 SHEET NO: 1.
LOGGED BY: Ø.M. STARTED: PROPERTY Kolsvik, Bindal.
CASING: FINISHED:
CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
0	19.30		Overburden
19.30	22.60		Dioritic gneiss. Mostly massive, but weak foliation (73°) near lower contact. Some py.
22.60	65.30		Granite. 22.60 - 25.00: Pink granite with breccia texture in more quartz-rich parts. Some Aspy on breccia texture but also some disseminated grains. 25.00 - 30.00: Grey granite, rather massive but some fractures and quartzveining are cutting with ab 70° angle. At lower part some Aspy on fractures. 30.00 - 36.00: Brecciated granite. Quartz and Aspy on the texture. From 31.70 - 31.80 crosscutting quartz vein. From 35.00 1 m with red coloured zeolitization. 36.00 - 40.00: Massive granite. Red alteration first 1 m. Only traces of Aspy. Some fracturing nearly vertical cor 40.00 - 45.00: Massive granite. From 40.22 till 40.30 Aspy mineral zation on quartz vein. Some Aspy on fractures first 2 m. Also some quartz veining and chlorite filling in fractures. 45.00 - 50.00 Zeolite mineralization gives a pink colour. No mineralization but some quartz veining. Some fracture zones can be seen. 50.00 - 65.30 Rather massive granite, mostly with pink colour. Some Aspy mineralization on quartz veins and fractures first 2.5 meters.
65.30	66.60		Foliated dioritic gneiss. Foliation 70°.
66.60	69.05		Granite. Grey and massive.
69.05	69.90		Diorite with no marked planar structure.
69.90	70.30		Massive granite.
70.30	71.10		Diorite showing biotite foliation.
71.10	85.50		Granite. Rich in biotite giving a dark colour. Weak brecciation near lower contact.
85.50	89.95		Foliated dioritic gneiss. Foliation 75°.
		89.95	End of hole.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 32 m S - 22 m E BEARING: 215° DIP: 80° HOLE NO: 17/81 SHEET NO: 1

LOGGED BY: Ø.M. STARTED: 15/9 -81 PROPERTY Kolsvik, Bindal.

CASING: FINISHED:

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
0	12.70		Overburden
12.70	20.00		Carbonate breccia containing fragments of granite and dioritic rocks. Some py in the dioritic fragments. Occasionally weak foliation (50°) and shearzones.
20.00	24.60		Foliated dioritic gneiss. Foliation 65°-80°. Occasionally well sheared, specially between 21.50 and 22.00 and near lower contact
24.60	26.45		Granite
			24.60 - 25.20 Fracture zone, containing Aspy on 90° fractures.
			25.20 - 26.45 Granite showing weak brecciation and disseminated As
26.45	26.55		Mica schist. Foliation 55°, some Aspy, specially along contacts.
26.55	27.05		Granite, rather massive.
27.05	27.40		Mica schist. Foliation 80°.
27.40	30.50		Granite.
			27.40 - 30.00 Varying quartz content, and occasionally brecciation and fracturing. Aspy on some fractures.
			30.00 - 30.50 Breccia texture with scattered Aspy mineralization.
30.50	31.80		Foliated biotite rich dioritic gneiss. Foliation 50°. At 31.60 cu by quartz vein (direction 30°) containing Aspy and py.
31.80	71.50		Granite.
			31.80 - 34.30: Quartz rich granite. First 1 m, much brecciation ar quartz veining. Aspy on breccia texture and quartz veins. In lower part Aspy on fractures.
			34.30 - 40.50 Massive grey granite.
			40.50 - 42.20: Brecciated pink granite. Good Aspy mineralization, specially concentrated to 50° fractures.
			42.20 - 43.70: Massive grey granite.
			43.70 - 48.00: Mostly brecciated quartz rich granite, occasionally granite cut by quartz veining (dominating direction 80°). Both breccia texture and veining contain goo Aspy mineralization..
			48.00 - 71.50 Mostly massive grey granite Aspy mineralization onl seen on thin crosscutting quartz veins (at 53.15 - 53.25, 59.75 - 59.77, 59.90 - 59.91, 63.40 - 63.41, 68.25 - 68.26.
71.50	72.35		Fine grained, biotite rich dioritic gneiss, foliation 70°. Cut by quartz and granite veining, concordant foliation.
72.35	77.60		Granite. Massive granite, occasionally zeolitization and epidote & chlorite on fractures.
77.60	78.00		Foliated biotite rich diorite.
78.00	80.60		Massive grey granite.
		80.60	End of hole.

A/S SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 32 m S - 22 m E
BEARING: 295° DIP: 45° HOLE NO: 18/81 SHEET NO: 1
LOGGED BY: Ø.M
STARTED:
PROPERTY Kolsvik, Bindal.
CASING: 32 mm
FINISHED:
CORE SIZE:
TESTS (CORRECTED):

From	To		Description
0	16.60		Overburden
16.60	16.85		Mica schist. Mica carbonate veining, parallel foliation (25°). These are cut by 1 cm thick Aspy vein parallel core.
16.85	18.75		Granite, cut by carbonate veining.
18.75	19.10		Mica schist rich in carbonate. Foliation 60°. 1.5 cm thick Aspy vein at lower contact.
19.10	21.70		Granite. Mostly light coloured but occasionally pink. Scattered Aspy mineralization on some fractures.
21.70	26.70		Mica schist. Foliation 50°-70°. Plenty of carbonate material both as horizons in gneiss and cross cutting veins. Most fractures parallel foliation.
26.70	27.10		Granite.
27.10	27.65		Mica schist. Foliation 65°.
27.65	34.40		Granite.
			27.65 - 31.40: Rather massive granite showing pink colour. Most fractures are filled with carbonate and zeolite minerals, but lower 1 m also traces of Aspy.
			31.40 - 32.00: Brecciated granite. Mineralization mainly py but also some Aspy.
			32.00 - 34.40: Massive granite.
34.40	35.00		Quartz. Disseminated Aspy can be seen.
35.00	35.60		Granite. Upper contact very diffusable.
35.60	35.70		Quartz.
35.70	37.40		Massive granite.
37.40	39.40		Mica schist. Foliation 40°. Plenty of carbonate.
39.40	42.20		Dioritic rocks, varying from foliated gneisses till more massive.
42.20	49.90		Granite, mostly light coloured. Some fracturing which are filled with carbonate and zeolite minerals.
49.90	50.20		Quartz. Aspy can be seen on 40° fractures.
50.20	97.00		Granite. Varying colour from light grey till pink. Some fracturing and zeolitization. No mineralization is seen.
		97.00	End of hole.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 32 m S - 22 m E BEARING: 048° DIP: 66° HOLE NO: 19/81 SHEET NO: 1

LOGGED BY: Ø.M. STARTED: PROPERTY Kolsvik, Bindal.

CASING: FINISHED:

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
0	7.50		Overburden
7.50	23.05		Granite. Varying between yellow and pink colours, due to alteratio of feldspars. Plenty of carbonate veining and fractures filled wit carbonate and zeolite minerals. Some spots of Aspy can be seen fir 5 meters. Occasionally totally fractured; especially in following intervals: 8.30-9.10, 9.90 - 10.00, 10.50 - 10.90, 12.20 - 13.00, 13.45 - 15.40.
23.05	24.45		Mica schist. Foliation 20°. The sequence contains plenty of carbonate. Also some crosscutting carbonate veining. Most fractures parallel foliation but some have 70° direction. Some skarn mineralization, particularly near upper contact.
24.45	24.90		Granite. As previous section cut by carbonate veining.
24.90	25.20		Mica schist. Foliation 40°.
25.20	26.70		Granite. As previous sections cut by carbonate veining. Great variation in directions of fractures (20°, 40°, 70° and 90°).
26.70	27.00		Mica schist, foliation 50°. Highly sheared. Some epidote on fracture surfaces.
27.00	29.00		Granite, pink in colour. Plenty of carbonate and zeolite filled fractures.
29.00	56.30		Mica schist, extremely rich in carbonate. Crosscutting granite veining is usual. Skarn mineralization near upper contact and relatec to granitic veins. Most fractures parallel foliation (15°-40°), anc occasionally zones of high shearing (Following intervals: 32.20-32.5 40.50-40.80, 41.50-41.80, 42.40-42.70, 44.15-45.70, 52.30-52.50).
		56.30	End of hole.

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 101 m S - 45 m E BEARING: 087° DIP: 45° HOLE NO: 20/81 SHEET NO: 1

LOGGED BY: Ø.M. STARTED: PROPERTY Kolsvik, Bindal.

CASING: FINISHED:

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
0	3.75		Overburden
3.75	4.90		Granite. Pink colour near upper contact.
4.90	5.00		Foliated mica schist showing shearing near contacts.
5.00	6.80		Granite. Rather massive, but some fractures with direction 30° and
6.80	7.30		Mica schist. Foliation 35°.
7.30	8.90		Granite. Near upper contact shearing and weak foliation. In this area some quartz veining and Aspy.
8.90	9.70		Mica schist. Weak foliation but highly sheared at lower contact.
9.70	28.30		Granite. 9.70-11.00: Grey granite. Scattered Aspy on some fractures. 11.00-15.10: Some alteration, mostly as zeolite, muscovite, chlori epidote. 15.10-15.40: Sheared and brecciated quartz rich granite. Spots of Aspy. 15.40-16.10: Rather massive with few fractures. 16.10-16.40: Fractured and brecciated granite. Spots of Aspy. 16.40-17.50: Massive granite. 17.50-18.00: Pink coloured granite. Disseminated Aspy and as scat-tered grains on some fractures. 18.00-21.30: Quartz rich granite. Spots of Aspy. Lower o.20 m fr tured. 21.30-24.00: Medium-grained, rather massive. Upper 0.2 m fracture 24.00-26.00: Quartz rich granite with spots of Aspy. 26.00-28.30: Occasionally green coloured due to epidote & chlorite some fractures.
28.30	33.20		Foliated dioritic gneiss. Foliation 0°-15°. Most fractures 40°-50 but some parallel core.
33.20	50.70		Granite. 33.20-38.00: Granite with scattered Aspy on some 45° fractures. 38.00-42.40: Massive, but traces of Aspy on fractures from 41.80. 42.00-47.70: Well fractured quartz rich granite. No mineralizatio 47.70-50.70: Good brecciation with Aspy. Late quartz veining cuts breccia texture.
50.70	58.80		Deformed and sheared dioritic rocks. From 55.40 till 56.30 extreme sheared. May represent a greater fault zone. Direction 10°.
58.80	66.30		Granite. 58.80-62.00: Brecciated granite. 62.00-66.30: Rather massive. Scattered Aspy on some fractures. Direction 50°.
66.30	67.00		Fine grained, biotite rich dioritic gneiss. Foliation 55°.
67.00	70.95		Granite. Rather massive, with few fractures (direction 60°-70°).
70.95	76.25		Fine grained dioritic gneiss. Foliation 50°. Some crosscutting granitic veins.
76.25	77.50		Granite.

A/S SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 101 m S - 45 m E BEARING: 087° DIP: 45° HOLE NO: 20/81 SHEET NO: 2.

LOGGED BY: Ø. M. STARTED: PROPERTY Kolsvik, Bindal.

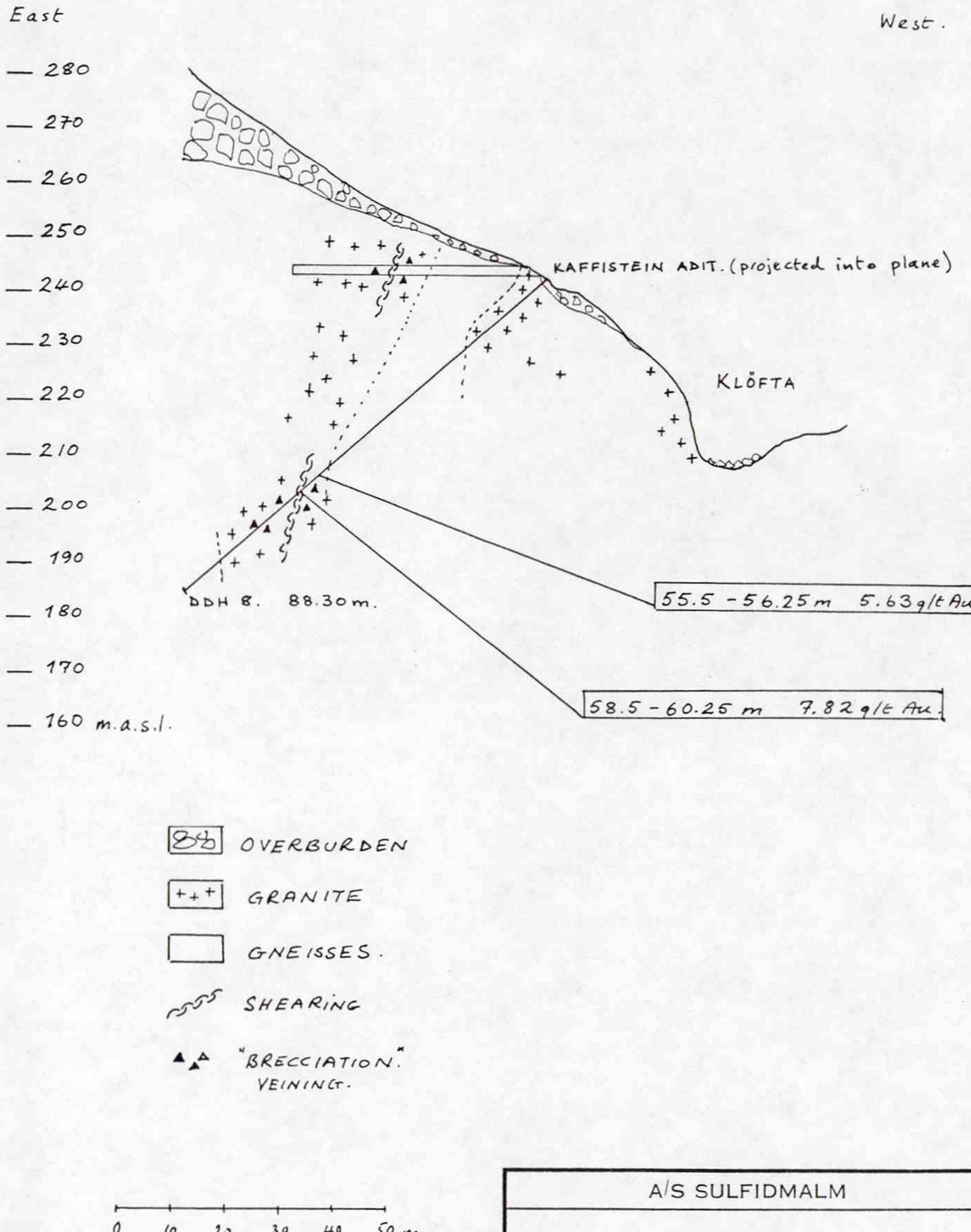
CASING: FINISHED:

CORE SIZE: 32 mm TESTS (CORRECTED):

From	To		Description
77.50	82.25		Dioritic rocks without any planar structure.
82.25	89.80		Granite. Rather massive with some fractures. No mineralizaiton.
		89.80	End of hole.

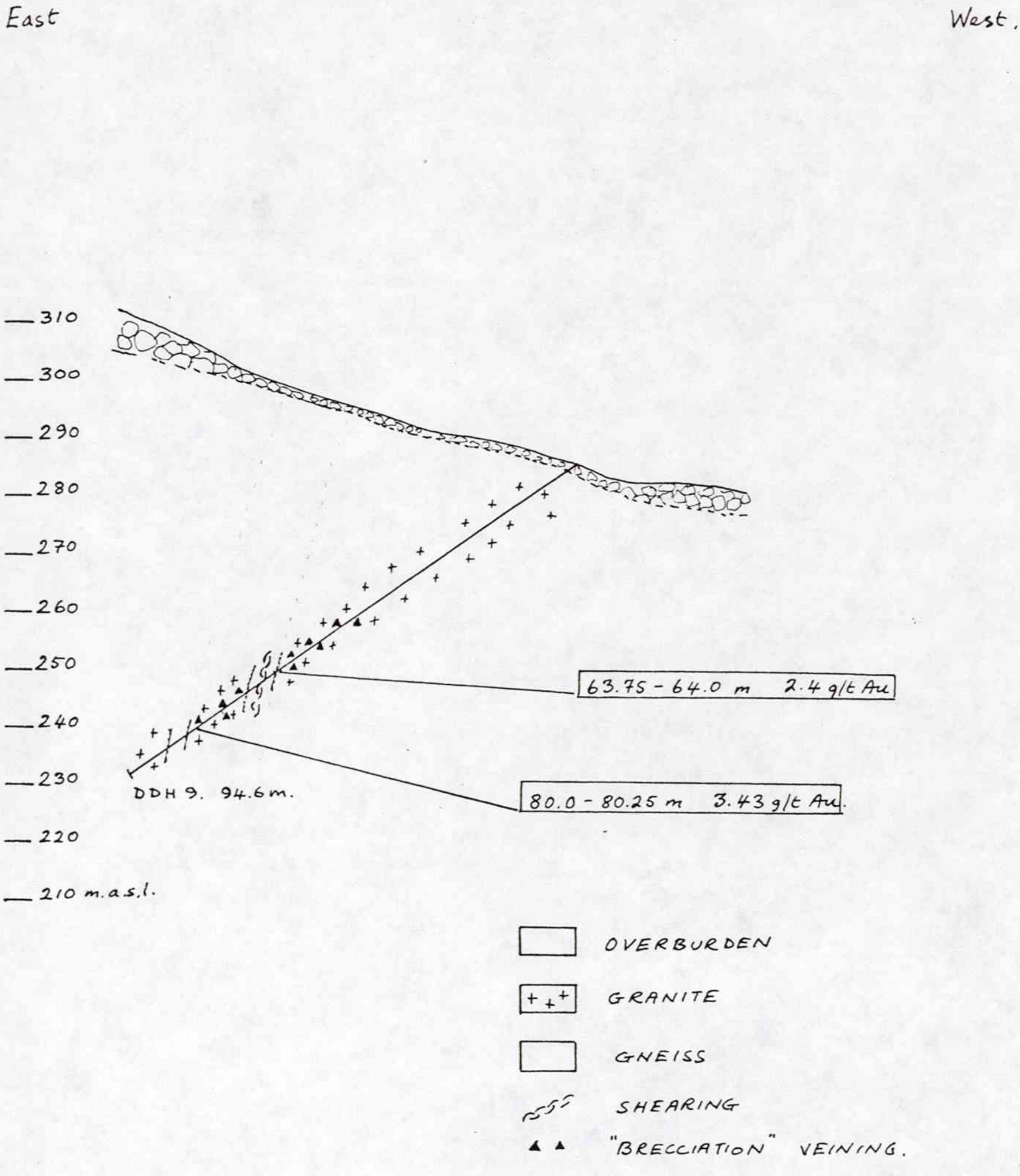
A P P E N D I X   3

Simplified drill sections



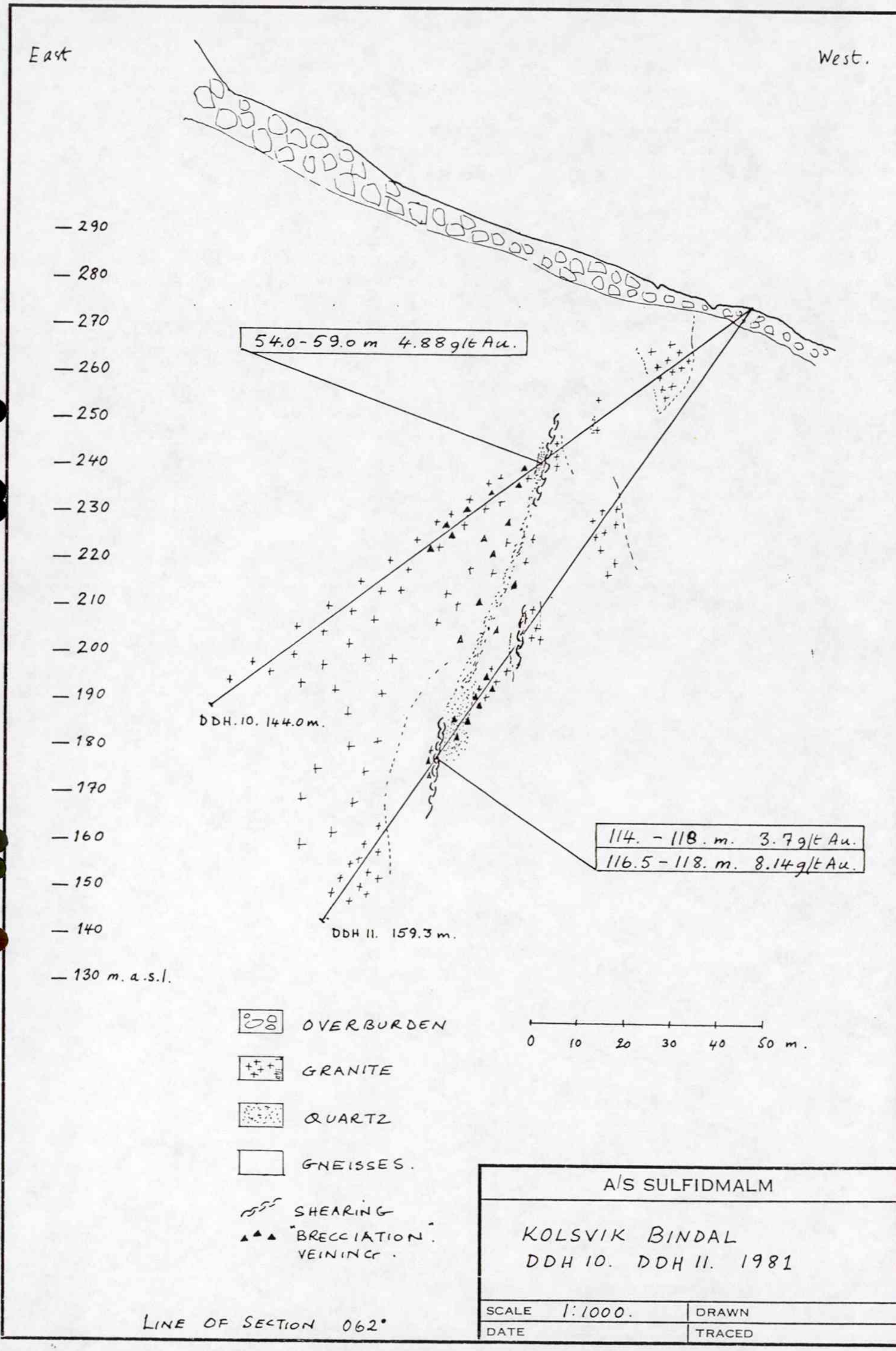
Line of section. 060°.

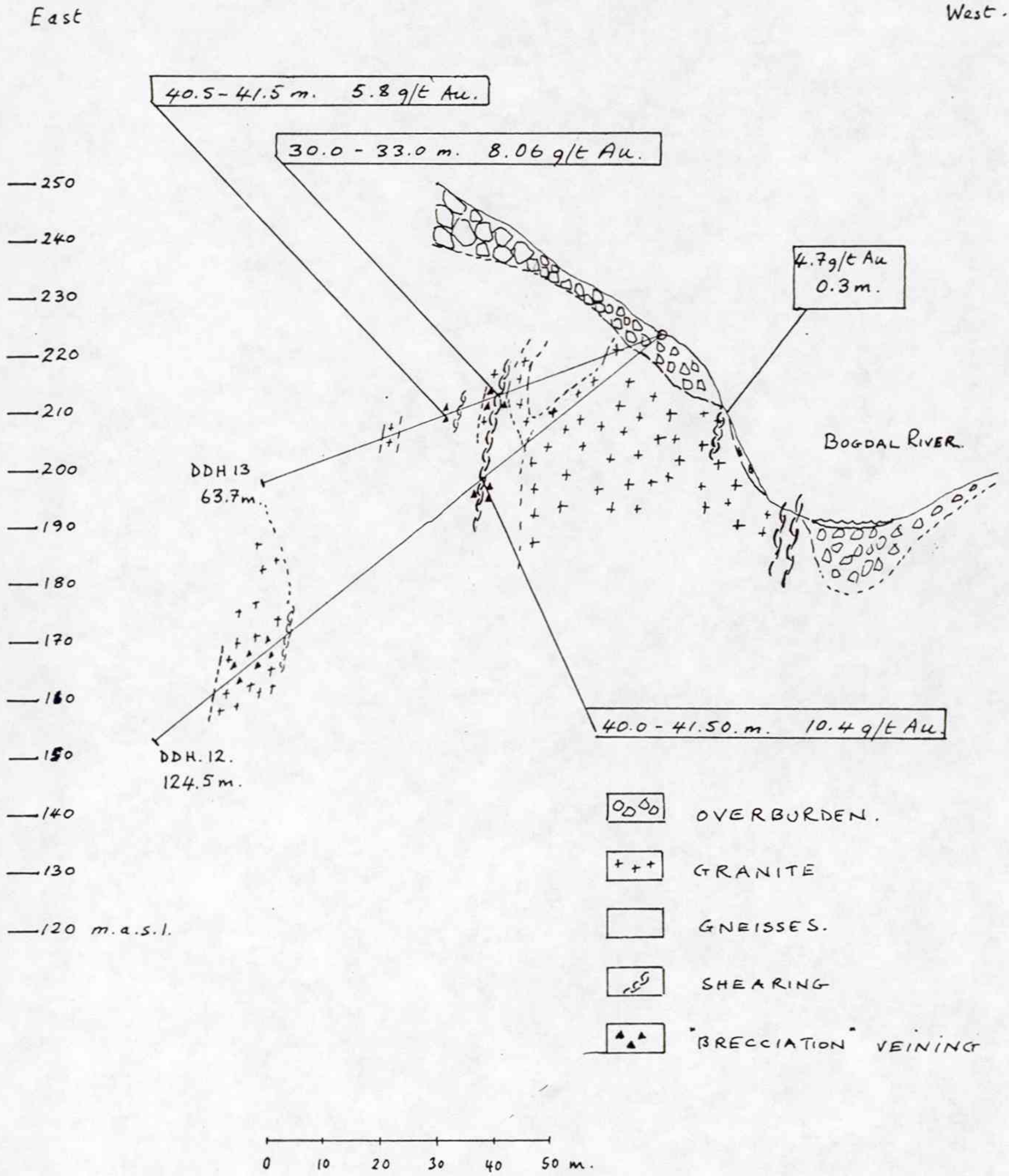
A/S SULFIDMALM	
KOLSVIK BINDAL. DDH 8 1981	
SCALE 1:1000.	DRAWN
DATE	TRACED



LINE OF SECTION 052°.

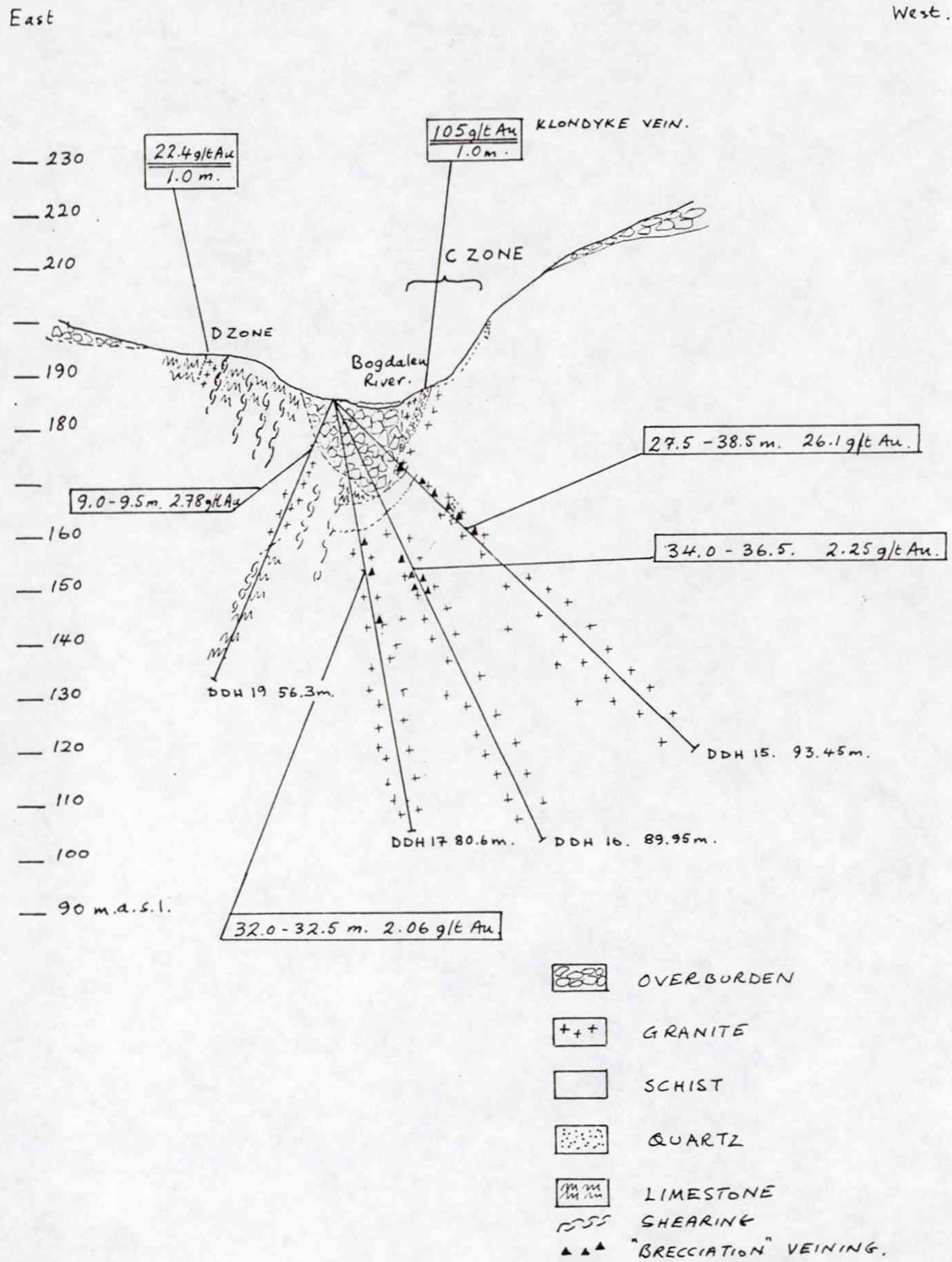
A/S SULFIDMALM	
KOLSVIK BINDAL DDH. 9. 1981.	
SCALE 1:1000	DRAWN
DATE	TRACED


East
West.
— 290
— 280
— 270
— 260
— 250
— 240
— 230
— 220
— 210
— 200
— 190
— 180
— 170
— 160
— 150
— 140
— 130 m. a.s.l.
54.0-59.0 m 4.88 g/t Au.
DDH.10. 144.0 m.
114. - 118. m. 3.7 g/t Au.
116.5 - 118. m. 8.14 g/t Au.
DDH 11. 159.3 m.
OVERBURDEN
GRANITE
QUARTZ
GNEISSES.
SHEARING
"BRECCIATION". VEINING.
0 10 20 30 40 50 m.
LINE OF SECTION 062°
A/S SULFIDMALM
KOLSVIK BINDAL
DDH 10. DDH 11. 1981
SCALE 1:1000.
DRAWN
DATE
TRACED



Line of section 072°.

A/S SULFIDMALM	
KOLSVIK BINDAL. DDH. 12. DDH 13. 1987.	
SCALE 1:1000.	DRAWN
DATE	TRACED



0 10 20 30 40 50 m.

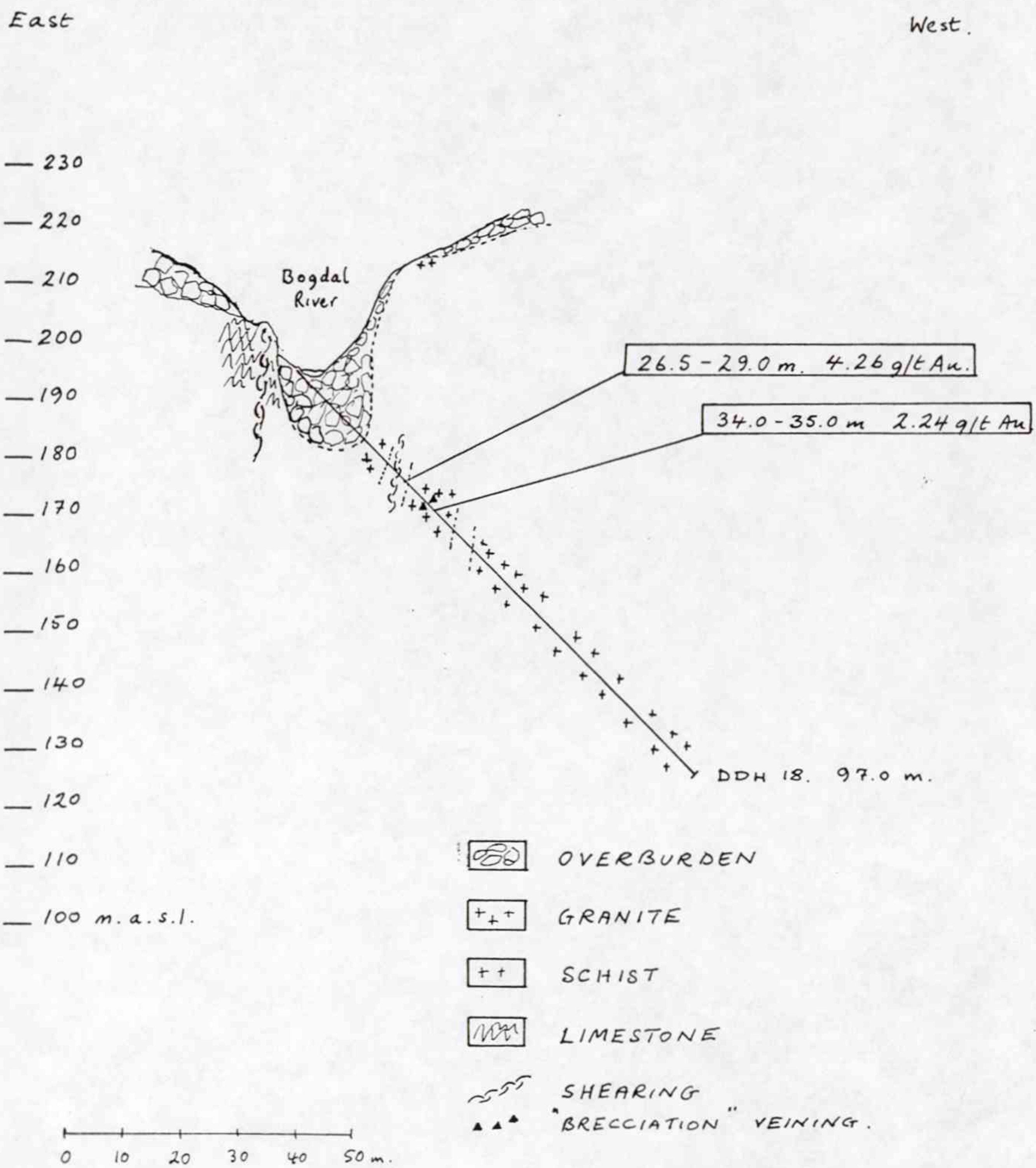
LINE OF SECTION 215°.

A/S SULFIDMALM

KOLSVIK BINDAL.

DDH. 15. 16. 17. 19. 1981.

SCALE 1:1.000	DRAWN
DATE	TRACED

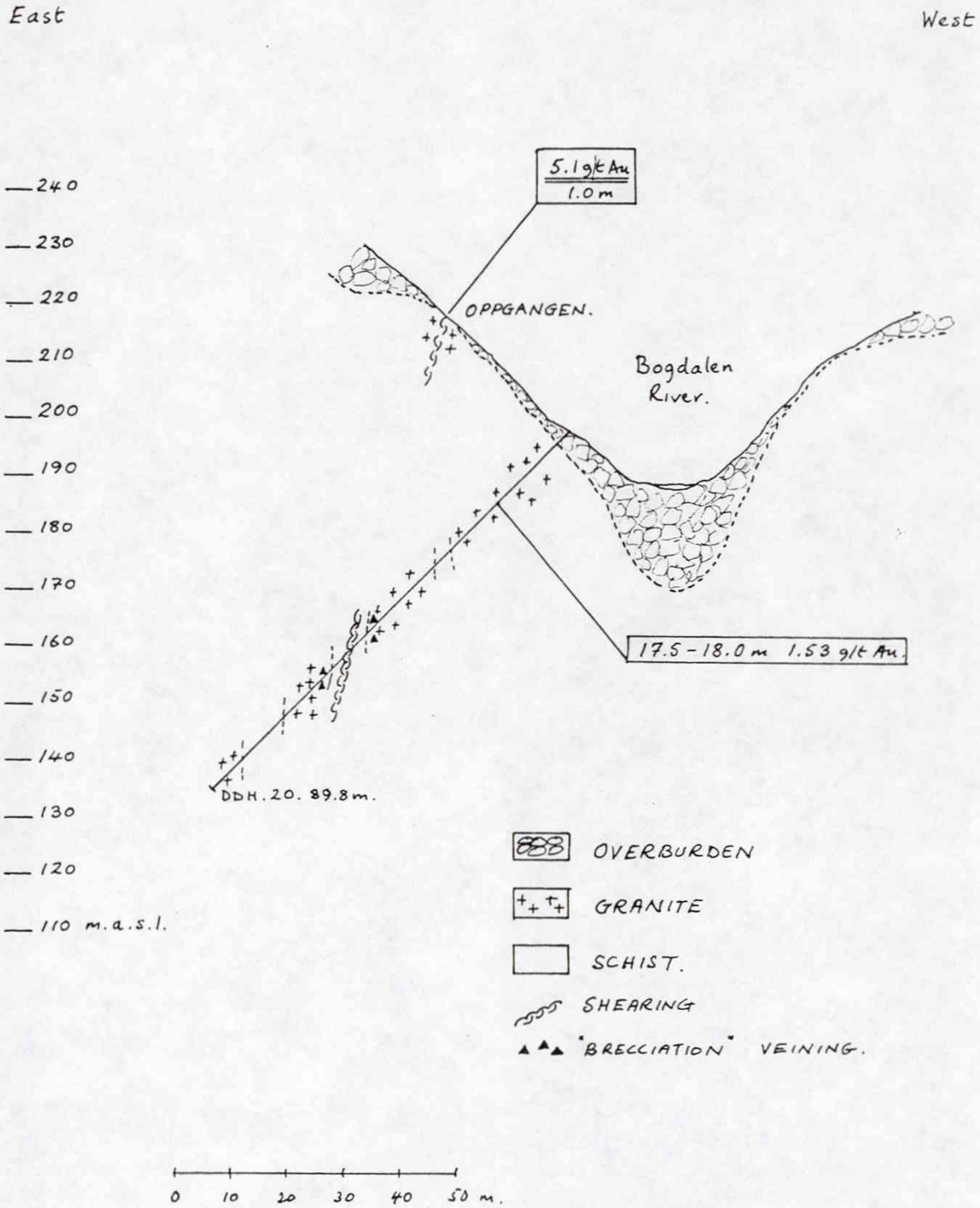


Line of section 295°

A/S SULFIDMALM

KOLSVIK BINDAL
DDH 18. 1981.

SCALE	1:1000.	DRAWN	
DATE		TRACED	



A/S SULFIDMALM	
KOLSVIK BINDAL DDH. 20. 1981	
SCALE 1.1000	DRAWN
DATE	TRACED

A P P E N D I X 4

Petrographic investigations

Location	Kolsvik, Norway	Lab. No. 82-141
Sample Description	DDH 14 @ 61.95 m	PTS No. 6827

MINERALS		Est. % by Vol.	Grain Size (m.m.) Max.	Avg.
Feldspar -	Oligoclase $\pm$ An_{22}	30 - 35		
	Orthoclase	15 - 20		
Quartz		30 - 35		
Biotite		6 - 8		
Muscovite/Sericite		3 - 4		
Garnet		tr		
Zircon		tr		
Apatite		tr		
Magnetite, Ilmenite		tr		
Pyrite, Marcasite, Chalcopyrite		tr		

DESCRIPTION

Augen textures are evident in hand sample but the textures in pol-thin section are granitic. Scattered coarse flakes of biotite and muscovite occur in a coarse mosaic of feldspar, both sodic and potassic, and quartz. The latter shows evidence of deformation by the presence of strain shadows and slight granulation. One grain of garnet was observed in the section.

Augen gneiss of quartz monzonite composition

Location	Kolsvik, Norway	Lab. No. 82-141
Sample Description	DDH 14 @ 74.70 m	PTS No. 6828

MINERALS	Est. % by Vol.	Grain Size (m.m.) Max.	Avg.
Feldspar - Oligoclase	30 - 35		
Feldspar - Orthoclase	15 - 20		
Quartz	30 - 35		
Biotite	6 - 8		
Muscovite/Sericite	2 - 3		
Garnet	~1		
Chlorite	2 - 3		
Apatite	tr		
Pyrrhotite, Marcasite	tr		
Magnetite, Ilmenite	tr		

DESCRIPTION

Very similar in composition to the previous sample. However, the pol-thin section displays strong orientation of biotite/muscovite/chlorite flakes to produce a gneissic texture.

Augen gneiss of quartz monzonite composition

Location	Kolsvik, Norway	Lab. No.	82-141
Sample Description	DDH 14 @ 97.40 m	PTS No.	6829

MINERALS		Est. % by Vol.	Grain Size Max.	(m.m.) Avg.
Feldspar -	Oligoclase $\pm$ An_{27}	30 - 35		
	Orthoclase	12 - 15		
Quartz		15 - 20		
Amphibole		15 - 20		
Biotite		10 - 12		
Zircon, Apatite		tr		
Sphene		1 - 2		
Carbonate		tr		
Wolframite(?)		tr		
Pyrite		tr		

DESCRIPTION

This sample is finer grained and more mafic than the samples at 61.95 m and 74.70 m. It contains about 25% dark minerals but from the total mineral assemblage it is likely a mafic member of the same quartz monzonite unit.

A brown translucent mineral was picked out from the section and subjected to X-ray powder diffraction. Its pattern fits closely that of wolframite but a search of the spectrographic film revealed no lines diagnostic of tungsten.

Quartz Monzonite

Location	Kolsvik, Norway	Lab. No. 82-141
Sample Description	DDH 14 @ 100.70 m	PTS No. 6830

MINERALS		Est. % by Vol.	Grain Size Max.	(m.m.) Avg.
Feldspar -	Oligoclase $\pm An_{25}$	40 - 45		
	Orthoclase	8 - 10		
Quartz		6 - 8		
Amphibole		25 - 30		
Biotite		4 - 6		
Epidote		1 - 2		
Sphene		3 - 4		
Carbonate		1 - 2		
Sericite		tr		
Pyrite		tr		

DESCRIPTION

This sample is less siliceous than the previous one and it is classified as a monzonite rather than a quartz monzonite. Dark green hornblende, green biotite and relatively abundant sphene are similar to the assemblage in PTS-6829.

Monzonite

Location	Kolsvik, Norway	Lab. No.	82-141
Sample Description	DDH 14 @ 125.40 m	PTS No.	6831

MINERALS		Est. % by Vol.	Grain Size (m.m.) Max.	Avg.
Feldspar -	Oligoclase	45 - 50		
	Orthoclase	10 - 12		
Quartz		6 - 8		
Amphibole		25 - 30		
Biotite		3 - 5		
Sphene		2 - 3		
Pyrite		tr		

DESCRIPTION

Almost identical to the previous sample at 100.70 m.

Monzonite

Location	Kolsvik, Norway	Lab. No. 82-141
Sample Description	DDH 15 @ 30.60 m	PTS No. 6832

MINERALS		Est. % by Vol.	Grain Size (m.m.) Max.	Avg.
Quartz		70 - 75		
Feldspar -	Orthoclase	6 - 8		
	Oligoclase	1 - 2		
Carbonate		18 - 20		
Biotite		tr		

DESCRIPTION

Coarse irregular patches of highly strained quartz and carbonate occur with a heavily granulated, carbonatized, medium grained rock of granitic composition. Some late veins are lined by dog-tooth quartz and show vuggy textures.

Highly deformed and carbonatized granite

Location	Kolsvik, Norway	Lab. No.	82-141
Sample Description	DDH 15 @ 80.50 m	PTS No.	6834

MINERALS		Est. % by Vol.	Grain Size (m.m.) Max.	Avg.
	{Microcline	40 - 45		
Feldspar -	{Orthoclase	10 - 15		
	{Oligoclase	10 - 15		
Quartz		20 - 25		
Muscovite/Sericite		4 - 5		
Chlorite		tr		
Carbonate		tr		

DESCRIPTION

A medium- to coarse grained granite shows evidence of strong deformation. Quartz invariably has strain shadows or is partly granulated.

Granite

Location	Kolsvik, Norway	Lab. No.	82-141
Sample Description	DDH 15 @ 80.50 m	PTS No.	6834

MINERALS	Est. % by Vol.	Grain Size Max.	(m.m.) Avg.
{Microcline	40 - 45		
Feldspar - {Orthoclase	10 - 15		
{Oligoclase	10 - 15		
Quartz	20 - 25		
Muscovite/Sericite	4 - 5		
Chlorite	tr		
Carbonate	tr		

DESCRIPTION

A medium- to coarse grained granite shows evidence of strong deformation. Quartz invariably has strain shadows or is partly granulated.

Granite

Location	Kolsvik, Norway	Lab. No. 82-141
Sample Description	DDH 18 @ 22.65 m	PTS No. 6836

MINERALS	Est. % by Vol.	Grain Size Max.	(m.m.) Avg.
Feldspar - Oligoclase	6 - 8		
Quartz	10 - 12		
Amphibole	2 - 3		
Epidote	25 - 30		
Biotite	4 - 5		
Chlorite	25 - 30		
Carbonate	<1		
Apatite	∿1		
Garnet	1 - 2		
Sphene	∿1		
Pyrite	8 - 10		
Chalcopyrite	<1		

DESCRIPTION

Peculiar textures in pol-thin section shows coarse grained feldspar completely replaced by chlorite. Interstitial to the altered feldspar are coarse epidote, strained quartz, anhedral pyrite and occasional grains of fresh feldspar, biotite and anhedral orange garnet. Weak chalcopyrite mineralization occurs in gangue rather than in the coarse pyrite.

The intensity of alteration makes it difficult to assess the original rock type. However, from the mineral assemblage it likely represents a highly altered monzonite or diorite.

Location Kolsvik, Norway Lab. No. 82-141

Sample Description DDH 18 @ 27.30 m PTS No. 6837

MINERALS		Est. % by Vol.	Grain Size Max. (m.m.)	Avg.
Feldspar -	Orthoclase	20 - 25		
	Albite-oligoclase	15 - 18		
Quartz		10 - 12		
Biotite		35 - 40		
Rutile		2 - 3		
Carbonate		6 - 8		
Zircon		tr		

DESCRIPTION

PTS-6837 consists of about 60:40 host rock to vein material. The latter is about 90% coarse grained, highly strained quartz with crosscutting veinlets and patches of carbonate. The texture of the biotite-rich host is almost sedimentary rather than igneous with grains of feldspar and quartz surrounded by biotite. Rutile is prominent in the section as small blocky translucent brown grains. Carbonate occurs as late shear infillings.

The rock is classified as a biotite schist of uncertain origin which is heavily penetrated by quartz/carbonate veinlets.

Location	Kolsvik, Norway	Lab. No. 82-141
Sample Description	DDH 18 @ 31.95 m	PTS No. 6838

MINERALS	Est. % by Vol.	Grain Size (m.m.) Max.	Avg.
{Orthoclase	20 - 25		
Feldspar - {Microcline	20 - 25		
{Oligoclase $\pm$ An_{28}	15 - 20		
Quartz	25 - 30		
Chlorite	~1		
Muscovite/Sericite	~1		
Carbonate	4 - 5		
Apatite, Sphene	tr		
Arsenopyrite	2 - 3		
Sphalerite	~1		

DESCRIPTION

Euhedral arsenopyrite grains in this granite are adjacent to or within shears. Patches of sphalerite are also invariably accompanied by shear infillings of carbonate.

Granite

Location	Kolsvik, Norway	Lab. No. 82-141
Sample Description	DDH 18 @ 82.95 m	PTS No. 6840

MINERALS	Est. % by Vol.	Grain Size Max.	(m.m.) Avg.
Feldspar - {Orthoclase	30 - 35		
Feldspar - {Microcline	15 - 20		
Feldspar - {Oligoclase	15 - 20		
Quartz	25 - 30		
Muscovite/Sericite	4 - 5		
Chlorite	1 - 2		
Biotite	∿1		
Magnetite, Pyrrhotite	tr		

DESCRIPTION

Good example of a leucocratic granite.

Location	Kolsvik, Norway	Lab. No. 82-141
Sample Description	DDH 18 @ 82.95 m	PTS No. 6840

MINERALS	Est. % by Vol.	Grain Size (m.m.) Max.	Avg.
Feldspar - {Orthoclase	30 - 35		
{Microcline	15 - 20		
{Oligoclase	15 - 20		
Quartz	25 - 30		
Muscovite/Sericite	4 - 5		
Chlorite	1 - 2		
Biotite	~1		
Magnetite, Pyrrhotite	tr		

DESCRIPTION

Good example of a leucocratic granite.

FALCONBRIDGE METALLURGICAL LABORATORIES

QUALITATIVE SPECTROGRAPHIC ANALYSIS

DISTRIBUTION: REPORT No. Q-1281

ANALYTICAL METHOD:

REQUESTED BY: DATE: May 12, 1982

RECEIVED FROM: CHARGE: JO#3064

SAMPLE No.: L#82-141 No. of SAMPLES: 15

SAMPLE DESCRIPTION: Miscellaneous Rocks

Kolsvik, Norway

	DDH 14 @ 100.70 m	DDH 14 @ 125.40 m	DDH 15 @ 30.60 m
10 – 100%	Si	Si	Si
3 – 30%	Fe, Al	Fe, Al	Al
1 – 10%	Mg, K, Ca	Mg, K, Ca	K, Ca
0.3 – 3%	Ti	Ti	Fe, Na, Ti
0.1 – 1%			As, Mg
0.03 – 0.3%	Cr	Cr	Cr
0.01 – 0.1%	Mn	Mn	
0.003 – 0.03%	V, Zr, Ni	V, Zr, Ni	Mn
0.001 – 0.01%	Co	Co	
0.0003 – 0.003%	Cu, Ba	Cu, Ba	Pb, Cu, Zr, Ni
0.0001 – 0.001%			V, Ba
< 0.0003%			Ag
I	Sr	Sr	Sr
S	Na>1%	Na>1%	

I = Interference prevents positive identification.

S = Strong spectral lines, unable to estimate amount.

Unless specified above, the following were not detected at the approx. ppm lower limits of 0.5 Cu,Ag; 1 Mn; 5 Mg, Cr; 10 Ba, Be, Bi, Ca, Co, Ni, V; 25 Ge, Fe, Pb, Mo, Si, Sr, Sn, Ti, Zr, Tl, Pd; 50 Al, Sb, B, Cd, Ga, In, Li, Zn; 100 As, Au, Na; 200 Rh, Re, Ir, Pt, Ru, Sc; 300 Te, Os; 1000 K, U, Th; 2000 P.

FML-1017

Analyst

FALCONBRIDGE METALLURGICAL LABORATORIES

QUALITATIVE SPECTROGRAPHIC ANALYSIS

DISTRIBUTION: REPORT No. Q-1281

ANALYTICAL METHOD:

REQUESTED BY: DATE: May 12, 1982

RECEIVED FROM: CHARGE: JO#3064

SAMPLE No.: L#82-141 No. of SAMPLES: 15

SAMPLE DESCRIPTION: Miscellaneous Rocks

Kolsvik, Norway

	DDH 14 @ 100.70 m	DDH 14 @ 125.40 m	DDH 15 @ 30.60 m
10 – 100%	Si	Si	Si
3 – 30%	Fe, Al	Fe, Al	Al
1 – 10%	Mg, K, Ca	Mg, K, Ca	K, Ca
0.3 – 3%	Ti	Ti	Fe, Na, Ti
0.1 – 1%			As, Mg
0.03 – 0.3%	Cr	Cr	Cr
0.01 – 0.1%	Mn	Mn	
0.003 – 0.03%	V, Zr, Ni	V, Zr, Ni	Mn
0.001 – 0.01%	Co	Co	
0.0003 – 0.003%	Cu, Ba	Cu, Ba	Pb, Cu, Zr, Ni
0.0001 – 0.001%			V, Ba
< 0.0003%			Ag
I	Sr	Sr	Sr
S	Na>1%	Na>1%	

I = Interference prevents positive identification.

S = Strong spectral lines, unable to estimate amount.

Unless specified above, the following were not detected at the approx. ppm lower limits of 0.5 Cu,Ag; 1 Mn; 5 Mg, Cr; 10 Ba, Be, Bi, Ca, Co, Ni, V; 25 Ge, Fe, Pb, Mo, Si, Sr, Sn, Ti, Zr, Tl, Pd; 50 Al, Sb, B, Cd, Ga, In, Li, Zn; 100 As, Au, Na; 200 Rh, Re, Ir, Pt, Ru, Sc; 300 Te, Os; 1000 K, U, Th; 2000 P.

FML-1017

Analyst

FALCONBRIDGE METALLURGICAL LABORATORIES

QUALITATIVE SPECTROGRAPHIC ANALYSIS

DISTRIBUTION: REPORT No. Q-1281

ANALYTICAL METHOD:

REQUESTED BY: DATE: May 12, 1982

RECEIVED FROM: CHARGE: JO#3064

SAMPLE No.: L#82-141 No. of SAMPLES: 15

SAMPLE DESCRIPTION: Miscellaneous Rocks

Kolsvik, Norway

	DDH 15 @ 35.30 m	DDH 15 @ 80.50 m	DDH 18 @ 18.85 m
10 – 100%	Si	Si	Si
3 – 30%		Al	Fe,Al
1 – 10%	K	K	Mg, Ca
0.3 – 3%	Fe	Fe	Ti, K
0.1 – 1%	Ca	Mg, Ca	
0.03 – 0.3%		Ti	Cr
0.01 – 0.1%	Mg, Al, Cr	Cr	Mn, Ni
0.003 – 0.03%	As, Pb	As	As, V, Zr
0.001 – 0.01%	Mn, Ni	Mn	Cu, Co
0.0003 – 0.003%	Cu, Ti	Pb, Cu, Zr, Ni	
0.0001 – 0.001%		Ba	Ba
< 0.0003%	Ag	–	Ag
I	Sr	Sr	Sr
S	Na>1%	Na>1%	Na>1%

I = Interference prevents positive identification.

S = Strong spectral lines, unable to estimate amount.

Unless specified above, the following were not detected at the approx. ppm lower limits of 0.5 Cu,Ag; 1 Mn; 5 Mg, Cr; 10 Ba, Be, Bi, Ca, Co, Ni, V; 25 Ge, Fe, Pb, Mo, Si, Sr, Sn, Ti, Zr, Tl, Pd; 50 Al, Sb, B, Cd, Ga, In, Li, Zn; 100 As, Au, Na; 200 Rh, Re, Ir, Pt, Ru, Sc; 300 Te, Os; 1000 K, U, Th; 2000 P.

FML-1017

Analyst

FALCONBRIDGE METALLURGICAL LABORATORIES

QUALITATIVE SPECTROGRAPHIC ANALYSIS

DISTRIBUTION: REPORT No. Q-1281

ANALYTICAL METHOD:

REQUESTED BY: DATE: May 12, 1982

RECEIVED FROM: CHARGE: JO#3064

SAMPLE No.: L#82-141 No. of SAMPLES: 15

SAMPLE DESCRIPTION: Miscellaneous Rocks

Kolsvik, Norway

	DDH 18 @ 22.65 m	DDH 18 @ 27.30 m	DDH 18 @ 31.95 m
10 – 100%	Si, Fe	Si	Si
3 – 30%	Al, K	Fe, Al	Al, K
1 – 10%	Mg, Ca	Mg, K, Ca	
0.3 – 3%	Ti	Ti	Fe, Ti, Ca
0.1 – 1%	Na		As, Mg
0.03 – 0.3%		As	
0.01 – 0.1%	Mn,Cr	Pb, Cr	Pb, Cr
0.003 – 0.03%	As,V,Cd,Zn,Zr,Ni	Mn, V, Zr	Zn
0.001 – 0.01%	Cu, Co		Mn, Zr
0.0003 – 0.003%	Sn	Cu, Ni, Ba	Cu, Ni
0.0001 – 0.001%	Mo	Co	V, Ba
< 0.0003%	Ag	Ag	Ag
I	Sr	Sr	Sr
S		Na>1%	Na>1%

I = Interference prevents positive identification.

S = Strong spectral lines, unable to estimate amount.

Unless specified above, the following were not detected at the approx. ppm lower limits of 0.5 Cu,Ag; 1 Mn; 5 Mg, Cr; 10 Ba, Be, Bi, Ca, Co, Ni, V; 25 Ge, Fe, Pb, Mo, Si, Sr, Sn, Ti, Zr, Tl, Pd; 50 Al, Sb, B, Cd, Ga, In, Li, Zn; 100 As, Au, Na; 200 Rh, Re, Ir, Pt, Ru, Sc; 300 Te, Os; 1000 K, U, Th; 2000 P.

Analyst

FALCONBRIDGE METALLURGICAL LABORATORIES

QUALITATIVE SPECTROGRAPHIC ANALYSIS

DISTRIBUTION: REPORT No. Q-1281

ANALYTICAL METHOD:

REQUESTED BY: DATE: May 12, 1982

RECEIVED FROM: CHARGE: JO#3064

SAMPLE No.: L#82-141 No. of SAMPLES: 15

SAMPLE DESCRIPTION: Miscellaneous Rocks

Kolsvik, Norway

	DDH 18 @ 39.95 m	DDH 18 @ 82.95 m
10 – 100%	Si	Si
3 – 30%	Fe, Al, Ca	Al
1 – 10%	Mg, K	K
0.3 – 3%	Ti	Fe, Ca
0.1 – 1%		Mg
0.03 – 0.3%		Ti
0.01 – 0.1%	Mn	Cr
0.003 – 0.03%	As, V, Zr, Ni	As
0.001 – 0.01%	Cu, Cr	Mn
0.0003 – 0.003%	Co, Ba	Pb, Cu, Zr, Ni
0.0001 – 0.001%		Ba
< 0.0003%	Ag	
I	Sr	Sr
S	Na>1%	Na>1%

I = Interference prevents positive identification.

S = Strong spectral lines, unable to estimate amount.

Unless specified above, the following were not detected at the approx. ppm lower limits of 0.5 Cu, Ag; 1 Mn; 5 Mg, Cr; 10 Ba, Be, Bi, Ca, Co, Ni, V; 25 Ge, Fe, Pb, Mo, Si, Sr, Sn, Ti, Zr, Tl, Pd; 50 Al, Sb, B, Cd, Ga, In, Li, Zn; 100 As, Au, Na; 200 Rh, Re, Ir, Pt, Ru, Sc; 300 Te, Os; 1000 K, U, Th; 2000 P.

FML-1017

Analyst

APPENDIX 5. Investigations of placer gold potential in fluvial and glaciofluvial sediments north of Kolsvik gold showings.

Investigations of the quaternary geological history and development of the various fluvial and glaciofluvial sediments north of the Kolsvik showings were reported in report no. 522.28.81.

Since that time 17 trenches have been sampled (see fig. 2 for location) and treated.

Samples weighing some 20-30 kg were collected at various horizons within the trenches and washed on tables in the field down to ca. 2-3 kg. These samples were then washed in a motor driven gold wheel where a heavy metal concentrate of some 2-300 gm was collected.

The concentrates were dried and magnetic fractions separated out. The samples were investigated under a binocular microscope and interesting minerals noted before being sent for assay. Very little gold was noted and the best results from assay indicated only 0.2 g/t. These poor results coupled with the limited tonnage leads us to recommend no further work. Some initial sampling will however be carried out in the Kolsvik Bay in the main fjord where gold has been panned on the shore line.

Of special interest was the discovery of cassiterite in several of treated samples.

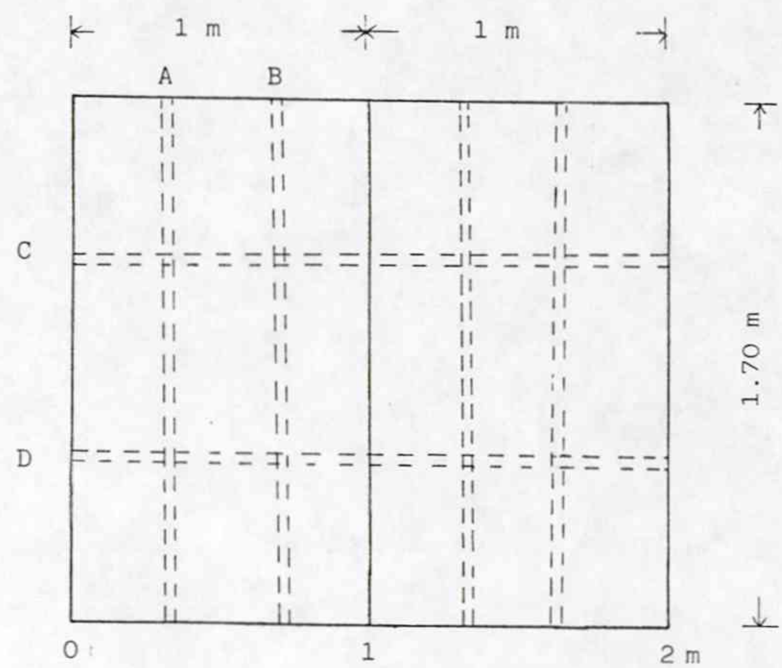
A P P E N D I X 6

Channel samples from adits in the Kolsvik area

A P P E N D I X

Channel samples from adits in the Kolsvik area.

The adits were sampled on one wall over 1 m intervals. 4 channel samples being taken over 1.70 m^2 as shown below.



BOLIDEN ADIT Sampled on South Wall

Location	Sample no.		Gold g/t	Average gold g/t
÷ 1 - 0 m	3242	A	1.64	
		B	22.94	7.23
		C	0.58	
		D	3.78	
0 - 1 m	3201	A	16.29	
		B	2.62	10.89
		C	16.49	
		D	8.18	
1 - 2 m	3202	A	3.09	
		B	1.56	3.87
		C	7.41	
		D	3.43	
2 - 3 m	3203	A	0.03	
		B	0.42	0.27
		C	0.14	
		D	0.49	
3 - 4 m	3204	A	1.04	
		B	0.08	0.37
		C	0.25	
		D	0.10	
4 - 5 m	3205	A	1.25	
		B	2.68	1.48
		C	0.51	
		D	Sample missing	
5 - 6 m	3206	A	1.27	
		B	0.98	0.65
		C	0.21	
		D	0.16	
6 - 7 m	3207	A	0.39	
		B	0.65	0.82
		C	1.67	
		D	0.56	

Boliden adit, sampled on south wall.

Location	Sample no.		Gold g/t	Average gold g/t
7 - 8 m	3208	A	0.45	
		B	1.18	1.16
		C	0.28	
		D	2.74	
8 - 9 m	3209	A	0.52	
		B	2.65	4.72
		C	0.62	
		D	15.09	
9 - 10 m	3210	A	1.14	
		B	0.18	1.56
		C	4.62	
		D	0.30	
10 - 11 m	3211	A	1.06	
		B	5.37	2.42
		C	2.84	
		D	0.41	
11 - 12 m	3212	A	1.06	
		B	7.58	11.15
		C	35.22	
		D	0.76	
12 - 13 m	3213	A	4.39	
		B	1.63	3.41
		C	7.43	
		D	0.21	
13 - 14 m	3214	A	0.99	
		B	0.41	0.74
		C	1.51	
		D	0.07	

Boliden adit, sampled on south wall.

Location	Sample no.		Gold g/t	Average gold g/t
14 - 15 m	3215	A	0.65	
		B	0.47	0.35
		C	0.07	
		D	0.21	
15 - 16 m	3216	A	Nil	
		B	0.03	0.04
		C	Nil	
		D	0.14	
16 - 17 m	3217	A	0.05	
		B	0.07	0.06
		C	0.01	
		D	0.12	
17 - 18 m	3218	A	0.03	
		B	0.10	0.05
		C	0.02	
		D	0.07	
18 - 19 m	3219	A	0.07	
		B	0.08	0.56
		C	2.06	
		D	0.10	
19 - 20 m	3220	A	0.06	
		B	0.07	0.38
		C	1.13	
		D	0.28	
20 - 21 m	3221	A	0.04	
		B	0.06	0.04
		C	0.03	
		D	0.28	

Location	Sample no.		gold g/t	average gold g/t
21 - 22 m	3222	A	0.04	
		B	0.03	0.10
		C	0.14	
		D	0.20	
22 - 23 m	3223	A	0.03	
		B	0.03	0.12
		C	0.22	
		D	0.21	
23 - 24 m	3224	A	0.23	
		B	0.86	0.44
		C	0.04	
		D	0.62	
24 - 25 m	3225	A	0.88	
		B	0.99	0.76
		C	0.08	
		D	1.10	
25 - 26 m	3226	A	0.03	
		B	0.07	0.15
		C	0.36	
		D	0.14	
26 - 27 m	3227	A	0.05	
		B	0.27	0.15
		C	0.02	
		D	0.25	
27 - 28 m	3228	A	0.03	
		B	0.05	0.45
		C	0.21	
		D	0.61	
28 - 29 m	3229	A	0.03	
		B	Nil	0.03
		C	0.01	
		D	0.07	

Boliden adit, sampled on south wall

Location	Sample no.		gold g/t	average gold g/t
29 - 30 m	3230	A	0.01	
		B	0.14	0.05
		C	0.03	
		D	0.03	
30 - 31 m	3231	A	0.04	
		B	1.86	6.40
		C	23.04	
		D	0.67	
31 - 32 m	3232	A	1.02	
		B	Sample missing	0.88
		C	0.85	
		D	0.78	
32 - 33 m	3233	A	1.79	
		B	0.22	0.67
		C	0.27	
		D	0.42	
33 - 34 m	3234	A	10.12	
		B	0.70	5.68
		C	0.16	
		D	11.73	
34 - 35 m	3235	A	0.46	
		B	0.18	0.22
		C	0.07	
		D	0.18	
35 - 36 m	3236	A	Nil	
		B	0.01	Nil
		C	0.01	
		D	Nil	
37 - 38 ? 36 - 37	3237	A	Nil	
		B	Nil	
		C	Nil	Nil
		D	Nil	

Location	Sample no.		gold g/t	average gold g/t
37 - 38 m	3238	A	0.03	
		B	Nil	0.28
		C	0.02	
		D	1.08	
38 - 39 m	3239	A	0.01	
		B	Nil	Nil
		C	Nil	
		D	Nil	
39 - 40 m	3240	A	Nil	
		B	Nil	Nil
		C	Nil	
		D	Nil	
40 - 41 m	3241	A	Nil	
		B	Nil	Nil
		C	Nil	
		D	Nil	

MANNERHEIM ADIT Sampled on north wall

Location	Sample no.		gold g/t	average gold g/t
0 - 1 m	3331	A	6.61	
		B	0.13	2.12
		C	0.17	
		D	1.57	
1 - 2 m	3332	A	0.20	
		B	0.24	0.24
		C	0.17	
		D	0.37	
2 - 3 m	3333	A	0.29	
		B	0.34	0.23
		C	0.31	
		D	Nil	
3 - 4 m	3334	A	0.01	
		B	0.19	
		C	0.25	0.13
		D	0.07	
4 - 5 m	3335	A	0.17	
		B	0.14	0.48
		C	0.87	
		D	0.74	
5 - 6 m	3336	A	0.24	
		B	3.41	1.13
		C	0.25	
		D	0.62	
6 - 7 m	3337	A	0.71	
		B	0.66	1.13
		C	2.56	
		D	0.59	

Mannerheim adit, sampled on north wall.

Location	Sample no.		gold g/t	average gold g/t
7 - 8 m	3338	A	0.14	
		B	0.03	0.09
		C	0.03	
		D	0.15	
8 - 9 m	3339	A	0.03	
		B	Nil	0.04
		C	Nil	
		D	0.15	
9 - 10 m	3340	A	0.02	
		B	0.14	0.05
		C	0.03	
		D	Nil	
10 - 11 m	3341	A	0.39	
		B	0.50	
		C	0.24	0.42
		D	0.55	
11 - 12 m	3342	A	0.04	
		B	0.10	0.06
		C	0.07	
		D	0.05	
12 - 13 m	3343	A	0.03	
		B	0.06	0.04
		C	0.03	
		D	0.04	
13 - 14 m	3344	A	0.07	
		B	0.17	0.10
		C	0.13	
		D	0.04	
14 - 15 m	3345	A	0.07	
		B	0.05	0.03
		C	Nil	
		D	Nil	

Mannerheim adit, sampled on north wall.

Location	Sample no.		gold g/t	average gold g/t
15 - 16 m	3346	A	Nil	
		B	0.17	0.05
		C	0.03	
		D	Nil	
16 - 17 m	3347	A	0.86	
		B	0.03	0.22
		C	Nil	
		D	Nil	
17 - 18 m	3348	A	Nil	
		B	0.10	0.12
		C	0.24	
		D	0.09	
18 - 19 m	3349	A	0.16	
		B	Nil	0.05
		C	Nil	
		D	0.03	
19 - 20 m	3350	A	0.01	
		B	0.03	
		C	0.01	0.01
		D	Nil	
20 - 21 m	3351	A	Nil	
		B	Nil	Nil
		C	0.05	
		D	NIl	
21 - 22 m	3352	A	0.26	
		B	0.51	
		C	0.72	0.37
		D	Nil	

SOUTH SKAR ADIT — Sampled on south wall

Location	Sample no.		gold g/t	average gold g/t
0 - 1 m	3251	A	0.05	
		B	0.20	0.08
		C	Nil	
		D	0.09	
1 - 2 m	3252	A	0.03	
		B	0.05	0.05
		C	0.03	
		D	0.10	
2 - 3 m	3253	A	0.08	
		B	0.07	0.05
		C	0.03	
		D	0.03	
3 - 4 m	3254	A	0.13	
		B	0.16	0.30
		C	0.81	
		D	0.10	
4 - 5 m	3255	A	0.22	
		B	0.10	0.15
		C	0.12	
		D	0.17	
5 - 6 m	3256	A	0.13	
		B	2.04	0.62
		C	0.16	
		D	0.15	
6 - 7 m	3257	A	0.98	
		B	1.17	0.65
		C	0.19	
		D	0.28	

South Skar adit, sampled on south wall.

Location	Sample no.		gold g/t	average gold g/t
7 - 8 m	3258	A	0.49	0.32
		B	0.01	
		C	0.55	
		D	0.24	
8 - 9 m	3259	A	0.02	0.01
		B	Nil	
		C	0.03	
		D	0.01	
9 - 10 m	3260	A	Nil	Nil
		B	Nil	
		C	0.01	
		D	Nil	
10 - 11 m	3261	A	0.16	3.90
		B	8.34	
		C	7.17	
		D	0.08	
11 - 12 m	3262	A	0.65	0.48
		B	0.95	
		C	0.21	
		D	0.11	
12 - 13 m	3263	A	0.14	0.98
		B	3.05	
		C	0.55	
		D	0.15	

NORTH SKAR ADIT Sampled on north wall

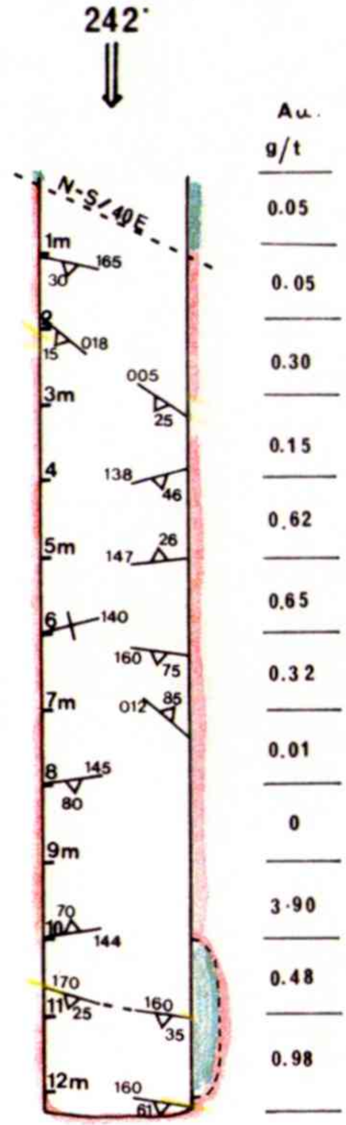
Location	Sample no.		gold g/t	average gold g/t
1 - 2 m	3314	A	Nil	0.01
		B	Nil	
		C	Nil	
		D	0.06	
2 - 3 m	3301	A	0.03	0.16
		B	0.31	
		C	0.22	
		D	0.07	
3 - 4 m	3302	A	0.02	0.06
		B	0.07	
		C	Nil	
		D	0.16	
4 - 5 m	3303	A	0.96	0.81
		B	0.29	
		C	0.44	
		D	1.56	
5 - 6 m	3304	A	0.21	0.53
		B	1.44	
		C	0.31	
		D	0.16	
6 - 7 m	3305	A	1.22	0.68
		B	0.19	
		C	0.76	
		D	0.55	
7 - 8 m	3306	A	0.12	0.17
		B	0.03	
		C	0.14	
		D	0.38	

North Skar adit, sampled on south wall.

Location	Sample no.		gold g/t	average gold g/t
8 - 9 m	3307	A	1.22	
		B	0.68	0.30
		C	0.22	
		D	0.20	
9 - 10 m	3308	A	2.45	
		B	0.05	0.68
		C	0.06	
		D	0.16	
10 - 11 m	3309	A	Nil	
		B	Nil	Nil
		C	0.02	
		D	Nil	
11 - 12 m	3310	A	Nil	
		B	0.10	
		C	0.02	0.03
		D	0.10	
12 - 13 m	3311	A	Nil	
		B	Nil	0.01
		C	0.06	
		D	Nil	
13 - 14 m	3312	A	0.46	
		B	0.04	0.17
		C	0.17	
		D	0.03	
14 - 15 m	3313	A	Nil	
		B	Nil	Nil
		C	0.01	
		D	Nil	

A P P E N D I X   7

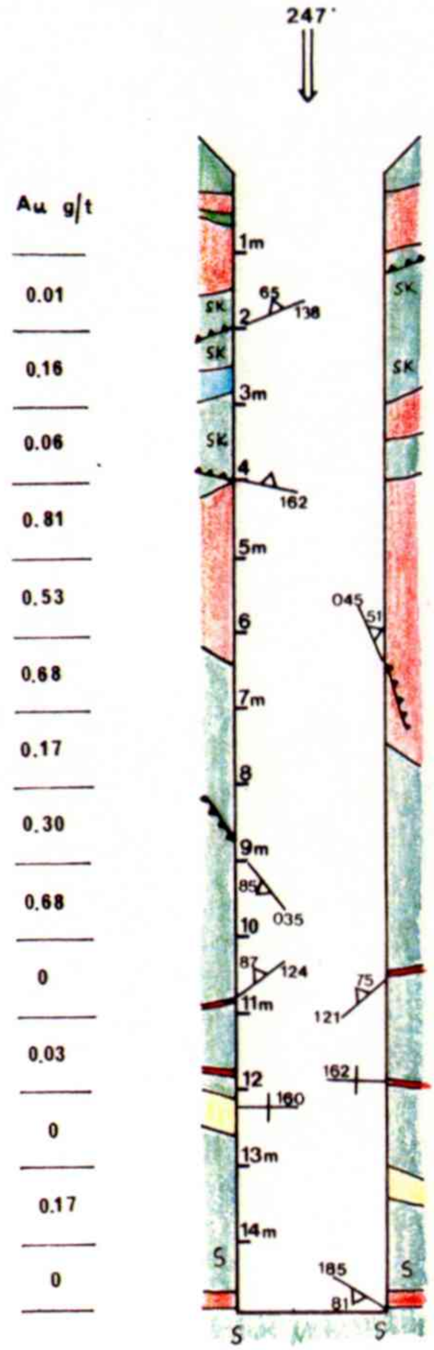
Geology of the Kolsvik adits



LEGEND

- Mica-schist
- Granite
- Quartz
- Joints/ shear planes

A/S SULFIDMALM	
SOUTH SKARSTOLL	
SCALE 1 : 100	DRAWN
DATE	TRACED K K



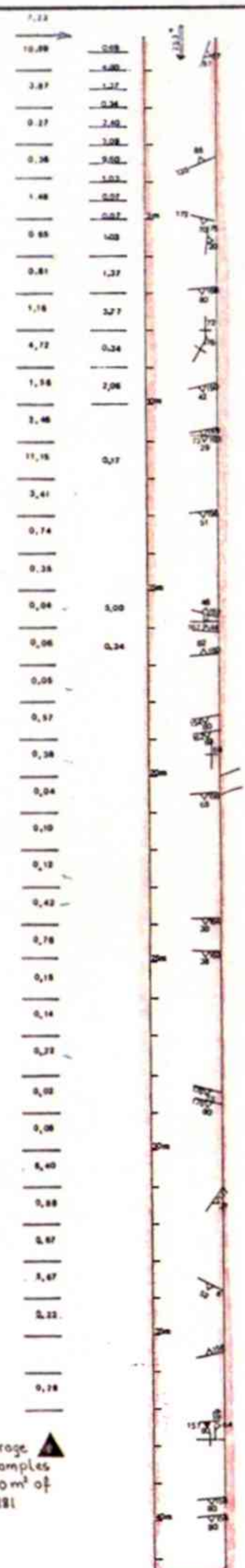
LEGEND

- Limestone
- Mica-schist
- Granite
- Quartz
- Joints / shear planes

S SERICITE
sk SKARN

A/S SULFIDMALM	
NORTH SKARSTOLL	
SCALE 1 : 100	DRAWN
DATE	TRACED K K

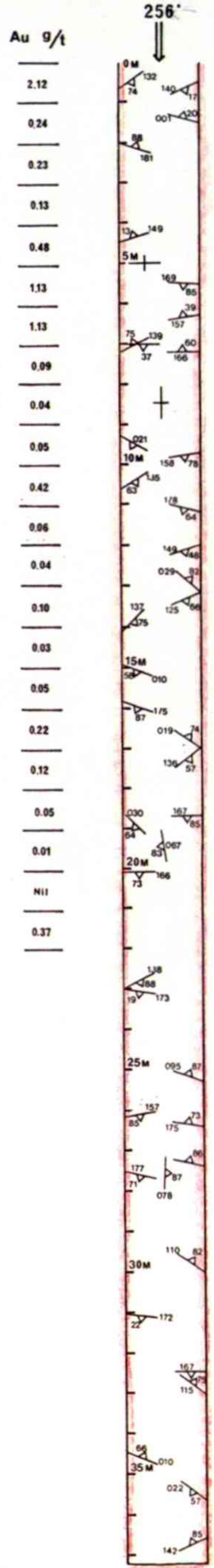
Tørrkopi. 1000. A 4. E 9 gl. 12-77. Sentrum Trykkeri.



Samples are average of 4 channel samples taken over 1.70 m² of adit wall. 1981

Chip sample with 0.5-1.0m interval 1980

BOLIDEN	SCALE	OBS.	
		DRAW.	
		TRAC.	
		CHK.	
% SULFIDMALM	MAP NO.		



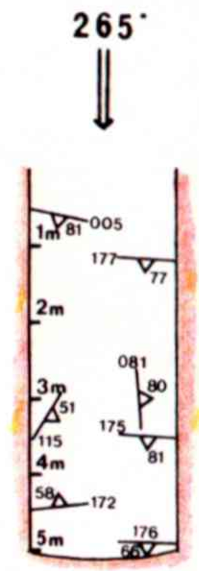
LEGEND

- Mica-schist
- Granite
- Quartz
- Joints/shear planes

A/S SULFIDMALM

MANNERHEIM

SCALE	
OBS.	
DRAW.	
TRAC.	K K
CHK.	
MAP NO.	



LEGEND

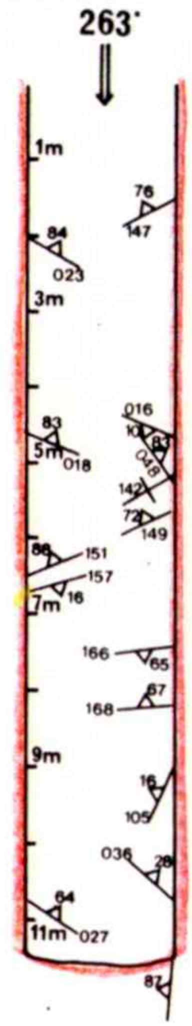
Granite

Quartz

Joints/ shear planes

A/S SULFIDMALM	
TANNER	
SCALE 1 : 100	DRAWN
DATE	TRACED K K

kopi 1000 A 4. E 9 gl. 12-77 Sentrum Trykkeri



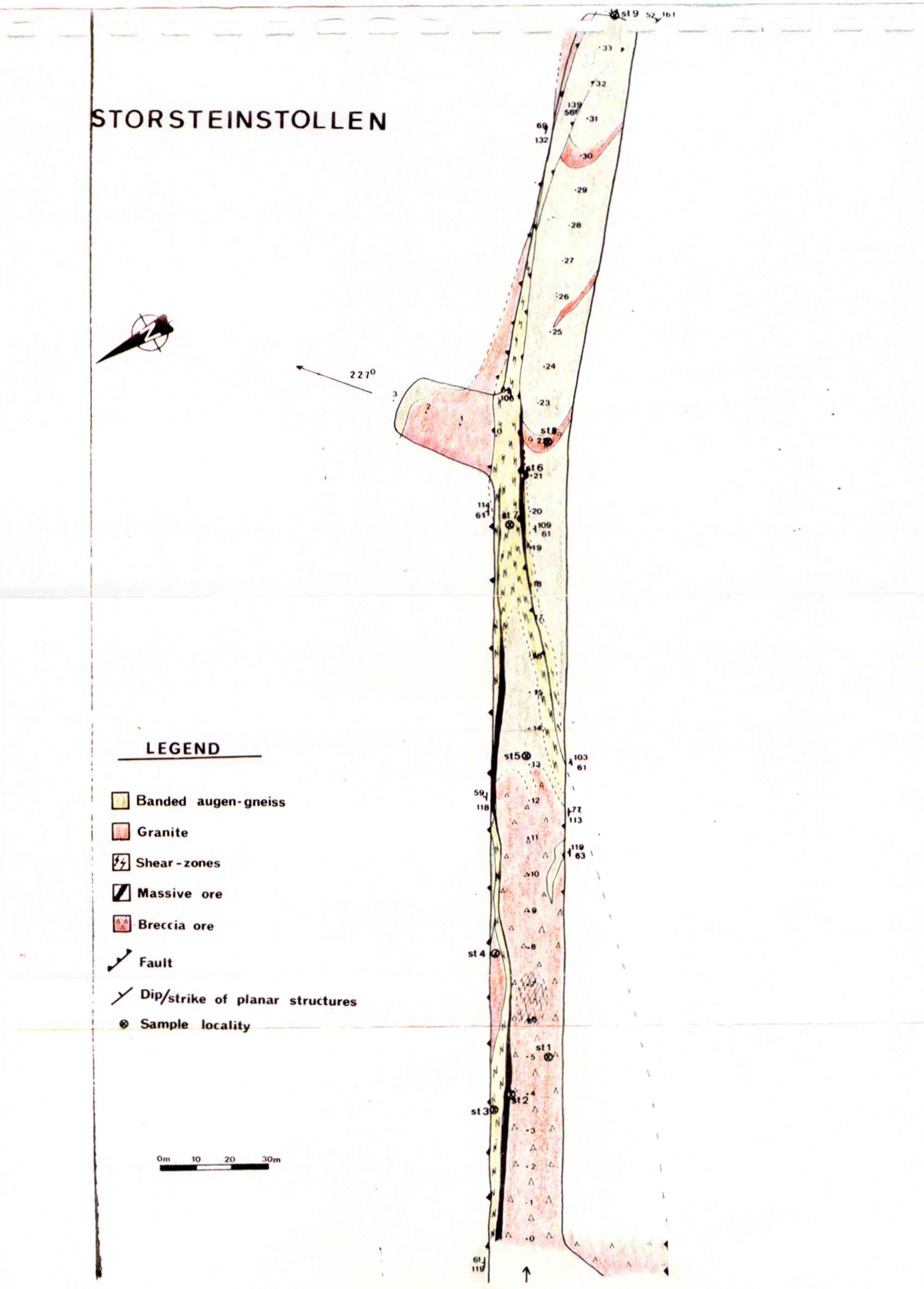
LEGEND

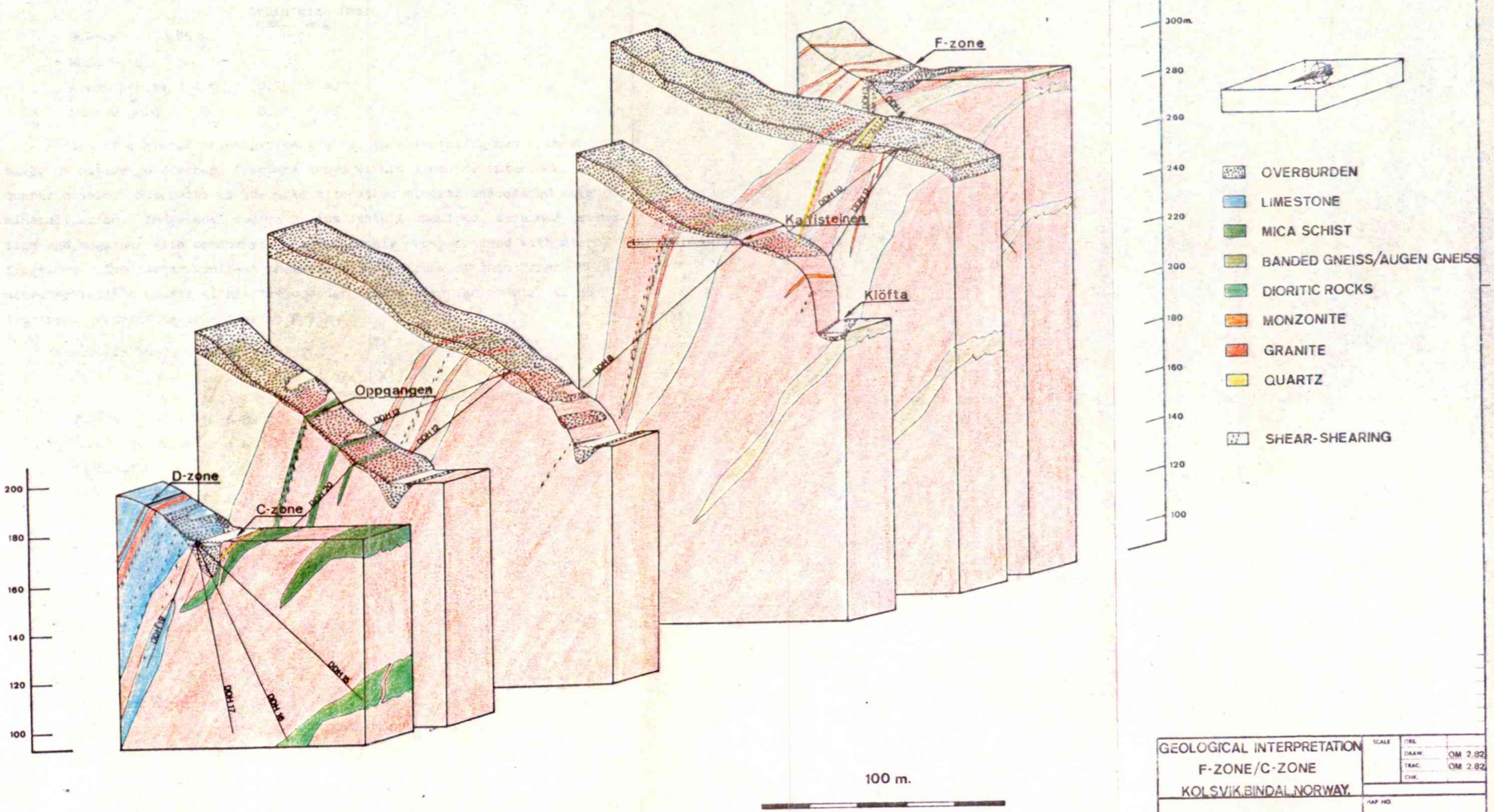
Granite

Quartz

Joints/ shear planes

A/S SULFIDMALM	
HARTVIK	
SCALE 1 : 100	DRAWN
DATE	TRACED K K


STORSTEINSTOLLEN
227°
LEGEND
Banded augen-gneiss
Granite
Shear-zones
Massive ore
Breccia ore
Fault
Dip/strike of planar structures
Sample locality
0m 10 20 30m
st 1
st 2
st 3
st 4
st5
st 6
st 7
st 8
st 9



GEOLOGICAL INTERPRETATION
F-ZONE/C-ZONE
KOLSVIK, BINDAL, NORWAY.

SCALE	OBS.	
	DRAW.	OM 2.82
	TRAC.	OM 2.82
	CHK.	

% SULFIDMALM

MAP NO.

MAP SHEET 1525 II