Borhull Tverrfjellgruver

Borhull Hjerkinn og omegn

"THICKNESS" [m]	ROCKUNIT		LITHOLOGIES	LITHOLOGICAL MARKERS
	upper meta - sediments (UMS)		biotite-sericite schist, biotite-sericite-chlorite schist, carbonate-rich mica schist, qtz-mica schist quartzite	
70 - 1200	upper amphibolites (UA)		amphibolite, porphyritic amphibolites	
30 - 700	meta lahar (ML)		greenstone, conglomerates, carbonate -biotite-chlorite schist, carbonate-rich biotite-chlorite-sericite schist	
0 - 130	upper tuff-member (UTM)		meta-tuff/-tuffite, banded amphibolite, biotite-sericite schist, quartzite, meta-chert	magnetite-tuff, meta-chert
0 - 310	Tverrfjell meta - volcanics and meta - sediments	hanging-wall amphibolites (HMB)	amphibolite, porphyritic amphibolite, banded amphibolite, meta-chert	porphyritic amphibolite within the upper part of the unit
0 - 140		Tverrfjell ore zone (TOZ)	meta-tuff/-tuffite, banded amphibolite, biotite-sericite schist, qtz-mica schist, amphibolite, quartzite, meta-chert, kvartskeratofyr, greywacke, polymict conglomerate, "vasskis"	polymict conglomerate
0 - 200		footwall amphibolites (FMB)	amphibolite, leopard-textured amphibolite, greenschist, meta-chert, "vasskis"	leopard-textured amphibolite meta-chert, "vasskis"
0 - 400	meta - pelite section (MPS)		(garnet)-biotite-sericite schist garbenschiefer, qtz-mica schist, quartzite, greywacke, polymict conglomerate, po-mineralization	two horisons of polymict conglomerate and greywacke, po-mineralization near contact with FMB
0 - 180	lower amphibolites (LA)		amphibolite, leopard-textured amphibolite, banded amphibolite	leopard-textured amphibolite
	lower meta-sediments (LMS)		qtz-phyllites, garbenschiefer	

"THICKNESS" (m)		ROCK UNIT	LITHOLOGIES	LITHOLOGICAL MARKERS
	~~ther~~	upper meta-sediments (UMS)	biotite-sericite schist, biotite-sericite-chlorite schist, carbonate-rich mica schist, qtz-mica schist, quartzite ~~kvartsporfyr~~ ← SCRIPT	
370 - 1200		upper amphibolites (UA)	amphibolite, porphyritic amphibolites meta-tuff, meta-chert	
50 - ~~700~~		meta-lahar (ML)	greenstone conglomerate, carbonate-biotite-chlorite schist, carbonate-rich biotite-chlorite-sericite schist	
40 - 130		upper tuff-member (UTM)	meta-tuff/-tuffite, banded amphibolite, biotite-sericite schist, quartzite, meta-chert heterogeneous amphibolite, kvarts-porfyr, Py-mineralization	magnetite-tuff, meta-chert
0 - 310		hanging-wall amphibolites (HMB)	amphibolite, porphyritic amphibolite, banded amphibolite, meta chert heterogeneous amphibolite, greenstone conglomerate	porphyritic amphibolite within the upper part of the unit
0 - 140	Tverrfjell meta-volcanics and meta-sediments	Tverrfjell ore zone (TOZ)	meta-tuff/-tuffite, banded amphibolite, biotite-sericite schist, qtz-mica schist, amphibolite, quartzite, meta-chert, kvartsporfyr, greywacke, polymict conglomerate, "vassdis" greenstone conglomerate, mass. sulphide deposit (Tverrfjellet)	polymict conglomerate
0 - 200		footwall amphibolites (FMB)	amphibolite, leopard-textured amphibolite, greenschist, meta-chert, "vassdis" greenstone conglomerate, quartzite, mica-schist	leopard-textured amphibolite, meta-chert, "vassdis"
40 - 400		meta-pelite section (MPS)	(garnet)-biotite-sericite schist, ~~garbenschiefer~~, qtz-mica schist, quartzite, greywacke, polymict conglomerate, Po-mineralization carbonate-banded chlorite schist	two horisons of polymict conglomerate and greywacke, Po-mineralization near contact with FMB
0 - 180		lower amphibolites	amphibolite, leopard-textured amphibolite, banded amphibolite	leopard-textured amphibolite

LITOSTRATIGRAFI I HJERKINNFELTET

	"MEKTIGHET" (m)	FORMASJON		LITOLOGIER	LEDEHORISONTER SÆRSKILTE BERGARTER
		øvre meta-sediment (UMS)		biotitt-serisittskifer , biotitt-serisitt-klorittskifer, karbonat-rik glimmerskifer, kvarts-glimmerskifer, kvartsitt (kvarts-feldspat fels (meta-kvartskeratofyr)	
nedre Hovin-gruppe ekvivalent	370-1200	øvre meta-vulkanitt (UMV)		amfibolitt, amfibolitt med mandelsteintekstur (kvarts-feldspat-biotitt gneis (meta-tuff), kvartsitt (meta-chert))	
	0 - 700	meta-lahar (ML)		grønnsteinkonglomerat, karbonat-biotitt-klorittskifer, karbonat-rik biotitt-klorittt-serisittskifer	
	40 - 130	øvre meta-tuff og meta-sediment (UTS)		kvarts-feldspat-rik skifer og gneis (meta tuff/tuffitt), båndet amfibolitt, biotitt-serisittskifer, kvartsitt, heterogen amfibolitt, kvarts-feldspat fels/gneis (meta-kvartskeratofyr), (mt)-kvartsitt (meta-chert) (grønnsteinkonglomerat)	magnetitt-rik skifer (meta. mt-tuff), mt-kvartsitt (meta-chert)
	0 - 310		meta-basalter i heng (HMB)	amfibolitt, amfibolitt med mandelsteintekstur, båndet amfibolitt (grønnsteinkonglomerat, glimmerskifer, (mt) - kvartsitt (meta-chert))	mandelstein-amfibolitt i øvre halv-delen av sekvensen
Støren-gruppe ekvivalent	0 - 140	Tverrfjell meta-vulkanitt og meta-sediment (TVS)	Tverrfjell malm-sone (TOZ)	kvarts-feldspat-rik skifer og gneis (meta-tuff/tuffitt), båndet amfibolitt, biotitt-serisittskifer, kvarts-glimmerskifer, amfibolitt, kvartsitt, mt-kvartsitt (meta-chert), kvarts-feldspat fels/gneis (meta-kvartskeratofyr), meta. konglomeratisk slamstein,vasskis (svfid-malm (Tverrfjellet), grønnstein-konglomerat)	meta. konglomeratisk slamsten
	0 - 200		meta-basalter i ligg (FMB)	amfibolitt, leopard-teksturert amfibolitt, grønnskifer, lys-amfibolitt, (mt)-kvartsitt (meta-chert), vasskis (glimmerskifer, kvartsitt)	leopard-teksturert amfibolitt, (mt)-kvartsitt (meta-chert), vasskis
	40 - 400	midtre meta-sediment (MMS)		(granat)-biotitt-serisittskifer, garbenskifer, karbonat-båndet klorittskifer, kvarts-glimmerskifer, kvartsitt, meta. konglomeratisk slamstein, meta-gråvakke, po-mineralisering (amfibolitt)	to horisonter med meta. konglo-meratisk slamstein og meta-gråvakke, po-mineralisering nær kontakt til FMB
Gula-gruppe ekvivalent	0 - 180	nedre meta-vulkanitt (LMV)		amfibolitt, leopard-teksturert amfibolitt, båndet amfibolitt (heterogen amfibolitt, kvartsitt, glimmerskifer)	leopard-teksturert amfibolitt
		nedre meta-sediment (LMS)		kvartsfyllitt, garbenskifer	

MAJOR ROCKTYPES OF THE HJERKINN - AREA

Sediments

7. Quartzites and mica-rich quartzites = meta. qtz arenites (deposited by turbidity currents or developed from bottom currents)

8. Qtz - phyllites and qtz-mica schists (semi - pelites) = meta. qtz - pelites or siltstones

9. (Carbonate, amphibole, garnet) - biotite - sericite schist = meta hemipelagic pelite

10. Carbonate-rich mica schists, carbonate-rich phyllosilicate - qtz - fspar gneisses/schists and magnetite-rich mica schists = meta-tuffs /-tuffites, meta. tuffaceous sediments, meta. exhalative qtz and mt enriched epiclastic sediments

11. Matrix supported clastic sediments

    a. meta. conglomeratic sandstone/conglomeratic mudstone and greywackes = fluxo - turbidites/mud flows (para-conglomerates, tilloides)
    Polymict, chaotic assemblage of coarse to fine clasts set in a sandy or muddy matrix

    b. meta - lahar = volcanoclastic sediment

    proximal facies: greenstone konclomerate
    Vesiculated basalt fragments and some qtz - fspar clasts surrounded by sparse to abundant pelitic (cloritic) matrix

    distal facies: carbonate-rich sericite - biotite - chlorite schist with transition into carbonate-rich biotite-chlorite-sericite schist (supp. mixed fine grained volcanic and epiclastic sedimentary material)

lørdag

19

september

uke 38

m	t	o	t	f	l	s
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Rentedager: 259-101
Årets dager: 262-103

1987

Vi Vaare Kjemiter

chemical precipitates

in order to avoid detecte

on which major components

of the rock, silicates and

carbonates were dissolved de-

8

9 rectly by exhalation.

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17

MAJOR ROCKTYPES OF THE HJERKINN-AREA

Mafic and felsic volcanic rocks, exhalites

1. Amphibolites and greenschists/greenstones = meta - basalt flows (mainly sheet flows and lobate flows)
   Within definate stratigraphical levels with leopard - texture or as porphyritic amphibolite (blasto - amygdaloidal texture).
   Sporadically as plagioclase amphibolies = meta. basaltic andesite

2. Banded amphibolite = pyroclastic deposits, meta-tuff (ash)

   Well - defined compositional banding. Alternation of mm - to cm - thick mafic and felsic layers. In places bands of quartzite (meta-chert), carbonate and sporadically discontinuous layers of pyrite.

3. Heterogeneous amphibolites = meta - hyaloclastite, locally supp. basaltic agglomerate

4. Carbonate - biotite - chlorite schist = meta. hydrothermally altered mafic volcanic
   Restricted to the Tverrfjell - deposit. Main conduit alteration.

5. Quartz - fspar rocks = meta. felsic volcanics, tuffs (alkalirhyolites, qtz - keratophyrs)

6. Exhalites.

   a. quartzites and magnetite quartzites (oxide facies iron formation)

   b. "vasskis" pyrite deposits (sulfide facies iron formation)

   c. + garnet, + amphibole, - biotite - quartz gneiss (silicate facies iron formation)

BERGARTER I HJERKINNFELTET

Vulkanitter og vulkan relaterte bergarter

1. Amfibolitter og grønnskifere/grønnsteiner = metamorfe basaltiske lavaer

   I bestemte stratigrafiske nivåer med "leopard" - eller "mandelsteinteksturer" (blasto-amygdaloidal tekstur).

2. Båndete amfibolitter = metatuffer (askeavsetninger)

   Rytmisk og/eller arytmisk veksling av mm til cm tykke mafiske og felsiske lag. Stedvis striper av kvartsitt (meta-cherts) og bånd - eller linseformede anrikninger av svovelkis.

3. Heterogene amfibolitter = metamorfe hyaloklastiter og basaltiske pyroklasitter

4. Karbonat - biotitt - klorittskifre = metamorfe altererte vulkanitter

   Representerer den deformerte feedersonen av Tverrfjell-forekomsten.

5. Kvarts - feldspat bergarter = metamorfe felsiske vulkanitter (kvartskeratofyrer)

6. Vulkanokjemitter (Ekshalitter)

   a. kvartsitter og magnetitt-kvartsitter (oksydisk jern-formasjon)

   b. vasskis (sulfidisk jernformasjon)

   c. biotitt - amfibol båndete kvartsitter (silikatisk jern-formasjon)

BERGARTER I HJERKINNFELTET

Sedimenter

7. Kvartsitter og glimmerrike kvartsitter = metamorfe kvarts-arenitter (avsatt av turbidittstrømmer eller dannet av bunnstrømmer)

8. Kvartsfyllitter og kvarts-glimmerskifre (semipelitter) = metamorfe kvartspelitter eller siltsteiner

9. (Karbonat, amfibol, granat) - biotitt - serisittskifre = metamorfe hemipelagiske pelitter

10. Karbonatrike glimmerskifre, karbonatrike fyllosilikat - kvarts - feldspat gneiser og mt - rike skifre = meta tufitter, metamorfe tufittiske sedimenter og urene pelitter og epiklastiske sedimenter med ekshalativ mt

11. Matrisk styrke sedimenter

    a. metamorfe konglomeratiske slamsteiner = fluxo-turbiditter/mud flows metagråvakker

    b. metalahar = vulkanoklastisk sediment

       proksimale fazies: grønnsteinkonglomerat

       distale fazies: karbonatrik serisitt - biotitt -

       klorittskifer med overganger til biotitt - kloritt - serisittskifer

FOLLDAL VERK A/S
avd. Tverrfjellet

BERGARTER I HJERKINNFELTET.

1. Amfibolitter og grønnskifere/grønnsteiner = metamorfe basaltiske lavaer (Tholeiitter og alkalibasalter)

   Skifrige (nematoblastic schistosity) og sjelden massive varieteter, homogen, stedvis båndet, kornstørrelse: submegaskopisk til middelskornig. I bestemte stratigrafiske nivåer med "leopard-" eller "mandelsteinteksturer" (blastoamygdaloidal tekstur).

   Mineralsammensetning: amfibol + oligoklas (17 - 27 % An) + epidot + klinozoisit ± biotitt ± Fe-rik kloritt ± kvarts ± karbonat (dolomitt) ± granat ± ilmenitt og/eller titanitt ± pyritt ± magnetitt.

   Et karakteristisk trekk er det i øynefallende høye karbonat innhold (inntil 15 %) i amfibolittene som overleirer Tverrfjellmalmen.

2. Båndete amfibolitter = metatuffer (askeavsetninger)

   Rytmisk og/eller arytmisk veksling av mm til cm tykke mafiske og felsiske lag. Stedvis striper av kvartsitt (metacherts) og bånd- eller linseformede anrikninger av svovelkis.

   Mineralsammensetning: Fe-rik kloritt + amfibol (porfyroblaster ofte på tvers av lagningen) + karbonat (dolomitt) (rhomboeder, homogen fordelt og/eller som båndaktige anrikning) + oligoklas + kvarts + epidot ± serisitt ± biotitt ± titanitt ± pyritt.

3. Heterogene amfibolitter = a) metamorfe basiske agglomerater og b) metamorfe hyaloklasitter

   Sortering og rundhetsgrad av amfibolittfragmenter gir utslag for enten a) eller b). Sterkt deformerte fragmenter (linser, linealer) av blokk- (<30 cm) og sten-størrelse.

   Mineralsammensetning av matriks: kvart + plagioklas + amfibol (porfyroblaster); epidot + kvarts + kloritt + karbonat ± biotitt ± oligoklas.

4. Karbonat - biotitt - klorittskifre = metamorfe altererte basiske vulkanitter

Sterkt deformerte (ofte disharmonisk foldet) sjelden udeformerte ("chicken wire" tekstur) skifere, med og uten sulfider (fliser og linser av po og cy, spredte idioblaster av py, sjelden mt). På steder kvartsårer.
Storkornet, granoblastisk og porfyroblastisk.

Mineralsammensetning: Mg - Fe-kloritt + karbonat (dolomitt og ankeritt) (rhomboeder) + biotitt + feldspat (plagioklas og K-feldspat) + kvarts ± serisitt ± amfibol ± sulfid ± magnetitt ± granat.

5. Kvarts - feldspat bergarter = kvartskeratofyrer (natriumrike alkalirhyolitter)(tuffer)

Massive og skifrige varieteter, båndet (båndingskyldes variasjoner i gehalter av kvarts, fspat og amfibol), men også homogen, finkornet - granoblastisk og porfyroblastisk, ofte sterkt granulert.

Mineralsammensetning: Kvarts + oligoklas ± K-feldspat ± amfibol (porfyroblaster) ± serisitt ± biotitt ± karbonat ± Fe-rik kloritt ± Mg - Fe kloritt (fyllinger i skjærsoner).

6. Vulkanokjemitter (Ekshalitter) = a) kvartsitter og magnetitt -kvartsitter (oxidisk jernformasjon) b) Vasskis (sulfidisk jernformasjon) c) silikatisk jernformasjon

a) tette, finkornete kvartsitter med og uten submegaskopiske korn av magnetitt som enten er jevnt fordelt, eller er konsentrert i mm til cm tykke bånd.

b) granoblastisk kvarts og karbonat som matrisk for sulfider (py, po), massive og båndete varieteter.

c) kvarts og phyllosilikater (biotitt, kloritt) med og uten amfibol (porfyroblaster) og granat (ekstremt finkornig) i finbåndet veksling. Ofte magnetittanrikninger, sjelden epidot.

7. Kvartsitter og glimmerrike kvartsitter = metamorfe kvartsarenitter (dannet ved turbidittstrømmer ?)

Finkornet, granoblastisk, phyllosilikater (serisitt + biotitt + Fe-rik kloritt) er anriket i mm-tykke lag (båndete kvartsitter) eller omvokser "øyne" av kvarts (pseudokonglomeratstruktur som er dannet gjennom to ulike foldningsfaser.

8. Kvartsfyllitter og kvarts-glimmerskifre (semipelitter) = metamorfe kvartspelitter eller siltsteiner

Lyse, finkornete to-glimmerbergarter (serisitt og biotitt) med betydelig innhold av kvarts. Homogen, sjelden båndinq eller laminasjon forårsaket av variasjoner i anrikningen av biotitt. Biotitt stedvis som porfyroblaster (0,1 - 0,15 cm) med orientering på tvers av hovedskifrighet.

9. (Karbonat,amfibol,granat) biotitt-serisittskifre = metamorfe hemipelagiske pelitter

Lyse, fin - til middelskornete to - glimmerbergarter med og uten granat-subidioblaster (syntektonisk med post-tektonisk påvekst). Sjelden som Garbenskifer. Spredte porfyroblaster av biotitt (0,1 - 0,2 cm) som går på tvers (cross-biotite) men kan også ligge parallelt med hoved-skifrigheten. Oftest homogen men kan også være betydelig cm-båndet (opprinnelig silt-leire veksling).

Mineralsammensetning: serisitt (muskovit) + kvarts + biotitt ± Fe-rik kloritt ± karbonat (rhomboeder) ± granat (almandin) ± amfibol ± feldspat ± turmalin (schørl, authigen).

10. Karbonatrike skifre og karbonatrike fyllosilikat-kvarts - feldspat gneiser = metatuffer, metatuffitter, metamorfe tuffitiske sedimenter og urene pelitter

Lyse og mørke, fin til middelskornige bergarter. Homogene båndete og laminerte varieteter. Sterk varierende sammen-setning. Karakteristisk ved høy konsentrasjon av karbonat og hyppig opptreden av Mg-Fe kloritt.

Mineralsammensetning: Fe-rik kloritt + biotitt + karbonat + feldspat + kvarts ± Mg - Fe kloritt ± epidot ± serisitt ± amfibol (porfyroblaster).

11. Matriks styre sedimenter

a. metamorfe konglomeratiske slamsteiner (fluxo-turbiditter/mud flows)

Blastopsefittisk tekstur. Sterkt deformerte (linser og linealer) fragmenter med størrelse på mellom sten og sand (20 - 2 mm) i matriks rik på sand eller leire fraksjon. Dårlig sortering. Polymikt.

Fragment Fragmenter: granoblastisk kvarts (flint,chert), kvarts-feldspat fels (kvartskeratofyr), granitt eller granodioritt, marmor, sjelden amfibolitt eller kloritt-skifer (meta-basalter).

Matriks: kvarts + feldspat + Fe-rik kloritt + serisitt + biotitt + epidot ± karbonat ± amfibol (porfyroblaster)

meta-gråvakker

Blastopsammittisk tekstur.

b. meta-lahar = vulkanoklastisk sediment

Proksimale facies: grønnsteinkonglomerat

Blastopsefittisk og blastopsammittisk tekstur. Stert deformerte (flate linser og linealer) fragmenter med maksimum størrelse 100 cm (lengde) x 30 cm (bredde) x 5 cm (tykkelse) i leire matriks.

Fragmenter: amfibolitt med blasto-amygdaloidal tekstur (variolittiske meta-basalter) og amfibolførender kvarts-feldspat fels (metamorfe sure vulkanitter).

Matriks: Fe-rik kloritt + biotitt + karbonat + epidot + kvarts ± feldspat ± titanitt ± serisitt ± amfibol.

Distale facies: karbonatrik serisitt-biotitt-kloritt-skifer med overganger til biotitt-kloritt-serisittskifer

Tverrfjellgrava
Borhull

Susceptibility measurements

DDH 768 g (scintrex SM-5)

Results in 10^{-3} cgs units

Goal zone → 165.00 – 167.20 ore zone

1.00	0.0	54.00	0.1	101.70	0.4	130.50	4.5	163.00	8.7		
2.00	0.0	55.00	0.0	102.00	0.4	130.60	32.6	163.50	12.7		
3.00	0.0	56.00	0.2	103.00	0.7	130.80	13.6	164.00	8.0		
4.00	0.0	57	0.1	104.00	0.6	131.10	12.6	164.50	11.7		
5.00	0.0	58	0.1	105.00	0.4	131.50	6.3	165.00	8.7		
6	0.0	59	0.0	106.00	2.2	131.80	19.6	165.50	20.7		
7	0.0	60	0.1	106.75	1.3	132.00	5.6	166.00	8.7		
8	0.0	61	0.2	107.00	1.3	132.50	3.5	166.50	13.7		
9	0.0	62	0.2	107.50	1.4	133.00	9.1	167.00	9.7		
10	0.1	63	0.2	108.00	1.1	133.50	4.0	167.50	36.7		
11	0.1	64	0.1	108.50	0.3	134.00	3.1	168.00	3.3		
12	0.0	65	0.0	109.00	0.5	135.50	3.8	168.50	1.0		
13	0.1	66	0.1	110.00	1.2	136.00	3.5	169.00	0.7		
14	0.1	67	0.0	111.00	2.0	136.50	5.6	169.50	0.7		
15	0.1	68	0.0	111.50	3.6	137.00	4.9	170.00	0.7		
16	0.1	69	0.1	112.00	2.6	137.50	16.6	170.50	0.5		
17	0.1	70	0.1	112.50	2.3	138.00	2.2	171.00	0.4		
18	0.0	71	0.1	113.00	2.9	139.00	0.9	171.50	3.5		
19	0.1	72	0.1	114.00	5.3	140.00	1.4	171.70	9.7		
20	0.0	73	0.1	114.50	2.8	141.00	0.2	172.00	0.7		
21	0.1	74	0.0	115.00	1.2	142.00	4.4	172.50	0.0		
22	0.1	75	0.0	115.25	8.9	143.00	0.1	173.50	0.1		
23	0.0	76	0.0	115.50	2.4	144.00	0.2	174.00	0.2		
24	0.1	77	0.0	116.00	2.2	145.00	0.3	175.00	0.9		
25	0.0	78	0.0	116.50	1.9	145.75	5.4	176.00	0.1		
26	0.1	79	0.2	117.00	3.3	146.00	7.2	177.00	0.1		
27	0.0	80	0.0	117.50	2.6	146.60	36.7	178.00	0.0		
28	0.1	81	0.0	118.00	1.8	147.00	4.6	179.00	0.2		
29	0.0	82	0.0	118.50	0.4	148.00	0.5	180.00	0.4		
30	0.0	83	0.0	119.00	0.6	149.00	1.0	181.00	0.3		
31	0.0	84	0.0	119.50	1.1	150.00	0.7	182.00	0.2		
32	0.0	85	0.0	120.00	1.1	150.50	17.7	183.00	0.1		
33	0.0	86	0.0	120.50	0.2	151.00	7.0	184.00	0.3		
34	0.0	87	0.0	121.00	0.1	151.50	5.3	185.00	0.2		
35	0.1	88	0.0	122.00	0.1	152.00	1.0	186.00	0.2		
36	0.0	89	0.0	123.00	0.0	153.00	2.6	187.00	0.3		
37	0.0	90	0.0	124.00	0.2	154.00	0.4	188.00	0.3		
38	0.0	91	0.1	125.00	0.4	155.00	6.6	189.00	0.1		
39	0.0	92	0.1	125.50	1.4	155.50	46.7	190.00	0.3		
40	0.0	93	0.1	126.00	0.2	155.90	3.1	190.60	6.5		
41	0.0	94	0.2	126.20	26.3	156.40	2.8	191.00	0.2		
42	0.0	95	0.2	126.50	5.2	157.00	5.1	192.00	0.8		
43	0.0	96	0.3	127.00	4.0	157.50	10.7	192.40	4.1		
44	0.0	97	0.3	127.35	18.0	158.00	3.6	192.60	6.5		
45	0.0	97.30	0.6	127.45	19.2	158.50	0.3	193.00	1.1		
46	0.0	97.70	2.9	127.70	2.6	159.00	1.0	193.50	0.9		
47	0.0	98.0	2.6	128.00	0.7	159.50	6.9	194.00	2.3		
48	0.0	98.50	1.7	128.30	19.3	160.00	5.9	194.50	0.7		
49	0.1	99.00	1.8	128.65	44.3	160.50	7.1	195.00	1.1		
50	0.1	99.50	3.4	128.90	21.6	161.00	2.9	195.50	3.1		
51	0.1	100.00	2.5	129.00	3.1	161.50	4.1	196.00	4.3		
52	0.1	100.50	2.3	129.50	3.0	162.00	3.6	196.50	0.3		
53	0.0	101.00	3.3	130.00	8.6	162.50	2.8	197.00	1.1		
								197.50	12.4		
								198.00	2.6		

7685

<7al 233.70 - 233.90 ate (enviou) [illegible] 1 ord. prov 17 på II Trinoffilial
139,2 SEM VOO

198.50	0.6	224.20	4.9	254.00	0.1	309.00	0.0	337.70	6.5
199.00	1.7	224.50	3.5	255.00	0.0	310.00	0.0	337.90	0.0
199.50	0.2	225.00	2.8	256.00	0.0	311.00	0.0		
200.00	9.4	225.50	3.3	257.00	0.0	312.00	0.0		
200.50	4.2	226.00	3.2	258.00	0.0	313.00	0.0		
201.00	6.5	226.50	2.6	259.00	0.0	314.00	0.0		
201.50	1.4	227.00	1.9	260.00	0.0	315.00	0.3		
202.00	3.6	227.50	0.7	261.00	0.0	316.00	0.1		
202.50	3.0	228.00	2.2	262.00	0.0	317.00	0.0		
203.00	3.8	228.50	4.2	263.00	0.0	318.00	0.0		
203.50	51.4	229.00	0.0	264.00	0.0	318.50	0.0		
204.00	0.3	229.50	1.5	265.00	0.0	318.65	1.3		
204.50	3.6	230.00	2.4	266.00	0.0	318.70	17.4		
205.00	1.1	230.20	2.0	267.00	0.0	318.80	29.3		
205.20	13.4	231.00	2.3	268.00	0.0	318.90	13.3		
205.50	13.4	231.50	4.8	269.00	0.0	320.00	2.7		
206.00	4.6	232.00	0.7	270.00	0.0	320.10	19.3		
206.50	14.4	232.50	3.4	271.00	0.0	320.20	32.3		
206.90	7.6	233.00	3.5	272.00	0.0	320.40	25.3		
207.00	4.1	233.50	4.7	273.00	0.0	320.60	31.3		
207.50	1.6	234.00	1.9	274.00	0.0	320.70	42.3		
208.00	2.5	234.50	1.6	276.00	0.0	320.80	0.4		
208.50	0.3	235.00	2.4	276.00	0.0	321.00	0.3		
209.00	0.6	235.50	2.6	277.00	0.0	321.30	25.3		
209.50	0.3	236.00	3.5	278.00	0.0	321.50	5.2		
210.00	0.1	236.20	3.1	279.00	0.1	321.60	26.3		
210.50	1.7	236.50	4.6	280.00	0.1	321.70	19.3		
211.00	0.1	236.70	8.5	281.00	0.0	321.80	0.9		
212.00	0.5	236.90	14.5	282.00	0.0	322.00	1.3		
213.00	1.1	238.00	22.5	283.00	0.0	322.30	5.2		
213.80	12.6	238.20	9.5	284.00	0.0	322.50	33.5		
214.00	0.2	238.50	10.5	285.00	0.0	322.70	27.5		
214.30	1.3	239.00	0.0	286.00	0.0	322.80	21.5		
214.50	0.3	239.30	22.5	287.00	0.0	323.00	32.5		
215.00	0.2	239.70	0.8	288.00	0.0	323.10	26.5		
216.00	0.4	240.00	0.1	289.00	0.0	323.30	25.5		
217.00	0.4	240.60	0.3	290.00	0.0	323.50	2.8		
218.00	1.9	241.10	0.3	291.00	0.1	323.70	1.3		
218.50	0.0	241.50	0.4	292.00	0.0	323.90	0.0		
218.90	18.6	242.00	0.1	293.00	0.0	324.30	0.2		
219.00	27.6	242.40	0.7	294.00	0.0	324.50	0.1		
219.20	20.6	243.00	1.3	295.00	0.0	325.00	0.1		
219.50	12.6	243.40	0.8	296.00	0.0	326.00	0.0		
219.80	9.6	244.00	0.2	297.00	0.0	327.00	0.0		
220.00	3.5	244.50	0.3	298.00	0.0	328.00	0.0		
220.40	10.0	245.00	0.4	299.00	0.0	329.00	0.0		
220.60	7.4	246.00	0.2	300.00	0.0	330.00	0.0		
220.90	20.4	247.00	0.7	301.00	0.0	331.00	0.1		
221.30	25.4	248.00	0.5	302.00	0.0	332.00	0.0		
221.50	21.5	249.00	0.1	303.00	0.0	333.00	0.0		
222.00	1.2	249.50	0.0	304.00	0.0	334.00	0.0		
222.50	9.4	250.00	0.7	305.00	0.0	335.00	0.0		
223.00	14.4	251.00	0.1	306.00	0.0	336.00	0.0		
223.50	2.6	252.00	0.1	307.00	0.0	337.00	0.0		
		253.00	0.1	308.00	0.0	337.50	0.7		
						337.60	11.7		

7689

338.50	0.2
339.00	0.2
339.40	0.7
339.80	0.0
340.50	0.0
341.35	0.0
342.00	0.0
343.20	0.0
344.50	0.0
345.00	0.0
346.00	0.0
347.00	0.0
347.20	0.3
347.90	0.3
349.00	0.0
350.00	0.1
351.00	0.0
352.00	0.0
353.00	0.1
353.80	0.4
354.10	0.2
355.00	0.0
355.60	0.5
356.00	0.0
356.66	0.7
357.00	0.1
358.00	0.0
359.00	0.0
360.00	0.0
361.00	0.0
362.00	0.0
363.00	0.0
364.00	0.0
365.00	0.0
366.00	0.0
367.00	0.0
368.00	0.0
369.00	0.0
370.00	0.0
371.00	0.0
372.00	0.0
373.00	0.0
374.00	0.0
375.00	0.0
376.00	0.0
377.00	0.0
378.60	0.0

439.95 – 448.60 : gränsslinje som går mot bäcken upp.
kontakt mellan sälpensvie + FMB el en telekommunikation

~~← mangår en Sasse~~ [illegible] 1an 2500

~~448.60 gränsslinje [illegible] med pyn't~~

Wide nod ana: Kasse 30 288.73 - 288.98 769 G - 4
290.30 - 290.60
290.90 - 291.00

Kasse 29 273.10 - 274.55 769 G - 3

Kasse 28 264.42 - 265.44 769 G - 2

Kasse ~~27~~ 254.70 - 255.26 769 G - 1
255.41 - 255.60

462.15 - 463.15 769 G - 5

Susceptibility measurements DDH 769 (Sinterex SM-5)
Results in 10^{-3} cgs units.

165.50	0.4	152.00	0.3	197.50	0.3	222.60	1.5	242.50	0.2
166.00	0.3	152.50	0.2	198.00	0.4	223.00	0.3	242.90	4.9
166.50	0.3	153.00	0.2	198.50	0.2	223.50	0.1	243.50	4.2
167.00	0.7	153.50	0.3	199.00	0.7	224.00	0.1	243.90	2.9
167.50	0.4	154.00	0.2	199.50	0.2	224.50	0.0	244.30	1.7
168.00	0.2	154.50	0.2	200.00	0.2	225.00	0.1	244.80	4.7
168.50	0.3	155.00	0.2	200.50	0.2	225.25	0.9	245.20	3.0
169.00	0.2	155.50	0.2	201.00	0.2	225.50	0.5	245.90	6.3
169.50	0.2			201.50	0.1	226.00	6.7	246.60	0.1
170.00	0.2	175.50	0.2	202.00	0.2	226.50	0.2	247.00	0.7
170.50	0.1	176.00	0.2	202.50	0.2	226.75	2.2	247.60	0.4
171.00	0.1	176.50	0.2	203.00	0.2	227.00	0.3	248.00	0.7
171.50	0.2	177.00	0.4	203.50	0.4	227.50	0.2	248.70	0.6
172.00	0.1	177.50	0.4	204.00	0.4	228.00	3.9	249.10	0.0
172.50	0.4	178.00	0.4	204.50	0.2	228.10	2.9	249.60	0.0
173.00	0.7	178.50	0.5	205.00	0.4	228.50	0.3	250.00	0.0
173.50	0.3	179.00	0.7	205.50	0.3	229.00	0.3	251.00	0.0
174.00	1.1	179.50	0.7	206.00	0.2	229.50	0.2	252.00	0.0
174.50	0.2	180.00	0.2	206.50	2.7	230.00	0.3	253.00	0.0
175.00	0.2	180.50	0.2	207.00	0.4	230.50	0.3	254.00	0.0
155.75	0.2	181.00	0.3	207.50	1.0	231.00	0.2	255.00	0.0
156.25	0.0	181.50	0.2	208.00	0.3	231.50	0.2	256.00	0.0
156.75	0.1	182.00	0.3	208.50	0.3	232.00	0.1	256.50	0.8
157.25	0.1	182.50	0.2	209.00	0.4	232.50	0.0	256.90	1.8
157.75	0.0	183.00	0.4	209.50	0.4	233.00	0.1	257.10	2.4
158.25	0.1	183.50	0.5	210.00	0.4	233.50	0.3	257.40	1.4
158.75	0.0	184.00	0.3	210.50	0.1	234.00	0.2	257.60	0.0
159.25	1.3	184.50	0.2	211.00	0.2	234.50	0.2	257.90	0.0
159.75	0.3	185.00	0.3	211.50	0.2	235.00	0.2	259.00	0.0
160.25	0.2	185.50	0.2	212.00	0.2	235.50	0.1	260.00	0.0
160.75	0.3	186.00	0.3	212.50	0.3	236.00	0.2	261.00	0.0
161.25	0.4	186.50	0.3	213.00	0.5	236.50	0.1	261.30	0.1
161.75	0.4	187.00	0.4	213.50	3.2	237.00	0.0	261.90	0.0
162.25	0.8	187.50	0.4	214.00	4.9	237.50	0.2	262.00	0.0
162.75	1.1	188.00	0.6	214.50	0.3	238.00	0.0	262.50	4.2
163.25	0.4	188.50	0.4	215.00	0.3	238.50	0.0	263.00	2.0
163.75	0.3	189.00	0.5	215.50	0.2	238.65	3.3	263.50	10.0
164.25	0.9	189.50	0.1	216.00	0.5	238.80	6.0	264.00	7.0
164.75	2.1	190.00	0.4	216.50	0.3	239.05	7.9	264.20	17.0
165.05	0.5	190.50	0.1	217.00	0.2	239.40	0.4	264.40	7.3
Doszło dla ura		191.00	0.7	217.50	0.6	239.55	7.5	265.00	0.1
tygnie,	146.00	191.50	0.3	218.00	0.3	239.70	1.7	266.00	0.0
	146.50	192.00	0.0	218.50	0.2	240.00	0.8	267.00	0.0
	147.00	192.50	0.1	219.00	4.8	240.20	0.0	268.00	0.0
	147.50	193.00	0.2	219.30	0.9	240.60	1.2	269.00	0.0
	148.00	193.50	0.4	219.80	0.3	241.00	6.8	270.00	0.0
	148.50	194.00	0.5	220.00	0.6	241.20	0.0	271.00	0.0
	149.00	194.50	0.2	220.50	2.0	241.25	1.6	272.00	0.0
	149.50	195.00	1.0	220.90	4.3	241.50	1.4	273.00	0.0
	150.00	195.50	0.8	221.20	4.3	241.80	11.0	274.00	0.0
	150.50	196.00	1.1	221.50	1.0	241.90	45.0	275.00	0.0
	151.00	196.50	0.6	221.90	2.8	242.00	6.5	276.00	0.0
	151.50	197.00	0.6	222.30	0.8	242.10	2.0	277.00	0.0

278.00	0.0	321.00	0.0	344.50	3.6	361.00	0.3	377.70	0.1
279.00	0.0	322.00	0.0	344.80	1.6	361.50	0.3	378.00	0.1
280.00	0.0	323.00	0.0	345.15	0.4	362.00	0.8	378.50	0.1
281.00	0.0	324.00	0.0	345.50	1.3	362.40	0.0	379.00	0.1
282.00	0.1	324.40	0.8	345.80	1.9	362.80	0.0	379.50	0.1
283.00	0.0	325.70	7.5	346.05	0.3	363.30	1.7	380.00	0.1
284.00	0.0	326.05	0.3	346.45	0.7	363.50	3.2	380.50	0.1
285.00	0.0	326.50	1.5	347.00	1.0	364.05	0.0	381.00	0.1
286.00	0.0	327.15	0.3	347.40	5.7	364.50	1.9	381.50	0.1
287.00	0.0	327.50	0.1	347.60	1.6	364.75	2.5	382.00	0.1
288.00	0.0	328.10	0.3	348.00	0.6	365.05	2.8	382.50	0.1
289.00	0.1	328.50	0.3	348.45	1.5	365.30	2.1	383.00	0.1
290.00	0.0	328.65	17.7	348.80	0.7	365.50	0.8	383.50	0.1
290.40	0.1	328.95	3.4	349.00	2.2	365.80	3.4	384.00	0.1
291.10	0.2	329.05	0.0	349.20	0.6	366.00	2.4	384.50	0.1
292.00	0.0	329.20	6.7	349.45	0.9	366.40	1.6	385.00	0.1
293.00	0.0	329.25	3.4	349.55	7.9	366.85	1.3	385.50	0.1
294.00	0.0	329.50	0.1	349.80	2.5	367.05	1.2	386.00	0.1
294.70	10.0	329.70	6.6	350.00	2.4	367.30	1.4	386.50	0.1
295.00	0.0	330.00	0.0	350.30	7.3	367.70	2.0	387.00	0.1
295.25	6.0	331.00	0.0	350.55	0.5	368.00	1.7	387.50	0.1
295.50	1.3	332.00	0.0	350.65	0.3	368.40	11.0	388.00	0.0
296.00	0.1	333.00	0.0	351.00	0.6	368.50	16.0	389.00	0.0
297.00	0.1	333.75	1.6	351.50	0.6	368.85	1.0	390.00	0.0
298.00	0.1	333.85	0.2	351.80	0.5	368.30	0.8	391.00	0.0
299.00	0.1	334.25	13.0	352.15	0.6	369.50	1.2	392.00	0.0
299.90	0.9	334.50	7.1	352.55	0.6	369.80	1.4	393.00	0.0
300.20	2.4	334.80	7.4	352.85	0.7	369.95	22.0	393.20	0.0
300.40	0.1	334.90	0.2	353.10	1.0	370.15	10.0	393.50	0.0
300.55	0.2	335.40	1.6	353.50	1.3	370.50	16.0	393.80	0.3
300.75	0.4	335.80	0.3	353.80	2.2	370.80	30.0	394.10	1.0
301.00	0.0	336.30	0.0	354.00	0.8	370.95	27.0	394.40	0.4
301.25	3.3	337.00	0.2	354.50	3.2	371.15	26.0	394.50	1.2
301.50	0.0	337.50	0.0	354.65	3.6	371.40	2.7	394.80	0.5
302.00	0.0	338.00	0.7	354.90	4.0	371.70	1.0	395.10	1.3
303.00	0.0	338.50	0.2	355.25	17.0	371.80	2.0	395.40	2.2
304.00	0.0	338.90	7.7	355.55	43.0	371.95	1.7	395.80	0.4
305.00	0.0	339.25	8.4	355.65	34.0	372.20	1.1	396.00	0.2
306.00	0.0	339.50	0.3	356.05	54.0	372.50	0.9	396.60	0.0
307.00	0.0	339.90	0.6	356.35	0.9	372.80	1.0	398.00	0.0
308.00	0.0	340.35	0.4	356.65	0.1	373.00	0.4	399.00	0.0
309.00	0.0	340.80	5.4	357.00	0.3	373.50	0.4	400.00	0.0
310.00	0.0	341.20	14.0	357.50	0.3	373.80	1.3	401.00	0.0
311.00	0.0	341.40	5.2	357.85	3.0	374.00	0.6	402.00	0.6
312.00	0.0	341.70	3.4	358.15	0.2	374.50	0.3	402.50	0.3
313.00	0.0	342.00	3.8	358.40	1.5	375.00	0.4	403.00	1.0
314.00	0.0	343.20	7.7	358.70	0.5	375.50	1.4	403.50	0.6
315.00	0.0	343.50	10.0	359.00	4.9	375.80	0.3	404.00	0.2
316.00	0.0	343.90	3.3	359.50	0.1	376.20	0.1	404.40	0.7
317.00	0.0	343.30	0.3	359.80	0.0	376.60	0.9	404.80	0.9
318.00	0.0	343.60	3.0	360.00	0.3	377.00	0.3	405.15	0.3
319.00	0.0	343.75	0.6	360.40	0.2	377.30	0.3	405.50	0.0
320.00	0.0	344.20	0.7	360.75	0.2	377.50	0.4	405.80	0.7

406.00	0.0	442.60	0.2
406.30	0.3	449.00	0.2
406.80	0.3	449.50	0.0
407.00	0.0	450.00	0.2
407.00	0.0	450.50	0.3
409.50	0.7	451.00	0.2
410.15	1.1	451.50	3.9
410.50	0.6	451.60	1.8
411.00	0.1	452.00	0.9
411.50	0.6	452.40	1.5
412.00	0.1	452.50	0.1
412.50	0.9	452.00	0.0
413.00	0.0	453.50	0.3
413.50	0.0	454.00	0.4
414.00	0.0	454.50	0.0
414.50	0.0	455.00	0.2
415.00	0.0	455.50	0.0
415.50	0.0	456.00	0.1
416.00	0.0	456.50	0.0
416.50	0.0	457.00	0.0
417.00	0.0	458.00	0.0
417.50	0.0	~~458.00~~	
418.00	0.0		
419.00	0.0		
420.00	0.0		
421.00	0.0		
422.00	0.0		
423.00	0.0		
424.00	0.0		
425.00	0.0		
426.00	0.0		
427.00	0.0		
428.00	0.0		
429.00	0.0		
430.00	0.0		
431.00	0.0		
432.00	0.0		
433.00	0.0		
434.00	0.0		
435.00	0.0		
436.00	0.0		
437.00	0.0		
438.00	0.0		
439.00	0.0		
440.00	0.0		
441.00	0.0		
442.00	0.0		
443.00	0.0		
443.50	0.2		
444.00	0.0		
445.00	0.0		
446.00	0.0		
447.00	0.0		
448.00	0.0		

~~218.50~~ - 218.90		meta lahar
218.90 - 220.60		quartzite mt spots
220.60 - 222.20		exhalative qtz med innfoldet chloritt sliver
222.20 - 224.65		quartzite mt spots
224.65 - 225.15		meta-lahar innfoldet
225.15 - 226.30		quartzite mt spots
226.30 - 238.55		semi-pelite with dm interlayers of quartzite slowly overgoing into sericitt schist med 5:0 quartzite har alltid idioblaster av mt 228.00 - 228.30 : the cm-tykke lag av c22. brudt med mt diss.
238.55 - 238.65		ex. mt
238.65 - 239.30		kvartsitt og epidottitt sericittschist med high-grade diss of mt + mt på ex mt + qtz (chloty tuffite)
239.30 - 239.50		5:0 - cm:0 skifer med carb. (layer of meta lahar) meta dust ved 239.30 og 239.42 m.
239.50 - 239.70		calc. qtz-rik 5:0-ser schist fra 239.50 - 239.60 m cm alternation between epi sed. og ex qtz. med mt
239.70 - 241.30		quartzite rik på idiob. of mt, between 240.90 - 240.10 sericite rik og veldig høy mt.
241.30 - 241.80		calc. sericitt chlo skifer, ~~tuff~~ sediment med volcanic debris ?
241.80 - 242.00		mt-chert.
242.00 - 242.16		quartzitt with spots of mt
242.16 - 242.72		calc. 5:0 - sericitt skifer
242.72 - 245.80		kvartsitt og semipelitt med gradvelle overganger mt spots av og til. noengang gamske lik 5:0-ser's skifer
245.80 - 246.60		milky qtz
246.60 - 249.45		high calc 5:0-klorit skifer
→ 249.45 - 250.50		amf. med il
250.50 - 257.45		meta-dust
257.45 - 260.50		qtz-fisper rik 5:0ritt-epidot skifer av og til med noninous amf il spots
260.50 - 261.20		~~amf 5:0m~~ klorit-amf. skifer med augen av plagioklas. gamske lik amygdul basalter fra UA
261.20 - 262.00		chlorite-ample-epidote gneiss
262.00 - 264.40		mt dust
264.40 - 294.65		ample med il (277.10 - 279.00 amygdul basalt, 279.35 - 279.95 m amygdul basalt)
294.65 - 294.75		quartzitt med rik på carb og dusky mt. (meta dust lens epidotic-rich lidebergart (amf.)
294.75 - 338.90		amf med il
	295.20 - 295.30	similar 294.65-294.75
	295.42 - 295.54	"
	299.92 - 300.00	quartzitt med carb
	300.15 - 300.27	quartzitt rik på carb epidotic-rich amf. på ~~tegnen~~.
	300.52 - 300.63	quartzitt
	300.71 - 300.80	"
	301.20 - 301.22	" rik på carb.
	305.12 - 305.80	sandet amf rik på carb og epidott
	306.10 - 319.00	amygdul basalt.

	321.40 - 322.60	amygdul basalt
	324.00 - 325.10	carb. tio klorit skifer
	325.60 - 325.90	qtz - tio - serisit skifer
	328.10 - 329.90	blandet tuff med lava og mot bunnen
	329.20 - 329.40	" epidot mS med
		bånd av mt.
	329.62 - 329.75	meta dior mS epidotisert ganger
	330.25 - 330.65	amygdul basalt
	331.05 - 331.35	"
	333.70 - 333.80	meta tuff lag epidote mineral
	334.20 - 336.05	meta tuff og av og til sterk epidot holdig amf. meta tuff lignes hovedsakelig på 325.60 - 325.90
	337.55 - 337.60	meta dior mS på carb.
	338.57 - 338.61	" "
tuffsekvens	~~338.90~~ -	meta tuff similar 334.20 - 336.05
338.90 - 339.35		
339.25 - 345.25	hovedsakelig: blandet serisitskifer feldspar rike ganger, noe altrerte carb klorit skifer deler, litt amf.	
345.25 - 349.00	blandet amfibolitt	
349.00 - 350.05	amf.	
350.05 - 350.35	serisitt skifer	
350.35 - 354.10	blandet amfibolitt	
354.10 - 356.75	serisitt skifer, klorit skifer metadiorit	
356.75 - 358.30	amf. mS på bånd.	
358.30 - 360.70	carb. qtz serisitt skifer (meta pelitt, semi pelitt)	
360.70 - 362.30	qtz serisitt skifer (meta pelitt semi pelitt)	
362.30 - 368.70	mt-dior	
368.70 - 369.85	litic calc. chloritt skifer med bio.	
369.85 - 371.45	mt dior med metavulkanitt mellomlag	
371.45 - 373.50	calc chloritt skifer med ovo ganger til blandet amf.	
	noen mellomlag mot dior?	
373.50 - 375.70	quartzitt	
375.70 - 376.50	chloritt skifer	
376.50 - 378.00	quartzitt	
378.00 - 378.35	chloritt skifer	
378.35 - 383.85	quartzitt	
383.85 - 385.40	chloritt skifer	
385.40 - 385.80	quartzitt	
385.80 - 386.40	bio chlo skifer	
386.40 - 390.90	quartzitt mica- med quartzitt	
390.90 - 391.95	serisitt skifer	
391.95 - 393.60	quartzitt	
393.60 - 393.75	serskifer	
393.75 - 396.60	quartzitt	
396.60 - 397.65	fault	
397.65 - 400.60	sei skrist	
400.60 - 410.35	Kvartsitt	
410.35 - 411.00	skifer	
411.00 - 411.60	Kvartsitt	
411.60 - 415.70	skifer med noen kvartsitt bånd	
415.70 - 417.80	Quartzitt	
417.80 - 439.95	skifer	

258.65 - 358.70 typisk mt smale skifer eller båndet qtz rike pai nivå til pai nivå og i 2x 700°

DIAMOND DRILL LOG

FOLLDAL VERK A/S

Trondfjellet

PAGE 1

From	To	Description 37-769 G	Interval From	Interval To	Assays Cu	Mo	Pb	Zn	Au	Ag
				20-25°						
0.00	57.50	Basalt flow								
		amphibole schist, amphibolite, plagioclase amphibolite								
		gr to grgn, mainly medium grained with subsections								
		fine grained to extremely fine grained, massive								
		sections alternate with predominantly schistose								
		sections, sporadically porphyroblast of biotite								
		randomly orientated as well as aligned with								
		schistosity, bands or irregular veins of qtz, sometimes fizzy bodies,								
		only in places layered, some tuffaceous								
		sections interbedded that here more dacitic								
		looking (qtz-fspar rich biotite-sericite schist)								
		24.45 - 24.47: high altered basalt								
High A		coarsegrained biotite-chlorite schist								
		25.00 - 26.40: tuffaceous section								
		basaltic towards dacitic								
		42.25 - 43.30: tuffaceous section			25-30°					
		basaltic as well as dacitic								
	<	mainly carbonaceous biotite-sericite-chlorite schist								
		41.70 - 41.85: milky qtz								
		47.50 - 47.55: dacitic tuff								
		slightly carb. biotite-sericite-chlorite schist								

Hama Trykk A/S

Ivar Fjellet

DIAMOND DRILL LOG

FOLLDAL VERK A/S

From	To	Description 34 - 769 G	Interval From	Interval To	Cu	Mo	Pb	Zn	Au	Ag
		51.70 - 55.80: dioritic lcas. amphibole idrat gn. medium to even fine grained, prophyric dioritic randomly orientated massive, several dm interlayers of tuffaceous andesitic to dacitic mat (carb. lcas. qtz-fspar rich dioritic - sericitic - chlorite idrat): 51.70 - 52.30, 53.20 - 53.30, 55.35 - 55.70								
57.50	105.70	basalt flow gn. extremely fine grained, idrat lcas, homogeneous, mm bands of carb.-dioritic - qtz assimilate, some rare spots of py or po, occasionally cm bands of high altered basalt (carbonaceous dioritic - chlorite idrat) (often as pebbles in mid-slate), dm interlayers of tuffaceous mat. (andesitic or dacitic), mainly carbonaceous to high carbonaceous qtz-fspar rich dioritic - sericitic - chlorite idrat: 62.20 - 62.50, 72.20 - 72.25, 72.30 - 72.80, 74.80 - 74.95, 75.60 - 75.75, 78.35 - 78.40, 80.15 - 80.25, 81.60 - 81.70, 81.80 - 82.10, 82.90 - 83.40, 86.95 - 87.05, 91.50 - 91.60, 61.15 - 61.30: milky qtz 62.60 - 62.75: bands of milky qtz 72.25 - 72.30: milky qtz some irregular spots of py 77.15 - 77.25: milky qtz 82.10 - 82.80: "		25° - 30° 92.15 - 92.50, 95.10 - 95.25, 95.35 - 95.45, 96.90 - 97.15, 97.90 - 98.10, 98.30 - 98.35, 101.90 - 102.10, 103.05 - 103.20, 104.50 - 104.70,						

Tverrfjellet

DIAMOND DRILL LOG

FOLLDAL VERK A/S

From	To	Description BH - 769 g	Interval From	Interval To	Assays Cu	Mo	Pb	Zn	Au	Ag
105.70	218.80	sequence of basaltic and andesitic ~~to trans-basaltic~~ tuffs and tuffites in alternation with tuffaceous sediments, mostly sharp boundarys between more volcanic and more sedimentary material, some intrusections of conglomeratic habit, some bands of milky qtz								
		105.70 - 110.25: basaltic tuff		30-35°						
A/C		carbonaceous to high carb. qtz bear. biotite-sericite-chlorite schist gn, fine grained, layered with flaser and wavy texture, biotite and chlorite generally forming distinct layers, carbonate mainly concentrated with qtz or qtz-fspar flasers or inter layers, rare interlayers of fine crystalline basalt (see before)							correlation BH 769 I	
		109.15 - 109.30: milky qtz								
		110.25 - 115.20: tuffaceous sediment to carbonaceous: carb bear. qtz - rich biotite - sericite - chlorite schist gn, fine crystalline with often porphyric biotite randomly orientated, laminated with occasionally flaser texture, carbonate mainly concentrated with qtz or qtz-fspar interlayers								

* Biotite forms too porphyro-blasts aligned with schistosity

Transfjellet

DIAMOND DRILL LOG

FOLLDAL VERK A/S

BH - 769 G

From	To	Description	Interval From	Interval To	Assays Cu	Mo	Pb	Zn	Au	Ag	
		115.70 - 118.90: tuffaceous ~~conglomerate~~ sed. slightly carb. qtz-rich diorite-sericite-chlorite schist grgn. fine crystalline with often porphyric diorite randomly orientated, extreme flase texture, rounded qtz-fragments (clasts) pressed, in places slightly obvious conglomerate, carbonate mainly accompanying qtz-clasts								
		118.90 - 119.40: tuffaceous sediment see: 110.25 - 115.70								
		119.40 - 119.20: basaltic tuff / tuffite see: 105.70 - 110.25								
A/C		119.80 - 122.75: tuffaceous sediment qtz-rich diorite-chlorite-sericite schist lightgrey-grey. fine crystalline with porphyric dio. randomly orientated, laminated with occasionally flase texture see too 110.25 - 115.70		35-40°				121.50 fault		
		122.75 - 124.90: basaltic tuffite								
A/C		carbonaceous qtz-diorite-sericite-chlorite schist see: 105.70 - 110.25 here more laminated, stronger foliation								

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Transfilled

DIAMOND DRILL LOG

FOLLDAL VERK A/S

BH - 769 E

From	To	Description	Interval From	Interval To	Assays Cu	Mo	Pb	Zn	Au	Ag
		122.55 - 122.80: bands of milky qtz								
		124.90 - 126.30: tuffaceous sediment								
		see: 119.80 - 122.75 here occasionally conglomeratic, extremely fine banded texture								
		126.30 - 128.35: basaltic tuff								
		see: 105.70 - 110.25								
		126.60 - 126.95: agglomerate round bands of milky qtz with occ. some carbonate embedded in a matrix of biotite - sericite - chlorite								
		128.35 - 148.50: tuffaceous sediment slightly carbonaceous qtz-rich biotite-chlorite-sericite schist								
		see: 119.80 - 122.75 sometimes conglomeratic, here with very distinct fine banded texture: 136.20 - 137.40, 138.10 - 138.35, 143.60 - 143.75, 146.05 - 146.55 (bands ?)								
		147.05: band of milky qtz								
		148.50 - 149.80: basaltic tuff								
		see: 105.70 - 110.25 here high foliation								
		149.80 - 155.00: tuffaceous conglomerate								
		see: 115.70 - 118.90 some intersections of laminated tuffaceous sed.								

coll. sample 768 E/1

finest diss of int rock spots towards end of sequence

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DIAMOND DRILL LOG

FOLLDAL VERK A/S

From	To	Description 34 - 769	Interval From	Interval To	Cu	Mo	Pb	Zn	Au	Ag
		155.00 - 155.40: basaltic tuff								
		see: 105.70 - 110.25								
		155.00: bomb of milky qtz								
		155.40 - 156.00: tuffaceous sediment								
		see: 119.80 - 122.75								
		156.00 - 162.00: basaltic tuff / tuffite		40°						
		see: 105.70 - 110.25 here highe foliation,								
		gradual change in qtz-content sometimes								
		high in qtz, here often very distinct flaser								
		texture may be conglomeratic								
		162.00 - 163.70: tuffaceous sediment		40°						
		see: 119.80 - 122.75								
		163.70 - 163.95: basaltic tuff								
		see: 156.00 - 162.00 no flaser texture								
		163.95 - 164.75: tuffaceous sediment								
		see: 119.80 - 122.75								
		164.75 - 164.90: basaltic tuff								
		see: 163.70 - 163.95								
		164.90 - 173.00: tuffaceous sediment								
		see: 119.80 - 122.75 changing qtz-content, occasionally								
		reading chlorite-sericite rich quartzite								

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DIAMOND DRILL LOG

FOLLDAL VERK A/S

DH - 769

From	To	Description	Interval From	Interval To	Cu	Mo	Pb	Zn	Au	Ag
		166.65 - 166.80: carbonate rich qtz-rich biotite-chlorite-sericite tuff qu to light grey, mainly flasertextire, foliated, idiomorphic carbonate scattered throughout, max size 0.3 cm Ø								
	C									
		166.90 - 167.00: carbonaceous biotite-chlorite-sericite-rich quartzite greenish grey, laminated, idiomorphic carbonate scattered through, max. size 0.3 cm Ø								
	C									
		173.00 - 174.20: basaltic tuff								
		see: 156.00 - 162.00								
		174.20 - 181.60: tuffaceous sediment								
		see: 119.80 - 122.75, here often sections with cm-alternation of qtz and phyllosilicates, interbeds of high altered basalt (coarse grained biotite-sericite-chlorite assemblage), very distinct flasertextire from 178.00 - 181.60 (tuffaceous conglomerate)								
		181.60 - 210.35: basaltic tuffite			40° to 45°					
		see: 105.70 - 110.25, here some cm interlayer of likely tuffaceous sediment, always gradial transitions between, in places spotted carbonate: 182.15 - 182.75, 184.10 - 184.40, 207.10 - 207.60								
	C									

195.55 - 197.90 fault

Tverrfjellet

DIAMOND DRILL LOG

FOLLDAL VERK A/S

From	To	Description	Interval From	Interval To	Cu	Mo	Pb	Zn	Au	Ag
		3H - 769 ø								
		207.00 - 207.60: carbonaceous bio-chl.-ser.-chl. qtz-rich qtzite								
		see: 166.90 - 167.00		max. size	carbonate					
		0.7 cm ø								
		210.35 - 218.80: tuffaceous sediment								
		see: 119.80 - 122.75 m.								
218.80	220.70	biotite-chlorite bearing sericite-rich qtzite		40-45°						
		lightgreen/light to gr, fine grained, laminated, sometimes						core taken with 115.70 - 116.50 3H - 768 ø		
		slightly conglomeratic, giant spots of mt homogeneously								
		distributed, max size 0.3 cm ø, mainly hypidiomorphic								
220.70	222.50	Qtzt								
		massive, some lamination due to carbonate or								
		mt impregnation, occasionally flasers of carbonaceous-								
		biotite-chlorite schist (altered basalt), giant spots of								
		mt very scarce.								
222.50	226.75	qtzite								
		rounded qtzite fragments embedded in a matrix								
		of biotite bearing sericite schist, slightly carbonaceous,								
		mainly accompanied with qtzite clasts,								
		very distinct flaser texture, occasionally giant								
		spots of mt: 222.50 - 222.60, 225.25 - 225.30, 225.50 - 226.15, 226.65 - 226.75								
light/C		223.00 - 223.25: high altered basaltic tuff / flow								

Yves Gillet

DIAMOND DRILL LOG

FOLLDAL VERK A/S

From	To	Description	Interval From	Interval To	Cu	Mo	Pb	Zn	Au	Ag	
		BH - 769 g									
		carbonaceous biotite - chlorite schist									
		brownish, laminated, folded, mainly									
		coarse grained, spotted carb.									
226.75	245.80	tuffaceous sediment ~~metaquartzite~~ often mixed with volcanic mat									
		slightly carb. ~~gneiss~~ biotite - sericite ~~schist~~ schist ~~to medium grained~~									
		gs to slightly gritty, laminated with sporadically						section correlates			
		indistinct flaser texture, prograding phyllosilicate						with mat. from			
		content towards hanging, carbonate eyes as small						about 144.00 - 165.35			
		spots or fuzzy bodies mainly arranged with quartzite						BH - 768 g			
		interlayers, spotted mt throughout, sometimes interlayers with spots of py									
	238.60 - 238.75:	qtz - feldspar - translucent qtz		45°				228.00 - 228.25: three bands of			
		massive, some finest stringers of						dust with dusty			
		mt, rare spots of carb.						ex mt			
	238.75 - 239.10:	dacitic tuffite									
		qtz - feldspar rich biotite - sericite schist									
		lithology, fine grained with porphyritic biotite, laminated with									
		flaser texture									
	239.20 - 239.25:	qtz - feldspar									
		stringers and stripes of ex mt									
	239.25 - 239.50:	andesitic to basaltic tuffite									
		slightly carb. qtz - rich biotite - chlorite schist									

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DIAMOND DRILL LOG

FOLLDAL VERK A/S

From	To	Description BH - 769 G	Interval From	Interval To	Cu	Mo	Pb	Zn	Au	Ag
		gn to grgn. fine grained with porphyric biotite randomly oriented								
		241.80 - 242.00 : chert								
		high concentration of finest cr. mt								
		242.40 - 243.50 : dacitic tuffite		40°						
		carbonate bear. qtz-rich biotite - sericite schist								
		lightgreen/gr. fine grained with porphyroblasts								
		of biotite randomly oriented, laminated with								
		often distinct flaso texture, interbedded								
		10 cm section of more conglomeratic tuffaceous sed.								
245.80	246.60	milky qtz								
246.60	249.25	basaltic tuffite								
		high carbonaceous to carb. qtz-rich biotite-chlorite-sericite schist								
	≤	green, fine grained with porphyric biotite aligned with								
		schistosity, layered with slightly flaso texture,								
		varying qtz-amount, carbonate mainly accompanying								
		qtz-rich interbeds, very rarely spotted carb.								
		some cm interlayers of qtz-chloritic								
249.25	358.30	basalt section								
		249.25 - 255.55: basalt flow								

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DIAMOND DRILL LOG

FOLLDAL VERK A/S

From	To	Description BH-769 G	Interval From	Interval To	Assays Cu	Mo	Pb	Zn	Au	Ag
		amphibole schist to plagioclase amphibolite gn. mainly fine to extremely fine grained with section more medium grained, gradual transitions, mainly homogeneous, some irregular qtz-carbonate veining, finest spots of mt or il								
		255.55 - 256.55: chert amphibole tuff. quartzite mildly layered, finest dissem of po								
		256.55 - 262.00: qtz-mt-diabase - epidote rock may be porphyr light gn to yellowish gn, mainly fine grained with slightly porphyric texture, laminated to layered, some individual porphyroblasts of plag. (mainly diabase dust), spots of il								
		262.00 - 265.25: chert massive to mildly laminated, some rare spots and stringers of py								
		265.25 - 300.80: basalt flow amphibole schist								

Trondfjellet

DIAMOND DRILL LOG

FOLLDAL VERK A/S

From	To	Description BH - 769 E	Interval From	Interval To	Assays Cu	Mo	Pb	Zn	Au	Ag
		gn. mainly very fine grained with occ. dm intrusions more medium grained, predominately homogeneous massive but partly distinct laminated, some irregular qtz-carbonate veining, finest spots of ~~py~~ py throughout, in places albite porphyroblasts (mainly round or lense shaped)								
		265.30 - 265.35: chert								
		266.60 - 265.65: chert clouded by ep mt								
		294.60 - 294.80: chert clouded by ep mt some stringers of py								
		295.45 - 295.50: chert clouded by ep mt								
		300.80 - 301.85: basalts, tuffites and tuffaceous sediments close alternation of siltite - chert with chert and basaltic mat. carbonate bear. strongly layered chert layers with fizzy py min								

Tverrfjellet

DIAMOND DRILL LOG

FOLLDAL VERK A/S

BH - 769 S

From	To	Description	Interval From	Interval To	Cu	Mo	Pb	Zn	Au	Ag
		301.85 - 323.30: basalt flow amphibole schist gr. extremely fine grained with sections more fine cryst., mainly massive but section laminated & layered, sometimes flares of biotite randomly orientated, occasionally section with porphyric albite, intereds of lapilli tuff, bands and irregular veins of qtz-carbonate, spotted il throughout								
		323.30 - 358.30: basalt flows, basaltic tuffs, chert dacitic tuffites and qtz-keratophyrs, grading with tuffaceous sediments (may also sometimes tuffaceous sed.). alternation bedding with sharp boundaries and gradual transitions. ~~sedimentites~~ and amphibole schists, biotite schists, carbonaceous biotite-sericite schists, sericite bearing quartzites, chert			45°					
		340.35 - 340.45: chert bounded with ex mt								
		341.40 - 342.60: chert, partly layered by ex mt								
		sections with pyrrhotite amphibole layers up to 1 cm wide								

cont. BH 768 S

BH mt

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DIAMOND DRILL LOG

FOLLDAL VERK A/S

Tverrfjellet

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From	To	Description	Interval From	Interval To	Assays Cu	Mo	Pb	Zn	Au	Ag
		BH - 769								
		355.20 - 356.20: dust, banded by ct vnt								
—		slightly						bottom part near basalt similar to basalts from BH - 768 bordering		
358.30	372.00	tuffaceous sediment								
		biotite-sericite bearing quartzite, carbonaceous qtz-rich biotite-sericite dust						biotite-sericite-chlorite dust		
		biotite-bear. sericite-rich quartzite, quartzite								
		lightgrey, laminated with flaser and lenticular texture, sometimes likely conglomeratic, biotite often porphyric and randomly orientated, changing qtz amount, sometimes irregular								
		bodies of milky qtz, some spots of py mostly								
		concentrated within slightly clastic looking			py	(361.50 - 362.00 m; 362.60 - 362.70 m)				
		sections, locally clouded vnt or vnt banded								
		sections (368.60 - 368.75, 369.85 - 371.25)								
—										
372.00	373.50	basaltic tuffite								
		carbonatic qtz-fspar rich amphibole-biotite-chlorite schist								
		gn, fine grained, needles of amphibole aligned with								
		schistosity, spots of carbonate, laminated to layered,								
		often with flaser texture								
—										
373.50	387.80	quartzite								
		laminated by sericite interlayers, occasionally								
		flawed, sometimes intermixed tuffaceous mat.								

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Tverrfjellet

DIAMOND DRILL LOG

FOLLDAL VERK A/S

From	To	Description BH - 769	Interval From	Interval To	Assays Cu	Mo	Pb	Zn	Au	Ag
		vere more chloritic, some very rare spots of mt, sections of slightly chloritic garnet bear biotite - sericite schist								
387.80	396.50	tuffaceous quartzite with intersections of tuffaceous sed (375.10 - 375.20, 375.70 - 376.45, 378.30 - 378.70, 383.70 - 384.80, 385.90 - 386.40,								
		lenticular fragments of quartzite (rodlike) embedded								
		in a matrix of sericite or biotite - sericite (very distinct flaser texture, sometimes intersections								
		of chlorite bearing biotite - sericite schist (tuffaceous pelites) (391.10 - 391.90, 392.55 - 392.70, 393.75 - 393.90								
		idio py at 391.10 - 391.15								
		— fault (396.50 - 397.85)								
397.85	400.55	~~tuffaceous~~ tuffaceous sediment		50°						
		qtz-rich chlorite bearing garnet - biotite - sericite schist								
		light greenish, fine grained with slightly porphyric biotite randomly orientated, laminated								
		with preferably lenticular bedding								
400.55	410.30	pressed conglomerate? quartzite								
		lenticular fragments of quartzite embedded								
		in a matrix of biotite and sericite, often								
		likely laminated quartzite								
		404.00 - 404.20: milky qtz								
410.30	415.55	tuffaceous sediment to tuffite (daatic looking) and tuffaceous quartzite								
		biotite - chlorite - sericite schist / biotite - sericite bear. quartzite (411.00 - 411.50, 411.95 - 412.07, 412.65 - 412.95,								
		greenish, fine grained with porphyric biotite not								

Tverrfjellet

DIAMOND DRILL LOG

FOLLDAL VERK A/S

From	To	Description BH-769	Interval From	Interval To	Cu	Mo	Pb	Zn	Au	Ag
		oriented, layered occasionally massive, with lenticular (agglom. qtz (rodites ~~massive to conglomeratic~~) or flaser bedding, some irregular folding, varying amount in schist, some times garnet bearing								
415.55	417.85	folded quartzite layered, biotite - sericite or only biotite stripes, stringers								
417.85	440.40	intermediary towards felsic tuffite qtz-rich biotite-chlorite-sericite schist lightgreenish, fine grained with often slightly porphyric biotite, laminated or layered in places obvious conglomeratic or lapilli tuff, sometimes flaser texture or wavy texture, mostly inhomogeneous, rather changing quartz content								
440.40	448.20	basaltic tuff slightly carbonaceous to carb. amphibole or biotite - sericite - chlorite schist gn, fine grained with partly pisolithic amphibole randomly oriented or porphyric biotite, layered, carbonate as separate layer or in strings or flaser		50°						

Tverrfjellet

DIAMOND DRILL LOG

FOLLDAL VERK A/S

DH - 769 G

From	To	Description	Interval From	Interval To	Assays Cu	Mo	Pb	Zn	Au	Ag
442.20	562.30	slightly carb. qtz-rich biotite-chlorite-sericite schist light greenish gr, fine grained with porphyric biotite randomly orientated, layered with occ. flaso texture, homogeneous, in places intrusion without biotite and rich chlorite (more basaltic), decreasing chlorite content toward lying								
		451.45 - 451.50: po mineralization as stripes in qtz-feldspar								
		452.45 - 452.47: high grade po min				478.50 - 482.50			small	
		498.60 - 519.30: conglomerate or ~~conglomerate~~ with coarse ss or ~~lapilli tuff~~: lenticulas quartz or qtz-feldspar clasts within a matrix of biotite-sericite and chlorite			< 460.65 - 460.66: stripes of massiv po				plattning	
		544.45 - 550.65: "			496.60 - 496.80: cong.					
					496.80 - 498.00: coarse ss					
					498.00 - 504.50: cong.					
					504.50 - 505.85: coarse ss					
					505.85 - 506.60: cong					
					506.60 - 507.50: coarse ss					
					507.50 - 508.65: cong.					
					508.60 - 511.00: coarse ss					
					511.00 - 512.25: cong					
					512.25 - 512.80: ss					
					512.80 - 519.30: cong.					

Hamar Trykk A/S

DIAMOND DRILL HOLE 4

Tverrfjellet mine, Folldal Verk A/S, Exploration hole from 1957.
Location: 2600 W - 1275 N.
Inclination : 55°N, no deviation measured.
Total length : 113.20 m (2.60 m overburden).

Description :

0.00 - 27.85 : Slightly calcareous garnet bear. biotite - sericite schist
(meta - pelite)
lightgn., layered with wavy lenticular texture, alternation of qtz with phyllosilicate, qtz - poor layers or stringers, poikiloblasts of biotite randomly oriented (cross-mica)
5.33 - 5.53 : sericite bear. quartzite (sed.)
bluishgr, fine grained, massive, some irregular spots and traces of granules of carbonate.
25.20 - 25.40 : slightly calcareous garnet - chlorite bear. biotite - sericite schist (garben-
A schist).
(Meta - pelite)
see above, poikiloblasts of chlorite max. 1.5 cm size randomly oriented, pseudomorphs after amphibole.

27.85 - 31.90 : Slightly calcareous biotite - sericite schist
(meta - pelite or tuffaceous meta - pelite)
gr to brownishgr, layered with in places wavy - lenticular bedding, biotite often aligned with foliation in places forming discrete lamina, sporadically porphyroblasts of amphibole which in places are altered to chlorite (chlorite - pseudo - morphs), locally medium to even high-grade dissemin - ation of py always connected to highly altered dacitic
AA/C layers (high carbonaceous biotite - chlorite - qtz - plagioclase schist) : 30.40 m, 32.20 - 32.25 m.
gradual hanging wall.

DDH 4

31.90 - 34.00 : High calcareous chlorite - epidote - amphibole - qtz - fspar rock
(meta - mafic tuff or tuffite)(banded amphibolite)
gngr, medium - grained, crude development of com - positional banding, chlorite - amphibole - rich layers gradually change into qtz - plagioclase dominated bands, amphibole prisms max. 0.1 cm long and randomly oriented (porphyroblasts), porphyric, hypidio - morphic crystals of carbonate (spotted carbonate)
33.17 - 33.20 : several mm - bands of nearly massive po and py in alternation with qtz and amphibole layers.

C

34.00 - 35.90 : Calcareous chlorite bear. epidote - qtz - plag.- amphibole schist
(meta - basalt, flow)
grgn, fine-to medium-grained, fibrous amphibole mainly parallel schistosity, disseminated huge spots of carbonate, mainly as hypidiomorphic poikiloblasts which in places form traces of granules being dis - cordant schistosity.
sharp hanging wall
45°.

35.90 - 39.85 : High calcareous chlorite - epidote - amphibole - qtz - fspar rock
(meta - mafic tuff or tuffite)(banded amphibolite)
same as: 31.90 - 34.00 m
several interlayers of qtz - fspar rock (qtz - kera - tophyr) with high - grade dissemination of py :
36.20 - 36.22 m, 36.25 - 36.28 m, 36.35 - 36.37 m, 36.85 - 36.90 m mainly basaltic , 20 Vol.-%, 39.80 - 39.85 m.
45°
sharp hanging wall.

39.85 - 40.75 : Amphibole schist
(meta - basalt, flow)
gn, fine - grained, fibrous amphibole, in - places biotite bearing, closely interfingered by tiny

veins of qtz often laying conformable with schistosity, rare spots of py.
gradual hanging wall

40.75 - 42.80 : Epidote - plag.- qtz bear. amphibolite
(meta - basalt, flow)
gn, medium - grained, crudely schistose, ellipsoi - dal multi - crystal amphibole surrounded by a xeno - blastic plag. - qtz mosaic, low - grade dissemination of opaques which sporadically are decomposed to titanite, qtz - plagioclase rock (qtz - keratophyr) with medium - grade dissemination of py :
42.75 - 42.80 m.
sharp hanging wall.

42.80 - 44.55 : Amphibole schist
(meta - basalt, flow)
same as: 39.85 - 40.75 m
sometimes cluts of qtz with sutured boundaries
43.39 - 44.09: qtz - fspar rock (qtz - keratophyr) with high - grade py, cut by small fault.
gradual hanging wall.

44.55 - 45.40 : Calcareous to high calcareous amphibole - biotite - sericite bear. chlorite - plagioclase - qtz rock
(meta - dacite, tuff to tuffite) see too 53.80-54.80m
A/C
greenishgr, fine - grained, nebulous texture due to alteration, crudely developed wavy - lenticular texture remainding to lapilli tuff, qtz - nodules of max. 0.5 cm size equally distributed and always parallel to a slight foliation, carbonate as minor spots but sometimes as bigger lumps.
sharp hanging wall.

45.40 - 46.65 : Calcareous - plagioclase - chlorite - amphibole schist
(meta - basalt, flow)
gn. to grgn, fine - grained, sometimes cm-layered, here alternation of qtz - with amphibole bands, irregular qtz - veining throughout.
gradual hanging wall.

DDH 4

46.65 - 52.00 : Calcareous to high calcareous chlorite - epidote - bear. amphibole - fspar rock

(meta - mafic, tuff or tuffite)

C

slightlygr, banded, due to amphibole forming sporadically always monomineralic layers or traces of granules, texture very close to banded amphibolite, amphibole with prismatic outlines, poikiloblasts max. 0.5 cm long randomly oriented but slightly aligned with layering within more monomineralic amphibole layers, granoblastic qtz - fspar. mosaic, hypidiomorphic porphyroblasts of carbonate equally distributed, opaques (Fe - Tioxides) often decomposed to titanite, some rare spots of tiny py, sometimes inter - layers of qtz - fspar rock (qtz - keratophyr) with low - grade py : 48.00 m, 47.65 m, 50.70 - 50.82 m.
gradual hanging wall.
60°.

52.00 - 53.80 : High calcareous biotite bear. amphibole - chlorite - qtz - plagioclase rock

(meta - mafic tuff)

A/C

blueishgreenishgr, fine - grained, often nebulous - texture prisms of amphibole being conformable and randomly oriented, porphyroblasts mainly 0.1 cm long, sometimes nodules or bands of qtz, spotted carbonate.
gradual hanging wall.

53.80 - 54.80 : High calcareous biotite - sericite bear. chlorite - plagioclase - qtz rock

(meta - dacite, crystal tuff)

A/C

lightblueishgr, fine - grained, crudely schistose, nebulous - texture supposely due to high carbonate content and alteration, phyllosilicates strongly parallel, sometimes cross - biotite, spotted carbonate mainly as xenomorphic crystals, finely - dispersed titanite sometimes forming discontinuous traces of granules.
gradual hanging wall.

54.80 - 59.70 : High calcareous amphibole bear. biotite - chlorite - qtz - plagioclase rock / schist
(meta - mafic, flow or tuff)
see too: 66.30 - 77.30 m, AA/C - sections
slightlygreengr, mostly massive but sporadically well bedded, fine - grained with poikiloblasts of biotite being aligned with layering or randomly oriented, in places highly enriched in biotite, sometimes cm - interlayers of qtz - fspar rock (qtz - keratophyr) always carrying some py : 55.70 - 55.80m, 58.73 - 58.75m, 59.15 - 59.25m.
Sharp hanging wall.

AA/C

59.70 - 66.30 : Slightly calcareous qtz - plagioclase - epidote - bear. amphibole schist
(meta - basalt, flow)
gn, fine - grained, fibrous amphibole always parallel schistosity, irregular qtz and carbonate veining, sometimes only stringers, opaques decomposed to titanite, interlayer of qtz - fspar rock (qtz - keratophyr) with rare spots of py: 60.96 - 61.00m.
Sharp hanging wall.

66.30 - 77.30 : High calcareous epidote - biotite - chlorite bear. qtz - amphibole-plagioclase rock
(meta - mafic tuff)(banded amphibolite)
greenishgr, fine - grained, porphyroblasts of amphibole randomly oriented, prisms max. 0.4 cm long, spotted carbonate as hyidiomorphic and idiomorphic porphyro - blasts randomly larger 0.1 cm, often crystal aggregates of carbonate, slightly mineralized by py, some sections highly altered to high calcareous epidote bear. biotite amphibole - chlorite - qtz - plagioclase rock or high calcareous chlorite - qtz - biotite - plagioclase rock

C

AA/C

greenishgr, fine - grained with poikiloblasts of biotite equally distributed and randomly oriented, nebulous texture due to extense alteration, spotted carbonate often as irregularely-shaped grain aggregates, slightly mineralized by py : 66.00 - 67.00m, 67.90 - 69.00m, 72.00 - 77.30m.
Gradual hanging wall.

77.30 - 93.60 : Calcareous plag.-biotite - qtz - chlorite schist
(meta - basalt, flow and tuff)
gn, fine - fibrous chlorite with occasional huge poikiloblasts of biotite randomly aligned with schistosity, crude development of wavy-lenticular texture, in places crudely cm-banded with alternate chlorite - dominated layers and qtz - and/or plagioclase - rich bands, banding when present only partly due to metamorphic differentiation, chlorite always with distinct crenulation cleavage, finest spots of carbonate often accreted to bigger (giant) spots which normally are lense - shaped and equally distributed (multi-crystal carbonate), random cross-cutting veinlets of carbonate, slightly mineralized by py, irregular qtz - veining throughout, sometimes mineralized by py and/or po.
Gradual hanging wall.
45°, 75.20m Ⱥ, 80.70m 65°, 84.80m 60°, 85.30m Ⱥ, 89.85m Ⱥ, 90.85m 45°, 93.05m 40°

AA/C

93.60 - 94.55 : Calcareous biotite - qtz - chlorite schist
(meta - basalt, flow, feeder)
gn, fine - fibrous chlorite, crudely development of wavy-lenticular bedding, irregular veins, veinletts, nodules, stringers of qtz randomly accompanied by carbonate but sometimes carring cp and po or py as irregular stringers or spots, carbonate as giant spots of ellipsoidal shape (multi-crystal aggregate), mt as huge irregular shaped spots equally distributed, at hanging wall some interlayers of pure biotite - schist.
sharp hanging wall.

AA/giant C feeder

94.55 - 95.10 : Calcareous biotite - chlorite - pyrite - plagioclase rock
(meta - felsic volcanic supp. dacitic composition)
grgn, medium-grained, crudely layered, mm- to cm-alternation of biotite - chlorite layers with pyrite - plagioclase bands, mostly gradual borders plagioclase as idiomorphic crystals (shortprismatic) max. 0.1 cm size (spotted plag.), carbonate as minute spots and sometimes as bigger crystal - aggregates equally distri-

AA/C disseminated ore

tributed, average low - dissemination of py.
sharp hanging wall.

95.10 - 95.25 : Quartzite
(chert or qtz - keratophyr)
gr, fine - grained, massive, some tiny stringers or lamina of py and po.
sharp hanging wall.

95.25 - 95.70 : Calcareous pyrite - sericite bear. biotite - chlorite - qtz schist
(meta - basalt, feeder)
AA/C feeder
browngr, coarse - grained, chaotically folded, nodules, stringers, bands of qtz rich in idiomorphic py of max. 0.2 cm size within a biotite - chlorite matrix with abundant carbonate, phyllosilicate matrix contains low-grade dissemination of iron-titanium oxides.
sharp hanging wall.

95.70 - 96.25 : Slightly calcareous biotite bear. pyrite - qtz - sericite schist
(meta - pelite)
low-grade dissemination of py
gr, crudely layered but mostly wavy - lenticular texture lenses and discontinuous bands of qtz rich in disse - minated py, poikiloblasts of biotite equally distri- buted (cross - mica), low - grade dissemination of pyrite throughout, often idiomorphic crystal faces.
sharp hanging wall.
40^{o} - 35^{o}

96.25 - 96.50 : Calcareous pyrite - sericite bear. biotite - chlorite - qtz schist
(meta - basalt, feeder)
AA/C feeder
same as: 95.25 - 95.70m
sharp hanging wall.

96.50 - 110.60 : Py - ore
(massive sulphide layer)
medium-grade, massive, intercalation of chert with irre- gular sulphides : 98.25 - 98.60 and altered basalt : 106.43 - 106.93m, 108.60 - 109.10m.

110.60m end of DDH.

DDH 4

Chemical composition of ore:

96.50	-	99.30m	=	2.80m	=	0.40% Cu,	1.70% Zn,	36.75% S
99.30	-	102.91m	=	3.61m	=	1.60% Cu,	1.00% Zn,	41.10% S
102.91	-	106.43m	=	3.52m	=	1.26% Cu,	1.15% Zn,	27.15% S
106.43	-	110.60m	=	4.17m	=	0.80% Cu,	1.50% Zn,	36.00% S

Thinnsection:

4/1	33.60 m
4/2	34.70 m
4/3	41.80 m
4/4	49.40 m
4/5	54.50 m
4/6	60.55 m
4/7	69.60 m
4/8	73.75 m
4/9	75.90 m
4/10	77.60 m
4/11	83.60 m
4/12	92.40 m
4/13	94.20 m
4/14	94.80 m
4/15	95.85 m
4/16	96.40 m

DIAMOND DRILL HOLE 13

Tverrfjellet mine, Folldal Verk A/S.
Exploration hole from 1957.
Location : 1280 N - 2700 W.
Inclination : 55°, 75 m 44°, 140 m 37°.
Total length : 196.86 m (4.5 m overburden).

Description :

0.00 - 13.10 : Slightly calcareous garnet bear. biotite - sericite schist
(meta - pelite)
greenishgr, fine - grained, wavy - lenticular structure to flaser-structure porphyric biotite as cross - mica, occurs in varying degrees, some sections even biotite - poor, biotite cause spotted appearence of the rock, garnet often idiomorphic and max. 0.5 cm in size, not equally distributed, rare spots of carbonate, occasionally chlorite - pseudomorphs after amphibole - porphyroblasts.
Gradual hanging wall.
30°.

13.10 - 14.70 : Calcareous biotite bear. qtz - sericite schist
(meta - pelite)
C bluegngr, fine-grained, flaser - structure, spotted carbonate sometimes forming traces of granules, rare stringers of po throughout always conformable with schistosity, band of stringery or web - like low - grade po - mineralization: 14.10 - 14.11 m.
Gradual hanging wall.
45°.

14.70 - 16.95 : Slightly calcareous garnet - biotite bear. amphibole sericite schist (garbenschist)
(tuffaceous meta - pelite)
lightgreenishgr, with gn garben, fine - grained biotite - sericite matrix, porphyroblasts of amphibole as ellipsoidal crystals often forming spheroids, randomly oriented, mainly very coarse with 2.0 cm length and 0.3 cm width, in

BH 13

14.70 - 16.95 : general equally distributed, idiomorphic garnets as max. 0.5 cm large crystals.
Gradual hanging wall.

16.95 - 18.28 : Calcareous biotite - chlorite bear. qtz - sericite schist
(tuffaceous meta - pelite)
C
bluegngr, fine - grained, flaser-structure gradually changing into distinctly laminated rock and vice versa, biotite mostly fine - grained, within layered sections increased in grain - size and randomly oriented, always together with chlorite, rare cm - interlayers of qtz - amphibolite, coarse grained with gradual contacts.
Sharp hanging wall.
50^{o}.

18.28 - 18.38 : Quartzite
(meta - chert)
white, fine - grained, flasers of po conformable with schistosity of nabouring schist.
Sharp hanging wall.
50^{o}.

18.38 - 18.66 : Biotite - amphibole bear. qtz - sericite schist
(garbenschist)
(tuffaceous meta - pelite)
same as : 14.70 - 16.95 m.
Gradual hanging wall.

18.66 - 19.50 : Slightly calcareous qtz - biotite - sericite schist
(meta - pelite)
gr, fine - grained, flaser -structure porphyric biotite randomly oriented (cross - mica), biotite cause spotted appearence of the rock, increasing qtz - content upsection, web - like po - mineralization : 19.38 - 19.46 m.
Gradual hanging wall.
50^{o}.

BH 13

19.50 - 19.60 : Biotite - qtz - fspar gneiss
(meta - qtz - keratophyr)
whitegr, fine - grained, laminated, biotite - cluts (multi - crystals) strongly aligned with foliation, distinct light - dark banding.
Gradual hanging wall.

19.60 - 20.35 : Quartzite
(meta - chert)
white sometimes transparent, sporadic mm - interlayers of chlorite - schist with rare spots of py, footwall slightly mineralized by po.
Sharp hanging wall.

20.35 - 20.79 : Biotite - amphibole bear. qtz - fspar gneiss
(meta - qtz - keratophyr)
same as: 19.50 - 19.60 m, rare porphyroblasts of amphibole randomly oriented, web - like po - mineralization: 20.44 - 20.45 m, 20.48 - 20.51 m high - grade po stratigraphically followed by a cm - band of altered basic - volcanic.
Sharp hanging wall.
45°.

20.79 - 21.47 : Calcareous qtz - biotite - sericite schist
C
(meta - pelite)
same as: 18.66 - 19.50 m, footwall tuffaceous and highly
AA/C altered (biotite - sericite schist).
Gradual hanging wall.
45°.

21.47 - 24.20 : Garnet - biotite bear. amphibole - sericite schist
(garbenschist)
(tuffaceous meta - pelite)
same as: 14.70 - 16.95 m, biotite more coarser grained and randomly oriented (cross - mica), irregularily distributed.
Sharp hanging wall.

BH 13

24.20 - 74.00 : Slightly calcareous garnet bear. biotite - sericite schist
(meta - pelite)
same as: 0.00 - 13.10 m, interlayer of low - grade dissemination of py: 31.81 - 31.82 m.
Sharp hanging wall.
78°, 48.67 m fault.

74.00 - 75.96 : High calcareous chlorite - sericite bear. garnet - pyrrhotite - qtz - rock
(meta - felsic - tuff with high - grade po)
C po-mineralization
brown, medium - grained with fine - grained pyrrhotite, web - like po - mineralization sometimes flasers sometimes massive bands, hypidiomorphic plagioclase with varying amounts, spotted carbonate, in places slightly distorted.
Gradual hanging wall.

75.90 - 76.76 : High calcareous biotite bearing pyrrhotite - sericite qtz schist
(meta - tuffite, highly altered)
AA/C po-mineralization
greenishgr, medium - grained, mm - and cm - layered, alternate biotite - chlorite bands and qtz - carbonate rich layers, often disharmonic folded, low - grade po - mineralization as stringers and web - like features mainly within felsic bands.
85°.

76.76 - 77.41 : Garnet - epidote rock
(fault - mylonite)

77.41 - 85.50 : High calcareous biotite - sericite bear. garnet - chlorite - fspar - qtz rock/schist
(meta - tuffite, meta - pelite with volcanic impurity)
greenishbrownishgr, medium - grained crudely layered and schistose, nebulous texture due to alteration, fine - fibrous chlorite, often porphyric biotite as cross - mica, varying amount of idiomorphic garnets max. 0.2 cm large, spotted also flasery carbonate, rare spots of

idiomorphic mt, very rare spots of py.
Sharp hanging wall.
75°.

85.50 - 88.20 : Slightly calcareous biotite - epidote bear. garnet - chlorite - amphibole - qtz - fspar rock
(meta - tuff to tuffite, flow or tuff)
gngr, medium to coarse grained, crudely layered by variation in the mode by amphibole, amphibole as porphyroblasts randomly oriented, elliptical crystals of 0,7 cm length and 0,2 cm width not crossing or touching, idiomorphic garnets of max. 0,3 cm size nearly equally distributed, but some modal variation possible, rare flasers of biotite and chlorite, rare spots of py.
Sharp hanging wall.

88.20 - 88.75 : Calcareous biotite - chlorite - fspar - qtz rock
A/C
(meta - mafic tuff or tuffite, altered)
gr, mainly fine-grained, flaser-texture often nebulous due to alteration, fine-fibrous chlorite always accompanied by slightly coarser biotite which mainly is parallel foliation, carbonate as irregular aggregates or flasers equally distributed, web-like py-mineralization of low-grade: 88.25 - 88.26m.
Gradual hanging wall.
90°.

88.75 - 89.90 : Slightly calcareous chlorite bear. amphibole - qtz - plagioclase rock
(meta - mafic volcanic compare with DDH-18 77.00 - 82.50m)
greenishgr, medium-grained, prisms of amphibole max. 0.3 cm long and randomly oriented, fine-fibrous chlorite rare spots of carbonate mostly hypidiomorphic, very rare spots of py.
Sharp hanging wall.

89.90 - 93.00 : Slightly calcareous plag. amphibolite
(meta - basalt, flow)
grgn, medium to coarse grained, amphibole accreted to

multi-crystal porphyroblasts of elliptical shape, plag. and qtz fill interstices of the amphibole crystals, spots and minute veins of carbonate.
Gradual hanging wall.

93.00 - 93.67 : Calcareous chlorite bear. amphibole - plagioclase - qtz rock
(meta - mafic volcanic)
same as: 88.75 - 89.90 m.
Gradual hanging wall.

93.67 - 96.40 : Calcareous biotite - amphibole bear. sericite - chlorite - fspar - qtz rock
(meta - dacite, tuff or tuffite, correlation with: DDH 4 53.80 - 54.80 m)
greenishgr, fine-grained, crudely schistose, nebulous texture, flasers of fine-fibrous chlorite equally distributed, biotite often as cluts crosscutting but to conformable schistosity, random prisms of amphibole max. 0,2 cm long mostly not oriented, mode of biotite and amphibole changes with the degree of alteration, irregular shaped carbonate mostly equally distributed.
A/C
Gradual hanging wall.
90^{o}.

96.40 - 107.81 : Calcareous to high calcareous sericite - garnet-bear. biotite - chlorite - fspar - qtz rock
(meta -tuff to tuffite highly altered, see: DDH 4 72.00 - 77.30 m)
AA/C
lightgreen, fine-and medium-grained, often nebulous texture due to intense alteration, compositional changes mainly caused by varying degrees of alteration, fine-fibrous chlorite, biotite often as porphyroblasts randomly oriented but sometimes parallel a slight lineation, footwall even basaltic with prisms of amphibole (porphyroblasts) randomly oriented, crystals mainly elliptical in outline with max. 0.7 cm length, strongly varying garnet content, mainly idiomorphic crystals with max. 0.3 cm in crossection, rare spots of mt throughout, crystals or crystal aggregates mainly xenomorphic, some with

idiomorphic outlines, dusty carbonate often accreted to discrete stringers and/or lamina, interlayers of quartzite rich in py and po, mainly low-grade laminated ore: 96.85 - 96.95 m, 97.15 - 97.20 m, 98.40 - 98.55 m high-grade exhalative mt as laminated ore making up upper half part of the mineralization, rare interlayers of quartzite (chert): 105.04 - 105.06 m, 106.07 - 106.09 m.
Gradual hanging wall.

107.81 - 109.48 : High calcareous biotite bear. sericite - chlorite - fspar - qtz rock/schist
(meta - dacite, tuff, highly altered)

AA/C greenishgr, fine-grained, flaser-structure due to accretion of fine-fibrous chlorite to semiconformable flasers and lenses which are surrounded by felsic compounds highly enriched in dusty carbonate, biotite as finest flakes always conformable a slight lineation of the rock, sericite seems to be equally distributed.
Gradual hanging wall.
70^{o}.

109.48 - 123.65 : High calcareous biotite - amphibole bear. fspar - qtz - chlorite schist/rock
(meta - basalt, tuff or flow, highly altered)
bluishgn, flaser-structure in places disharmonic folded, fine-fibrous chlorite interlayered by lenses, stringers and laminae of qtz or qtz with carbonate, amphibole as tiny prisms possibly conformable with foliation, giant spots of mt (multi-crystal spots): 109.60 - 110.60 m, 114.00 - 114.61 m, 117.25 - 122.90 m, rare spots of py throughout; interlayers of quartzite rich in carbonate and always laminated by chlorite: 109.54 - 109.59 m laminae rich in dusty mt, 109.85- 110.16 m rare bands of nearly massive py, several flasers and laminal of dusty mt, 110.15 - 110.16 m some rare flasers of mt, 110.36 - 110.37m laminae of py, 112.60 - 112.75 m low-grade web-like py-,po-mineralization, 115.50 - 115.60 m some spots of py and po, rare flasers of mt; interlayers of quartzite (chert) with rare spots of po or py: 113.59 - 113.62 m, 114.61 - 114.80 m, 116.30 - 116.45 m,

116.75 - 116.85 m, 118.80 - 119.30 m, 119.50 - 119.65 m, repeated by folding, 120.00 - 120.56 m partly isoclinal folded, 121.60 - 121.66 m, 121.79 - 121.81 m, 123.25 - 123.26 m, 123.52 - 123.65 m.
Sharp hanging wall.
90°, abundant isoclinal folding: 119.57 m ⊅ , 120.00 - 120.30 m ⊄ , chert supposely be repeated several times.

123.65 - 124.75 : Calcareous biotite - chlorite - fspar - qtz gneiss
(meta - tuff, highly altered, correlation with DDH 20 70.10 - 73.85 m)
lightgn, mm-and cm-layered, alternate mm-thick qtz-layers with cm-thick bands of carbonate biotite - chlorite schist, cluts of biotite randomly oriented and surrounded by fine-fibrous chlority, spots and flasers of carbonate, slowly increasing py-content towards hanging portion, from 124.25 m upsection alternation of cm-thick carbonate biotite - chlorite schist with cm-to dm-thick layers of medium-grade py-ore (qtz-pyrite rock) which contains ambundant cp.
ore zone
Bedding fault line at hanging contact.
50°.

124.75 - 126.50 : Calcareous to high calcareous biotite - chlorite - fspar - qtz gneiss/schist
(meta - dacite tuff or tuffite, highly altered)
AA/C
slightly brownishgr, mainly fine-grained, laminated with sections being more massive and nearly coarse-grained, laminae of phyllosilicates alternate with slightly thicker bands rich in carbonate, coarse-grained more massive looking sections rich in biotite and chlorite (carbonaceous qtz biotite - chlorite schist) sporadically embedded which carry a low-grade dissemination of py and some spots of cp, several interlayers of medium-grade py-ore between: 125.92 - 126.05 m.
Sharp hanging wall.
85°.

BH 13

126.50 - 129.60 : Calcareous to high calcareous biotite - chlorite-fspar - qtz schist/gneiss

(meta - tuff or tuffite highly altered)

AA/C

gngr, mainly fine-grained, laminated to crudely banded, alternate felsic bands or flasers and phyllosilicate layers, porphyric biotite forming randomly oriented cluts or conformable sheets or lenses, lower portion with subordinate amount of amphibole, slightly altered porphyroblasts max. 0.7 cm long and elliptical in shape, always randomly oriented, carbonate sometimes of spotted appearence but mostly as finest dissemination within qtz, rare spots of py, xenomorphic spots of mt throughout.

Sharp hanging wall.

50°, partly isoclinal folded: 128.00 m Ɗ , 128.30 m ₵, 128.54 - 129.00 m $.

129.60 - 131.00 : High calcareous biotite - amphibole bear. fspar - qtz - chlorite schist

AA/C

(meta - basalt tuff, highly altered)

same as: 109.45 - 123.65 m, spots of mt to about 130.60m.

Gradual hanging wall.

75°.

131.00 - 134.45 : High calcareous biotite bearing chlorite - fspar - qtz schist

(meta - tuff or tuffite, highly altered)

gn, laminated with often flaser-or wavy - lenticular structure, some sections even cm-banded, here alternate quartzite or calcareous quartzite with dusty mt and highly altered intermediate to even basic volcanics in places carrying mm-layers of pyrite; fine-fibrous chlorite, porphyric biotite mainly as cross-mica, some sections with poikiloblasts of amphibole max. 1.7 cm long randomly oriented, carbonate as lenses, flasers or lamina, only sporadically of spotted occurrence, abundant pyrite mainly as scattered idiomorphic crystals but sometimes as mm-interlayers, spots of mt mainly with xenomorphic outlines, interlayers of quartzite (chert) often with flasers or more rarely

interlayers of high calcareous biotite - chlorite schist and sometimes with dusty mt: 131.95 - 132.10m areas with dusty mt, 132.20 - 132.35m layers enriched by dusty mt, 133.56 - 133.84m, 133.96 - 134.00m. Sharp hanging wall.
60° 131.50m, 35° 132.00m, 80° 132.80m, 60° 133.90m, 45° 134.00m.

134.45 - 136.20 : Slightly calcareous quartzite
(meta - chert with interlayers of mafic volcanics)
white, extremly fine-grained, in places chaotically folded, web-like carbonate, scattered mt, always xenomorphic crystals of mm-size, cm-and dm-interlayers of pyrite bearing carbonate - quartzite and biotite bearing qtz - chlorite - amphibole schist
(meta - basalt - tuff, weakly altered), coarse grained, amphibole - porphyroblasts of average 1.7 cm length, abundant py as trains of granules or dissemination, interlayer of pyrite-rich quartzite: 134.57 - 134.63 m. Sharp hanging wall.
45°.

136.20 - 138.28 : High calcareous biotite - fspar - qtz - chlorite schist
(meta - basalt, flow or tuff, highly altered)
AA/C gn, fine-grained, laminated with tendency to lenticular structure some sections with nodular structure supposely due to folding, fine - fibrous chlorite, biotite slightly coarser grained and strictly aligned with foliation, sometimes as porphyroblasts randomly oriented, lenses and flasers of carbonate, qtz forming nodules of irregular shape as well as mm - layers or flasers giant spots of mt with sutured boundaries: 136.20 - 137.30m; rare spots and sometimes discontinuous laminae of py; interbeds of quartzite with abundant pyrite and/or mt: 137.18 - 137.20 m high-grade dusty mt, 137.43 - 137.55 m cm - layers of high-grade dusty mt and cm - band of medium-grade py - ore.
Sharp hanging wall.
65°, sometimes distorted.

BH 13

138.28 - 139.80 : High calcareous biotite - chlorite - fspar - qtz schist
(meta - tuffite) (highly altered)

AA/C gn, fine-grained, laminated sometimes with tendency to lenticular -structure decrease in alteration towards hanging portion, fine-prismatic amphibole from

A/C 138.95 upsection, here minor biotite and chlorite, spots of mt throughout, mainly of irregular shape and with sutured grain boundaries, carbonate forms flasers and lenses, rare spots of pyrite which in places constitute trains of granules.
Sharp hanging wall.
45°.

139.80 - 142.00 : Calcareous biotite - chlorite - qtz schist
(meta - dacite, tuffite, altered)

A/C greenishgr, fine-grained, crudely laminated with tendency to nodular - texture, biotite and chlorite strongly aligned with foliation, flasers, lenses, nodules and layers of qtz alternate with stringers or laminae of phyllosilicates, rare spots of mt sometimes forming giant spots which sporadically occur with idiomorphic outlines, carbonate mainly forms flasers or mm-layers or web-like features.
140.00 - 140.40: High calcareous biotite - chlorite

AA/C schist in close alternation with mt-rich quartzite
(tuffaceous sequence, alternate cherts and basic tuffs, highly altered)
low-grade pyrite mineralization occurring as dissemination within biotite - chlorite schist, high - grade dusty mt restricted to cherty layers.
45°.

142.00 - 155.63 : Calcareous biotite - amphibole bearing fspar - chlorite - qtz schist
(meta - tuffite or tuff, altered)

A/C gn, fine-grained, crudely laminated with tendency to flaser -structure some sections well layered and highly enriched in carbonate and intensively altered:

AA/C 143.00 - 143.15 m, 144.20 - 144.80 m; fine-fibrous

chlorite, biotite slightly coarser grained and always conformable with schistosity, amphibole as minute prisms (max. 0.15 cm lenghts) strongly aligned foliation, qtz forming nodules and flasers or web-like features, spotted carbonate, giant spots of mt throughout, interlayers of quartzite with subordinate mt occurring mainly as stringers: 145.00 - 145.12 m, 147.09 - 147.26 m, 149.00 - 149.10 m, 149.45 - 149.60 m 149.67 - 149.87 m, 151.25 - 151.32 m, 152.73 - 153.02 m with flasers and mm-interlayers or web-like features of py and po, 153.50 - 153.82 m, 154.97 - 155.17 m hanging wall with interlayers of py, 155.40 - 155.50 m.

155.63 - 163.10 : Slightly calcareous biotite bearing chlorite - amphibole - fspar - qtz gneiss/schist
(meta - basalt, tuff, weakly altered)
gn to grgn, medium-grained, mm-and cm-layered sections alternate with more massive parts, several interlayers

A of quartzite (chert), in places distorted, prisms of amphibole max. 0.4 cm long and often not oriented, chlorite forming fine-fibrous aggregates, biotite - cluts mainly conformable foliation or layering, gradual compositional changes due to variation in the degree of alteration, highly altered section (garnet biotite-

AA chlorite schist): 158.20 - 158.32 m, 158.54 - 158.70m, 159.90 - 159.92 m, 162.36 - 162.56 m, several interlayers of quartzite (chert) often slightly mineralized by mt: 156.40 - 156.65 m, 156.99 - 157.50 m, 157.65 - 158.20 m partly with high-grade dusty mt and mm-layers of massive py, 158.32 - 158.54 m laminated by AA/C - basalt, high-grade dusty mt, some rare spots of py, 158.70 - 159.30 m, 159.80 - 159.90 m several layers of dusty mt, 161.00 - 161.15 m, 161.55 - 161.72 m, 162.22 - 162.42 m several cm-thick interlayers of chlorite bearing amphibole schist; rare stripes or discontinuous layers of py: 155.73 - 155.83 m within qtz - fspar amphibolite, 160.34 - 160.44 m within qtz amphibolite; interlayer of amphibole - fspar - qtz rock

BH 13

(qtz - keratophyr): 160.54 - 160.90 m.
Gradual hanging wall.
65 to 70°, often strongly disturted.

163.10 - 169.36 : Slightly calcareous biotite bearing chlorite - amphibole schist

(meta - basalt, flow, weakly altered)

A

gn, fine - to medium grained, crudely laminated or layered, decrease in the degree of alteration towards upsection, lower part rich in biotite -always as multi-crystal porphyroblasts mainly conformable foliation- and chlorite (fine-fibrous appearence), amphibole as minute prisms strictly aligned schistosity, rare spots of py throughout, hanging portion with little biotite and too subordinate chlorite, here mainly amphibole schist.
Sharp hanging wall.
75 to 85°, partly distorted.

169.36 - 170.58 : High calcareous biotite - chlorite - plagioclase - amphibole - qtz gneiss

(meta - mafic tuff with tuffaceous sediment interlayers)

C

grgn, medium-grained, crudely cm-banded, mainly gradual compositional changes, bands of calcareous biotite - chlorite schist, chlorite - amphibole schist and calcareous to high calcareous chlorite - amphibole bear. qtz - fspar rock, amphibole as max. 0.3 cm long prisms randomly oriented, fine-fibrous chlorite, biotite slightly coarser than chlorite forming cluts mainly being conformable with compositional layering, spotted carbonate often forming discrete layers, some rare spots of py; medium-grade dissemination of py:
169.61 - 169.63 m.
Sharp hanging wall.
60°.

170.58 - 171.07 : High calcareous chlorite bearing biotite - sericite - qtz - fspar rock/schist

(meta - tuffite, dacitic composition)

BH 13

gr, medium-grained, flaser-texture, large idiomorphic crystals of carbonate equally distributed.
Gradual hanging wall.

171.07 - 173.87 : <u>High calcareous chlorite - sericite bearing amphibole - fspar - qtz rock/gneiss</u>
(meta - dacite/-keratophyr, tuff)
C
gr, medium-grained, crudely layered, alternate amphibole-rich and- poor layers, amphibole forming porphyroblasts of max. 0.7 cm length, prisms randomly oriented, carbonate mainly forming traces of granules but sometimes large aggregates; interlayer of low-grade pyrite - mineralization: 171.47 - 171.50 m; band of slightly <u>mt</u> bearing quartzite (chert): 171.52 - 171.62 m.
Sharp hanging wall, sheared.
Strongly folded.

173.87 - 174.69 : <u>High calcareous biotite - chlorite - fspar - qtz schist</u>
(meta - keratophyr)
AA/C
white with brown stripes, mm-bands or flasers of biotite - chlorite alternate with high carb. fspar - qtz layers.
Gradual hanging wall.
Strongly folded, $.

174.69 - 176.65 : <u>High calcareous fspar - biotite - chlorite - qtz schist</u>
(meta - tuff, highly altered)
AA/C
grgn, medium-to coarse - crystalline biotite surrounded by fine-fibrous chlorite, flaser- and lenticular structure partly due to strong small - scale folding, carbonate tends to accompany qtz and- fspar which form irregular shaped aggregates, some dusty carbonate within flasers and lenses made by phyllosilicates, slow income of amphibole which forms 0.4 cm long prisms being randomly oriented, towards hanging portion band of <u>py</u> within 175.39 m.
Gradual hanging wall.
Strongly foleded, $.

BH 13

176.65 - 179.17 : Carbonate - biotite bearing chlorite - plagioclase - amphibole - qtz gneiss/rock
(meta - basalt, tuff)
grgn, medium-grained, crudely layered, gradual compositional changes, porphyric amphibole, prisms average 0.4 cm long and always not oriented, fine-fibrous chlorite, sporadic cluts of biotite being conformable with compositional layering, idiomorphic crystals of py sometimes forming trains of granules or cm - interlayers of low-grade dissemination, some lenses and flasers of po.
Sharp hanging wall.
90^{o}.

179.17 - 179.42 : Mt - bearing quartzite
(meta-chert)
whitegr, fine-grained, dense, some rare tiny flasers of mt.
Sharp hanging wall.

179.42 - 182.25 : Biotite - chlorite bearing qtz - plagioclase - amphibole gneiss
(meta - basalt, tuff)
gn to grgn, coarse - grained, crudely cm-layered, amphibole as ellipsoidal shaped porphyroblasts of 1.0 cm length and 0.2 cm width not oriented, sometimes altered sections of biotite - chlorite - amphibolite; cm - to dm - thick interlayers of chert (alternation chert - basaltic volcanic) within 180.17 - 180.54 m.
45^{o}.

182.25 - 183.80 : Stressed amphibolite
fault - zone.

183.25 - 185.71 : Chlorite bearing biotite - sericite schist
(meta - pelite)
gr, fine-grained,laminated to wavy-lenticular structure porphyroblasts of biotite always crosscutting foliation cause spotted appearence of the rock.
Small-scale folding.

BH 13

185.71 - 188.53 : Qtz - fspar amphibolite
(meta - basalt, tuff)
same as: 179.42 - 182.25 m, no altered sections, footwall and hanging wall rich in fspar and qtz; low-grade dissemination of pyrite: 185.71 - 185.72 m; mm-to cm-bands of nearly massive py: 188.30 - 188.53 m.
Gradual hanging wall.

188.53 - 188.60 : Qtz - rich pyrite rock
(sulphide layer, high-grade pyrite ore)
pyrite ore
medium-grained.
Gradual hanging wall.

188.60 - 192.36 : Carbonate bearing amphibole schist
(meta - basalt, flow)
gn, fine-grained with tendency to extremely fine-grained, spotts of idiomorphic carbonate sometimes forming traces of granules which often are conformable with schistosity, interlayers of chert at several locations: 190.30 - 190.35 m, 190.45 - 190.47 m; pyrite - mineralizations at: 189.00 - 189.02 m, 190.20 - 190.26 m.

192.36 m end of DDH.

Composition of ore:

74.00 - 75.00 m	= 1.0	m= 0.02	% Cu, 0.015 % Zn,
75.00 - 76.00 m	= 1.0	m= 0.024	% Cu, 0.023 % Zn,
76.00 - 76.80 m	= 0.8	m= 0.015	% Cu, 0.041 % Zn,
124.25 - 124.66 m	= 0.41	m= 0.632	% Cu, 0.809 % Zn,
124.66 - 125.15 m	= 0.49	m= 0.466	% Cu, 0.114 % Zn,
188.23 - 188.69 m	= 0.46	m= 0.063	% Cu, 0.025 % Zn.

Thinsection

13/2	22.50 m
13/9	74.30 m
13/8	76.70 m
13/11	79.30 m
13/25	86.30 m

SUSZEPTIBILITY DDH 13

m:		m:		m:	
70,00	0,0	97,00	0,5	118,50	0,0
71,00	0,0	97,50	0,3	118,80	3,4
72,00	0,0	98,00	0,9	119,00	0,8
73,00	0,0	98,20	0,6	119,20	0,8
73,50	0,0	98,50	39,1	119,50	0,4
74,10	0,8	99,00	0,3	119,70	1,2
74,60	1,5	99,50	0,5	120,00	0,1
75,20	1,6	100,00	0,3	120,20	0,3
75,60	1,6	100,50	0,2	120,50	0,4
75,90	1,8	101,00	0,1	120,70	0,2
76,05	0,7	101,50	0,3	121,00	0,0
76,20	1,1	102,00	0,2	121,50	0,0
76,50	0,6	102,50	0,4	122,00	0,5
76.70	0,3	103,00	1,2	122,50	0,2
76,90	0,1	103,50	0,6	123,00	0,1
77,40	0,1	104,00	0,9	123,50	0,1
77,85	0,1	104,50	0,1	124,00	0,0
78,90	0,1	105,00	0,1	124,30	0,1
79,40	0,3	105,50	0,0	124,50	0,0
80,00	0,0	106,00	0,3	124,70	0,0
81,00	0,1	106,50	0,5	125,00	0,0
82,00	0,1	107,00	0,4	125,50	0,3
82,50	0,0	107,50	0,1	126,00	0,0
83,00	0,1	108,00	0,5	126,50	0,0
83,50	0,1	108,50	0,0	127,00	0,5
84,00	0,2	109,00	0,1	127,50	1,3
84,50	0,4	109,20	0,0	128,00	1,6
85,00	0,1	109,40	5,3	128,50	4,1
85,50	0,6	109,50	4,8	129,00	6,4
86,00	0,4	109,60	12,5	129,50	1,4
86,50	1,2	109,70	1,6	130,00	0,6
87,00	1,0	109,90	3,4	130,50	0,6
87,50	0,8	110,00	1,1	131,00	0,2
88,00	0,4	110,50	0,4	131,50	0,2
88,50	0,0	111,00	0,1	131,70	1,1
89,00	0,0	111,50	0,1	131,90	1,9
89,50	0,0	112,00	0,0	132,00	3,9
90,00	0,4	112,50	0,1	132,20	0,9
90,50	0,1	112,70	0,6	132,30	15,0
91,00	0,4	113,00	0,1	132,50	1,5
91,50	0,7	113,50	0,0	132,60	1,0
92,00	0,0	114,00	0,2	132,70	2,6
92,50	0,1	114,50	0,4	132,90	3,3
93,00	0,0	114,70	7,0	133,10	0,2
93,50	0,2	115,00	0,0	133,30	0,1
94,00	0,0	115,50	0,0	133,60	1,1
94,50	0,0	115,55	1,2	133,85	0,5
95,00	0,0	116,00	0,1	134,00	0,0
95,50	0,0	116,50	0,1	134,40	0,7
96,00	0,0	117,00	0,0	134,60	3,1
96,50	0,0	117,50	0,0	135,00	0,3
96,90	2,2	118,00	0,0	135,40	0,4

m:		m:		m:	
135,60	1,2	154,50	1,2	178,50	0,1
136,00	0,6	155,00	0,3	179,00	0,2
136,30	1,0	155,10	0,2	179,10	0,1
136,50	1,2	155,40	5,3	179,40	0,7
136,80	0,7	155,80	3,4	180,00	0,2
137,00	0,9	156,00	1,4	181,00	1,6
137,20	18,0	156,50	4,0	181,50	4,0
137,40	0,9	157,00	0,0	182,00	0,2
137,50	14,0	157,40	2,9	182,50	0,5
137,60	1,2	157,80	4,7	183,00	0,0
138,00	0,0	157,90	11,0	183,50	0,1
138,50	0,7	158,10	3,3	184,00	0,0
138,60	0,6	158,20	0,4	184,50	0,0
138,80	0,3	158,40	7,3	185,00	0,0
139,00	1,6	158,55	0,5	185,50	0,0
139,40	1,3	158,70	1,1	186,00	0,0
139,80	0,5	159,10	2,7	186,50	0,0
140,10	4,1	159,50	0,5	187,00	0,0
140,30	5,4	159,80	0,3	187,50	0,0
140,40	10,0	160,00	0,4	188,00	0,3
140,70	0,8	160,50	20,0	188,50	0,1
141,00	1,3	160,70	0,2	189,00	0,1
141,50	1,3	161,00	0,4	190,00	0,0
142,00	0,4	161,50	0,8	190,50	0,0
142,60	0,6	162,00	0,2	191,00	0,0
143,00	4,1	162,40	1,0	191,50	0,0
143,10	1,4	162,60	0,3	192,00	0,0
143,40	1,6	163,00	0,2	192,50	0,0
143,90	1,1	163,50	0,0	193,00	0,0
144,10	0,8	164,00	0,1		
144,30	1,2	164,50	0,0		
144,50	1,0	165,00	0,0		
145,05	4,7	165,50	0,0		
145,50	1,4	166,00	0,0		
146,00	0,8	166,50	0,0		
146,50	0,7	167,00	0,0		
147,00	0,4	167,50	0,0		
147,15	4,3	168,00	0,0		
147,70	0,3	168,50	0,0		
148,00	0,4	169,00	0,0		
148,50	0,3	169,50	0,0		
148,70	0,6	170,00	0,0		
149,00	1,7	170,50	0,1		
149,20	0,2	171,00	0,0		
149,50	0,3	171,50	0,0		
149,75	1,2	172,00	0,9		
150,00	1,2	172,50	0,6		
150,50	1,3	173,00	0,5		
151,00	1,2	173,50	0,0		
151,30	3,7	174,00	0,0		
151,50	0,9	174,50	0,0		
152,00	1,4	175,00	0,0		
152,50	0,1	175,50	0,0		
152,90	2,7	176,00	0,0		
153,10	1,3	176,50	0,0		
153,60	0,2	177,00	0,0		
153,80	1,0	177,50	0,0		
154,00	0,9	178,00	0,1		

DIAMOND DRILL HOLE 14

Tverrfjellet mine, Folldal Verk A/S.
Exploration hole from 1957.
Location: 2350 V - 1225 N.
Inclination: 55° N, 80 m 30°, 115 m 25°.
Total length: 120.00 m. (3.50 m overburden).

Description:

0.00 - 18.10 : Garnet bearing biotite - sericite schist
(meta - pelite)
gr, fine - grained, in places wavy - lenticular -structure nodules of qtz surrounded by phyllosilicates, sometimes cm - banding of alternate qtz - rich layers with sericite bands, porphyric biotite always as cross - mica, responsible for spotted appearence of the rock, garnets max. 0.4 cm in size and mainly equally distributed, seem to occure more often within parts wavy - lenticular texture, rare spots of carbonate.
Gradual hanging wall.
45° 10.00 m, 45° 15.00 m.

18.10 - 19.25 : Fragment horizon
slightly calcareous biotite - sericite quartzite
(meta - paraconglomerate supp. meta - tilloide)
gr, wavy -lenticular structure sometimes banded, rounded fragments of qtz surrounded by fine - grained sericite with minor chlorite and porphyric biotite often crossing foliation, qtz - clasts mainly of 0.3 cm width and 1.0 cm length being flattened or squeezed, cm - banding at 18.85 - 19.25 m supposedly is due to sedmentation and flattening of larger qtz - clasts, matrix is here rich in silica.
Sharp hanging wall.
45°.

19.25 - 20.10 : Garnet bearing biotite - sericite schist
(meta - pelite)
same as: 0.00 - 18.10 m, at hanging wall distinctly enriched in chlorite.
Sharp hanging wall. 50°.

BH 14 Fragment horizon.

20.10 - 23.95 : Garnet bearing biotite - sericite - quartzite
(meta - paraconglomerate supp. meta - tilloide)
same as: 18.85 - 19.25 m, sometimes cm-thick interlayers of garnet bear. biotite - sericite schist, porphyroblasts of amphibole within matrix between flattened and stretched qtz- and qtz - keratophyr clasts (22.00 - 22.45 m, 23.38 - 23.58 m) prisms max. 0.5 cm long and often not oriented.
Sharp hanging wall.
45°, 15°, 23.70 m.

23.95 - 26.40 : Carbonate bearing biotite - amphibole - fspar - qtz gneiss
(meta - qtz - keratophyr, tuff)
gr, fine - grained with porphyroblasts of amphibole mainly of lenticular shape randomly oriented but sometimes aligned with foliation, crystals max. 1.2 cm long, mainly mm - banded (due to extreme foliation) sometimes sections cm - layered with alternate qtz - fspar bands and traces of granules of amphibole, biotite only within foliated sections, resulting from decomposition of amphibole, always paralling schistosity.
Gradual hanging wall.
15°, foliated sections 45°.

26.40 - 37.60 : Slightly calcareous garnet - chlorite bear. biotite - sericite schist
(meta - pelite, slightly tuffaceous)
gngr, fine - grained, crude development of wavy - lenticular structure, in places laminated, alternate qtz - bands and phyllosilicate - layers, porphyric biotite as cross-mica, qtz mainly as lenticular - shaped nodules (accretion due to folding and metamorphysm.), 36.48 - 36.52: calcareous quartzo - feldspatic gneiss
(meta - qtz - keratophyr - tuff) laminated, alternation of qtz and fspar - qtz and carbonate laminae with bands and stringers of py, (average 5 Vol. - %).
Gradual hanging wall.
45°.

BH 14

37.60 - 38.33 : Carbonate - rich biotite - sericite - quartzite
(tuffaceous meta - pelite)
gr, wavy-lenticular structure with transition into distinctly laminated rock, porphyric biotite as cross-mica, within laminated sections always parallel layering / foliation, sporadically some porphyroblasts of amphibole mainly restricted to even basic looking interbeds, cm - interlayers of qtz with dissemination of py (meta - chemical sediment): 36.85 m, 36.95 - 36.98 m, 37.40 m.
Sharp hanging wall.
45°.

38.33 - 39.33 : Carbonate - rich sericite - chlorite bear. amphibole - fspar - qtz gneiss
(meta - tuffite)
grgn, medium - grained, cm - sometimes mm - banded, alternate qtz - or fspar - qtz bands and amphibole layers rich in qtz and fspar, inplaces layers of chlorite - sericite schist, prisms of amphibole max. 0.3 cm long and randomly oriented, rare spots of py throughout, medium - grade py mineralization within qtz - layer : 38.35 - 38.39 m.
Sharp hanging wall.
45°.

39.33 - 41.88 : Carbonate - rich qtz - fspar - amphibole schist
(meta - basalt, flow)
gn, fine - grained, crude development of layering, sometimes cm interlayers of medium - grained chlorite bear. amphibolite, prisms randomly oriented, spotted carbonate, also often traces of granules, always idiomorphic crystals.
Sharp hanging wall.
45°.

41.88 - 42.30 : Qtz - fspar amphibolite
(meta - basalt, flow),
grgn, medium - grained, randomly oriented amphibole - prisms max. 0.3 cm size.
Sharp hanging wall.

BH 14

42.30 - 61.22 : Carbonate bear. amphibole schist
(meta - basalt, flow)
gn, fine - grained, in places laminated, alternation of qtz and amphibole beds, spots of idiomorphic carbonate sometimes forming traces of granules, in places lamina or stringers of biotite getting more abundant stratigraphically upwards, interlayers of quartzite (chert): 47.52 - 47.60 m, 48.49 - 48.55 m, in general low - grade dissemination of py often forming traces of granules, always sharp borders to amphibole schist.
Sharp hanging wall.
45^{o}.

61.22 - 62.40 : Calcareous amphibole - qtz - plagioclase gneiss
(meta - basalt, tuff supp. with hydrothermal silica)
grgn, medium - grained, cm - layering mostly crudely developed, prisms of amphibole max. 0.3 cm long and always randomly oriented, spotted carbonate, hypidiomorphic crystals sometimes form traces of granules, fine spots of py throughout.
Gradual hanging wall.
45^{o}.

62.40 - 66.10 : Amphibole schist
(meta - basalt, flow)
gn, fine - grained, slightly varying qtz - plagioclase content, some irregular qtz - veining, sporadically some cluts of biotite strongly aligned with schistosity, interlayers of quartzite (chert): 67.10 - 67.11 m, 67.15 - 67.17 m.
Sharp hanging wall.
60^{o}.

66.10 - 72.00 : Calcareous qtz - plagioclase - chlorite - amphibole gneiss
(meta - basalt, tuff, weakly altered)
gn, to grgn, medium - grained, cm-banding with gradual
A/C contacts, alternation of amphibole or amphibole - chlorite layers with qtz - plagioclase dominated bands, prisms of amphibole max. 0.4 cm long and randomly oriented, fine -

fibrous chlorite, mainly spotted carbonate sometimes as stringers, towards hanging wall some biotite, rare spots of py, giant spots of mt : 69.45 - 70.45 m.
Gradual hanging wall.
45°.

72.00 - 74.33 : Calcareous amphibole / biotite bear. chlorite schist
AA/C
(meta - basalt, highly altered)
gn, fine - grained, fine - fibrous chlorite together with giant cluts of biotite (multi - crystals porphyroblasts), in places prisms of amphibole max. 0.3 cm long and randomly oriented, here no biotite, irregularly shaped carbonate not equally distributed, rare spots of py.
Sharp hanging wall.
80°.

74.33 - 74.85 : Qtz - rich pyrite rock
ore zone
(massive sulphide layer)
medium - grained.
Sharp hanging wall.

74.85 - 75.00 : Carbonate bear. amphibole - fspar - qtz gneiss
(meta - mafic tuff)
greenishgr, cm - banding, alternate amphibole - rich layers with qtz - fspar bands poor in amphibole, prisms of amphibole max. 0.3 cm long and randomly oriented, rare spots of carbonate, rare spots of py.
Sharp hanging wall.
75°.

75.00 - 76.00 : Calcareous qtz - amphibole - chlorite schist
AA/C
(meta - basalt, flow, highly altered)
same as: 72.00 - 74.33 m, high - grade dissemination of pyrite with qtz: 75.85 - 75.86 m.
Sharp hanging wall.

76.00 - 76.60 : Amphibole schist
(meta - basalt, flow)
gn, fine - grained, some irregular qtz - veining.
Sharp hanging wall.

BH 14

76.60 - 77.45 : Sericite - amphibole - fspar - qtz rock
(meta - mafic tuff)
greenishgr, crudely laminated, prisms of amphibole max. 0.3 cm long and randomly oriented, sometimes compositional changes towards amphibole schist.
Sharp hanging wall.
80°.

77.45 - 77.70 : Calcareous amphibole - chlorite schist
(meta - basalt, flow or tuff, altered)
A/C
gn, fine - fibrous chlorite surrounding porphyroblasts of amphibole of max. 1.0 cm length and 0.3 cm width, lense - shaped crystals randomly oriented, carbonate mainly fills interstices between amphibole porphyroblasts.
Sharp hanging wall.

77.70 - 79.60 : Qtz - bear. /- rich pyrite rock
(massive sulphide layer)
ore zone
medium - grained, modal changes from medium - to high - grade ore.
Sharp hanging wall.

79.60 - 81.90 : Calcareous sericite bear. biotite - chlorite - qtz - plagioclase rock / schist
A/C
(meta - tuff, altered)
greenishgr, fine - grained, porphyric biotite mainly aligned with schistosity, sometimes crosscutting traces of granules, lense-shaped carbonate paralleling biotite, rare stringers and laminae of qtz only sporadically crosscutting schistosity.
Gradual hanging wall.
85°.

81.90 - 85.19 : Biotite bear. qtz - plagioclase - amphibole schist
(meta - basalt, flow)
gn, fine - grained, some irregular qtz and carbonate, biotite as multi - crystal porphyroblasts sporadically embedded, some banded sections rich in qtz and plagioclase, interlayers of quartzite (chert) with rare spots

of py: 84.15 - 84.25 m, 84.35 - 84.42 m, 84.92 - 85.19 m.
Sharp hanging wall.

85.19 - 96.90 : Calcareous amphibole bear. qtz - biotite - chlorite schist
(meta - basalt, flow, highly altered)
gn, fine - grained, only in places slightly banded, gradual changes in modal composition towards altered andesite, always fine - fibrous chlorite, giant cluts of biotite (multi - crystal) in places pseudomorph amphibole, biotite decreases when amphibole occurs, amphibole mainly as tiny prisms randomly oriented but sometimes as porphyroblasts of sporadically 1.0 cm size always randomly oriented, carbonate as stringers or irregular formed crystal aggregates, sometimes of spotted type, interlayer of quartzite with amphibole lamination and some spots of py: 88.10 - 88.35 m ; medium-grade pyrite mineralization: 90.76 - 90.81 m.
Sharp hanging wall.

96.90 - 97.75 : Qtz - rich pyrite rock
(massive sulphide layer)
medium - grained, varying qtz - amount,
97.05 - 97.15 m: calcareous chlorite bear. quartzite
(meta - felsic - tuff)
gr, fine - grained, laminated, alternate chlorite - and qtz - layers and stringers of carbonate, spots of py and mt.
Sharp foot - and hanging wall.
85^{o}.

ore zone

97.75 - 100.50 : Biotite - chlorite bear. quartzo - feldspatic gneiss
(meta - qtz - keratophyr with transition to tuffaceous meta - quartzite, strongly folded and tectonized)
gr, sometimes white, chaotically folded in places strongly foliated, laminated sections with wavy -lenticular and flaser-structure phyllosilicates in places coarse - grained with biotite often forming randomly oriented cluts, sometimes phyllosilicates.

strongly squeezed and aligned with foliation, varying fspar content, highest concentration at : 97.75 - 97.95 m, 99.40 - 100.15 m, (strongly foliated qtz - keratophyrs), in places some spots of carbonate. Sharp hanging wall.

100.50 - 101.10 : <u>High calcareous biotite - chlorite bear. sericite - qtz -fspar rock</u>

C

(meta - dacite, tuff)
gr, fine - grained, some flasers of biotite and chlorite irregularily distributed, sometimes forming ghoast-like layers.

101.10 - 102.00 : <u>Biotite - chlorite bear. sericite - quartzite</u>

(meta - pelite, slightly tuffaceous)
gr, wavy-lenticular structure porphyric biotite often as cross - mica sometimes forming flasers together with chlorite.
Sharp hanging wall.

102.00 - 103.90 : <u>High calcareous biotite - sericite bear. chlorite qtz - fspar rock / schist</u>

A/C

(meta - dacite, crystal - tuff (?), altered)
lightgrgn, mainly fine - grained, crudely laminated in places, nebulous texture, fine - fibrous chlorite, sometimes some cluts of biotite randomly oriented, spotted carbonate mainly as xenomorphic crystals, interlayers of low - to medium grade <u>py - ore</u>: 102.00 - 102.03 m, 102.35 - 102.36 m.
Sharp hanging wall.

103.90 - 107.70 : <u>Calcareous biotite - qtz - chlorite schist</u>

(meta - mafic tuffite)
gn to grgn, cm - layered sometimes wavy - lenticular structure, compositional changes from basaltic to intermediate or even felsic (sed.), fine-fibrous chlorite, cluts of biotite mainly parallel layering, carbonate as xenomorphic aggregates irregularily distributed, rare spots of <u>py</u>, intersections of low-to medium - grade

BH 14

103.90 - 107.70 : py - mineralization within qtz - fspar rock (meta - felsic - tuff) : 104.15 - 104.25 m, 104.35 - 104.42 m, 105.06 - 105.54 m, quartzite - layer (chert) : 106.80 - 106.86 m.
Gradual hanging wall.
85°.

107.70 - 108.50 : Carbonate bear. biotite - qtz - chlorite - sericite schist
(tuffaceous meta - pelite)
slightgngr, wavy-lenticular structure due to accretion of qtz and phyllosilicates, porphyric biotite as cross - mica but sometimes parallel foliation / schistosity.
Gradual hanging wall.
70°.

108.50 - 116.50 : Carbonate bear. amphibole - qtz - fspar - chlorite gneiss / rock
(meta - mafic tuff or tuffite)
gn, cm - banding sometimes passing into nearly massive rock, alternate amphibole - chlorite layers and qtz - fspar bands poor in Fe - Mg silicates, more massive sections bear. a crude banding due to traces of granules of amphibole within fine - fibrous qtz - chlorite rock, porphyroblasts of amphibole often are ellipsoidal in shape (max. 1.4 cm long a. 0.3 cm thick) and always are randomly oriented, irregular changes in the mode, sometimes very felsic.

116.50 end of DDH.

Composition of ore :

72.62 - 74.85 m = 2.23 m = 0.55% Cu, 2.60% Zn, 32.00% S
77.70 - 79.60 m = 1.90 m = 0.63% Cu, 1.10% Zn, 38.20% S
96.60 - 97.75 m = 1.15 m = 0.39% Cu, 1.10% Zn, 32.50% S

DIAMOND DRILL HOLE 18

Tverrfjellet mine, Folldal Verk A/S.
Exploration hole from 1958.
Loacation: 2650 W - 1290 N.
Inclination: 56° N, at 60 m 33°.
Total length: 144.50 m (4.50 m overburden).

Description:

0.00 - 27.85 : Slightly calcareous biotite - sericite schist
(meta - pelite)
lightgn, wavy lenticular texture, slightly layered, mainly alternation of qtz - rich bands and phyllosilicate qtz - poor layers, banding supposely due to metamorphic differentiation, porphyroblasts of biotite mainly cutting the older foliation (cross - mica)
Gradual hanging wall.

27.85 - 28.30 : Garbenschist, calcareous to high calcareous biotite bearing amphibole - chlorite - fspar - qtz schist
(meta - volcanie shale / siltstone) grgn, laminated to cm layered, close alternation of chlorite - rich, carbonate - rich and qtz - rich layers, in places wavy lenticular texture, porphyroblasts of amphibole randomly oriented, prisms of 0.2 to 1.2 cm size and often ellipsoidal formed, interlayers of qtz - fspar rock, (supp. meta - qtz - keratophyr) with some spots of py.
Sharp contact at hanging wall.

28.30 - 28.70 : Calcareous garnet - chlorite - plag. - amphibole schist
(meta - basalt - flow, weakly altered), gn, medium grained, crudely layered, varying amount in chlorite, amphibole as poikiloblasts mainly parallel foliation, prisms max. 0.3 cm long, garnets slightly corroded and less 0.3 cm large, invariably

A

distributed, irregular enrichments of qtz - fspar rock (meta - qtz - keratophyr) at :
28.40 m, 28.55 m and 28.60 m, always with low-grade or even mediumgrade dissemination of po, max. 10 Vol.-%.
Gradually passing into hanging amphibole schist.

28.70 - 30.00 : Garnet bear. plag. - amphibole schist, (meta - basalt - flow) gn. fine grained, irregular stringers of qtz sometimes conformable with foliation, garnets variably distributed.
Sharp contact at hanging wall.

30.00 - 36.70 : High calcareous chlorite - sericite - qtz - fspar rock
(Meta - dacite, crystal tuff or tuffite)
Lightgreenishgr, extremely fine grained, footwal slightly coarser grained, spotted carbonate mainly with dusty boundaries, sometimes cluts of biotite.
C 35°

36.70 - 41.60 : High calcareous biotite - chlorite bear., amphibole - qtz - fspar rock.
(Meta - mafic tuff)
Greenishgr, slightly schistose and crudely laminated, porphyric texture, prisms of amphibole randomly oriented, needles mainly 0.2 cm long, some rare spots of py.
C

41.60 - 45.60 : High calcareous sericite bear. chlorite - qtz - fspar rock
(Meta - dacite, tuff or tuffite)
Grgn., fine grained slightly coarser grained towards hanging wall, crudely schistose, in places slightly porphyric crystals of biotite, minute bands and stringers of qtz always irregular, sporadically enriched in mesh - like po often accompanied by qtz - fspar rock (supp. qtz - keratophyr) :
41.70 - 41.75 (40 Vol.- % po), 41.75 - 41.96 (low - grade), 42.20 - 42.32 (60 Vol. - % po).
C

BH 18

45.60 - 51.93 : High calcareous chlorite - amphibole - qtz - fspar rock

(Meta - mafic tuff)

Greenishgr, medium grained, slight foliation present by subparallel alignment of prisms of amphibole, amphibole needles max 0.2 cm long , spotted carbonate more distinct within the hanging porportion, irregular bands of qtz with carbonate, borders often nebulous.

C

51.93 - 53.80 : Calcareous chlorite - amphibole schist

(Meta - basalt - flow)

Gn., fine grained, spotted carbonate often mesh - like arranged.

53.80 - 57.00 : High calcareous chlorite - amphibole - qtz - fspar rock

C

(Meta - mafic tuff)

Same as : 45.60 - 51.93, sometimes minor of py.

57.00 - 62.75 : High calcareous epidote - sericite bear. qtz - fspar - chlorite schist

(Meta - mafic tuff or tuffite)

Greenishgr, fine grained, crudely laminated, nebulous texture supp. due to alteration, sporadically minute prisms of amphibole always not oriented, irregular accretion of qtz always accompanied by carbonate, rare spots of py.

A / C

Qtz - fspar rock (supp. meta - chert)

with low - grade py mineralization as spots and stringers : 57.30 - 57.50 m.

Gradual hanging wall.

62.75 - 66.30 : High calcareous epidote - chlorite - fspar - qtz - amphibole rock

(Meta - basalt , supp. tuff)

Lightgreen, slightly schistose, crudely laminated, randomly oriented porphyric prisms of amphibole mainly 0.1 cm, qtz and carbonate often irregularely

A / C

BH 18

accreted, minute qtz - veining, fuzzy and spotted carbonate.
Gradual hanging wall.
45°

66.30 - 70.00 : Calcareous sericite- biotite - chlorite - schist
(Meta - mafic tuff)
Lightgn, fine grained with slightly porphyric amphi - bole of 0.1 to 0.3 cm crystal length, randomly oriented, nebulous texture only slightly schistose, carbonate as fuzzy aggregates and sometimes minute spots.
Gradual hanging wall.
80°
Qtz - fspar rock, (supp. meta chert)
with low - grade py mineralization : 68.80 - 68.85 m.

70.00 - 71.00 : High calcareous epidote bear. chlorite - qtz - fspar - amphibolite
(Meta - basalt, crystal tuff or amygdaloid basalt)
Grgn., medium grained due to multi - crystal ellipsoidal chlorite-amphibole, qtz - plagioclase or carbonate lenses or spots of max. 0.5 cm size dis - continuously surrounded by amphibole and chlorite, also spotted carbonate.
C

71.00 - 71.61 : Mylonite within amphibolite

71.61 - 72.70 : High calcareous epidote - plagioclose - qtz - amphibole - chlorite gneiss
(Banded amphibolite, meta - basic tuff)
Grgn. to blueishgn., medium grained, slight light - dark banding mainly in a cm - scale due to alternation of amphibole - chlorite layers with plagioclase - qtz bands, contacts between distinct layers often gradual, amphibole prisms max 0.5 cm in size and randomly oriented, spotted carbonate mainly with idiomorphic outlines, spots of py throughout often concentrated within mafic layers.
Gradual hanging wall.
A / C

BH 18

72.70 - 75.10 : High calcareous epidote - biotite bear. qtz - plagioclose - rich chlorite schist
(Meta - basalt - flow, altered)
Gn. fine grained with porphyric biotite, max.0.2 cm large flakes randomly oriented, sometimes somewhat larger cluts (crystal aggregates), nebular texture due to mineral alteration, spotted carbonate showing tendency to from trains of granules, qtz - carbonate accompanied by sericite as crosscutting minute veins.

A / C

75.10 - 77.00 : Biotite - chlorite bear. amphibolite
(Meta - basalt - flow, weakly altered)
Gn. fine grained with porphyric amphibole, prisms randomly oriented.
Gradual hanging wall.

A

77.00 - 82.50 : Calcareous epidote - chlorite - amphibole - plagioclase - qtz rock
(Meta - mafic volcanic, banded amphibolite)
Grgn. fine grained with porphyric amphibole, prisms max. 0.3 cm long and randomly oriented, crudely laminated, indistinct alternation of mm - thick felsic layers with cm - sections richer in chlorite and amphibole, carbonate as tears or stringers mainly conformable with lamination, finely - dispersed sulphide, mainly py.
Gradual hanging wall.

82.50 - 87.95 : Calcareous to high calcareous chlorite schist
(Meta - basalt - flow, highly altered)
Gn. fine grained fibrous chlorite, in places por - phyric biotite possibly parallel with foliation, carbonate as minute spots, sometimes giant spots (max. 0.7 cm in diameter) of carbonate which are often accompanied by qtz and plagioclase, rare crosscutting veinletts of qtz often together with carbonate, interlayers of qtz - fspar rock, (meta - qtzkeratophyr) : 84.20 - 84.30 , 84.60 - 84.62 , 85.55 - 85.95 with low - grade po dissemination, minute beds of biotite - chlorite schist.

high A/ giant C

BH 18

87.69 - 87.75 : Calcareous qtz - chlorite - plagioclase schist

A

(Meta - mafic tuff / tuffite)
Grgn. fine grained, crudely bedded, conformable lenses of qtz - carbonate and granulated fspar of max. 0.3 cm size, stringery chlorite, rare spots of po and cp .
87.85 - 87.95 : translucent qtz, (meta - chert).
Gradual hanging wall.
Schistosity a. layering 50° to 60° .

87.95 - 89.83 : High calcareous chlorite - biotite - sericite - schist

AA/C

(Meta - tuff or tuffite)
Lightbluishgn., medium grained, cross - biotite as porphyroblasts, spotted carbonate, in places crudely laminated, alternation of felsic (plagio - clase), and biotite - chlorite layers, trains of granules of py within layered sections. Interbeds of qtz - fspar rock (qtz - keratophyr): 88.10 - 88.25 , 89.00 - 89.30.
Gradual hanging wall.
Schistosity a. layering : 45° , 88.30 m

89.83 - 95.65 : Calcareous to high calcareous biotite bear. chlorite schist

high A/giant C feeder

(Meta - basalt - flow, highly altered) same as 82.50 - 87.95 m.
Some spots of mt, crosscutting features of qtz with stringery po and cp, feeder material :
89.83 - 92.65 high- grade feeder ore, 92.65 - 93.65 low- grade feeder ore, 93.65 - 95.02 high - grade feeder ore.

95.65 - 120.25 : Massive pyrite ore

(Massive sulphide layer)

120.25- 124.95 : High calcareous sericite bear.qtz - plagioclase - chlorite schist.

BH 18

(Meta - basalt - flow , highly altered).

high A/giant C

Gn, crudely laminated, suggestion of flaser texture, mainly coarse chlorite, sporadically disharmonic small - scale folding, irregularily distributed carbonate as minute crystals of mainly anhedral shape, often giant, lense - like spots of carbonate accompanied by qtz, stringery mineralization and sometimes spots of po, py and cp, interlayers of qtz - fspar rock, (qtz - kera - tophyr) at : 123.13 - 123.23 with high - grade py mineralization, 124.00 - 124.95 high - grade py mineralization.
Gradual hanging wall.
Foliation at 30°

124.95 - 129.30 : Calcareous biotite bear. qtz - amphibole - chlorite schist , (Garbenschist)

(Meta - basalt - tuff, weakly altered)

A

Gn to grgn, crudely layered sometimes well banded, banded sections composed of alternate granoblastic (qtz - fspar) and schistose layers, porphyroblasts of amphibole - mainly elliptical crystals from 126.54 m randomly oriented prisms of up to 2.0 cm in size, spotted carbonate irregularily distributed mainly as minute spots, some smaller crystals of py, mt as 0.1 to 0.2 cm spots : 126.54 - 127.00 , 127.20 - 127.40 , 127.75 - 127.85 , 128.20 - 128.75 , 128.77 - 129.30.
Interlayers of qtz - fspar rock (meta - qtz - ker-atophyr, tuff), : 127.00 - 127.20 slighly mineral - ized by dusty mt, some spots of py, 127.85 - 128.20 stringery mt and stringery po,some rare spots of py,.128.75 - 128.77 rare spots of py.
Sharp hanging contact.
Layering 30°, 129.40 ↳

129.30 - 130.10 : Slightly calcareous amphibole bear. qtz - fspar rock

(Meta - mafic tuff or tuffite)

BH 18

Gr, crudely layered by trains of granules of amphibole, amphibole as porphyroblasts often with elliptical crystal face and max. 1.0 cm long randomly oriented, amphibole layers sometimes accompanied by fibrous chlorite, varying carb. content, in places lamina of carbonate, here some finest spots of mt and some biotite besides chlorite (alteration).
Gradual hanging wall.

130.10 - 130.90 : High calcareous amphibole bear. chlorite - biotite - qtz - fspar schist
(Meta - tuff)

high A / C

Gr to grgn, laminated, alternation of carbonate layers with chlorite - biotite bands and sections of granoblastic qtz - fspar rock in places carrying prisms (max. 0.2 cm size, elliptical) of amphibole, sometimes cm - thick interlayers of qtz - fspar rock, finely bedded with low - grade dissemination of py, spots of py throughout, sometimes forming trains of granules.
130.80 - 130.83 : qtz - fspar rock, (meta - qtz - keratophyr) laminated by ex mt and carbonate, some bigger spots of mt.

C

Sharp hanging wall.

130.90 - 133.90 : Calcareous qtz - fspar - amphibole - chlorite schist
(Meta - basalt, altered tuff)

A / C

Gn, crudely layered, wavy lenticular texture, porphyroblasts of amphibole mainly elliptical in shape and max. 1.5 cm long randomly oriented, in - places slightly parallel align with foliation / schistosity, qtz - carbonate as flasers and irregular layers throughout.
Sharp hanging wall.

133.70 - 133.75 : Qtz - fspar rock
(Meta - qtzkeratophyr)

BH 18

133.75 - 134.10 : Calcareous chlorite bear. amphibole - qtz - fspar rock
(Meta - dacite, supp. tuff)
Gr, to greenishgr, crudely layered, porphyric amphibole as max. 1 cm large crystals mainly elliptical, randomly oriented, spotted carbonate. Sharp hanging wall.

134.10 - 136.10 : Plagioclase amphibole schist
Gn, medium grained, crudely laminated, conformable bands of carbonate, fine spots of mt throughout, stripes of massive py : 134.75 - 134.76 , 135.50 - 135.80 , 134.76 - 134.96 : High calcareous chlorite - qtz - fspar rock
(Meta - dacite , tuff)
Low - grade dissemination of py , finest spots of mt.

136.10 m end of DDH.

Thinnsections :

18/1	28.00 m
18/2	28.40 m
18/3	29.75 m
18/4	32.85 m
18/5	36.80 m
18/6	43.95 m
18/7	48.40 m
18/8	58.60 m
18/9	64.40 m
18/10	70.30 m
18/11	72.35 m
18/12	74.80 m
18/13	78.70 m
18/14	85.40 m
18/15	86.80 m
18/16	87.70 m
18/17	89.70 m
18/18	125.30 m
18/19	131.60 m

BH 18

Composition of ore :

95.65 -120.00 = 24.35 m = 1.20% Cu, 0.90% Zn, 40.0% S
89.83 -125.00 = 45.17 m = 1.00% Cu. 0.80% Zn, 34.30%S

DIAMOND DRILL HOLE 20

Tverrfjellet mine, Folldal Verk A/S.
Exploration hole from 1958.
Location : 1240 N - 2450 V.
Inclination : 56° N, 35 m 50°, 75 m 42°, 115 m 37°.
Total length : 118.97 m (3 m overburden).

0.00 - 9.10 : Garnet bear. biotite - sericite schist
(meta - pelite)
darkgr, fine - grained, lenticular - texture often grading towards wavy - lenticular texture, porphyro - blasts of biotite as cross - mica, in places cluts (multi - crystal) randomly oriented, biotite causing spotted appearence of the rock, equally distributed garnets of max. 0.4 cm size, often idiomorphic, rare spots of xenomorphic carbonate.
Gradual hanging wall.
60°, from 5m 45°.

9.10 - 13.34 : Calcareous sericite bear. biotite - qtz - fspar gneiss
(meta - qtz - keratophyr)
gr, to browngr, laminated with in places flaser - texture, strongly folded, mm - layers of biotite alternate with slightly thicker bands of qtz accom - panied by carbonate, in places traces of granules of porphyroblasts of amphibole strongly aligned with foliation, very rare spots of mostly idiomorphic py.
Gradual hanging wall.
45°, strongly disharmonic folded, squeezed.

13.34 - 18.80 : Slightly calcareous garnet - biotite - sericite rich quartzite
(meta - arenite)
greenishgr, flaser - texture, close alternation of qtz with phyllosilicates, cross - biotite.
Sharp hanging wall.
50°.

DDH 20

18.80 - 28.25 : Slightly calcareous garnet - chlorite - biotite bear. sericite schist
(meta - pelite)
dark greenishgr, fine - grained, some flasers or lenses of qtz, porphyric biotite often as cross - mica but sometimes flattened and aligned with schistosity, biotite cause spotty appearence of the rock, strongly idiomorphic garnets of max. 1.0 cm size.
Gradual hanging wall.
Mainly 60°.

28.25 - 31.35 : Calcareous chlorite - biotite - qtz - sericite schist
C
(tuffaceous meta - pelite)
gngr, fine - grained, laminated, alternate carbonate - qtz layers and phyllosilicatebands, porphyric biotite often as cross - mica but sometimes streched and aligned with schistosity, sporadically mm - layers of chlorite - biotite with coarse multi crystal biotite randomly oriented,distinct increase in biotite and chlorite and decrease in sericite within hanging portion, interlayers of medium - grade py within qtz - rock : 30.14 - 30.15 m; low - grade dissemin - ation of py : 30.90 - 31.35 m.
Gradual hanging wall, conformable.
60° changing towards 45°.

31.35 - 35.87 : Calcareous chlorite - amphibole - qtz - plagioclase gneiss (banded amphibolite)
(meta - mafic tuff or tuffite)
grgn, medium - grained, crudely cm - layered mainly
C due to variation of chlorite (fine - fibrous) and amphibole, latter forming prisms of max. 0.7 cm size being randomly oriented, spotted carbonate, in places flaser or lenses conformable with indistinct banding, rare spots of idiomorphic py.
Gradual hanging wall.
45°.

DDH 20

35.87 - 68.87 : Slightly calcareous amphibole schist
(meta - basalt, flow)
gn, fine to medium grained, in places laminated or crudely banded due to mm - or cm - interlayers of quartz, cluts of biotite often as cross - mica and sometimes forming traces of granules (layers) :
A 57.20 - 58.90 m and again at 59.66 - 68.87 m, latter section often enriched in chlorite and more laminated (weak alteration), carbonate as rare spots of mostly lense - like shape; sporadically spotted carbonate mainly idiomorphic crystals :
C 38.00 - 39.40 m, 41.30 - 42.95 m; interlayers of quartzite (chert) with subordinate amounts of mt and py : 37.20 - 37.35 m, 57.35 - 57.37 m, 57.60 - 57.65 m (exmt), 59.41 - 59.66 m, 60.10 - 60.22 m, 66.12 - 66.19 m; occasional interbeds rich in py, pyrite mineralization often accompanied by quarts sometimes embedded in amphibolite : 37.60 - 37.70 m 10 Vol.-% py, 40.82 - 40.93 m 60 Vol.-% py, 43.80 - 43.81 m 80 Vol.-% py, 45.75 - 45.76 m rare spots of py, 46.75 - 46.76 m 60 Vol.-% py, 50.12 - 50.57 m low - grade dissemination or web - like py, (tuff sequence), 52.95 - 52.96 m 60 Vol.-% py, 53.61 - 53.86 m 90 Vol.-% py.
Sharp hanging wall.

68.87 - 69.10 : Qtz - pyrite rock
(disseminated pyrite layer)
medium - grained, medium - grade pyrite - ore, disseminated pyrite sometimes forming traces of granules.
Sharp hanging wall.

69.10 - 69.50 : Quartzite
(meta - chert)
white, extremely fine - grained, subordinate pyrite as minute spots and mm-layers.
Sharp hanging wall.

DDH 20

69.50 - 69.95 : Qtz - rich pyrite rock
(massive sulphide layer)
medium - grained.
Sharp hanging wall (bedding fault line)

69.95 - 70.10 : Calcareous sericite - amphibole - chlorite - qtz - fspar rock / gneiss
(meta - tuff, weakly altered)
gn, to lightgn, medium - grained, crude development of cm - layering, fine - fibrous sericite and chlorite, porphyric amphibole max. 0.3 cm long and randomly oriented, sometimes elliptical in shape, minute spots of carbonate equally distributed.
Gradual hanging wall.

70.10 - 78.36 : Chlorite bear. sericite - amphibole - qtz - fspar rock
(meta - mafic, flow or tuff)
grgn, medium - grained, prisms of amphibole max. 0.2 cm long always randomly oriented, rare spots of idiomorphic py, band of massive pyrite : 72.31 - 72.33 m.
Gradual hanging wall.

72.36 - 73.85 : Calcareous biotite - qtz - chlorite - amphibole schist / gneiss
(meta - basalt, tuff, weakly altered)
grgn, fine - grained with footwall more medium - grained, here more intensively altered and distinctly banded, amphibole prisms average 0.2 cm long and often parallel layering, giant spots of mt : 73.00 - 73.75 m, minute spots and stringers of carbonate throughout.
Sharp hanging wall.

A/C

73.85 - 84.50 : Qtz - bear. pyrite rock
(massive sulphide layer)
medium - grained, gradual changes in qtz- content, cherty pyrite - ore of low - grade : 80.25 - 80.70 m slightly mt bearing; close alternation of highly

ore zone

altered andesitic tuff with high - grade pyrite : 84.38 - 84.50 m.
Sharp hanging wall.

84.50 - 87.90 : Calcareous amphibole - biotite bear. chlorite - fspar - qtz schist
(meta - mafic tuff, highly altered)

AA/C lightgn, fine - grained, laminated with in places wavy - lenticular texture, sometimes chaotical, spotted appearence due to scattered minute flakes of biotite, fine - fibrous chlorite, carbonate often associated with qtz forming irregular aggregates and stringers or even bands, rare spots and stringers of py, interlayers of quartzite (chert) with py mineralization : 85.36 - 85.70 m, footwall and hanging wall marked by cm - layers of massvie py, 85.92 - 85.95 m subordinate py, 86.13 - 86.18 m traces of granules of py, low - grade mineralisation.
Gradual hanging wall.
85°.

87.90 - 90.88 : High calcareous chlorite - biotite bear. sericite - qtz - fspar rock
(meta - qtz - keratophyr, tuff)

C grwhite, fine - grained, biotite mainly as porpyro - blasts randomly oriented (cross - biotite) not equally distributed, carbonate as minute spots often accreted within layers or nodules, carbonate in places major compound, intersections of garbenschist (calcareous amphibole - sericite - qtz - fspar rock): 88.57 - 88.77 m, 89.13 - 89.40 m, 90.00 - 90.88 m, porphyroblasts of amphibole (extremely coarse sometimes as spherolites) randomly oriented; interlayers of quartzite with mt and py : 88.10 - 88.18 m low - grade py, 88.77 - 89.13 m rare spots of py, dissemination of mt, 89.40 - 89.46 m rare spots of mt.
Sharp hanging wall.

DDH 20

90.88 - 91.16 : Quartzite
(meta - chert)
withegr, extremely fine-grained, increasing py-content towards hanging portion, py- barren footwall.
Gradual hanging wall.

91.16 - 92.25 : Qtz - pyrite rock
(massive sulphide layer)
ore zone
medium-grained, sporadically transparent qtz.
Sharp hanging wall.

92.25 - 96.19 : High calcareous sericite bear. biotite - chlorite - qtz - plagioclase schist
(meta - mafic tuff, very similar 66.30 - 77.30 m DDH 4) (banded amphibolite)
AA/C
lightgn, fine-fibrous chlorite, porphyroblasts of biotite forming traces of granules conformable with schistosity, sometimes isolated cluts of biotite as cross - mica, carbonate as minute spots often scattered but sometimes as traces of granules, footwall contains porphyroblasts of amphibole randomly oriented, prisms decrease in size upsection (max. 1.0 cm long).
Sharp hanging wall, bedding fault line.
45°, strongly folded $

96.19 - 105.40 : High calcareous qtz - biotite - chlorite schist
(meta - mafic tuff or tuffite, highly altered)
AA/C
gn, to lightgn, mainly coarse - grained, chaotically folded only sometimes harmonic with crude development of banding, huge multi - crystals of biotite surrounded by medium - grained chlorite, dissemination of pyrite, occasinal some prisms of amphibole, infolded high - grade py-ore : 96.14 - 96.30 m, 96.35 - 97.20 m, 98.10 - 98.30 m, 98.70 - 98.85 m, 99.65 - 99.80 m, 102.00 - 102.15 m low-grade py, 103.32 - 103.60 m medium-grade py.
Gradual hanging wall.
Strongly folded, $

DDH 20

105.40 - 108.90 : Calcareous chlorite bear. amphibole - plagioclase - qtz rock (banded amphibolite)
(meta - andesite/-basalt, tuff)
grgn, medium - grained, crude development of banding,
C porphyroblasts of amphibole max. 0.4 cm long randomly oriented, idiomorphic carbonate equally distributed, very sporadically forming traces of granules, rare spots of py.
107.30 - 108.90 m : high calcareous amphibole bear. qtz - chlorite schist
AA/C (meta - mafic tuff, or tuffite)
lightgn, fine - fibrous chlorite, rare prisms of amphibole (0.4 cm long) randomly oriented, coarse idiomorphic carbonate equally distributed, in places forming irregular aggregates, hanging portion with low - grade dissemination of py.
Sharp hanging wall.
45°.

108.90 - 109.00 : Quartzite
(meta - chert)
white, extremely fine - grained, interlayers of massive py.
Sharp hanging wall.

109.00 - 109.40 : Qtz - rich pyrite rock
(massive sulphide layer, repeated by folding)
medium - grained.
Sharp discordant hanging wall.

109.40 - 109.60 : High - calcareous amphibole bear. qtz - chlorite schist
AA/C (meta - mafic tuff or tuffite)
same as : 107.30 - 108.90m.

DDH 20

109.60 - 115.97 : Calcareous to high calcareous chlorite - bear. amphibole - plagioclase - qtz rock / gneiss
(banded amphibolite)
C (meta - basalt, tuff)
same as : 105.40 - 107.30 m, some interlayers of low - grade py within quartzite : 110.45 - 110.70 m, 111.59 - 111.72 m Ø , 115.80 - 115.97 m.

115.97 m end of DDH.

Chemical composition of ore :

73.85 - 84.50 m = 10.75m = 0.63% Cu, 1.50% Zn, 42.75% S
90.88 - 92.25 m = 1.37m = 0.45% Cu, 1.40% Zn, 27.50% S
96.14 - 103.62 m = 7.48m =

DIAMOND DRILL HOLE 21

Tverrfjellet mine, Folldal Verk A/S
Exploration hole from 1958
Location: 1330 N - 2725 V
Inclination: 55°
Total length: 133,05 m + 6 m overburden

Description:

0,00 - 5,90: Magnetite quartzite
(meta-oxide facies BIF)
grey with violet streaks, locally brownish or greenish coloured, banded, irregular alternation of quartzite bands which may contain flakes of biotite with cm-thick layers or schlieren of magnetite - quartz, sporadically interlayers composed of carbonate, phyllosilicates, qtz and fspar which may be tuff beds. Often disturbed banding being due to folding.
Schistosity/banding: 60°
Sharp contact.

5,90 - 16,80: High calcareous biotite - chlorite schist
(meta-mafic volcanic, supp, altered basalt flow)
gr with brown rods and white schlieren, crude development of compositional banding - often strongly deformed, alternation of bands made by fine-fibrous chlorite which shows widely scattered fibrous aggregates and or porphyroblasts of biotite with trains of granules or schlieren of carbonate, carbonate in addition occurs as scattered idioblasts on average 0,15 cm across within the phyllosilicate bands; several interlayers of calcareous biotite-sericite schist/phyllite (meta-felsic volcanic tuff) (6,02 - 6,27 m, 6,83 - 7,33 m, 7,53 - 7,83 m, 9,03 - 9,23 m); bands of quartzite (meta-chert) at: 10,12 - 10,32 m, 11,85 - 12,00 m, 14,49 - 15,19 m, 16,17 - 16,80 m.
Strongly folded, contacts between layers of different composition and competency, f.eks. meta-chert, knife sharp and as bedding fault lines.

16,80 - 40,15: Calcareous to high calcareous biotite - chlorite schist/phyllite
(meta-mafic volcanic sediment)
lightgn with brown and grey schlieren or spots, often with distinct compostional banding which in places may be deformed, sometimes quite homogeneous, fine-crystalline, alternation of phyllosilicate bands with schlieren, lenses and thin layers mainly composed of carbonate which is accompanied by qtz, biotite tends to form porphyroblast which are scattered and predominately oriented parallel to the compositional layering, carbonate besides being concentrated within crystal aggragtes forms scattered xenomorphic porphyroblasts, huge amphibole crystals occur

between 17,00 - 17,15 m; sparse interlayers of meta-chert (16,95 - 17,02 m, 28,22 - 28,47 m some clusters of py, 30,13 - 30,19 m some poikoloblasts of mt, 33,81 - 33,88 m, 36,32 -36,55 m low-grade dusty mt, 37,25 - 38,90 m); rare poikiloblasts of mt between: 38,90 - 39,50 m.
Lamination/banding: 80°
Sharp contacts

40,15 - 41,75: Calcareous biotite - chlorite schist
(meta-altered basalt flow)
AA gn with white and brown spots, homogeneous, crudely developed lenticular texture due to carbonate which tends to be concentrated within lenses and schlieren, fibrous chlorite surrounds poikiloblasts of biotite which are homogeneously distributed and tend to be oriented parallel to each other, sparse poikiloblasts of mt;at footwall interlayers of meta-chert and high calcareous biotite - sericite schist (tuff or tuffite), the latter carries clusters of py and supp. sph
chem.analysis 40,15 - 40,28 m
Sharp contact

41,75 - 42,10: Biotite - sericite schist
(meta-pelite, weakly altered)
A gr with abundant brown rods, fine-crystalline, homogeneous, biotite forms max. 0,25 cm long porphyroblasts which tend to be aligned parallel to the major foliation of the rock, in places lense-shaped aggregates composed to qtz; sparse idioblasts og py.
Gradually passing into following schist.

42.10 - 45,74: Calcareous to high calcareous chlorite-bear. biotite - sericite schist
(meta-pelite with volcanic impurity, altered)
A gr with abundant brown spots, fine-fribrous sericite accompanied by randomly oriented porphyroblasts of biotite as schlieren, layers and lenses in alternation with lenses composed of qtz and carbonate, the latter often carry spots of py, in places clusters of qtz which contain abundant carbonate, py either occurs as scattered hypidiomorphic blasts or forms irregular shaped aggregates or trains of granules, the sulphide amounts to < 1 % by volume of the rock; tiny scattered spots of either mt or il.
chem.analysis 42,10 - 43,10 m, 43,10 - 44,10 m, 44,10 - 45,70 m

AA 43,20 - 43,40: calcareous qtz-sericite-chlorite-biotite schist (highly altered mafic volcanic)
greenishbrown, medium- to coarse-crystalline, strongly small scale folded, phyllosilicates are concentrated within schlieren and deformed layers which surround clusters of qtz, carbonate is irregularily distributed; py occurs as scattered porphyroblasts and grades lesser 1 Vol-%.
Sharp deformed contacts.

45,74 - 47,10: Calcareous biotite - chlorite-bear. quartzite
(meta-hydrothermal silica with interlayers of highly altered mafic volcanic)
AA gr with brown and gr schlieren, schlieren structure, phyllosilicates together with carbonate compose schlieren and in places web-like features which alternate and are

chem.analysis 45,74 - 47,10 m

filled by fine-grained granublastic quartz which may contain dusty mt but often is accompanied by scattered lense-like porphyroblasts of carbonate or crystals of biotite; py and lesser amounts of po forms trains of granules or low-to medium-grade mineralizations within cm-thick layers, the sulphides grade average 3 % by volume of the rock.
Strongly deformed due to folding.
Knife sharp boundaries.

47,10 - 69,98: Calcareous to high calcareous chlorite-schist/phyllite
(meta-mafic volcanic sediment, may be altered basaltic lava)
gn, flaser- and lenticular structure, close irregular alternation of fine-fibreous chlorite layers which near the footwall contain randomly oriented porphyroblasts of biotite with schlieren, clusters and thin layers composed of qtz and carbonate, sparse max. 0,1 cm large idioblasts of mt; interlayers of calcareous phyllosilicate-bear. quartzite (meta-hydrothermal silica with volcanic and terrigen impurity) at: 49,50 - 49,77 m, 49,83 - 49,95 m, 52,12 - 52,34 m, 54,78 - 55,18 m some schlieren of po and in places high-grade dissemination of dusty mt, 55,85 - 56,59 m low-grade dissemination of dusty mt and abundant not oriented poikiloblasts of amphibole, 57,24 - 57,31 m low-grade dusty mt and abundant tiny needles of amphibole, 58,97 - 59,08 m, 59,20 - 59,52 m several cm-thick bands in alternation with chlorite-schist, 60,72 - 60,82 m, 64,31 - 64,40 m trains of granules of py at both footwall and hanging wall, 66,02 - 66,13 m, 66,27 - 66,38 m, 67,00 - 67,05 m.
Sharp contact.

69,98 - 73,94: Quartzite
(meta-chert)
grwhite, fine-grained granoblastic qtz with sparse mm-thick layers of calcareous chlorite phyllite, spots of pyrite very locally.
Sharp contact.

73,94 - 74,18: Calcareous amphibole - qtz - fspar rock
(meta-felsic tuff)
milky white with darkgn garben, porphyroblastic, inhomogeneous, huge porphyroblasts of amphibole showing no preferred orientation are ambedded in a fine-crystalline matrix composed of qtz and fspar, locally biotite or chlorite join amphibole; sparse blasts of pyrite which tend to be close amphibole.
Strongly deformed.
Gradually passing into following rock.

chem.analysis 73,90 - 74,28 m

74,18 - 74,97: Quartzite
(meta-chert)
milkywhite to colourless, fine-grained granublastic, massive, in places banded by mt and trains of granules of pyrite, local occurrence of clusters of either carbonate or pyrite and huge crystals of amphibole which are oriented parallel the major foliation of the surrounding rocks.

chem. analysis 74,42 - 74,64 m

parallel the major foliation of the surrounding rocks.
Banding: 65°
Sharp contact.

74,97 - 75,95 Calcareous biotite - sericite schist
(meta-pelite)
gr with faint greenish tint, abundant brown spots, lenticular structure, interlocked qtz crystals as lenses and schlieren in nonrhythmic alternation with schlieren and layers composed of sericite and biotite, the latter forms scattered tiny porphyroblasts, carbonate displays lense-like aggregates which are nearly homogeneously distributed.

76,12 - 76,29: slightly calcareous amphibole-fspar-qtz rock similar 73,94 - 74,31 m and quartzite which carries abundant carbonate and idioblasts of py, the lithologies are suggested having been placed within the biotite-sericite schist by folding.
Schistosity: 45°
Sharp contact to following rock, bedding shearzone.

75,95 - 76,12: Quartzite
(meta-chert)
colourless, massive, fine-grained granublastic, incorporation of stringers filled with phyllosilicates is due to folding.
Desturbed contact relationship with following rock.

76,12 - 77,74: Biotite - amphibole-bear. chlorite - schist and quartzite
(meta-mafic volcanic sediment and meta-chert closely folded together)
Biotite - amphibole-bear. chlorite schist: gn, porphyroblastic, inhomogeneous often with flaser structure, huge porphyroblasts of amphibole which randomly are oriented are surrounded either by fine-fibrous chlorite which forms schlieren and layers or fine-grained granoblastic qtz which displays lenses and discontinuous layers; pyrite as max.0,4 cm large porphyroblast is variably distributed, it amounts to 10 Vol-% between 76,74 - 77,08 m, elsewhere it grades lesser 2 Vol-%; sparse porphyroblasts of mt. Quartzite: colourless, massive, fine-grained granublastic; rare spots py.
Contact relationships with following rock are unclear which is due to folding.

chem.analysis
76,39 - 76,74 m
76,74 - 77,08 m
77,08 - 77,37 m

77,74 - 78,66: Calcareous biotite - sericite schist and quartzite
(meta-pelite and meta-chert closely folded together)
Calcareous biotite - sericite schist: similar: 74,97 - 75,95 m.
Quartzite: similar: 76,61 - 77,74 m
Contact relationships with following rock remain unclear which is due to folding and shearing.

78,66 - 80,55: Calcareous biotite - sericite - chlorite schist
(meta-mafic volcanic sediment with epiclastic sedimentary impurity; hydrothermally altered)
AA
gn with lightgr bands and abundant brown flakes, inhomogeneous, strongly folded and sheared, S-shaped quartz

silicate matrix composed of fine-fibrous sericite and chlorite which are associated by porphyroblasts or crystal aggregates of biotite which often show a preferred orientation, carbonate forms lense-like aggregates which are variably distributed; rare hypidiomorphic porphyroblasts of pyrite.

Interlayers or infolded sections of quartzite (meta-chert) which carry subordinate pyrite as tiny idiomorphic crystals between: 79,89 - 80,03 m and 80,39 - 80,55 m.

Folded and sheared contact with following lithology.

80,55 - 81,18: Calcareous biotite-bear. amphibole - chlorite schist
(meta-mafic volcanic sediment)
Similar: 76,12 - 77,74 m but without pyrite.

Gradually passing into following rock.

81,18 - 82,55: Calcareous amphibole-bear. biotite - chlorite schist
(meta-mafic volcanic sediment with epiclastic sedimentary
AA impurity, hydrothermally altered)
similar: 78,66 - 80,55 m but no pyrite.

81,91 - 81,97: pyrite-rich quartzite (meta-chert)
grwhite, fine-grained granoblastic qtz forms the interior of the layer while pyrite occurs as high-grade dissemination within the outer rims.
Folded contact.

82,55 - 83,86: Calcareous biotite - chlorite schist
(meta-mafic volcanic sediment, supp. hydrothermally altered)
gn, strongly deformed, often with clusters of meta-chert, fine-fibrous chlorite is associated by scattered, randomly oriented flakes of biotite, several lenses and nodules or discontinuous layers of carbonate or qtz; rare spots of mt; low - to medium - grade dissemination of py between: 82,65 - 82,88 m.
Sharp deformed contact with following lithology.

83,86 - 84,55: Calcareous biotite-bear. sericite schist
(meta-pelite)
gr with faint greenish tint, lenticular structure, tiny lenses composed of either carbonate or qtz embedded in a fine-crystalline groundmass made by sericite which locally is accompanied by biotite.
Sharp contact.

84,55 - 86,97: Calcareous chlorite schist/phyllite
(meta-mafic volcanic sediment)
similar: 16,80 - 40,15 m but without biotite, abundant poikiloblasts of mt which are locally 0,5 cm across.

Chemical analysis 85,67 - 85,85 m

85,29 - 85,78: mt-bear. quartzite (meta-chert)
grwhite with faint violet tint, massive, in places banded, extremely fine-grained qtz with dusty mt which in places gets concentrated within up to 1 cm thick bands with either

sharp or gradual boundaries, pyrite displays a massive lesser 1 cm thick interlayer at 85,50 m, from here it gets mobilized on fractures into the neighbouring quartzite. Sharp contacts.

86,25 - 86,28: quartzite (meta-chert)
grwhite, massive, extremely fine-grained, sparse schlieren of chlorite-schist; pyrite displays schlieren on one side of the layer.

86,97 - 88,87: Quartzite
(meta-chert)
grwhite, in places milkywhite, massive, locally crude development of lamination which is due to trains of granules of pyrite or schlieren of chlorite schist, mt either as dust-like impregnation or with spotted appearence occurs between 87,30 - 87,59 m and 88,18 - 88,24 m, pyrite as scattered idioblasts or trains of granules or schlieren is sporadically present, several intersections of amphibole-chlorite schist which is similar 76,12 - 77,74 m
Knife sharp contact.

chemical analysis 87,35 - 87,61 m

88,87 - 90,95: Slightly calcareous amphibole-chlorite schist
(meta-mafic volcanic sediment, locally similar banded amphibolite)
similar: 76,12 - 77,74 m, several interlayers with sharp boundaries of meta-chert: 89,00 - 89,10 m, 89,24 - 89,57 m (some spots of py, schlieren of nearly massive mt at 89,30 m), 90,12 - 90,17 m (infolded quartzite sparse idioblasts of pyrite), 90,26 - 90,47 m (high-grade mt at 90,28 m, nearly massive pyrite layer on one side of the chert band), 90,52 - 90,57 m (laminated by carbonate and amphibole-chlorite schist), 90,77 - 90,84 m (discontinuous layers of mt, clusters of pyrite on one side of the band)
Sharp contact.

chemical analysis 88,93 - 89,17 m, 89,52 - 89,74 m, 89,98 - 90,50 m, 90,72 - 90,84 m

90,95 - 91,20: Magnetite-bear. quartzite
(meta-chert)
grwhite, massive, crudely developed lamination which is caused by the tendency of mt to collect within schlieren and tiny bands, sometimes schlieren of chlorite schist and trains of granules of carbonate which are parallel the mt-lamination of the rock, rare spots of pyrite.
Knife sharp, distorted contact.

91,20 - 92,17: Calcareous amphibole - chlorite schist
(meta-mafic volcanic, strongly hydrothermally altered)
deepgn with in places brown schlieren, strongly folded, partly sheared, abundant clusters of milky qtz, inhomogeneous, chlorite forms fine-fibrous aggregates of irregular shape which host huge porphyroblasts og amphibole or sometimes crystal aggregates of biotite, carbonate forms lense-like aggregates, clusters or a high-grade dissemination; sparse, scattered idioblasts of mt; pyrite forms porphyroblasts or clusters which are of local occurrence.
Knife sharp contact.

AA/C

92,17 - 92,86: Magnetite-bear. quartzite
(meta-chert)
grwhite with faint violet tint, massive but sometimes with stringers of mt, dusty mt, single crystals of pyrite within hanging wall.
Knife sharp contacts on both side.

92,86 - 93,26: Calcareous magnetite - biotite - amphibole-bear. chlorite schist
(meta-mafic volcanic, supp. tuff, strongly hydrothermally altered)

AA/C deepgn with black spots and slightly yellowish schlieren and lenses, heterogeneous, crude development of layering due to compositional changes, fine-fibrous chlorite as bands and schlieren in irregular alternation with lenses and discontinuous layers of carbonate which locally is accompanied by qtz and trains of flakes of biotite; mt is present throughout, it is variably distributed and occurs as either up to 0,35 cm large porphyroblasts or 0,1 cm large idioblasts which tend to form trains of granules being conformable with the major schistosity of the rock; pyrite displays a huge crystal aggregate within the middle part of the layer.
Layering/schistosity: 45°
Sharp contact.

93,26 - 93,56: Magnetite-bear. quartzite
(meta-chert)

chemical analysis 93,26 - 93,68 m: grwhite with violet layers and gn bands, extremely fine-grained granoblastic qtz as cm-thick layers or clusters (due to folding) in nonrhythmic alternation with mt -bands, py-layers and schlieren or bands of chlorite schist.
Layering: 30° - 45°.
Sharp contact.

93,56 - 95,35: Slightly calcareous amphibole - chlorite schist
(meta-mafic volcanic, supp. tuff, strongly hydrothermally altered)

AA gn, homogeneous, porphyroblastic, groundmass of fine-fibrous chlorite, abundant acicular crystals of amphibole on average 0,45 cm in length and often not oriented tend to form an open framework of touching crystals; pyrite is

chemical analysis 94,67 - 95,27 m: locally present as hypidiomorphic porphyroblasts or clusters, it is concentrated between 94,92 - 95,02 m where it estimates 15 % by volume of the rock.

94,00 - 94,13: magnetite-bear. quartzite (meta-chert)
similar: 92,17 - 92,86 m but no pyrite

94,82 - 94,92: milky qtz with clusters og py
Gradual contact.

95,35 - 100,07: Slightly calcareous biotite - amphibole - chlorite schist
(meta-mafic volcanic, supp.tuff, slightly hydrothermally, altered) (similar: TVN-IV-13 b, TVN-IV-14)
gn, crude development of compositional and textural

banding, sometimes distinctly layered, fine-fibrous chlorite is accompanied by either amphibole which forms scattered acicular crystals being not oriented or biotite which displays lense-like aggregates or flakes often being aligned with the schistosity and compositional banding of the rock, sporadically flat lenses or thin bands of qtz and layers with sharp boundaries of mt-bear. chert (95,85 - 95,84 m, 96,00 - 96,01 m, 96,30 - 96,32 m, 96,34 - 96,38 m, 96,51 - 96,52 m, 96,57 - 96,59 m, 96,70 - 96,75 m, 98,82 - 98,87 m, 99,41 - 99,47 m), carbonate is variably distributed, it occurs within lense-like aggregates, as schlieren, or laminae or it forms a dust-like dissemination; pyrite is found at: 94,66 m, 95,85 m (clusters within milky qtz), 96,92 m, 98,40 - 98,60 m (scattered porphyroblasts and trains of granules, average 3 Vol.-%), 99,58 m.
Compositional banding/schistosity: 50°
Gradual contact.

chemical analysis 98,37 - 98,60 m

100,07 - 103,94: Calcareous amphibole - chlorite - qtz - fspar rock
(meta-intermediate volcanic, supp. flow)
(similar: BH 18 sample 18/9 - 64,40 m)
bluishgr, crude development of compositional banding, porphyroblastic texture, fine-fibrous chlorite as schlieren alternate with areas being rich in fspar, qtz and carbonate, amphibole forms scattered, randomly oriented porphyroblasts, the needles being on average 0,25 cm long; local occurrence of pyrite.
Schistosity: 50°
Knife sharp contact.

103,94 - 104,36: Phyllosilicate-bear. qtz - fspar schist
(meta-qtz-keratophyr)
milkywhite with greenish and brown schlieren and flakes, schlieren-texture, biotite and sericite form schlieren and sometimes laminae which are surrounded by fine-grained granoblastic interlocking fspar and qtz crystals.
Schistosity: 65°.
Gradually passing into following lithology.

104,36 - 107,02: Biotite - chlorite schist
(meta-mafic volcanic sediment)
lightgn with abundant brown rods, crude development of compositional banding, fine-fibrous chlorite being associated by scattered lense-like porphyroblasts or crystal aggregates of biotite which are oriented at random as schlieren and layers of variable thickness in alternation with lenses and sometimes clusters mainly composed of qtz; rare spots of py.
Schistosity: 50°
Gradual contact.

107,02 - 109,56: Slightly calcareous biotite - chlorite-bear. amphibole schist
(meta-basalt flow)
gn, fine-crystalline, homogeneous, local occurrence of cm-thick interlayers with sharp boundaries of biotite -

chlorite schist similar 104,36 - 107,02 m, here sometimes porphyroblasts of py, carbonate occurs as widely scattered round globular crystals or fills crosscutting tiny veins.
Gradual contact.

109,56 - 110,00: Biotite - chlorite schist
(meta-mafic volcanic sediment)
chemical analysis 109,56-110,00 m
similar: 104,36 - 107,02 m, low grade dissemination of pyrite within 1 cm thick qtz-band at 109,98 m.
Schistosity: 45° - 50°
Gradual contact.

110,00 - 111,15: Calcareous biotite-bear. chlorite-amphibole-qtz-fspar rock/schist
(meta-intermediate volcanic, supp. flow.)
(similar: BH 18 sample 18/9 64,40 m)
chemical analysis 110,73-110,85 m 110,96-111,15 m
similar: 100,07 - 103,94 m, near hanging wall transgoing into banded amphibolite, low-grade dissemination of pyrite within tuffaceous interlayer at 110,73 - 110,85 m which represents a high calcareous amphibole-bear. biotite-chlorite-qtz schist and between 110,96 - 111,09 m.

111,09 - 111,25: phyllosilicate-bear. qtz - fspar rock/schist (meta-qtz-keratophyr) similar: 103,94 - 104,36 m; band of nearly massive pyrite/po at the footwall of the layer.
Gradual contact.

111,15 - 114,55: Slightly calcareous biotite - chlorite-bear. amphibole schist
(meta-basalt flow)
chemical analysis 114,06-114,12 m
similar: 107,20 - 109,56 m; band with knife sharp boundaries of massive py at 115,06 - 115,12 m
Knife sharp boundary.

114,55 - 114,71: Amphibole-bear. epidote-rich quartzite
(meta-chert with mafic volcanic interlayers)
grwhite with greenishgr schlieren and bands, banded, rhythmic alternation of cm-thick bands of fine-grained granoblastic qtz with schlieren and layers made by epidote and amphibole, the latter displays acicular crystals of 0,2 cm length.
Sharp contact.

114,71 - 116,86: Qtz-fspar amphibole gneiss/schist
(meta-mafic volcanic, supp. tuff)
gn with faint bluish tint, porphyroblastic texture, crude development of compositional and textural banding, huge, lense-shaped porphyroblasts of amphibole form an open framework of touching sometimes crossing crystals the interstices of which being filled by fine-grained granoblastic qtz and fspar which in places are joined by carbonate, locally the amphibole porphyroblasts are closely
chemical analysis

116.56-116,71 m crystals at mt; frequent occurrence of bands of magnetite-quartzite (meta-chert) with sharp boundaries which sometimes carry crystals of pyrite (114,88 - 115,04 m, 115,17 - 115,26 m, 115,37 - 115,38 m, 115,41 - 115,43 m, 115,74 - 115,77 m, 115,84 - 115,90 m, 116,16 - 116,38 m (near footwall 2 cm of massive py, 0,5 cm thick band of massive po at 116,26 m), 116,63 - 116,71 m (low-grade dissemination of py within lower portion)). Gradual contact.

116,86 - 118,13: Calcareous amphibole schist
(meta-basalt flow)
gn, medium-crystalline, homogeneous in places indistinctly banded, spotted carbonate, the often idiomorphic crystals being on average 0,15 cm across.
Sharp contact.

118,13 - 133,05: Slightly calcareous amphibole schist
(meta-basalt flow)
gn, extremely fine-grained, nematoblastic texture, locally crosscutting qtz-veins, carbonate as subidiomorphic porphyroblasts is variably distributed, several interlayers with sharp but also gradual borders of fine- to medium-grained amphibole schist which shows a crude development of leopard texture, strongly parallel oriented lense-shaped amphibole crystals or crystal aggregates of max. 0,45 cm length are embedded in a sparse matrix composed of plagioclase, at places irregular qtz-veining (121,19 - 122,25 m, 123,20 - 123,35 m, 123,85 - 125,70 m, 125,75 - 133,05 m), layers of exhalative qtz at: 123,35 - 123,85 m, 125,05 - 125,15 m schlieren and irregular veins of po, 125,70 - 125,75 m, 126,30 - 126,35 m finest dissemination of po and some spots of py, sulphides show a crude tendency to collect within layers, total sulphide amount estimates to 7 Vol-%, 126,60 - 126,62 m some clusters and schlieren of po associated by py (5 Vol-%).

chemical analysis 125,05-125,15 m 126,30-126,35 m

133,05 m End of DDH

Frank-D. Priesemann

August 1986

CHEMICAL ANALYSIS: DDH 21

	% Cu:	% Zn:	% S:
42,10 - 43,10 m	0,02	0,16	0,60
43,10 - 44,10 m	0,03	0,15	1,73
44,10 - 45,70 m	0,07	0,15	2,46
45,70 - 47,10 m	0,34	0,08	9,49
73,90 - 74,20 m	0,04	0,05	2,69
74,42 - 74,64 m	0,06	0,03	1,99
76,39 - 76,74 m	0,01	0,04	2,26
76,74 - 77,08 m	0,02	0,04	6,88
77,08 - 77,37 m	0,01	0,04	2,72
81,91 - 81,97 m	0,01	0,03	6,61
82,65 - 82,88 m	0,05	0,05	3,42
85,67 - 85,85 m	0,04	0,03	6,98
87,35 - 87,61 m	0,02	0,03	6,54
88,93 - 89,17 m	0,03	0,03	6,76
89,52 - 89,74 m	0,00	0,05	1,10
89,98 - 90,50 m	0,02	0,02	6,78
90,77 - 90,84 m	0,03	0,02	5,23
91,92 - 92,00 m	0,03	0,05	4,38
93,26 - 93,68 m	0,03	0,03	5,59
94,67 - 95,27 m	0,05	0,04	7,91
98,37 - 98,60 m	0,03	0,29	6,69
109,56 - 110,00 m	0,03	0,03	1,42
110,73 - 110,85 m	0,11	0,04	2,10
110,96 - 111,15 m	0,13	0,07	5,50
114,06 - 114,12 m	0,06	0,47	32,5
116,16 - 116,27 m	0,04	0,02	15,7
116,56 - 116,71 m	0,05	0,02	5,19
125,05 - 125,15 m	0,10	0,01	8,01
126,30 - 126,35 m	0,18	0,01	5,50

SUSZEPTIBILITY DDH 21

1,00	14,0	37,40	0,5	58,40	0,0
1,40	8,2	37,90	0,3	58,95	0,0
1,90	21,0	38,50	5,8	59,20	0,0
2,20	14,0	38,95	0,9	59,50	0,0
2,40	18,0	39,30	0,4	59,70	0,0
2,60	10,0	39,70	0,0	59,95	0,7
3,50	31,0	40,00	0,0	60,75	0,1
4,40	5,9	40,20	2,3	60,85	0,0
4,90	19,0	40,30	0,0	61,20	0,0
5,60	13,0	40,50	0,0	63,40	0,0
6,00	0,0	41,60	0,9	63,90	0,0
6,50	0,0	41,80	0,4	64,10	0,0
7,10	0,0	41,90	0,1	64,35	0,0
7,60	0,3	42,20	0,1	64,70	0,0
8,40	0,1	42,90	0,1	65,10	0,7
8,90	0,1	43,15	0,2	66,10	0,0
10,05	0,3	43,90	0,1	66,30	0,0
10,15	0,1	44,30	0,1	67,10	0,7
10,70	0,0	44,70	0,4	67,50	0,1
11,00	0,1	45,75	0,4	68,10	0,0
11,50	0,0	45,95	0,4	71,00	0,4
12,50	0,4	46,70	0,4	73,90	0,9
12,80	0,0	47,00	0,0	74,10	0,5
14,40	0,0	47,30	0,0	74,50	3,3
14,50	0,0	47,70	0,1	74,90	0,3
14,90	0,0	48,50	0,1	75,90	0,0
15,25	0,0	49,40	0,2	76,45	0,3
16,20	0,0	49,60	0,6	76,80	1,0
16,70	0,0	49,80	0,3	76,95	1,4
17,20	0,0	49,90	0,1	77,30	1,3
18,00	0,0	50,50	0,1	77,80	0,1
19,26	0,0	51,50	0,1	78,10	0,0
20,25	0,0	52,20	0,4	78,40	0,0
21,10	0,0	52,73	1,4	78,70	0,1
22,10	0,0	52,93	0,0	79,40	0,1
23,15	0,0	53,40	0,1	79,80	0,0
24,15	0,0	53,76	0,7	80,10	0,0
25,20	0,0	53,96	0,4	80,75	1,8
26,20	0,0	54,72	1,1	81,00	1,9
28,10	0,0	54,95	0,0	81,30	0,7
28,25	0,0	55,12	2,5	81,50	0,3
28,50	0,0	55,27	0,9	81,85	0,2
29,50	0,0	55,70	4,1	81,95	0,1
30,20	2,5	55,85	0,9	82,10	0,0
30,35	0,0	55,90	3,2	82,70	0,2
32,80	0,0	56,10	6,9	83,00	0,1
33,50	0,0	56,30	0,7	83,40	0,3
34,40	0,0	56,50	6,5	84,00	0,1
35,40	0,0	56,80	0,0	84,50	0,0
36,40	3,5	57,20	0,0	84,70	0,6
36,70	0,3	57,25	1,6	85,10	1,6
37,00	0,0	57,35	0,0	85,35	2,1

85,65	7,3	100,30	0,2
85,75	9,9	100,80	0,1
85,90	4,7	101,00	0,1
86,10	1,9	102,00	0,1
86,40	1,2	103,00	0,0
86,50	0,3	104,00	0,0
87,00	0,8	105,00	0,0
87,30	6,9	106,00	0,1
87,55	2,7	107,00	0,3
87,75	0,1	108,00	0,1
88,25	0,6	109,00	0,1
88,50	0,5	110,00	0,0
88,80	0,1	110,50	0,2
89,00	1,2	110,80	0,6
89,10	1,2	111,00	0,2
89,35	9,4	111,50	0,0
89,50	0,9	112,00	0,0
89,70	0,0	113,00	0,2
89,80	0,1	114,00	0,1
90,00	0,2	115,00	0,6
90,30	17,6	115,20	9,4
90,50	0,6	115,45	2,6
90,80	7,4	115,80	2,0
91,05	15,5	116,10	1,8
91,20	8,5	116,25	27,0
91,40	1,3	116,50	0,2
91,80	1,2	116,60	1,4
91,95	2,3	117,00	0,4
92,10	1,4	117,50	0,1
92,25	11,0	118,00	0,1
92,70	7,7	119,00	0,0
92,90	5,7	120,00	0,0
93,10	0,7	121,00	0,0
93,30	23,9	122,00	0,0
93,65	3,1	123,00	0,1
93,85	1,9	124,00	0,1
94,05	2,3	125,00	0,1
94,40	4,9	126,00	0,1
94,70	0,6	127,00	0,1
95,00	2,7	128,00	0,1
95,25	0,5	129,00	0,1
95,60	0,5	130,00	0,0
95,85	0,3	131,50	0,0
96,30	0,6	132,50	0,0
96,35	0,2		
96,73	2,7		
97,40	0,3		
97,80	0,1		
98,20	0,2		
98,45	0,1		
98,75	0,1		
99,10	0,4		
99,70	0,1		

DIAMOND DRILL HOLE 35 G

Tverrfjellet mine, Folldal Verk A/S, ore zone V, level IV.
Loacation : X + 39.22, Y + 499.92, Z +~845
Azimuth : 345°
Inclination : 0°
Total lenght : 34.38 m.

Description :

0.00 - 3.05 : **Carbonaceous biotite - sericite schist**
(tuffaceous meta - pelite)
A/C
lightbluishgr, wavy - lenticular bedding, often chaotically folded, discontinuous bands and stringers and nodules of qtz, porphyric biotite always connected to carbonate spots mainly of giant - type, only very sporadically typical cross - biotite, transitions to carbonate biotite - chlorite - qtz - sericite schist with very distinct wavy - texture.
Sharp hanging wall.

3.05 - 7.52 : **Carbonaceous biotite bear. sericite - chlorite schist**
(tuffaceous meta - pelite)
greenishgr, fine - grained, irregular nodules and stringers rich in qtz, mainly fine - grained biotite but sometimes porphyroblasts always crossing schistosi - ly, rare idiomorphic garnets of 0.7 cm Ø : 4.15 - 7.52 m.
Sharp hanging wall.

7.52 - 8.42 : **Pyrite - magnetite ore**
(massive sulphide deposit)
ore zone
violett, fine - grained, mm - banding of py within magnetite.
Sharp hanging wall.

8.42 - 10.70 : **Massive pyrite ore**
(massive sulphide deposit)
ore zone
medium - grained massive ore with cherty - magnetite layer : 8.80 - 8.98 m.
Sharp hanging wall.

BH 35 G

10.70 - 11.26 : Amphibole bear. chlorite - qtz - plagioclase gneiss
A (meta - basalt, tuff)
gn, medium-grained, compositional bedding of alternate chlorite, chlorite - amphibole, qtz - plagioclase and qtz - pyrite layers, bands often mm - thick.
Sharp hanging wall.

11.26 - 11.60 : Massive pyrite ore
(massive sulphide layer)
medium-grained, massive.
Sharp hanging wall.

11.60 - 12.32 : Amphibole bear. chlorite - qtz schist
A (meta - basalt, tuff)
same as : 10.70 - 11.26 m.
Sharp hanging wall.

12.32 - 12.60 : Pyrite ore
(massive sulphide layer)
medium-grained, massive.
Sharp hanging wall.

12.60 - 12.85 : Plagioclase - qtz rock/gneiss
(meta - qtz - keratophyr)
gr, fine-grained, lamina of fine grained pyrite.
Sharp hanging wall.

12.85 - 13.01 : Pyrite ore
(massive sulphide layer)
medium-grained, massive.
Sharp hanging wall.

13.01 - 13.80 : Amphibole bear. pyrite - biotite - sericite - fspar - qtz rock / gneiss
(meta - dacite, tuff)
greenischgr, medium-grained, compositional banding as alternate phyllosilicate - rich layers and phyllosilicate - poor qtz bands rich in py, some small bands of massive py, biotite and sericite forming cluts (multi - crystal aggregates, amphibole
A

as minute prisms parallel layering, low - grade dissemination of pyrite throughout.
Sharp hanging wall.

13.80 - 15.50 : Carbonaceous to high carbonaceous biotite - chlorite - qtz - sericite schist
(tuffaceous meta - pelite)
C
greenishgr, fine - grained, laminated and partly wavy - lenticular texture, alternation of qtz - layers or lenses with phyllosilicate bands/lamina, biotite slightly coarser grained than chlorite and sericite , always parallel layering, carbonate as mm - spots and some - times bigger aggregates (lense - shaped) equally dis - tributed, rare spots of minute grains of py throughout.
Sharp hanging wall.

15.50 - 17.22 : High carbonaceous sericite bear. qtz - biotite - chlorite schist
(tuffaceous meta - pelite)
A/C
grgn, fine-grained, wavy - texture, nodules and stringers of qtz with or without carbonate surrounded by fine-fibrous chlorite with some crystals of biotite, spots and lumps of carbonate irregularily distributed, interlayers of fspar - qtz - rock (qtz - kreatophyr) with medium grade py mineralization : 15.75 - 15.89 m, 16.30 m.
Sharp hanging wall.

17.22 - 17.75 : Carbonaceous qtz - amphibole schist
(meta - basalt, flow)
C
grgn, fine-grained, mm-to cm-layering, alternation of amphibole layers with qtz - carbonate bands, slightly chloritic.
Sharp hanging wall.

17.75 - 18.20 : Carbonaceous to high carbonaceous chlorite - amphibole - qtz - fspar gneiss
lightgreen, medium-grained, compositional banding in

cm - scale, alternate amphibole bear. chlorite layers with carb. chlorite bear. qtz - fspar - amphibole bands and carb. amphibole bear. qtz / fspar - qtz layers, fine - fibrous chlorite, porphyroblasts of amphibole max. 0.4 cm size randomly oriented, some rare spots of py .
Sharp hanging wall.

18.20 - 19.10 : Carbonaceous chlorite - qtz - amphibole schist
(meta - basalt, flow)
C
gn, extremely fine-grained and fine-grained, laminated, minute bands of qtz or carbonate in alternation with cm - bands of amphibole, coarse idiomorphic spots of carbonate (spotted carb.) often forming traces of granules, some rare spots of idiomorphic pyrite,
highly altered rock : high carbonaceous amphibole bear. qtz - chlorite schist : 18.20 - 18.50m.
AA/C
Sharp hanging wall.

19.10 - 19.50 : Carbonaceous to high carbonaceous chlorite - amphibole - qtz - fspar gneiss
(meta - basalt/-andesite , tuff)
same as : 17.75 - 18.20m.
Sharp hanging wall.

19.50 - 21.49 : Slightly carbonaceous qtz - amphibole schist
(meta - basalt, flow)
gn, fine-grained, in places slightly banded, rare spots of py, interlayer of fspar - qtz rock (qtz - keratophyr: 20.02 - 20.20 m low grade dissemination of py, interlayer of carbonaceous amphibole - chlorite - fspar - qtz rock (meta - andesite, tuff) : 20.45 - 20.75 m.
Sharp hanging wall.

21.49 - 21.59 : Fspar - qtz rock
(meta - qtz - keratophyr)
gr, fine-grained, finest stringers of py, sometimes bigger spots, high - grade ore : 21.57 - 21.58 m.
Sharp hanging wall.

BH 35 G

21.59 - 21.95 : Slightly carbonaceous chlorite bear. amphibole - qtz - plagioclase gneiss
(meta - basalt, tuff)
grgn, medium grained, crudely layered, prisms of amphibole strongly aligned with foliation, average 0.5 cm in size, fine - fibrous chlorite as matrix together with qtz and fspar.
Sharp hanging wall.

21.95 - 22.30 : Pyrite - qtz gneiss
(cherty sulphide layer)
gr, alternate pyrite and qtz layers, medium grade ore.
Sharp wall.

22.30 - 22.40 : Again 21.59 - 21.95m due to folding.

22.40 - 22.55 : Again 21.95 - 22.30m due to folding.

22.35 - 26.40 : Chlorite bear. amphibole schist
(meta - basalt, flow)
gn, rare irregular veinletts of qtz, some spots of carbonate often forming traces of granules, interlayer of quartzite (meta - qtz - keratophyr) with stringery py mineralization : 24.88 - 24.91 m.
Gradual hanging wall.

26.40 - 29.92 : High carbonaceous chlorite - amphibole - qtz - plagioclase rock/gneiss
(meta - basalt/-andesite, tuff)
grgn, to grgn, medium-grained in places slightly finer grained, crudely cm - layered, sometimes even massive, fine - fibrous chlorite, porphyric prisms of amphibole max. 0.4 cm long and randomly oriented, spotted carbonate, idiomorphic crystals often forming trains of granules conformable with layering, rare spots of pyrite, some interlayers of fspar - qtz rock (meta - qtz - keratophyr) with high - grade py mineralization : 28.50 - 28.65 m, 29.65 - 29.75 m.
Sharp hanging wall.

BH 35 G

29.92 - 31.75 : Quartzite
(chert)
gr, extremely fine-grained, tight, flasers of py throughout, interlayer of massive py : 30.04 - 30.10 m. Sharp hanging wall.

31.75 - 34.38 : Amphibole schist
(meta - basalt, flow)
gn, fine-grained, wavy - texture due to nodules and stringers of qtz, altered rock : chlorite - amphibole schist at footwall : 31.75 - 32.50 m, interlayer of quartzite (chert) : 33.00 - 33.08 m, 33.60 - 33.66 m.

A

34.38 m end of DDH.

DIAMOND DRILL HOLE 35 G

Tverrfjellet mine, Folldal Verk A/S, ore zone V, level IV.
Loacation : X + 39.22, Y + 499.92, Z +~845
Azimuth : 345°
Inclination : 0°
Total lenght : 34.38 m.

Description :

0.00 - 3.05 : **Carbonaceous biotite - sericite schist**
(tuffaceous meta - pelite)
A/C
lightbluishgr, wavy - lenticular bedding, often chaotically folded, discontinuous bands and stringers and nodules of qtz, porphyric biotite always connected to carbonate spots mainly of giant - type, only very sporadically typical cross - biotite, transitions to carbonate biotite - chlorite - qtz - sericite schist with very distinct wavy - texture.
Sharp hanging wall.

3.05 - 7.52 : **Carbonaceous biotite bear. sericite - chlorite schist**
(tuffaceous meta - pelite)
greenishgr, fine - grained, irregular nodules and stringers rich in qtz, mainly fine - grained biotite but sometimes porphyroblasts always crossing schistosi - ly, rare idiomorphic garnets of 0.7 cm Ø : 4.15 - 7.52 m.
Sharp hanging wall.

7.52 - 8.42 : **Pyrite - magnetite ore**
(massive sulphide deposit)
ore zone
violett, fine - grained, mm - banding of py within magnetite.
Sharp hanging wall.

8.42 - 10.70 : **Massive pyrite ore**
(massive sulphide deposit)
ore zone
medium - grained massive ore with cherty - magnetite layer : 8.80 - 8.98 m.
Sharp hanging wall.

BH 35 G

10.70 - 11.26 : Amphibole bear. chlorite - qtz - plagioclase gneiss
A (meta - basalt, tuff)
gn, medium-grained, compositional bedding of alternate chlorite, chlorite - amphibole, qtz - plagioclase and qtz - pyrite layers, bands often mm - thick.
Sharp hanging wall.

11.26 - 11.60 : Massive pyrite ore
(massive sulphide layer)
medium-grained, massive.
Sharp hanging wall.

11.60 - 12.32 : Amphibole bear. chlorite - qtz schist
A (meta - basalt, tuff)
same as : 10.70 - 11.26 m.
Sharp hanging wall.

12.32 - 12.60 : Pyrite ore
(massive sulphide layer)
medium-grained, massive.
Sharp hanging wall.

12.60 - 12.85 : Plagioclase - qtz rock/gneiss
(meta - qtz - keratophyr)
gr, fine-grained, lamina of fine grained pyrite.
Sharp hanging wall.

12.85 - 13.01 : Pyrite ore
(massive sulphide layer)
medium-grained, massive.
Sharp hanging wall.

13.01 - 13.80 : Amphibole bear. pyrite - biotite - sericite - fspar - qtz rock / gneiss
(meta - dacite, tuff)
greenischgr, medium-grained, compositional banding as alternate phyllosilicate - rich layers and phyllosilicate - poor qtz bands rich in py, some small bands of massive py, biotite and sericite forming cluts (multi - crystal aggregates, amphibole
A

as minute prisms parallel layering, low - grade dissemination of pyrite throughout.
Sharp hanging wall.

13.80 - 15.50 : Carbonaceous to high carbonaceous biotite - chlorite - qtz - sericite schist
(tuffaceous meta - pelite)
C
greenishgr, fine - grained, laminated and partly wavy - lenticular texture, alternation of qtz - layers or lenses with phyllosilicate bands/lamina, biotite slightly coarser grained than chlorite and sericite , always parallel layering, carbonate as mm - spots and some - times bigger aggregates (lense - shaped) equally dis - tributed, rare spots of minute grains of py throughout.
Sharp hanging wall.

15.50 - 17.22 : High carbonaceous sericite bear. qtz - biotite - chlorite schist
(tuffaceous meta - pelite)
A/C
grgn, fine-grained, wavy - texture, nodules and stringers of qtz with or without carbonate surrounded by fine-fibrous chlorite with some crystals of biotite, spots and lumps of carbonate irregularily distributed, interlayers of fspar - qtz - rock (qtz - kreatophyr) with medium grade py mineralization : 15.75 - 15.89 m, 16.30 m.
Sharp hanging wall.

17.22 - 17.75 : Carbonaceous qtz - amphibole schist
(meta - basalt, flow)
C
grgn, fine-grained, mm-to cm-layering, alternation of amphibole layers with qtz - carbonate bands, slightly chloritic.
Sharp hanging wall.

17.75 - 18.20 : Carbonaceous to high carbonaceous chlorite - amphibole - qtz - fspar gneiss
lightgreen, medium-grained, compositional banding in

cm - scale, alternate amphibole bear. chlorite layers with carb. chlorite bear. qtz - fspar - amphibole bands and carb. amphibole bear. qtz / fspar - qtz layers, fine - fibrous chlorite, porphyroblasts of amphibole max. 0.4 cm size randomly oriented, some rare spots of py .
Sharp hanging wall.

18.20 - 19.10 : Carbonaceous chlorite - qtz - amphibole schist
(meta - basalt, flow)

C

gn, extremely fine-grained and fine-grained, laminated, minute bands of qtz or carbonate in alternation with cm - bands of amphibole, coarse idiomorphic spots of carbonate (spotted carb.) often forming traces of granules, some rare spots of idiomorphic pyrite, highly altered rock : high carbonaceous amphibole bear. qtz - chlorite schist : 18.20 - 18.50m.

AA/C

Sharp hanging wall.

19.10 - 19.50 : Carbonaceous to high carbonaceous chlorite - amphibole - qtz - fspar gneiss
(meta - basalt/-andesite , tuff)
same as : 17.75 - 18.20m.
Sharp hanging wall.

19.50 - 21.49 : Slightly carbonaceous qtz - amphibole schist
(meta - basalt, flow)
gn, fine-grained, in places slightly banded, rare spots of py, interlayer of fspar - qtz rock (qtz - keratophyr: 20.02 - 20.20 m low grade dissemination of py, interlayer of carbonaceous amphibole - chlorite - fspar - qtz rock (meta - andesite, tuff) : 20.45 - 20.75 m.
Sharp hanging wall.

21.49 - 21.59 : Fspar - qtz rock
(meta - qtz - keratophyr)
gr, fine-grained, finest stringers of py, sometimes bigger spots, high - grade ore : 21.57 - 21.58 m.
Sharp hanging wall.

BH 35 G

21.59 - 21.95 : Slightly carbonaceous chlorite bear. amphibole - qtz - plagioclase gneiss
(meta - basalt, tuff)
grgn, medium grained, crudely layered, prisms of amphibole strongly aligned with foliation, average 0.5 cm in size, fine - fibrous chlorite as matrix together with qtz and fspar.
Sharp hanging wall.

21.95 - 22.30 : Pyrite - qtz gneiss
(cherty sulphide layer)
gr, alternate pyrite and qtz layers, medium grade ore.
Sharp wall.

22.30 - 22.40 : Again 21.59 - 21.95m due to folding.

22.40 - 22.55 : Again 21.95 - 22.30m due to folding.

22.35 - 26.40 : Chlorite bear. amphibole schist
(meta - basalt, flow)
gn, rare irregular veinletts of qtz, some spots of carbonate often forming traces of granules, interlayer of quartzite (meta - qtz - keratophyr) with stringery py mineralization : 24.88 - 24.91 m.
Gradual hanging wall.

26.40 - 29.92 : High carbonaceous chlorite - amphibole - qtz - plagio - clase rock/gneiss
(meta - basalt/-andesite, tuff)
grgn, to grgn, medium-grained in places slightly finer grained, crudely cm - layered, sometimes even massive, fine - fibrous chlorite, porphyric prisms of amphibole max. 0.4 cm long and randomly oriented, spotted carbonate, idiomorphic crystals often forming trains of granules conformable with layering, rare spots of pyrite, some interlayers of fspar - qtz rock (meta - qtz - keratophyr) with high - grade py mineralization : 28.50 - 28.65 m, 29.65 - 29.75 m.
Sharp hanging wall.

BH 35 G

29.92 - 31.75 : Quartzite
(chert)
gr, extremely fine-grained, tight, flasers of py throughout, interlayer of massive py : 30.04 - 30.10 m. Sharp hanging wall.

31.75 - 34.38 : Amphibole schist
(meta - basalt, flow)
gn, fine-grained, wavy - texture due to nodules and stringers of qtz, altered rock : chlorite - amphibole schist at footwall : 31.75 - 32.50 m, interlayer of quartzite (chert) : 33.00 - 33.08 m, 33.60 - 33.66 m.

A

34.38 m end of DDH.

Hjerkinn
Dorhüll

DIAMOND DRILL HOLE 51

Hjerkinn, east of main fault, 1957.
Location: Hjerkinnhø, 2100 Ø - 125 S.
Azimuth: 157° N.
Inclination: 50°.
Total length: 112.08 m, 2.62 m overburden.

Description:

2.62 - 21.88 : Calcareous plagioclase - rich chlorite - amphibole schist
(meta - basalt flow)
gn with faint bluish tint, medium - grained, sometimes fine - grained, amphibole forms needles, fascicular bundles and sometimes imperfect spherulites the crystals and crystal - aggregates show a preferred orientation which in places may be less distinct, amphibole tends to be joined by fine - fibrous chlorite the multi - crystal aggregates being max. 0.2 cm large they are scattered within a matrix of plagioclase, carbonate forms scattered hypidio - to idiomorphic crystals of max. 0.2 cm size it locally forms lense shaped clusters or trains of granules both conformable with the foliation of the rock; hydrothermally altered rock is present between: 15.30 - 16.57 m and 18.50 - 19.65 m, the rock displays calcareous amphibole bear. epidote - plagioclase - chlorite schist
which is characterized by a flaser structure caused by a more or less rhythmic alternation of fine - fibrous chlorite schlieren and lenses being accompanied by amphibole and lenses and schlieren composed of epidote and plagioclase, carbonate forms scattered hypidiomorphic crystals of max. 0.15 cm size; occurrences of milky qtz at: 15.40 - 15.78 m, 16.57 - 16.90 m.
Schistosity: 50°.
Sharp contact.
6.85 - 7.00 m: Amphibole bear. magnetite - rich quartzite

(meta - chert)
grwhite with faint bluish tint, laminated, cm - thick layers of dense qtz being characterized by a low - grade dissemination of tiny crystals of magnetite and which carries small amounts of 0.15 cm large needles of amphibole alternate with laminae composed of amphibole, pyrite and amphibole and amphibole and chlorite, the footwall shows a close alternation of cherty layers, amphibole - chlorite bands, amphibole bands and trains of granules of pyrite.

chem. analysis 7.00 - 7.12 m

7.00 - 7.12 m: Pyrite bear. qtz - amphibole gneiss
(alternation of mafic volcanic and cherty material)
gn with bluish tint, laminated, close alternation of up to 1 cm thick layers composed of amphibole and lenses and schlieren of qtz which is accompanied by pyrite, pyrite is most concentrated at the hanging wall where it forms a medium - grade mineralization of 1 cm thickness, the total sulphide amount is about 3 Vol.-%.
Sharp hanging contact.

7.12 - 7.25 m: Magnetite - quartzite
(meta - chert)
gr with bluish tint, dense, fine - crystalline quartz is interstatified by one or two 0.5 cm thick layers of strongly schistose amphibolite, magnetite is restricted to the quartz - zones where it constitutes a low - grade dissemination.

21.88 - 22.56 : Amphibole bear. magnetite - rich chlorite schist
(meta - mt - rich basalt flow with interlayers of magnetite - qtz)
gn, fine - grained, banded, cm - thick bands composed of fine - crystalline chlorite, magnetite and amphibole, the latter forming 0.2 cm large acicular crystals which parallel the foliation/banding of the rock, alternate with stripes composed of qtz, locally occur cm - thick bands of qtz - magnetite rock (oxide facies BIF).
Banding: 59°.

Sharp contact.

22.56 - 23.10 : Calcareous amphibole - epidote bear. fspar - qtz - chlorite schist
(meta - mafic volcanic sediment)
lightgn with faint bluish tint, flaser and lenticular structure, interlocking qtz crystals as max. 0.5 cm large lenses and stringers in close alternation with schlieren composed of fine - crystalline chlorite which carry subordinate amphibole, the latter constitutes acicular crystals being aligned to the foliation of the rock, carbonate occurs as xenomorphic to hypidiomorphic crystals which often are stretched, they are homogeneously distributed.
Schistosity: 60°.
Sharp boundary.

23.10 - 24.00 : Garnet bear. magnetite - chlorite - qtz - amphibole gneiss
(meta - mt - rich basaltic volcanic with interlayers of magnetite - chert)
distinct gn - white striping, mm - to cm - thick bands composed of medium - grained amphibole and fine - fibrous chlorite which are accompanied by tiny scattered crystals of mt alternate with schlieren and layers of dense quartz which locally carry high amounts of magnetite, garnet is sometimes incorporated within the amphibole layers the crystals being 0.1 cm across, it may elsewhere forms trains of granules.
Banding: 60°.
Sharp contact.

24.00 - 26.00 : Calcareous chlorite bear.-plagioclase amphibolite
(meta - basalt flow)
gn, medium - grained, within hanging wall coarse crystalline, crude development of leopard texture, acicular crystals, bow - tie shaped crystal aggregates and imperfect spherulites of amphibole are associated with fine - fibrous chlorite forming lense - like crystal aggregates of 0.1 to 0.25 cm size which are surrounded by plagioclase, carbonate occurs as spots throughout it randomly presents lense - shaped crystal aggregates.
Gradual boundary to following rock.

26.00 - 50.30 : Slightly calcareous epidote - plagioclase - chlorite amphibole schist
(meta - basalt flow)
light gn, fine - crystalline, with dm - thick intersections being medium - grained and texturally similar to above mentioned rock, crude development of mineral preferred orientation, amphibole forms acicular crystals which tend to be isolated by plagioclase and epidote they arguable only locally form radiating aggregates; epidote predominates as tiny veins and laminae, sometimes it constitutes net - work like features; ilmenite is present at 26.00 - 28.10 m, 29.60 - 31.10 m, 34.60 - 36.00 m and 41.80 - 45.00 m, it constitutes tiny xenomorphic spots but locally dendritic features and lense-like clusters of max. 0.2 cm in size the bounderies of which showing sutured relationships with the surrounding silicates, the amount of il varies from place to place, a 3% average concentration seems likely; high - grade po - mineralization between 35.56 - 35.60 m, 43.00 - 43.01 m, 45.74 - 45.75 m; cm - thick interlayers of meta - chert between 46.72 - 46.81 m; several interlayers of amphibole bear. epidote - rich fspar - qtz - chlorite schist
(meta - mafic volcanic sediment)
(28.11 - 28.23 m, with platelets of po; 31.24 - 31.53 m, with platelets and clusters of po (1-2 Vol.-%); 32.32 - 32.60 m with schlieren and platelets of po (3 Vol.-%); 32.70 - 34.30 m, very similar to 22.56 - 23.10 m, within hanging portion rare platelets of po; 36.75 - 37.52 m, with schlieren of po between 36.88 - 36.92 m; 38.98 - 39.02 m; 47.14 - 48.50 m, platelets of po between 47.70 - 48.14 m) the rocks always are fine - crystalline, laminated or with flaser or lenticular structure, amphibole forms scattered acicular crystals of max. 0.2 cm in long dimension.

50.29 - 53.27 : Slightly calcareous amphibolite
(meta - basalt flow)
gn, extremely fine - grained, massive, irregular qtz and carbonate veining.
Gradual contact.

53.27 - 65.98 : Calcareous to high calcareous biotite - amphibole bear. fspar - qtz - chlorite phyllite schist
(meta - mafic volcanic sediment)
lightgn with faint bluish tint, laminated in places homogen, sporadically distorted and with huge clusters of qtz or carbonate, fine - crystalline phyllosilicates are associated with max. 0.15 cm large acicular crystals of amphibole which tend to be parallel to the major foliation of the rock, biotite occurs locally it forms fascicular bundles or bow - tie shaped crystal aggregates of max. 0.15 cm size which are oriented at random, qtz forms mm - thick bands conformable with the schistosity of the rock, it sometimes displays crosscutting features or big clusters; ilmenite is present throughout forming tiny spots rarely being idiomorphic, it is concentrated never overestimating 2% by volume between 55.93 - 57.44 m, 61.94 - 62.78 m, 63.75 - 64.93 m; interlayers of slightly calcareous chlorite bear. plagioclase amphibolite (meta - basalt flow) which is similar 24.00 - 26.00 m occur at 63.44 - 63.68 m, 64.38 - 64.42 m, 64.55 - 64.63 m, 64.95 - 65.50 m, the layers have always knife - sharp boundaries with the surrounding schist; po - mineralization is found within quartzite (meta - chert) forming stringers between 54.79 - 54.83 m and 63.40 m, the sulphide content grades 2 Vol.-% within the former zone, it is about 40 Vol.-% within the latter.
Schistosity: 65°.
Sharp contact.

sample: 51/1 (53.54-53.59m)
51/2(60.96-60.03m)
51/3(63.08-63.14m)

65.98 - 66.17 : Calcareous pyrite - quartz rock
(meta - sulphide facies BIF, vasskis)
grwhite, crude development of banding, granoblastic qtz assoziated by hypidio - to idiomorphic crystals of py on average 0.05 cm large which often form crystal aggregates or trains of granules, the sulphide amounts to 10 - 15 Vol.-%, carbonate occurs as discontinuous bands or constitutes lense - shaped clusters it further accompanies qtz as smaller crystals, rarely are found schlieren composed of chlorite and sericite which also

chem. analysis 65.98 - 66.17 m

carry some spots of po.
Sharp boundary.

66.17 - 66.30 : Slightly calcareous epidote bear. chlorite - amphibole schist
(meta - basalt flow)
gn with faint bluish tint, fine - crystalline, acicular crystals of amphibole on average 0.15 cm large are embedded in a matrix composed of epidote and fine - fibrous chlorite, locally chlorite is concentrated within schlieren which are conformable with the slight foliation of the rock, qtz forms tiny veins; po is found as schlieren and small clusters it amounts to less 1 Vol.-%.
Sharp contact, 70°.

66.30 - 66.63 : Slightly calcareous qtz - plagioclase - epidote - sericite - chlorite - amphibole schist/gneiss
(meta - mafic - felsic volcanic sediment)
gn to lightgn, crudely laminated, nematoblastic texture, mm - to cm - alternation of bands composed of amphibole, epidote, chlorite and sericite, layers predominated by phyllosilicates and laminae rich in qtz and fspar, the compositional changes happen gradually, amphibole is the most pronounced mineral as it forms acicular crystals max. 0.25 cm long which tend to be aligned to the layering of the rock, chlorite and sericite are fine - crystalline as well as qtz and fspar which are fine - grained granoblastic, the rock contains little po especially within its hanging part.
Lamination: 58°.
Sharp contact.

66.63 - 66.70 : Massive pyrrhotite layer
(meta - iron sulphide supp. formed by sulphatereducing bacteria in an anoxic - reducing environment, suggested) volcanochemite)
metalbrown, web - like po - mineralization, granoblastic qtz as lense - like crystal aggregates surrounded by po, sporadically occur schlieren composed of phyllosilicates.

Phyllosilicate schlieren: 58°.
Knife sharp boundary: 58°.

66.70 - 66.98 : Slightly calcareous amphibole bear. sericite - chlorite schist
(meta - mafic volcanic sediment)
similar 53.27 - 65.98 m, but no biotite and no qtz or carbonate veining, here low - grade spotted mineralization of po.
Foliation: 54°.
Sharp contact.

66.98 - 72.74 : Plagioclase amphibolite
(meta - basalt)
similar: 24.00 - 26.00 m, low - grade dissemination of tiny spots of ilmenite between 67.15 - 68.80 m and 71.65 - 72.29 m; po occurs at: 68.52 - 68.53 m forming a low - grade mineralization within amphibolite, it is concentrated within the hanging portion of the section where it displays a web - like high - grade enrichment within a cm - thick cherty quartz layer, at 69.13 - 69.40 m po forms a high - grade stringery mineralization which is characterized by a close alternation of laminae of qtz - pyrrhotite and tiny layers of amphibolite, the mineralization is restricted to the lower portion of the section, the upper part shows a nerve - like po enrichment (2 Vol.-%) within amphibolite, 72.00 - 72.74 m some rare platelets of po, the sulphide - amount slightly increases upsection.
Sharp contact.

chem. analysis 69.13-69.40m

72.74 - 73.71. : Amphibole bear. chlorite schist and calcareous sulphide - rich quartzite
(meta - mafic volcanic sediment with layers composed of hydrothermal silica, carbonate and iron sulphides)
folded section, dm- thick layers composed of fine - fibrous chlorite and porphyroblasts of amphibole the latter being max. 0.25 cm in long dimension, alternate with bands characterized by a close nonrhythmic alternation of granoblastic qtz, amphibole bear. chlorite

chem. analysis 72.74-73.71m

schist and amphibole bear. qtz - pyrrhotite / pyrite rock, the sulphide amounts on average to 15 Vol.-%. Gradual conatct.

73.71 - 74.27 : Amphibole - pyrrholite - magnetite - quartz gneiss
(meta - oxide - silicate facies chert with some interlayers of altered mafic tuff)
greenishgr, laminated, close alternation of laminae of magnetite quartzite, pyrrhotite quartzite, quartzite and amphibole quartzite, within the footwall several cm- thick interlayer of calcareous chlorite - biotite - amphibole schist which supp. represent an altered mafic tuff.
Lamination: 66°.
Sharp contact.

chem analysis 73.71-74.27m

74.27 - 99.85 : Epidote bear. plagioclase amphibolite
(meta - basalt flow)
gr, medium - grained, with intersections being fine - grained locally distinct leopard texture, amphibole tends to form imperfect spherulites which cause a slight foliation, the crystal aggregates are of max. 0.25 cm size they are surrounded by fine - grained granoblastic fspar - epidot and qtz; ilmenite is present between 78.28 - 79.40 m, 79.78 - 81.37 m, 84.16 - 86.50 m, 87.80 - 88.35 m, 89.10 - 90.53 m, 90.95 - 91.32 m, 92.54 - 94.34 m, 94.72 - 99.85 m where it grades on average 1 to 2 Vol.-%, it forms max. 0.15 cm large spots which have sutured boundaries with the surrounding minerals.
75.43 - 75.90 m: Slightly calcareous epidote - amphibole - chlorite schist (meta - mafic volcanic sediment)
gn with faint bluish tint, layered, cm - thick bands composed of fine - fibrous chlorite or chlorite and amphibole alternate with mm - thick layers and schlieren or lenses of qtz and carbonate; po is present as tiny flasers being conformable with the lamination of the rock or max. 0.3 cm large spots, it tends to be concentrated within the phyllosilicate layers, its amount being 1 to 2 Vol.-%; ilmenite forms max. 0.2 cm large spots which

Sample:51/4 75.54-75.61m

are less frequent than po.
Lamination: 59°.
Sharp contact.

78.07 - 78.12 m: Massive pyrrhotite layer (meta - iron sulphide supp. formed by sulphate - reducing bacteria in an anoxic - reducing environment, supp. volcanochemite)
similar: 66.63 - 66.70 m.
Knife sharp boundaries.

81.43 - 83.85 m: Calcareous qtz - fspar rich amphibole - chlorite schist (meta - tuff, some similarities with banded amphibolite)
lightgn with abundant white stripes, laminated, porphyritic texture, fine - grained granoblastic qtz associated by carbonate as lenses and mm - thick layers in alternation with schlieren and bands composed of fine - fibrous chlorite and amphibole, the latter forms randomly oriented porphyroblasts of max. 0.7 cm in long dimension which tend to prolongate into the qtz - carbonate layers.
Lamination: 68°.
Gradual boundary.

83.85 - 84.06 m: Amphibole - chlorite schist (meta - mafic volcanic)
darkgn with faint bluish tint, groundmass composed of fine - crystalline chlorite, amphibole is present as acicular crystals of max. 0.15 cm needle length which are oriented at random, locally bands of dense qtz (meta -chert).

84.06 - 84.16 m: Sulphide bear. quartzite (meta - chert)
grwhite, dense qtz with low - grade dissemination of po as flasers and tiny spots.
Knife sharp contacts.

87.42 - 87.80 m: Calcareous amphibole bear. epidote - qtz - fspar rich chlorite schist (meta - mafic volcanic sediment)
lightgn with abundant grwhite stripes, lamianted, mm - thick bands schlieren composed of fine - crystalline chlorite and acicular crystals of amphibole which tend

to be parallel to the lamination of the rock alternate with lenses, laminae and schlieren of qtz and / or carbonate.
Lamination: 72°.
Sharp footwall, gradual hanging wall.

88.35 - 89.10 m: High calcareous amphibole bear. epidote - qtz - fspar - chlorite schist (meta - mafic volcanic sediment)

Sample: 51/5
88.80-88.87m

similar: 81.43 - 83.85 m, but minor amphibole

91.57 - 91.77 m: Sulphide - amphibole bear. quartzite (meta chert)
grwhite, dense, crude development of banding due to tiny needles of amphibole which form trains of granules; po occurs as rare tiny spots.
Knife sharp borders.

91.77 - 92.54 m: Calcareous amphibole bear. epidote - qtz - fspar - chlorite schist (meta - mafic volcanic sediment)
similar: 81.43 - 83.85 m but minor amphibole; po forms a high - grade mineralization within cherty - quartzite between 92.38 - 92.41 m.

94.34 - 94.72 m: Calcareous amphibole bear. epidote - qtz - fspar - chlorite schist (meta - mafic volcanic sediment)
similar: 87.42 - 87.80 m.
Sharp boundaries.

99.85 - 103.70 : Calcareous amphibole bear. epidote - qtz - fspar - chlorite schist
(meta - mafic volcanic sediment)
lightgn with faint bluish tint, homogeneous, in places laminated or with lenticular or flaser structure, often rich in veins of qtz and carbonate, locally clusters of qtz, fine - crystalline phyllosilicates are rarely accompanied by acicular crystals of amphibole max. 0.2 cm long which mostly are aligned with the foliation of the rock, within laminated sections the phyllosilicates form mm - thick layers which alternate with lenses or schlieren composed of qtz which is associated by carbonate, in places biotite occurs, it displays fasci-

cular bundles or bow - tie crystal aggregates max. 0.15 cm large which are not oriented; ilmenite constitutes clusters and / or tiny spots between 100.35 - 101.30 m; po forms a high - grade mineralization within cherty quartzite between 100.10 - 100.14 m.
Lamination: 64°.
Sharp contact.

103.70 - 103.85 : Schistose amphibolite
(meta - basalt flow)
darkgn, fine - crystalline, nematoblastic texture, some tiny veins of qtz.
Sharp contact.

103.85 - 103.87 : Quartzite
(meta- chert)
grwhite with faint bluish tint, dense, fine - crystalline, crude development of lamination due to parallel platelets of po.
Sharp contact.

103.87 - 104.95 : Epidote - chlorite rich schistose amphibolite
(meta - basalt flow)
lightgn, extremely fine - grained with intersections being fine - crystalline, homogeneous with local occurrence of veins or clusters of qtz and/or carbonate; low - grade dissemination of po between 103.87 - 104.01 m and 104.06 - 104.42 m; ilmenite occurs as scattered crystals between 104.42 - 104.92 m.
Gradual contact to leopard amphibolite.
104.01 - 104.06 m: Sulphide bear. quartzite (vasskis)
chem. analysis 104.10-104.06m
layers of fine - grained granoblastic qtz in alternation with banded sulphide - rich quartzite or even massive pyrite , sometimes mm - thick trains of granules of py, pyrite is the only sulphide and makes up 5% of the total rock.
Banding : 85°.
Knife sharp contacts.

104.95 - 108.20 : Epidote rich plagioclase amphibolite

(meta - basalt flow) (similar leopard textured amphibole from Svåni - Profile; BH 76: 19.54 - 21.13 m) gn spots in a yellowishgr matrix, distinct leopard texture, amphibole forms lense - shaped crystal aggregates on average 0.3 cm large which tend to be not oriented, the amphibole aggregates are surrounded by a fine - grained granoblastic matrix composed of plagioclase and epidote; interlayers of amphibole bear. sericite qtz - fspar rock (meta - intermediate to felsic volcanic material) occur at 105.74 - 105.95 m and 107.57 - 107.74 m, the layers showing knife sharp boundaries with the surrounding leopard amphibolite. Gradual contact between leopard amphibolite and following rock.

108.20 - 109.08 : Slightly calcareous to calcareous qtz - fspar - amphibole - chlorite schist

(meta - mafic tuff to tuffite, close to banded amphibolite)

lightgn with abundant darkgn needles, crude development of banding, porphyroblastic to porphyritic texture, lenses and small layers composed of fine - crystalline chlorite alternate with bands and lenses of qtz and fspar which contain some carbonate, the lamination is superimposed by a less distinct cm - banding which results from accumulations of porphyroblasts of amphibole within layers, the crystals being 0.35 cm long and tend to be not oriented.

Lamination: 76°.

Sharp contact.

109.08 - 109.41 : Pyrrhotite bear. quartzite

(sulphide enriched meta - chert)

grwhite, crudely laminated, fine - grained granoblastic qtz being interlaminated by trains of granules of pyrrhotite, sometimes occur po - schlieren or 0.5 cm thick nearly massiv po- bands, the po- content estimates to - 5 Vol.-%.

Lamination: 75°.

Knife sharp contact.

109.41 - 109.50 : Slightly calcareous qtz - plagioclase - chlorite - amphibole gneiss (banded amphibolite)
(meta - mafic tuff)
gn, banded, porphyroblastic texture, cm - thick bands of amphibole and chlorite alternate with mm - thick lenses or layers of fspar and qtz, amphibole forms scattered porphyroblasts of max. 0.4 cm length which tend to be not oriented.
Banding : 78°.
Gradual boundary.

109.50 - 109.76 : Schistose amphibolite
(meta- basalt flow)
gn, fine - crystalline, nematoblastic texture, crude development of layering due to mm - thick qtz lenses and layers which are aligned to the foliation of the rock.
Lamination: 80°:
Sharp contact.

109.76 - 110.21 : Calcareous qtz - fspar - amphibole bear. chlorite schist
(meta - mafic volcanic sediment)
similar : 53.27 - 65.98 m but no biotite.
Lamination: 75°.
Gradual contact.

110.21 - 112.08 : Calcareous qtz - fspar - chlorite - amphibole rock/ schist
(meta - basalt flow)
gn, fine - crystalline in places medium - crystalline and here with crude development of leopard texture, amphibole forms bundle - like crystal aggregates or imperfect spherulites which tend to be accompanied by fine - fibrous chlorite, the multi - crystal aggregates locally reach 0.2 cm in diameter, the matrix for the coloured compounds consists of fine - crystalline granoblastic qtz and fspar, abundant crosscutting layers and tiny veins of qtz.

F.D. Priesemann, 1986

112.08 m end of DDH

Samples for chemical analysis:

	% Cu	% Zn	%S
7.00 - 7.12 m	0.06	0.03	8.20
65.98 - 66.17 m	0.04	0.01	11.8
69.13 - 69.40 m	0.04	0.03	6.00
72.74 - 73.71 m	0.05	0.02	11.3
73.71 - 74.27 m	0.05	0.03	8.68
104.01 - 104.06 m	0.03	0.01	20.0

Susceptibility DDH 51 :

3.00	0.1	38.00	0.0	74.00	10.4
4.00	0.0	39.00	-0.1	74.20	1.0
5.00	0.1	40.00	0.0	74.30	0.0
6.00	0.1	41.00	-0.1	75.00	0.1
6.70	1.0	42.00	0.0	75.50	0.2
6.90	0.7	43.00	0.0	75.80	0.3
7.10	17.6	44.00	0.1	76.00	-0.1
7.20	7.6	45.00	0.0	77.00	0.0
7.35	0.0	46.00	0.0	77.90	0.0
8.00	0.0	47.00	0.0	78.10	0.3
9.00	0.0	48.00	0.1	78.30	0.0
10.00	0.0	49.00	0.1	79.00	0.3
11.00	0.0	50.00	0.2	80.00	0.1
12.00	0.0	51.00	0.1	81.00	0.0
13.00	0.0	52.00	0.1	82.00	0.1
14.00	0.0	53.00	0.1	83.00	0.1
15.00	0.0	54.00	0.1	83.70	0.0
16.00	0.0	55.00	0.1	84.00	0.1
17.00	0.0	56.00	0.1	84.10	0.1
18.00	0.0	57.00	0.1	84.20	0.0
19.00	0.1	58.00	0.2	85.00	0.0
20.00	0.0	59.00	0.1	86.00	0.0
21.00	0.0	60.00	0.2	87.20	0.0
21.50	0.0	61.00	0.1	88.00	0.0
21.80	0.0	62.00	0.2	89.00	0.0
21.90	18.6	63.00	0.1	90.00	0.0
22.00	12.6	64.00	0.1	91.00	0.0
22.10	17.6	65.00	0.0	91.60	1.3
22.30	21.4	65.80	0.2	91.70	0.2
22.40	17.6	66.00	0.1	92.00	0.0
22.50	8.8	66.20	0.1	92.40	0.2
23.00	0.0	66.50	0.1	92.50	0.1
23.15	20.4	66.75	0.3	93.20	0.1
23.45	19.4	66.85	0.2	94.10	0.0
23.65	24.4	67.00	0.2	95.00	0.0
23.75	21.4	67.50	0.2	96.00	0.0
23.95	0.3	68.00	0.2	97.10	0.0
24.10	0.0	68.50	0.2	98.10	0.0
24.45	0.0	68.60	0.1	99.00	0.0
24.65	0.0	69.00	0.0	99.80	0.0
24.75	0.0	69.20	0.2	100.12	0.2
25.00	0.1	69.50	0.3	100.60	0.1
26.00	0.1	70.00	0.0	101.00	0.1
27.00	0.0	71.00	0.1	102.00	0.1
28.00	0.1	72.00	0.1	103.00	0.0
29.00	0.1	72.20	0.2	103.90	0.2
30.00	-0.1	72.30	0.1	104.05	0.3
31.00	0.0	72.50	0.1	104.10	0.3
31.50	0.0	72.60	0.2	104.50	0.2
32.00	0.1	73.00	0.2	105.00	0.1
32.45	0.1	73.30	0.0	106.00	0.0
33.00	0.0	73.40	0.0	107.00	0.1
34.95	0.3	73.50	0.0	108.00	0.1
35.00	0.1	73.60	0.1	109.00	0.1
36.00	0.0	73.80	0.0	109.30	0.1
37.00	0.0	73.90	1.9	109.50	0.1
				110.50	0.0
				111.50	0.0

DIAMOND DRILL HOLE 52

Hjerkinn, east of main fault, 1957.
Location : 250 V - 490 N.
Azimuth: 157° N.
Inclination: 55°.
Total length: 57.60 m + 8 m overburden.

Description:

0.00 - 5.75 : Slightly calcareous qtz - biotite - sericite schist
(meta - conglomeratic tilloide, matrix support sediment)
gngr with white stripes and clusters, heterogeneous, blastopsephitic texture which locally changes into cm - banded rock, isolated stretched and flattened rounded fragments of quartzite, quartz - fspar rock with accessory sericite and biotite (keratophyr debris), biotite - fspar - qtz rock (granitoid clasts) and fine crystalline chlorite schist are embedded in little matrix composed of sericite and biotite, the mica flakes show a preferred orientation parallel to the longaxis of fragments, carbonate forms mm - thick discontinuous layers or lenses, it may in places constitute deformed clasts; coarse greywacke layers occur at 4.49 - 4.83 m and 5.37 - 5.75 m, the bands show sharp contacts to the surrounding paraconglomerate.
Gradual hanging wall.

5.75 - 14.26 : Slightly calcareous biotite - sericite schist
(meta - pelite)
gr with greenish tint and abundant brown rods, porphyritic texture, lenticular to flaser structure locally changing into laminated rock, close alternation of lenses or mm - thick bands of qtz and/or carbonate with bands and schlieren of fine - crystalline sericite which contains abundant scattered fascicular bundles of biotite max. 0.1 cm large and mostly not oriented.
Schistosity: 50°.
Gradual contact.

14.26 - 19.90: Slightly calcareous biotite - sericite schist
(meta - pelite)
same as: 5.75 - 14.26 m but with minor biotite, the

crystals or crystal aggregates are widely scattered and not oriented and are of max. 0.2 cm size.
Schistosity: 50°.
Gradual contact.

19.90 - 21.27 : Slightly calcareous biotite bear. sericite schist
(meta - pelite)
gr with faint greenish tint, lenticular to flaser structure, close alternation of lenses of qtz and/or carbonate with schlieren and laminae of sericite; low - grade mineralization of po, tiny schlieren, but locally wavy bands of mm - thickness are inhomogeneous distributed, sulphide content is lesser 1 Vol.-%.
Schistosity: 45° - 50°.
Sharp contact.

21.27 - 21.90 : Slightly calcareous qtz - sericite schist
(meta - pelite)
gr with faint greenish tint, ghoast - like lenticular structure, interlocked qtz - crystals as tiny lenses and cm - thick layers in alternation with flasers and schlieren of fine - crystalline sericite which sporadically is accompanied by tiny flakes of biotite, carbonate often accompanies qtz but also forms isolated lenses and discontinuous layers.
Schistosity: 65°.
Sharp contact.

21.90 - 29.20 : Slightly calcareous biotite - sericite schist
(meta - pelite)
gr with greenish tint, abundant brown spots, porphyroblastic texture, flaser and lenticular structure, in places distinctly mm - banded, interlocking qtz and qtz and carbonate crystals as lenses and layers in alternation with schlieren and lenses of fine - crystalline sericite which is accompanied by scattered fascicular bundles and spherulites of biotite of max. 0.3 cm size, the crystals and crystal aggregates tend to be not oriented; scattered idiomorphic crystals of garnet (reddish brown) of max. 0.2 cm in diameter are present between 25.55 - 28.26 m;

po is found throughout forming tiny schlieren which parallel the major foliation of the rock, the sulphide amounts to< 1 Vol.-%.
Schistosity a. lamination: 50° - 65°.
Sharp contact.

29.20 - 33.98 :Slightly calcareous to calcareous biotite bear. qtz - sericite schist
(meta - pelite)
gr with faint greenish tint, flaser and lenticular structure, alternation of lenses and schlieren composed of either qtz or qtz and carbonate with schlieren, lenses and bands of fine - crystalline sericite which by chance carries tiny crystals of biotite; po forms mm - large schlieren which are homogeneously distributed, they naturally accompany qtz, cm - thick stripes rich in po are restricted to a 20 cm thick section at the footwall and a 15 cm thick layer at the hanging wall, po forms here a network - like mineralization within qtz, sporadically po is accompanied by py, the sulphides average 1 Vol.-% of the rock.
Schistosity: 65° - 70°.
Sharp contact.
33.79 - 33.80 :Pyrite - pyrrhotite rich quartzite
(meta - sulphide facies BIF, vasskis), network - like po- py mineralization of medium grade within fine crystalline dense quartz.
Knife sharp contacts, 75°.

33.98 - 37.45 :Calcareous sericite schist
(meta - pelite)
gr with faint greenish tint, cm - layered rock, mm - to - cm - thick bands, lenses and schlieren of qtz which often are accompanied by grains of carbonate alternate with layers and schlieren of fine - fibrous sericite which contain a lot of hypidomorphic crystals of carbonate max. 0.1 cm in diameter.
Schistosity: 65°.
Gradual contact.

37.45 - 39.36 :Calcareous to high calcareous qtz - sericite schist
(meta - pelite)
gr with faint greenish tint, ghoast - like lenticular structure, interlocking qtz - crystals as lenses with indistinct boundaries in close alternation with lenses, schlieren and layers composed of qtz and sericite, carbonate forms discontinuous layers, it further constitutes scattered hypidiomorphic crystals on average 0.1 cm large which tend to join into crystal aggregates; po occurs sporadically in very small amounts, it displays tiny platelets or spots of max. 0.15 cm size.
Schistosity: 65°.
Sharp contact.

39.36 - 41.72 :Calcareous to high calcareous chlorite bear. epidote - pyrrhotite - sericite - qtz schist
(meta - pelite with synsedimentary iron sulphide supp. formed by sulphate - reducing bacteria in an anoxic - reducing environment)
whitegr with faint yellowish and faint greenish schlieren and stripes, lenticular to flaser structure, nonrhythmic alternation of lenses and schlieren sometimes clusters of qtz with schlieren and tiny bands composed either of epidote or sericite the latter being locally accompanied by chlorite, carbonate is inhomogeneously distributed forming trains of granules, clusters or scattered hyido- to idiomorphic crystals; po occurs as tiny platelets, flasers and bands or it constitutes weeb - like features, its amount varies strongly from place to place, the average content is 3 Vol.-%.
Sharp contact.

41.72 - 44.90 :High calcareous qtz - sericite schist
(meta - pelite)
same as: 37.45 - 39.63 m, but locally it is enriched in sericite forming a calcareous sericite schist like between 33.98 - 37.45 m.
42.15 - 42.34 m: calcareous chlorite bear. sericite - qtz schist (meta - pelite with synsedimentary iron sulphides supp. formed by sulphate - reducing bacteria

in an anoxic - reducing environment) same as: 39.63 - 41.72 m, but with minor po.

44.90 - 49.50 :Qtz - pyrrhotite - pyrite rock
(metamorphosed iron - sulphide enrichments supp. formed by sulphate - reducing bacteria, in an anoxic - reducing environment)
high - grade pyrite, pyrite - pyrrhotite and pyrrhotite mineralizations in dm - alternation with sulphide - barren calcareous sericite schist which locally may contain some chlorite, sometimes occur enrichments of qtz possibly of exhalative origin, the sulphides mainly are fine - grained with pyrite being slightly coarser than pyrrhotite, medium - grade pyrite ore is characterized by max. 0.2 cm large mainly, hypidiomorphic crystals of pyrite embedded in a fine - crystalline qtz matrix.
Sharp contact.

49.50 - 50.57 :Slightly calcareous to calcareous sericite schist
(meta - pelite)
gr with faint greenish tint, interlocking qtz crystals as tiny lenses and schlieren in close alternation with schlieren and layers of fine - crystalline sericite, carbonate forms 0.1 cm large hypidiomorphic crystals which locally constitute discontinuous trains of granules but elsewhere are scattered forming a more or less homogeneous dissemination; po is very rare and displays flake - like crystal aggregates.
Small fault: 49.81 m.
Schistosity: 60°.
Sharp contact.

50.57 - 51.60 :Calcareous chlorite bear. biotite - sericite schist
(meta - pelite)
gr with greenish tint, abundant brown bundles and rods, lenticular structure, porphyritic texture, interlocking qtz crystals which often are accompanied by carbonate in alternation with schlieren and layers of fine - crystalline sericite which contains abundant fascicular bundles or flakes of biotite on average 0.15 cm large, carbonate

in places forms mm - thick schlieren or lenses, only sometimes it occurs as isolated hypidiomorphic crystals.
Knife sharp contact, 55°.

51.60 - 52.16 :High calcareous biotite bear. qtz - sericite schist
(meta - pelite)
gr with faint greenish tint, distinct lenticular structure which gradually changes into laminated rock, interlocking qtz or carbonate crystals as schlieren and lenses of mm - thickness in close alternation with schlieren and layers composed of qtz and fine - crystalline sericite which contains scattered tiny crystals of biotite.
Knife sharp boundary, 50°.

52.16 - 53.08 :Calcareous chlorite bear. biotite - sericite schist
(meta - pelite)
same as: 50.57 - 51.60 m.
Knife scharp boundary, 55°.

53.08 - 54.42 :High calcareous biotite bear. qtz - sericite schist
(meta - pelite)
same as: 51.60 - 52.16 m.
Sharp contact, 80°.

54.42 - 54.48 :High calcareous sericite bear. qtz - fspar schist/rock
(meta - qtz - keratophyr/rhyolite)
grwhite, fine - crystalline qtz and fspar is interlayered by discontinuous trains of granules of carbonate; po forms scattered tiny plates being conformable with the carbonate layering within the stratigraphically lower part, it displays a medium - grade mineralization accompanied by py within the upper portion of the layer.
Knife sharp contact, 60°.

54.48 - 55.70 :Slightly calcareous biotite - chlorite sericite schist
(meta - pelite with mafic volcanic impurity)
grgn, intersections with scattered brown rods or spots, porphyroblastic texture, fine - crystalline chlorite and sericite accompanied by poikiloblasts or crystal aggregates of biotite which are oriented at random and on

average 0.15 cm large, biotite is most abundant within the lower portion of the layer, carbonate forms mm - thick schlieren, discontinuous trains of granules or isolated crystals of 0.1 cm size, qtz which sometimes seams to be accompanied by fspar exists as lenses or layers of sporadic occurrence.
Sharp contact.

55.70 - 56.67 :<u>High calcareous chlorite - biotite bear. sericite - qtz - fspar schist</u>
(meta - tuffaceous sediment or tuffite)
gr, lenticular to flaser structure, sometimes laminated, interlocking qtz and fspar or carbonate crystals as lenses and mm - layers in nonrhythmic alternation with schlieren and laminae composed of sericite, chlorite and biotite, the latter tends to form fascicular bundles of max. 0.15 cm size which parallel the lamination of the rock; <u>po</u> is present throughout, it displays mm - large platelets being aligned along the schistosity/lamination of the rock, within 56.15 - 56.17 m <u>po</u> forms a high - grade mineralization, the groundmass being qtz and carbonate; <u>py</u> is found constructing mm - to cm - thick layers of medium - grade mineralization at: 55.80 m, 55.98 m, 56.16-56.23 m and 56.26 m.
Sharp contact.

56.67 - 57.60 :<u>Amphibole bear. biotite - chlorite schist</u>
(meta - mafic volcanic sediment supp. with epiclastic sedimentary impurity)
gn with faint bluish tint, porphyroblastic texture, fine - crystalline amphibole and chlorite form the foliation of the rock, biotite displays scattered porphyroblasts of max. 0.3 cm size which are oriented at random, the crystals in places join each other constituting mm - thick discontinuous bands; several interlayers of magnetite - chert with knife - sharp borders to the surrounding schist are incorporated they occur at: 56.70 - 56.93 m, 57.06 - 57.07 m, 57.18 - 57.23 m, 57.27 - 57.30 m.

---footwall meta - basalt---

57.60 m end of DDH

Frank D.Priesemann
1986

chemical analysis: 44.90-49.50 m: Cu:traces, Zn:0.01%, S:19%

Susceptibility: DDH 52

57.50	0.0
57.25	0.2
57.10	0.0
57.05	0.0
56.90	0.0
56.80	0.1
56.70	5.5
56.60	0.5
56.55	0.0
56.00	0.1
55.90	0.0
55.80	0.0
55.50	0.1
55.00	0.1
54.00	0.2
53.00	0.0
52.75	0.0
52.00	0.0
51.00	0.0
50.00	0.0
49.00	0.0
48.00	0.1
47.00	0.1
46.00	0.0
45.00	0.1
44.00	0.0
43.00	0.0
42.00	0.0
41.00	0.1

DIAMOND DRILL HOLE 58.

Hjerkinn, east of main fault
Date of drilling: 03.08. - 16.08.1965.
Location: West og Kvitdalsvatna, 6200 Ø 90 S
Azimuth: grid north.
Inclination: 50°
Total length: 99,50 m

Description:

7,75 m	overburden
MMS-formasjon	until 18,00 m
0,00 - 2,70	qtz - biotite - sericite schist (meta.semi-pelite) gr, grgn, brown, pseudoconglomerate texture due to isoclinal folding and shearing along axial planes, often chaotically folded, lenses and bands composed of qtz which carry subordinate biotite are surrounded by fine crystalline sericite and biotite which constitute schlieren or ptygmatisk folded bands. Gradually passing into following rock.
2,70 - 18,00	carbonate banded biotite - chlorite schist (meta-mor. marble or carbonate banded pelite) (turbidite) grgn with white to yellowishwhite bands, scattered brown flakes, distinct composi-tional banding, alternation of cm- to dm-thick bands and lenses made by fine crystal-line chlorite and porphyroblastic biotite and cm-thick layers, but sometimes lenses of pure marble. Compostional banding; 4,10 m 63° , 5,30 m 78°, 8,50 m 89° , 9,50 m 84° , 10,60 m 82° , 13,60 m 76° , 17,60 m 53° . Gradually passing into following rock.
FMB-sequense until 87,95 m	
18,00 - 21,10	calcareous chlorite schist (metamor. epiclastic sediment mainly composed of volcanic related decomposition compounds may be even mafic volcanogenic sediment) (similar chlorite schists from DDH 51) gn, fine crystalline, indistinct lamination, mm-thick lensen or laminae of carbonate and qtz set in a fine crystalline matrix of chlorite which is rich in scattered tiny,

sub-idiomorphic blasts of carbonate. Acicular crystals of amphibole on average 0,15 cm in long dimension occur within the upper part of the layer. Strongly folded and with clusters of milky qtz between: 19,00 - 20,15 m.
Schistosity: 18,90 m 64°.

20,80 - 20,85: quartzite (meta-chert)
grwhite, massive, fine crystalline, trains of granules of po forming discontinuous bands, sometimes 0,5 cm thick clusters of po, po totals 1 % by volume of the rock. Knife sharp boundaries, 82° and 71°.
Slowly passing into following amphibolite.

21,10 - 34,40 schistose amphibolite
(meta-basalt flow)
gn, fine crystalline, qtz carbonate veining throughout. Scattered round globular crystals of il between: 28,00 - 31,00 m, 31,95 - 32,10 m, 32,45 - 33,95 m. Pyrite mineralization as either massive layers and schlieren or low - to medium-grade dissemination within amphibolite at several locations: 23,00 - 23,30 m, 23,48 - 23,68 m, 23,85 m, 24,30 m, 24,43 m, 26,20 m, 29,12 - 29,30 m.
Faultzone: 25.05 - 25,80 m, several minor faults between: 25,80 - 27,25 m.
Pyrite banding: 23,20 m 76°, 23,50 m 87°, 23,85 m 87°, 24,43 m 70°, 29,20 m 72°.

34,40 - 34,83 calcareous amphibole-bear. chlorite phyllite
(meta.mafic volcanite) (similar: chlorite phyllites from DDH 51, 76 aso.)
gn, grgn, crude development of compositional layering, fine crystalline chlorite forms cm-thick layers sometimes lenses which alternate with qtz-fspar enriched schlieren and bands, amphibole forms acicular crystals often being parallel aligned with the layering of the rock, it is concentrated within the central part of the section.
Sharp contact.

34,83 - 38,80 amphibolite
(meta-basalt flow)
gn, fine and medium crystalline, crudely developed leopard texture, abundant tiny veins of carbonate which locally compose a tight network. Interlayers of calcareous chlorite phyllite at 38,08 - 38,18 m and 38,36 - 38,42 m, always sharp boundaries with the surrounding amphibolite: 64°, 73°.
Sharp contact with following rock.

38,80 - 39,16 calcareous amphibole-bear. chlorite phyllite
(meta.mafic volcanic) (similar: chlorite phyllites from f.eks. DDH 51 a. 76).
gn, grgn, schlieren texture which sometimes transgoes into a cm-compositional banding, fine crystalline chlorite as bands and schlieren alternate with lensen and bands rich in qtz and fspar, acicular crystals of amphibole on average 0,15 cm in long dimension are concentrated within mm- to cm-thick interlayers which occur sporadically, abundant round globular spots of carbonate normally being homogeneously distributed but sometimes being concentrated within tiny bands. Rare spots of po.
Compositional banding: 73°.
Gradual contact.

39,16 - 40,45 slightly calcareous biotite - qtz rock
(metamor. qtz-arenite with exhalative qtz and magnetite)
brownishgr, well distinct lamination, close alternation of laminae of biotite with mm-thick bands mainly composed by qtz but containing abundant scattered tiny flakes of biotite being parallel aligned with the lamination of the rock, porphyroblasts of amphibole which decrease in size and abundancy upsection occur until 15 cm from the lower contact of the layer, here are also found some streaks of py, within the uppermost part of the section occurrence of fine crystalline sericite which increases in amount upsection.
Lamination: 73°.
Gradually passing into following rock.

40,45 - 45,30 qtz-rich biotite-sericite schist
(meta-pelite/-semi-pelite with abundant exhalative magnetite)
greenishgr, flaser and lenticular texture which supp. results from strong deformation, fine crystalline sericite which is accompanied by slightly porphyritic crystals of biotite as schlieren and streaks in close alternation with lenses and schlieren composed of qtz which contain some scattered flakes of biotite, carbonate tends to form schlieren or trains of granules which are widely spaced. Low-grade dissemination of mt sometimes forming makroskopic visuable blasts.
Schistosity: 60°
Gradually passing into following rock.

45,30 - 45,82	biotite - sericite schist (meta-pelite) gr with faint greenish tint, abundant brown flakes, porphyroblastic texture, scattered bundle-like aggragates and/or porphyroblasts of biotite set in a schistose matrix mainly composed of sericite. Gradual boundary.
45,82 - 46,05 A chemical analysis 45,87 - 46,05 m	biotite - chlorite - sericite schist (meta-pelite mixed with mafic volcanic compounds, hydrothermal alteration) greenishgr with abundant brown spots, crude development of compositional banding, porphyroblastic texture, chlorite and sericite form schlieren and layers which alternate with tiny lenses mostly composed of qtz but sometimes of carbonate, biotite forms 0,15 cm large crystals or crystal aggregates which are nearly equally distributed. Schlieren and streaks of po between 45,87 - 46,05 m, the sulphide amounts to 2 % by volume of the rock. Strongly deformed contact.
46,05 - 46,26	calcareous biotite - sericite - chlorite schist (metamor. mafic volcanite) gn with abundant brown flakes, crudely developed schlieren texture, sericite and chlorite form discontinuous bands and schlieren which alternate with lenses rich in qtz, homogeneous distribution of bundles and imperfect spherulites of biotite on average 0,15 cm large, scattered round globular crystals of carbonate which in places form trains of granules. Sharp contact.
46,26 - 46,34 chemical analysis	qtz - pyrite rock (exhalative sulphide deposit) gn with metallic luster, porphyroblastic texture, homogeneous distribution of round globular crystals or crystal aggregates of pyrite within a groundmass composed of fine grained granoblastic qtz and some scattered porphyroblasts of biotite. Sharp contact.
46,34 - 46,75	calcareous biotite - chlorite schist (metamor. mafic volcanite) similar: 46,05 - 46,26 m, slowly decreasing carbonate- and biotite-amount upsection. Schistosity: 82° Gradual boundary.

46,75 - 53,00	schistose amphibolite and chlorite-amphibole schist (meta-basalt flow) gn, extremely fine crystalline, abundant carbonate veining. Sharp contact.
53,00 - 55,65	biotite - sericite-rich quartzite (metamor. qtz-arenite or semipelite) greenish brownishgr fine crystalline with biotite being slightly porphyritic, well defined mm-alternation of qtz- and mica-bands from the lower contact until 53,70 m, between 53,70 m and 55,65 m mostly of lenticular texture which is caused by the strong deformation of the rock. Rare spots og py at 53,05 m and at several locations between 55,00 and 55,30 m.
55,65 - 55,83	milky qtz
55,83 - 65,60	qtz-rich biotite-sericite schist (metamor. semi-pelite with abundant exhalative magnetite) similar: 40,45 - 45,30 m, but with macroscopic mt which tends to be represented by scattered subidioblastic porphyroblasts max. 0,25 cm in diameter. 60,55 - 61,04: garnet-bear. magnetite - quartzite (meta-chert) gr with dark brown or even black stripes, dense, fine grained granoblastic qtz with low-grade dissemination og mt is interlayered by cm-thick bands of nearly massive mt which contain abundant tiny crystals of reddish brown garnet. Sharp contacts.
65,60 - 66,40	calcareous biotite - sericite schist (meta-pelite) greenishgr, fine crystalline with biotite forming 0,1 cm large randomly oriented porphyroblast which are equally distributed, carbonate occurs either as schlieren or forms round globular spots. Gradually passing into following rock.
66,40 - 67,75	calcareous qtz-rich chlorite - sericite - biotite schist (meta-pelite with rhythmic occurrence of exhalative mt and sulphide) greenish brownishgr, porphyroblastic texture,

well developed compositional banding, cm-alternation of layers of biotite-sericite schist with or without carbonate, bands of sericite-biotite schist with magnetite, qtz layers and schistose bands with medium-grade dissemination of py. Compositional banding: 66,60 m 75° , 67,20 m 72° , 67,70 61° . Gradually passing into following rock.

67,75 - 77,35 slightly calcareous biotite - sericite schist (meta-pelite)
gr, fine crystalline, crudely developed schlieren texture with transactions into laminated rock. Dissemination of mt throughout.
Schistotity: 69,50 m 63° , 71,40 m 62° , 72,40 m 47° , 75,50 m 48°.

73,05 - 73,60: magnetite-rich quartzite (meta-chert)
gr with darkbrown schlieren and layers, dense quartzite with sometimes scattered idioblasts of mt is interlayered by schlieren mainly composed og mt but also rich in sericite and biotite. Locally thin layers of mass. pyrite.

chemical analysis 73,05 - 73,30 m

73,60 - 73,80: mt-bear. pyrite rock (exhalative sulphide deposit)
medium-grained granoblastic, massive high-grade pyrite mineralization set in matrix composed of qtz and/or carbonate accompanied by mt of subordinate amount.

chemical analysis 73,60 - 73,80 m

77,35 - 80,05 magnetite-rich quartzite (meta-chert)
gr with abundant blackish schlieren and layers, dense quartzite with low-grade dissemination of mt interlayered by schlieren and layers mainly composed og mt. At several locations low-grade pyrite mineralization which often occurs within mica-rich intersections. Idioblasts of garnet within mt-layers between 78,90 - 79,50 m.
Gradational lower contact with chert - mica-schist alternation and bands of py. Sharp upper contact.

chemical analysis
77,35 - 77,50 m
78,70 - 78,80 m
79,20 - 79,26 m
79,54 - 79,60 m

80,05 - 81,80 slightly calcareous biotite-sericite schist (meta-pelite)
Similar: 65,40 - 66,40 m
Sharp contact.

81,80 - 84,03	magnetite-rich quartzite (meta-chert) Similar: 77,35 - 80,05 m but no garnet and no pyrite Knife sharp contact.
84,03 - 86,70	calcareous biotite-chlorite-sericite schist (meta-pelite with volcanic impurity) greenish, slightly laminated, porphyroblasts of biotite and mt are widely scattered within a schistose groundmass composed of chlorite and sericite. Carbonate forms flat lenses sometimes laminae which are conformable to the major foliation of the rock. At several locations pyrite-mineralization which varies between low- and high-grade:
chemical analysis 84,38 - 84,50 m 85,30 - 85,38 m 85,60 - 86,05 m 86,57 - 86,62 m	84,38 - 84,50 m, 84,70 m, 85,30 - 85,36 m, 85,60 - 86,05 m, 86,57 - 86,62 m.
	Schistosity: 59°. Knife sharp contact.
86,70 - 87,95	magnetite-rich quartzite (meta-chert) Similar: 77,35 - 80,05 m but no garnet. Several occurrences of pyrite: 86,72 m, 86,85 - 86,92 m, 87,07 - 87,20 m, 87,40m, 87,80 m.
chemical analysis 86,85 - 86,92 m 87,07 - 87,20 m 87,40 - 87,45 m	
	Knife sharp boundary.

TOZ-sequence until end of DDH.

87,95 - 90,00	slightly calcareous biotite - sericite schist (meta-pelite) similar: 65,40 - 66,40 m 88,95 - 89,10: scattered crystals of mt and some tiny interlayers of mt-chert. Sharp contact.
90,00 - 91,75	slightly calcareous qtz-biotite-rich sericite schist (meta-pelite, semi-pelite) greenishgr, lenticular texture, lenses and schlieren of quartz in close alternation with bands and schlieren composed of sericite and some biotite.
91,75 m	end of DDH.

F.D. Priesemann
Mai 1987

Chemical analysis of sulphide mineralization, DDH 58.

m	% Cu	%Zn	% S
45,87 - 46,05	0,04	0,03	14,9
46,26 - 46,34	-	0,03	19,5
73,05 - 73,30	-	0,04	3,02
73,60 - 73,80	-	0,02	40,3
77,35 - 77,50	0,01	0,03	2,49
78,70 - 78,80	0,02	0,04	2,81
79,20 - 79,26	0,02	0,04	2,54
79,54 - 79,60	0,02	0,04	0,35
84,38 - 84,50	-	0,02	4,39
85,30 - 85,38	0,01	0,02	3,23
85,60 - 86,05	0,01	0,05	6,22
86,57 - 86,62	0,01	0,01	13,2
86,85 - 86,92	-	0,03	15,0
87,07 - 87,20	-	0,06	43,88
87,40 - 87,45	-	0,01	14,4

Suszeptibility DDH 58 (sintrex - SM-5)
Results in 10^{-3} (cgs)

m:		m:		m:	
0,00	0,0	40,10	2,0	58,50	4,8
1,00	0,0	40,45	3,2	58,80	4,7
2,00	0,0	40,75	3,7	59,05	4,8
3,00	0,0	41,05	2,4	59,30	3,7
4,00	0,0	41,35	2,9	59,60	3,5
5,00	0,0	41,70	3,0	59,75	4,2
6,00	0,0	41,95	5,9	59,90	4,2
7,00	0,0	42,10	4,6	60,10	2,6
8,00	0,0	42,30	2,8	60,35	3,9
9,00	0,0	42,55	3,3	60,55	3,0
10,00	0,0	42,80	3,4	60,75	12,0
11,00	0,0	43,05	3,5	60,90	10,0
12,00	0,0	43,45	5,2	61,00	27,0
13,00	0,0	43,75	3,8	61,15	3,4
14,00	0,0	44,05	2,7	61,45	4,0
15,00	0,0	44,30	3,5	61,85	3,0
16,00	0,0	44,50	3,5	62,05	2,9
17,00	0,0	44,75	3,6	62,30	2,1
18,00	0,0	44,95	2,4	62,50	3,9
19,00	0,0	45,15	1,9	62,85	2,9
20,00	0,1	45,40	1,1	63,15	1,3
20,50	0,1	45,60	6,4	63,40	2,5
21,00	0,2	45,80	2,8	63,75	2,6
21,50	0,1	45,95	1,3	64,00	3,0
22,00	0,1	46,10	0,0	64,20	2,9
22,50	0,1	46,35	0,0	64,65	5,1
23,00	0,3	46,40	0,0	64,80	1,8
23,50	0,1	47,00	0,0	65,05	5,0
24,00	0,2	48,00	0,0	65,45	5,0
24,50	0,1	49,00	0,0	65,90	8,1
25,00	0,1	50,00	0,0	66,10	19,0
26,00	0,1	51,00	0,0	66,30	26,0
27,00	0,3	52,00	0,0	66,60	19,0
28,00	0,2	53,00	0,0	66,80	2,4
29,00	0,3	53,50	0,7	67,05	27,0
30,00	0,0	53,80	0,5	67,30	18,0
30,70	0,0	54,05	0,8	67,50	24,0
31,00	0,0	54,45	0,4	67,85	5,8
31,50	0,0	54,75	0,0	68,05	8,1
32,00	0,1	54,95	0,2	68,25	27,0
33,00	0,0	55,15	0,0	68,50	11,0
34,00	0,0	55,40	0,4	68,80	16,0
35,00	0,0	55,90	2,5	69,20	4,5
36,00	0,0	56,05	1,8	69,50	4,4
37,00	0,0	56,35	4,0	69,90	5,6
38,00	0,0	56,75	3,0	70,00	3,2
39,00	0,0	56,95	2,7	70,30	12,0
39,10	0,3	57,10	3,0	70,50	9,3
39,35	2,2	57,40	3,8	70,80	7,7
39,50	1,4	57,50	3,1	71,20	6,0
39,70	1,6	57,75	4,1	71,50	3,5
39,80	0,6	58,05	4,4	71,80	4,1
40,00	0,5	58,40	3,2	72,30	3,6

m:		m:	
72,50	2,9	86,50	0,9
72,75	3,5	86,75	17,0
72,95	3,2	86,90	46,0
73,10	11,0	87,20	12,0
73,20	31,0	87,50	19,0
73,40	28,0	87,80	36,0
73,50	18,0	88,10	7,0
73,60	6,6	88,50	3,9
73,75	14,0	88,80	3,0
73,95	5,7	89,10	25,0
74,20	5,0	89,50	4,8
74,50	4,5	89,75	4,9
74,80	5,3	90,15	0,2
75,20	5,1	90,50	0,3
75,50	3,2	90,80	0,2
75,80	3,1	91,20	0,3
76,10	4,8	91,70	0,1
76,40	5,5		
76,60	5,6		
76,80	5,4		
77,15	3,4		
77,30	18,0		
77,40	49,0		
77,50	30,0		
77,60	60,0		
77,70	43,0		
77,90	53,0		
78,10	50,0		
78,30	12,0		
78,50	20,0		
78,70	17,0		
78,95	14,0		
79,20	33,0		
79,40	45,0		
79,50	29,0		
79,75	44,0		
79,95	30,0		
80,25	2,7		
80,75	0,7		
81,10	5,0		
81,50	5,6		
81,95	47,0		
82,25	84,0		
82,50	11,0		
82,80	16,0		
83,05	18,0		
83,50	25,0		
83,85	24,0		
84,10	3,0		
84,50	0,5		
84,75	1,4		
85,20	0,3		
85,50	0,4		
85,75	1,6		
86,15	2,3		

DIAMOND DRILL HOLE 59

Hjerkinn, east of main fault
Date of drilling: 17.08.-23.08.1965.
Location: west of Kvitdalsvatna, 5200 Ø - 1175 N
Azimuth: Grid north
Inclination: 50
Total length: 96,60 m

Description:

15,00 m	Overburden
0,00 - 1,70	biotite-bear. chlorite schist (meta-pelite) gngr to gn, fine crystalline chlorite as cm-thick isoclinally folded bands and also as lenses in alternation with stripes and lenses of qtz and milky qtz, biotite forms streaks and schlieren which are parallel the major foliation of the rock. Strongly folded. Gradually passing into following rock.
1,70 - 5,50	chlorite-rich quartzite (metamor. qtz-arenite) gr to grwhite with gn schlieren, rhythmic mm-banding of qtz and chlorite which is often isoclinally folded, strong deformation results in a lenticular texture, at several places strong tectonic fragmentation. Unclear contact relationship due to folding.
5,50 - 12,85	biotite-bear. chlorite schist (meta-pelite) similar: 0,00 - 1,70 m but richer in qtz, often distinct cremulation cleavage, always strongly isoclinally folded, tectonic fragmentation with transition into mylonitic rock between: 6,95 - 7,70 m, 10,10 - 10,30 m. Scattered idioblasts of carbonate of 0,15 cm size between: 6,45 - 6,75 m and 8,45 - 9,20 m. Scattered poikiloblasts of il from 11,80 m until lower boundary of the rock. Schistosity: 13,20 m, 68 . Gradually passing into following rock.

12,85 - 13,10	calcareous chlorite - amphibole gneiss (metamor. mafic tuff) gn, porphyroblastic texture, amphibole forms acicular and lense-like crystals on average 0,2 cm in long dimension which are homogeneously distributed within a groundmass of fine crystalline chlorite, carbonate is bound to bands and irregular shaped features made by qtz, slight distinction of cm-banding due to textural and compostional variations, Sparse porphyroblasts of il. Banding: 60 . Sharp contact.
13,10 - 13,66	massive pyrite (exhalative sulphide deposit) metallic luster, massive, homogeneous, scattered porphyroblasts of amphibole on average 0,3 cm in long dimension are roughly being parallel aligned, some irregular formed bodies of qtz. Sharp contact with following amphibolite.
13,66 - 20,45	calcareous amphibolite (meta-basalt flow) gn to grgn, fine crystalline but more often medium to even coarse crystalline, often with distinct leopard texture. Carbonate forms lense - shaped bodies or schlieren, it sometimes is of spotted appearence (17,90 - 18,40 m). Scattered tiny crystals of il are present throughout. 15,30 - 15,32: massive pyrite (exhalative sulphide) infolded section from 13,10 - 13,66 m. Sharp contact.
20,45 - 20,90	quartzite (meta-chert with low dedree in exhalation sulphide) gr sometimes milkywhite, strongly folded, schlieren and irregular shaped bodies of schistose amphibolite with scattered crystals of il. Pyrite mineralization from low- to high-grade (massive).
20,90 - 21,45	schistose amphibolite (meta-basalt flow) gn, fine crystalline, strongly folded and with a tight network of qtz which sometimes ends up within big clusters.
21,45 - 21,95	quartzite (meta-chert with sulphide) similar: 20,50 - 20,90 m

21,95 - 23,60 schistose amphibolite with several cm-thick interlayers of massive pyrite (similar: 13,10 - 13,66 m) and quartzite (similar: 20,50 - 20,90 m) layers.

23,60 - 81,60: schistose amphibolite
(meta-basalt flow)
gn. fine crystalline, abundant qtz and qtz-carbonate veins, sometimes clusters of qtz which often are connected by qtz veins. Poikiloblasts of il throughout, the round globular crystals on average being 0,15 cm in diameter.

Strongly folded until about 70,00 m. Schistosity: 63,50 m 44 , 78,70 m 65 , 80,10 m 45 .

28,40 - 28,55: pyrite-bear.quartzite (meta-chert)
gr,fine crystalline, slightly laminated by trains of granules og py , sulphide amount lesser 1 % by volume of the rock.

29,40 - 29.60: quartzite (meta-chert)
gr. fine crystalline, some schlieren of amphibolite and rare spots of py.

29,87 - 30,05:quartzite (meta-chert)
gr. extremely fine grained, crude development of lamination due to random occurrence of trains of granules of po.

Knife sharp deformed contacts on each side of the band.

68,60 - 68,70: quartzite (meta-chert)
gr with faint violett tint, extremely fine grained, massive.

81,60 end of DDH

Frank D. Priesemann
Mai 1987

DDH 59

SAMPLES FOR CHEMICAL ANALYSIS

m	% Cu	% Zn	% S
12,90 - 13,50	trace	0,10	29,4
15.25 - 15,40	trace	0,20	26,4
20,50 - 23,65	trace	0,20	12,8

SUSCEPTIBILITY DDH 59 (SCINTREX SM - 5)

Results in 10^{-3} cgs

0,00	0,0	34,00	0,1
1,30	0,1	35,00	0,1
2,20	0,4	36,00	0,0
3,25	0,2	37,00	0,0
4,30	0,2	38,00	0,0
5,20	0,3	39,00	0,2
6,00	0,2	40,00	0,1
7,00	0,4	41,00	0,0
8,00	0,2	42,00	0,0
9,00	0,0	43,00	0,0
10,00	0,0	44,00	0,1
11,00	0,1	45,00	0,2
12,00	0,1	46,00	0,0
13,00	0,1	47,00	0,1
13,30	0,5	48,00	0,0
13,85	0,0	49,00	0,0
14,00	0,0	50,00	0,0
15,00	0,0	51,00	0,0
16,00	0,0	52,00	0,0
17,00	0,0	53,00	0,1
18,00	0,0	54,00	0,0
19,00	0,0	55,00	0,1
20,00	0,0	56,00	0,0
20,50	0,7	57,00	0,0
20,70	0,0	58,00	0,1
21,10	0,0	59,00	0,2
21,30	0,1	60,00	0,1
21,90	0,4	61,00	0,0
22,00	0,5	62,00	0,0
22,40	0,1	63,00	0,1
22,80	0,0	64,00	0,2
23,10	0,0	65,00	0,1
23,30	0,3	66,00	0,0
23,65	0,2	67,00	0,0
24,00	0,0	68,00	0,0
25,00	0,0	69,00	0,3
26,00	0,0	70,00	0,1
27,00	0,0	71,00	0,1
28,00	0,0	72,00	0,0
28,45	0,1	73,00	0,0
29,00	0,0	74,00	0,1
29,45	0,0	75,10	0,3
29,90	0,0	76,20	0,1
30,00	0.0	77,40	0,1
31,00	0,0	78,30	0,1
32,00	0,1	79,40	0,0
33,00	0,0	80,40	0,2
		81,40	0,2

DIAMOND DRILL HOLE 69

Tverrfjellet mine, Folldal Verk A/S
Exploration hole drilled in 1965.
Location: 2500 V, 1270 N.
Inclination: 50°
Total length: 77,20 m, 4,20 m overburden

DESCRIPTION

0,00 - 4,20	overbuden
FMB-sequenze	
4,20 - 4,80	high calcareous chlorite - sericite bear. amphibole - qtz - fspar rock/gneiss (metamor. felsic tuff)
A carbonatization	gr with often distinct yellowish tint due to weathered carbonate, crudely developed compostional banding, porphyroblastic texture, lenticular crystals of amphibole on average 0,2 cm in long dimension are either widely spaced or form trains of granules within a groundmass composed of fine crystalline carbonate, qtz and fspar . In places alteration of amphibole to chlorite and sericite. Gradational boundary.
4,80 - 12,20	calcareous chlorite-amphibole-qtz-fspar gneiss (banded amphibolite) (metamor. mafic pyroclastic deposit or epiclastic sediment composed of mafic volcanic decomposition compounds) gn, crudely developed compositional and textural banding, porphyroblastic texture, randomly oriented accicular crystals of amphibole set in a fine crystalline groundmass composed of chlorite and qtz and fspar. Carbonate forms scattered round globular crystals on average 0,15 cm in diameter.
	8,08 - 8,60: sulphide bear. quartzite (metachert) gr with greenish schlieren and bands, fine crystalline quartz as cm-thick bands in alternation with sulphide rich quartzose bands, some interlayers of schistose amphibolite with crudely developed leopard texture. Sulphide is mostly pyrite, it makes up 8 % by volume of the rock.
	Gradational contact with distinct foliation within both types of rock.

12,20 - 23,30 Plagioclase amphibolite (leopard amph.)
(meta-basalt flow)
gn lenses set in a grwhite matrix, distinct leopard texture, lense-shaped crystal aggregates of amphibole on average 0.5 cm large embedded in a fine crystalline groundmass composed of fspar, qtz and epidote. Fine crosscutting veins of qtz. Distinctly foliated rock near shearplanes.

Sharp contact.

23,30 - 24,80 slightly calcareous qtz-fspar-chlorite-amphibole rock/gneiss (banded amphibolite)
(metamor. mafic pyroclastic deposit or epiclastic sediment composed of mafic volcanic decomposition compounds)
similar: 4,80 - 12,20 m.

24,20 - 24,60 m: amphibole-sericite-chlorite bear. pyrite rich quartzite (metamor. chemical precipitate - supp. exhalite - with mafic volcanic interlayers) gr with some greenish bands, fine crystalline, crudely developed compositional banding, pyrite is concentrated within 10 cm thick bands occurring both near the footwall and the hanging wall of the layer.

Sharp contacts.

24,80 - 34,95 schistose amphibolite
(meta basalt flow)
gn, fine crystalline, in places tectonic brecciated structure and rich in qtz-veining. Strongly enriched in carbonate between 29,40 - 31,40 m. Carbonate forms here either scattered round globular spots or trains of granules which are parallel the major foliation of the rock. Interlayers of quartzite (metachert) with low degree in sulphides (mainly py) between: 32,20 - 32,30 m, 32,62 - 32,72 m, 32,90 - 32,95 m.

Strongly foliated and in places tectonized.

34,95 - 35,80 calcareous to high calcareous amphibole-chlorite-qtz-fspar rock
(metamor. volcanite)
greenishgr, flasertexture due to strong foliation of the rock, flasers and schlieren of amphibole and chlorite surrounded by fine crystalline qtz and fspar. Carbonate occurs as scattered round globular spots but also as

schlieren, it sometimes constitutes clusters. Some spots of pyrite

Sharp contact.

35,80 - 37,30 amphibolite banded quartzite
(meta-chert with interlayers of basaltic volcanic)
gr with gn interlayers, distinct compositional banding, fine grained quartz as cm-thick bands in rhythmic alternation with mm-thick and cm-thick layers composed of amphibole and with minor constituents as being biotite and chlorite.

37,30 - 39,15 slightly calcareous biotite - amphibole schist
(metamor. slightly altered mafic volcanic, supp. basalt flow)

A
biotitization

browngn, crudely developed porphyroblastic texture, homogeneous, equially distributed bundles of biotite on average 0,15 cm large set in a matrix of tiny acicular crystals of amphibole and fine crystalline qtz and fspar.

Sharp boundary.

39,15 - 39,75 amphibolite - banded quartzite
(meta-chert with interlayers of basaltic volcanic)

similar: 35,80 - 37,30 m.

39,75 - 42,70 calcareous to high calcareous amphibole-biotite-chlorite-qtz-fspar rock
(metamor. highly altered volcanic, supp. fspar-rich amphibolite)

AA
carbonatization
biotitization
chloritization

greenish gr, crudely developed schlieren texture, porphyroblastic texture, accicular crystals of amphibole on average 0,15 cm in long dimension and bundles of biotite set in a fine crystalline matrix composed of chlorite (may also containing sericite), qtz, fspar and carbonate. The latter mineral also occurs as round globular spots of equal distribution. Amphibole often is totally altered to biotite while biotite nearly is absent from areas with lower degree of alteration.

Gradational boundary.

42.70 - 47,70	plagioclase-amphibolite with transitions into slightly calcareous qtz - fspar - biotite - chlorite - amphibole rock/gneiss (metamor. basaltic volcanic locally being moderately altered) grgn, homogeneous but in places crude development of compositional banding porphyroblastic texture, acicular crystals og amphibole set in a fine crystalline matrix composed of either qtz and fspar (plagioclase amphibole schists) or carbonate, qtz, fspar, chlorite and biotite (moderately altered sections). Plagioclase amphibole schist sometimes contains porphyritic magnetite. Gradational contact.
47.70 - 52,00 A carbonatization biotitization	calcareous to high calcareous chlorite - biotite - amphibole schist (metamor. moderately altered basalt flow) browngr, crudely developed schlieren texture equal distribution of patches of biotite within a fine crystalline matrix composed of carbonate, amphibole, chlorite, qtz and fspar. In places round globular spots of carbonate. Interlayers of mt-bear. quartzite (meta-chert) at the bottom of the sequence. Sharp contact.
52,00 - 54,10 AA carbonatization biotitization chloritization TOZ-sequence ----------	calcareous biotite - chlorite schist (metamor. highly altered basalt flow) gn with abundant brown patches, bundles of biotite are scattered within a fine fibrous matrix of Mg - rich chlorite. Locally lenses and schlieren sometimes giant spots of carbonate. Small interlayers of mt - bear. quartzite (meta - chert).
54,10 - 72,10	sulphide - ore (metamor. exhalative sulphide deposit) gn with metallic lustre, porphyroblasts of pyrite accompanied by other sulphides set in a matrix composed of qtz but locally of qtz and carbonate.
72,10 - 73,10	high calcareous chlorite schist (metamor. highly altered mafic volcanic) (see also DDH 71: 100,95 - 107,00 m) gn, schlieren texture, lenses and layers composed of fine fibrous chlorite in alternation with schlieren and lenses composed of qtz and carbonate. Abundant tiny scattered spots of mt.

73,10 - 74,80	quartzite (meta-chert) grwhite, dense, some tiny spots of pyrite and mt.
74,80 - 77,20	slightly calcareous garnet - chlorite - sericite - amphibole schist (garbenschist) (metamor. epiclastic sediment with some volcanic related compounds) greenish gr with large blackish*gn* garben, huge porphyroblasts of amphibole and idioblasts of garnet set in a fine crystalline matrix composed of sericite and chlorite. Bands of sulphide bear. quartzite (meta-chert) are locally present (infolded).
77,20	end of DDH

F.D. Priesemann
November 1987.

Chemical analysis of sulphide mineralizations, Bh. 69

m	% Cu	% Zn	% S
54,10 - 71,50	0,52	1,40	41,50

Whole rock analysis

prøver	m
TV - 69 - 1	15,30 - 19,80
TV - 69 - 2	34,30 - 34,80
TV - 69 - 4	40,50 - 40,80
TV - 69 - 5	47,40 - 47,70
TV - 69 - 6	49,60 - 49,95

Suszeptibility DDH 69, Tverrfjellet

Results in 10^{-3} cgs

m:					
20,00	0,0	45,50	0,4	74,70	4,8
21,00	0,0	46,00	0,7	75,10	2,2
22,00	0,0	46,50	0,7	75,30	0,5
23,00	0,0	47,10	0,3	75,60	1,2
24,00	0,0	47,50	0,5	76,20	1,2
24,25	0,0	48,00	0,5	76,70	6,9
24,40	0,0	48,50	0,4	77,20	0,2
24,55	0,0	49,00	0,4	77,80	0,4
25,00	0,0	49,50	0,3		
26,00	0,0	50,00	0,5		
27,00	0,0	50,50	0,4		
28,00	0,0	51,00	0,3		
29,00	0,0	51,80	0,6		
30,00	0,0	52,00	0,3		
31,00	0,0	52,50	0,2		
32,00	0,0	53,20	3,8		
32,25	0,0	54,30	0,3		
32,50	0,0	54,80	0,0		
32,70	0,7	55,50	0,2		
32,90	0,2	56,00	0,0		
33,00	1,3	56,60	0,1		
34,00	0,1	57,00	0,1		
35,00	0,1	58,00	0,1		
36,00	0,9	59,00	0,0		
36,20	0,3	60,10	0,0		
36,50	0,3	60,50	0,3		
36,75	1,5	61,45	0,0		
36,90	0,9	62,50	0,0		
37,15	0,4	63,50	0,2		
37,40	0,4	64,40	0,4		
37,80	0,7	65,40	0,5		
38,30	0,8	65,80	0,5		
38.80	0,6	66,20	0,0		
39,05	0,4	66,70	0,0		
39,25	0,7	67,10	0,1		
39,50	0,6	67,70	0,2		
39,85	0,5	68,50	0,0		
40,00	0,6	69,50	0,0		
40,50	0,3	70,00	0,0		
40,90	0,5	70.50	0,1		
41,05	0,4	71,00	0,0		
41,50	0,6	71,50	0,0		
42,00	0,5	72,20	0,0		
42,50	0,6	72,50	0,0		
43,00	1,0	73,20	1,5		
43,50	0,9	73,50	7,0		
44,00	0,6	73,80	0,1		
44,50	0,7	74,00	1,2		
45,00	0,9	74,30	3,7		

DIAMOND DRILL HOLE 70

Tverrfjellet mine, Folldal Verk A/S
Exploration hole drilled in 1965.
Location: 2606 V, 1280 N
Inclination: 50°
Total length: 104,10 m, 6.40 m overburden.

Description:

0,00 -	6,40	Overburden
MMS - formation		
6,40 -	10,40	slightly calcareous garnet-biotite-sericite schist (meta-pelite) greenish gr, fine-grained granoblastic quartz as cm-large lenses and stringers in alternation with bands and lenses composed of fine fibrous sericite containing mm-large porphyroblasts of biotite. Carbonate forms stringers spots and sometimes clusters being equally distributed. Garnet occurs as blasts up to 0,7 cm i diameter and shows often idiomorphic outlines. Schistosity: 40° Gradational contact.
10,40 -	12,50	micaceous quartzite (metamor. mica-schist, qtz-arenite) gr with greenish schlieren and layers, fine-grained granoblastic quartz as lenses and bands in alternation with schlieren and mm-thick layers composed of sericite and biotite. Biotite typically forms mm-large porphyroblasts which are widely scattered. Schistosity: 45° . Disharmonic folding within 15 cm from lower contact. Sharp contact.
12,50 -	28,18	slightly calcareous biotite - sericite schist (meta-pelite) Same as: 6,40 - 10.40 m. Sparse porphyroblasts of garnet. Within 2 m from lower contact enriched in biotite and occurrence of some porphyroblasts of amphibole. Schistosity: 40°. Gradational contact.

28,18 - 31,00 calcareous sericite-chlorite-quartz amphibole gneiss
(banded amphibolite. Metamor. pyroclastic - epiclastic sediment of mainly volcanic related material)
light bluishgr, gr, mm- to cm-rhythmic banding of fine grained granoblastic quartz and layers made by fine crystalline chlorite and sericite which contain randomly oriented porphyroblasts of amphibole on average 0,15 cm in long dimension. Carbonate occurs as round globular spots being widely scattered or forms trains of granules being parallel the layering of the rock. Sparse crystals of py.

28,75 - 28,81: slightly calcareous pyrite bear. quartzite (metamor. hydrothermal silica with ironsulphide)
grwhite. Finegrained granoblastic quartz interlayered by schlieren of carbonate and trains of granules of py. Amount in sulfide ca. 1 % by volume of the rock.
Sharp contact.

Layering:40°. Chaotically folded between 29.70 - 30,00 m.
Gradually passing into following rock.

31,00 - 32,10 schistose amphibolite
(meta basalt flow)
gn, fine crystalline, crosscutting veinlets and sometimes clusters of qtz.
Schistosity: 40° .
Gradually passing into following rock.

32,10 - 33,90 calcareous sericite-bear. chlorite-amphibole-qtz-fspar gneiss
(banded amphibolite, metamor. volcanic related sediment or mafic-felsic pyroclastic deposit)
grgn, medium crystalline, crudely developed compositional banding, indistinct alternation of layers rich in qtz and fspar and bands mainly composed of chlorite and amphibole. Amphibole tends to form bundles or acicular crystals 1 to 2 mm in long dimension which are randomly oriented. Abundant round globular spots of carbonate (porphyroblasts or poikiloblasts) which are scattered but locally form trains of granules.
Layering: 45° .
Sharp contact.

33,90 - 36,45 calcareous greenschist
(metamor. basaltic volcanic, supp. flow)
gn, medium crystalline, crudely developed leopard texture, abundant round globular spots of carbonate which sometimes form trains of granules.
Schistosity: 40° .
Gradually passing into following rock.

36,45 - 39,58 calcareous sericite-bear. chlorite-amphibole-qtz-fspar gneiss
(banded amphibolite)
similar: 32,10 - 33,90 m. Sulphide mineralization at following locations: 36,50 m discontinous band of py; 37,05 - 37,18 m high-grade py enrichment; 37,20 - 37,32 m high-grade nearly massive py with interbeds of quartzite; 37,45 m schlieren of pyrite; 37,48 - 37,50 m high grade py-enrichment; 37,95 - 37,98 m cm-thick py band within chemical precipitate (quartzite); 38,16 - 38,34 m high-grade pyrite mineralization. Different stages of hydrothermal alteration: alteration (sericitization, biotitzation, chloritization, carbonatization) is concentrated between 37,98 - 38,16 m. Sericitization occurs also between 38,34 - 38,16 m. Sericitization occurs also between 38,34 - 39,58 m.
Layering: 58°
Gradually passing into following rock.

39,58 - 45,76 calcareous greenschist
(metamor. basaltic volcanic, supp. lavaflow)
similar: 33,90 - 36,45 m. Distinct leopard texture between 40,46 - 44,60 m. Locally clusters of py. Tectonic breccation and strong foliation at several locations.
Sharp contact.

45,76 - 50,35 calcareous qtz - fspar - amphibole - chlorite rock
(metamor. volcanic related sediment, may be mafic pyroclastic deposit supp. containing epiclastic sedimentary compounds)
greenish, crude development of compositional banding, porphyroblasitic texture. Fine grained granoblastic qtz and fspar and fine fibrous chlorite as groundmass. Amphibole forms acicular crystals on average 0,15 cm in long dimension which are oriented at random.Carbonate occurs as round globular spots - 0,1 to 0,15 cm across - being equally distributed. Pyrite is scarce forming minor

spots sometimes bigger clusters.

47,09 - 47,17: carbonate - pyrite bear. quartzite (metamor. chemical precipitate, supp. exhalite) grwhite, dense, homogeneous. Pyrite forms stringers and clusters, it amounts to ca. 1 % by volume of the rock. Sharp contacts.

Compositional banding: generally at 40°. Gradually passing into following rock.

50,35 - 51,23

AA
sericitization
carbonatization
biotitization

high calcareous biotite - sericite schist
(metamor. altered volcanic sediment)
greenishgr, homogeneous, crudely developed chicken-wire texture, fine grained granoblastic qtz and carbonate as round globular spots or lenses surrounded by fine fibrous sericite. Biotite forms fascicular bundles or minor clusters which are oriented at random. Gradually passing into following rock.

51,23 - 52,90

AA
chloritization
sericitization

high calcareous sericite-bear. chlorite schist
(metamor. altered volcanic rock)
grgn, tectonic brecciated texture, fine fibrous chlorite and sericite as schlieren surrounding lense-like spots, clusters and discontinous bands composed of carbonate and qtz.
Strongly folded and sometimes sheared. Gradational boundary.

52,90 - 61,20

slightly calcareous sericite - chlorite - amphibole - qtz - fspar rock/gneiss
(metamor. volcanic related sediment may be pyroclastic deposit)
greenishgr, crude development of compositional banding, porphyroblastic texture, fine fibrous sericite and chlorite and fine grained granoblastic qtz and fspar as groundmass, amphibole forms acicular crystals on average 0,2 cm in length which tend to be oriented at random, the needles are either equally distributed but locally may be enriched within cm-thick bands. Pyrite is scarce and occurs as tiny round globular spots. It, between 58,53 - 58,80 m, forms several discontinuous bands or trains of granules.

58,80 - 58,98: mt-bear. pyrite-rich quartzite (metamor. chemical precipitate, supp. exhalite) gr with faint violet tint, dense. Pyrite forms irregular shaped aggregates, it

amounts to abaout 7 % by volume of the rock. Gradational boundary.

61,20 - 61,68 — A carbonatization (biotitization)

calcareous amphibole schist
(metamor. slightly altered lava flow)
gn, crudely developed layering due to qtz and carbonate which tend to form schlieren and lenses being in alternation with layers or schlieren made by fine crystalline amphibole. Scattered bundles of biotite which are randomly oriented occur close to the lower border of the section.
Gradational boundary.

61,68 - 85,65 — AA chloritization carbonatization biotitization

calcareous to high calcareous biotite - chlorite schist
(metamor. altered basaltic lavaflows with minor intersections of basaltic tuffs and exhalites)
gn, heterogeneous due to slight compositional changes and strong folding. Chlorite is always of fine fibrous appearence while biotite forms bundles, schlieren and locally clusters which tend to be aligned with the major foliation of the rock. Carbonate forms either schlieren or crosscutting veinlets, it besides that is of spotted nature as it forms round globular spots being scattered. Qtz occurs as clusters within strong folded sections.
68,20 - 68,73: mt-pyrite bear. quartzite (meta-chert) gr, dense, some schlieren and veinlets of pyrite.
69,68 - 69,71: quartzite (meta-chert) gr, dense, homogeneous.
69,98 - 70,35: mt-bear. quartzite (meta-chert) grwhite, dense, some crystals of biotite and chlorite, cm-thick interlayers made by carbonate, amphibole, qtz and magnetite.
72,80 - 72,86: quartzite (meta-chert)
73,08 - 73,23: mt-bear. quartzite (meta-chert) gr with faint violet tint, finely dispersed tiny spots of mt, some schlieren of chlorite.
82,10 - 82,22: quartzite (meta-chert)
82,62 - 82,73: quartzite (meta-chert)

Sharp disformed contact towards ore zone.

85,65 - 86,36	sulphide-rich quartzite (metamorph. chemical precipitate, exhalative sulphide) gr, dense, crudely developed layering due to sulphide grains which sometimes are concentrated within tiny layers. Locally clusters of carbonate - especially near contact towards altered mafic flow. Here also spots and stringers of cpy and clusters of po (stringer type mineralization). Sharp boundary with following sulphide.
86,26 - 90,38	sulphide ore (metamor. exhalative sulphide deposit) greenishyellow, metallic lustre, homogeneous, high-grade sulphide enrichment set in a matrix of qtz.
90,38 - 91,62 AA chloritization carbonatization	calcareous chlorite schist (metamor. altered mafic volcanic) gn, fine fibrous chlorite with laminae of qtz and schlieren of carbonate, sparse bundles of biotite.
91,62 - 103,00	sulphide ore (metamor. exhalative sulphide deposit) similar: 86,36 - 90,38 m.
103,00 - 104,10 AA chloritization biotitization carbonatization	biotite-bear. sulphide-rich biotite-chlorite schist (metamor.- altered mafic volcanic) gn, schlieren texture, schlieren and lenses of qtz and/or carbonate surrounded by fine fibrous chlorite which is accompanied by huge crystals of biotite. Sulphides, predominately pyrite, are bound to qtz-lenses and schlieren.
104,10 m	end of DDH

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November 1987

CHEMICAL ANALYSIS OG SULPHIDE MINERALIZATION, DDH 70

m	% Cu	% Zn	% S
86,20 - 103,00	0,98	1,30	36,30

Whole rock analysis

prøver	m
TV - 70 - 1	31,10 - 31,45
TV - 70 - 4	66,45 - 66,80
TV - 70 - 6	71,00 - 71,45
TV - 70 - 7	78,00 - 78,45

SUSZEPTIBILITY DDH 70, TVERRFJELLET

Results in 10^{-3} cgs

m:		m:		m:	
7,00	0,1	47,13	0,6	81,00	0,0
8,00	0,2	48,00	0,0	82,00	0,0
9,00	0,2	49,00	0,0	83,00	0,0
10,00	0,0	49,50	0,2	84,00	0,0
11,00	0,0	50,00	0,0	85,00	0,0
12,00	0,0	51,00	0,0	85,70	0,0
13,00	0,0	52,00	0,0	85,75	0,6
14,00	0,0	53,00	0,0	85,85	0,5
15,00	0,0	54,00	0,0	86,00	0,3
16,00	0,0	55,00	0,0	86,10	0,4
17,00	0,0	56,00	0,0	86,50	1,1
18,00	0,0	57,00	0,0	87,20	2,4
19,00	0,0	58,00	0,0	87,80	7,0
20,00	0,0	58,50	0,2	88,15	1,1
21,00	0,0	58,70	0,2	88,50	3,0
22,00	0,0	58,90	0,1	88,85	0,3
23,00	0,0	59,00	0,0	89,25	0,8
24,00	0,0	59,50	0,0	89,60	0,2
25,00	0,0	60,00	0,0	89,90	0,0
26,00	0,0	61,00	0,0	90,10	0,0
27,00	0,0	61,80	0,2	90,30	0,0
28,00	0,0	62,80	0,0	91,30	0,0
28,50	0,1	63,00	0,0	91,70	0,1
28,80	0,2	64,00	0,0	92,50	0,0
29,00	0,1	65,00	0,0	93,50	0,2
29,40	0,2	66,00	0,0	94,20	0,0
29,80	1,0	66,15	0,8	94,85	0,0
30,00	0,1	66,40	0,0	95,25	0,3
31,00	0,2	67,00	0,0	95,40	5,6
32,00	0,2	68,10	0,0	95,50	0,2
33,00	0,1	68,45	0,4	96,50	1,3
34,00	0,0	68,60	0,2	97,00	0,2
35,00	0,3	69,00	0,0	97,50	0,2
36,00	0,2	69,50	0,0	98,00	0,0
37,15	0,1	70,10	0,8	98,80	1,4
37,25	0,0	70,15	11,4	99,30	0,1
37,50	0,0	70,50	0,0	99,80	0,0
38,30	0,1	71,00	0,0		
38,50	0,1	72,00	0,0		
39,00	0,0	73,00	0,0		
39,50	0,1	73,15	0,6		
40,00	0,0	74,00	0,0		
41,00	0,0	75,00	0,0		
42,10	0,3	76,00	0,0		
43,15	0,6	77,00	0,0		
44,00	0,0	78,00	0,0		
45,00	0,1	79,00	0,0		
46,00	0,0	80,00	0,0		
47,00	0,0	81,00	0,0		

DIAMOND DRILL HOLE 71

Tverrfjellet mine, Folldal Verk A/S

Exploration hole drilled in 1965.

Location: 2660 V, 1295 N

Inclination: 50 .

Total length: 107,00 m, 5,80 m overburden

Description:

0,00 - 5,80	overburden
MMS-formation 5,70 - 21,00	garnet - biotite - sericite schist (meta-pelite) Tectonic brecciated structure from 20,40 m until contact with following rock. Schistosity: 40 .
21,00 - 22,70	calcareous sericite - amphibole - chlorite schist (garbenschist, close to banded amph.) (metamor. mafic volcanic sediment diluted with epiclastic sedimentary material) gn to grgn, randomly oriented lenticular needles of amphibole on average 0,4 cm in long dimension are inhomogeneously distributed within a matrix composed of fine fibrous chlorite and sericite. Gradational contact.
22,70 - 23,30	calcareous biotite bear. qtz-rich chlorite-sericite phyllite (meta-pelite with volcanic impurity) greenishgr.,schlieren texture, phyllosilicates compose schlieren and irregular shaped clusters which are surrounded by fine crystalline qtz and carbonate. Biotite is scarse and exists as bundles which are widely scattered.
FMB-sequence 23,30 - 24,50	calcareous biotite - amphibole bear. chlorite phyllite (metamorph. pelitic sediment composed predominately of volcanic related decomposition compounds) pale green, crudely developed schlieren texture, fine grained granoblastic qtz and carbonate as lenses and schlieren in alternation with bands and schlieren composed

of fine fibrous chlorite and tiny acicular crystals of amphibole.
Schistosity: 45 .
Sharp contact.

24,50 - 25,20 — high calcareous sericite-chlorite schist (metamor. altered volcano-sedimentary rock)

AA
carbonization
sericitization

palegr, chicken-wire texture, spots of carbonate are surroundedby crystal aggregates of phyllosilicates.

Sharp contact.

25,20 - 26,20 — calcareous biotite-amphibole bear. chlorite phyllite

similar: 23,30 - 24,50 m
Gradational contact.

26,20 - 26,85 — qtz - fspar rich amphibolite (meta-basalt flow)
grgn, medium crystalline, tiny needles of amphibole compose a tight network filled by plagioclase and qtz. Sparse spots of py.

Gradational contact.

26,85 - 28,00 — calcareous amphibole bear. chlorite phyllite

similar: 23,30 - 24,50 m
Gradational contact.

28,00 - 30,00 — calcareous sericite bear. qtz-fspar rich amphibole chlorite schist (garbenschist, close to banded amph.)

similar: 21,00 - 22,70 m
Gradational contact.

30,00 - 30,30 — high calcareous biotite-amphibole bear. qtz-rich chlorite-sericite phyllite

similar: 22,70 - 23,30 m
Gradational contact.

30,30 - 34,85 — calcareous qtz-fspar rich amphibole-chlorite rock/gneiss (banded amph.) (metamor. mafic volcanic sediment)
gn, grgn, porphyroblastic texture, crudely developed compositional banding, fine crystalline groundmass of chlorite, qtz, fspar and epidote, amphibole occurs as acicular crystals on average 0,2 cm in long dimension which are oriented at random, carbonate is

	sometimes finely dispersed but normally occurs with round globular spots. Gradational boundary.
34,85 - 35,05	high calcareous biotite - amphibole bear. qtz-chlorite gneiss
AA chloritization	(metamor. mafic tuff with interlayers of chemical precipitates). gn - gr banding, cm-thick layers mainly composed of fine-fibrous chlorite alternate with tiny bands composed of qtz and carbonate, one thick band of qtz-carbonate occurs also, pyrite is scarce forming widely scattered clusters. Layering: 68 . Gradational contact.
35,05 - 35,30	calcareous amphibolite (meta-basalt flow) gn, medium crystalline, crudely developed leopard texture. Sharp contact.
35,30 - 35,60	calcareous pyrite-rich chlorite-amphibole gneiss (metamor. basaltic tuff with sulphide interlayers) gn, inhomogeneous, clusters and bands of pyrite set in a matrix mainly composed of amphibole. Sharp contact.
35,60 - 39,30 A and AA carbonization chloritization	high calcareous amphibole-chlorite-qtz-fsar rock/gneiss (similar banded amph.) (metamor. mafic volcanic sediment with high amount of felsic compounds. Different stages in hydrothermal alteration) similar in texture: 30,30 - 34,85 m
39,30 - 40,75	calcareous amphibole-chlorite rock (banded amph.) similar: 21,00 - 22,70 m. Cm-thick band of massive sulphide at 40,10 m 40,53 - 40,65: pyrite bear. quartzite (meta-chert) Sharp contact.

40,75 - 41,90	high calcareous amphibole bear. chlorite phyllite
AA carbonization	similar: 23,30 - 24,50 m. Strong carbonate enrichment within lowermost part of the section
	Sharp contact.
41,90 - 44,50	calcareous amphibole - qtz - fspar - chlorite gneiss (banded amphibolite) (metamor. mafic volcanic sediment partly being strongly altered) gn, crudely developed compositional banding, fine crystalline without amphibole which forms randomly oriented porphyroblasts, the agicular crystals on average 0,2 cm in lang dimension. Pyrite is scarse, it forms trains of granules between 43,05 - 43,30 m and 43,80 - 43,85 m (5 % by volume of the rock) Layering: 65 . Gradational contact.
44,50 - 45,45	calcareous to high calcareous plag-amphibolite (meta-basalt flow) gn, leopard texture, lense-like crystal aggregates of amphibole set in a matrix composed of qtz, fspar and epidote. Abundant round globular spots of carbonate. Sharp contact.
45,45 - 50,65	high calcareous amphibole-biotite bear. chloritic and sericitic qtz-fspat rock/schist
AA carbonization chloritization sericitization	(metamor. highly altered volcanite, tuff or tuffite) yellowishgr, flaser texture, scattered flasers of phyllosilicates sometimes being accompanied by amphibole set in a fine crystalline matrix composed of felsic minerals as: carbonate, qtz and fspar. Sharp contact.
50,65 - 54,30	calcareous amphibole bear. chlorite phyllite similar: 23,30 - 24,50 m. Scattered tiny crystals of ilmenite throughout. Gradational contact.
54,30 - 60,50	calcareous qtz-fspar rich amphibole-chlorite gneiss (close to banded amphibolite) similar: 41,90 - 44,50 m 55,85 - 56,50: chlorite-amphibole-pyrite gneiss (metamor. mafic tuff with exhalative sulphide) gn, rhythmic cm-banding,

	alternation of amphibole-chlorite layers and bands rich in pyrite. Amphibol typically forms acicular crystals which are set in a fine crystalline matrix of chlorite. Pyrite amounts to 10 % by volume of the rock. Sharp contact.
60,50 - 63,10	schistose amphibolite (meta-basalt flow) gn to grgn, medium crystalline, abundant qtz veining, stringers of carbonate, some areas with chlorite alteration. Gradational contact.
63,10 - 64,70 AA carbonization chloritization sericitization	calcareous to high calcareous amphibole bear. sericite - chlorite - qtz - fspar rock (metamor. altered volcanite) gngr, schlieren texture, qtz and carbonate form lenses, schlieren and flasers which are set in a fine crystalline matrix composed mainly of chlorite. Gradational contact.
64,70 - 65,32 chem.ana.	amphibole bear. qtz-pyrrhotite rock (metamor. chemical precipitate) brown with metallic luster, highgrade po mineralization set in a matrix of qtz, amphibole occurs sporadically with acicular crystals which tend to tuch each other. Sharp contact.
65,32 - 65,72 AA biotitization chloritization	calcareous garnet - chlorite - amphibole - biotite qtz rock (metamor. highly altered volcanite) grbrown, porphyroblastic texture, acicular crystals of amphibole and bundles of biotite surrounded by fine crystalline chlorite and qtz. Tiny, scattered idioblasts of garnet throughout. Gradational contact.
65,72 - 74,52 A locally AA carbonization chloritization	calcareous to high calcareous amphibole - chlorite gneiss (banded amphibolite which shows various degrees in alteration) (metamor. mafic volcanite, supp. tuff, with interlayers of chemical precipitates) gn, porphyroblastic texture, crude development of compositional banding, discontinuous bands and schlieren made by fine crystalline qtz alternate with cm- to dm-thick layers composed of fine fibrous chlorite and porphyroblasts of amphibole which are oriented at random. Carbonate forms either scattered poikiloblasts or schlieren and lenses. Widely

scattered porphyroblasts of garnet exist within the upper part of the section near to the highly altered volcanite.
Chemical precipitates of mt-quartzite or sulphide-enriched quartzite occur at: 66,00 - 66,36 m, 67,35 - 67,43 m, 65,82 - 65,86 m, 68,76 - 68,80 m, 70,38 - 70,57 m, 70,64 - 71,35 m alternation of mt-quartzite bands and mafic layers.
Sharp contact.

74,52 - 76,34 — calcareous chlorite phyllite
similar: 23,30 - 24,50 m
Sharp contact: 90 .

76,34 - 76,45 — amphibole - chlorite - qtz - pyrrhotite gneiss
(metamor. chemical precipitate)
grbrown with distinct metallic luster, schlieren texture, close alternation of bands made by po and qtz, qtz and amphibole and amphibole and chlorite.
Sharp contact.

76,45 - 77,72 — high calcareous amphibole - chlorite gneiss
similar: 65,72 - 74,52 m.

77,72 - 83,80 — high calcareous biotite - chlorite schist
(metamor. highly altered mafic volcanite supp. basalt flow)
AA carbonization chloritization
gn, fine crystalline, groundmass consists of fine fibrous Mg-rich chlorite. Biotite forms scattered large bundles which are oriented at random. Carbonate occurs either as veins, veinlets and lenses or as giant spots. Sparse bands and stringers of qtz.

Small scale folding throughout.
Sharp contact.

TOZ-sequence
83,80 - 84,55 — sulphide-rich quartzite
(metamor. exhalite, may be part of stringer mineralization)
gr brown with metallic lustre, high-grade po mineralization and sparse tiny blebs and veinlets og cpy set in a fine crystalline matrix composed of qtz.
graditional contact.

84,55 - 87,85 — sulphide ore
(metamor. exhalative sulphide deposit)
grgn with metallic lustre, homogeneous, spotted appearence of sulphides set in a fine crystalline matrix composed of qtz.
Gradational boundary.

87,85 - 88,85	<u>calcareous to high calcareous mt-bear. chlorite - biotite schist</u>
AA carbonatization chloritization biotitization	(metamor. highly altered mafic volcanite) greenishbr, coarse crystalline, closely packed bundles of biotite surrounded by chlorite and carbonate which form schlieren, lenses or sometimes clusters. Magnetite occurs as widely scattered porphyroblasts on average 0,2 cm in diameter and often with idiomorphic outlines. Sharp boundary.
88,85 - 100,95	<u>sulphide ore</u> similar: 84,55 - 87,85 m Sharp disformed boundary.
100,95 - 107,00	<u>high calcareous chlorite schist</u> (metamor. highly altered mafic volcanite) (see also DDH 69: 72,10 - 73,10 m) gn with abundant reddish brown schlieren, schlieren texture, schlieren and trains of granules of carbonate set in a matrix of fine fibrous chlorite.
107,00	end of DDH

Frank D. Priesemann
November 1987

DDH 71

CHEMICAL ANALYSIS of sulphide mineralizations.

(m)	% Cu	% Zn	% S
65,00 - 65,70	0,16	0,10	25,0
84,00 - 101,00	1,16	1,10	37,1

DDH 71

WHOLE ROCK ANALYSIS

Prøver	m
TV - 71 - 1	48,20 - 48,80
TV - 71 - 3	65,32 - 65,70
TV - 71 - 7	71,35 - 71,80
TV - 71 - 8	79,50 - 79,85
TV - 71 - 9	82,10 - 82,85
TV - 71 - 10	87,90 - 88,00
TV - 71 - 11	88,45 - 88,55
TV - 71 - 12	106,10 - 106,70

SUSZEPTIBILITY DDH 71, TVERRFJELLET

Results in 10^{-3} cgs

40,00	0,2	67,50	1,2	84,95	0,0
40,10	0,3	67,80	0,2	85,10	0,0
40,50	0,2	68,10	1,1	85,50	0,0
40,60	0,3	68,50	0,6	85,80	0,0
40,90	0,1	68,70	0,4	86,15	0,1
42,00	0,1	69,10	0,2	86,85	0,2
43,00	0,1	69,50	0,3	87,40	0,0
44,00	0,0	69,95	0,6	87,85	0,2
45,00	0,0	70,10	0,2	87,90	0,1
46,00	0,3	70,40	24,5	88,30	1,8
47,00	0,0	70,70	1,2	88,60	2,3
48,00	0,0	70,80	27,5	89,10	1,2
49,00	0,0	71,10	32,5	89,50	0,7
50,00	0,0	71,50	0,3	89,85	2,0
51,00	0,0	71,80	0,4	90,15	6,6
52,00	0,0	72,25	0,2	90,80	3,0
53,00	0,0	72,75	0,4	91,10	0,0
54,00	0,0	73,15	0,4	91,65	5,3
55,00	0,0	73,80	0,4	92,20	0,3
55,90	1,3	74,20	0,1	92,85	0,0
56,10	1,0	74,50	0,0	93,05	0,2
56,30	0,9	75,50	0,0	93,60	0,1
56,90	0,4	76,10	0,0	94,40	0,1
57,40	0,2	76,40	1,4	94,80	0,0
58,00	0,2	76,75	0,3	95,35	0,3
59,00	0,2	77,10	0,8	95,95	0,1
59,50	0,3	77,50	0,0	96,15	1,3
60,00	0,0	77,95	0,0	96,50	0,1
61,00	0,0	78,15	0,0	96,85	2,6
62,00	0,0	78,60	0,0	97,30	1,2
63,00	0,0	79,15	1,1	97,80	1,1
64,00	0,0	79,80	0,1	98,20	1,5
64,75	0,7	80,20	0,1	98,50	0,6
64,90	1,9	80,55	0,1	98,80	1,2
65,15	2,3	80,95	0,1	99,15	1,1
65,30	3,6	81,25	0,1	99,65	7,4
65,65	1,0	81,75	0,1	100,10	0,1
65,84	4,8	82,20	0,0	100,65	1,6
65,95	0,9	82,85	0,1	101,10	0,0
66,15	5,0	83,40	0,0	101,95	0,0
66,30	1,3	83,75	0,0	102,20	0,2
66,50	1,0	83,85	1,5	106,75	0,1
66,75	4,3	83,95	0,4		
66,90	1,3	84,10	1,4		
67,15	0,8	84,40	1,1		
67,35	42,0	84,60	0,0		
67,40	9,0	84,75	0,9		

DIAMOND DRILL HOLE 75

Hjerkinn, east of main fault, 1966.
Location: Hjerkinnhøi, 1200 Ø, 70 N
Azimuth: 157° N
Inclination: 45°
Total length: 135,10 m

Description:

0,00 - 2,02: Phyllosilicate quartzite
(meta - qtz arenite)
grwhite with abundant green schlieren, distinct lenticular structure which in places changes into mm-banding, interlocking qtz crystals as lenses and schlieren in alternation with mm-thick schlieren or bands of sericite, biotite occurs as scattert slightly porphyritic crystals both within qtz and sericite, low-grade dissemination of tiny crystals of mt throughout.
Lamination: 34°.

2,02 - 3,35: milky qtz

3,35 - 5,45: Phyllosilicate-rich quartzite
(meta-qtz arenite)
similar: 0,00 - 2,02 m.

5,45 - 6,20: Quartzite
(meta-chert)
gr, dense , rare stringers of sericite which are accompanied by trains of granules of magnetite, the crystals often being idiomorphic; py forms the footwall of the layer, it also occurs as slices along the outer rim of the core, it here contains idioblasts of mt.

6,20 - 6,70: Garnet - biotite - sericite schist
(meta - pelite)
gr with faint greenish tint, laminated, interlocking qtz crystals as mm-thick bands in rhythmic alternation with mm-layers composed of sericite and biotite, the latter forming porphyroblasts or bundle-like crystal aggregats on average 0,15 m large and not oriented, garnet occurs as scattered round globular crystals max. 0,2 cm across; mt displays a low-grade dissemination.
Folded, lamination: 4°
Gradual contact

6,70 - 7,30: Chlorite-bear. garnet - pyrite - biotite - sericite schist/gneis
(meta - tuff with thin interlayers of exhalative pyrite and cherty magnetite)
chemical analysis 6,70 - 7,25 m
gngr with abundant brown rods and reddish brown spots, distinct layering, close alternation of phyllosilicate layers with bands composed of qtz and magnetite or qtz

and pyrite, sericite and chlorite always are fine - crystalline while biotite displays fascicular bundles or porphyroblasts of max. 0,15 cm size which tend to be not oriented, garnet seems to be invariably distributed, the crystals often with idiomorphic outlines on average 0,2 cm across; mt either forms trains of granules within qtz layers or it displays idioblasts of max. 0,2 cm size; pyrite typically is scattered within a qtz-matrix, it reaches 5 to 10 Vol-%.
Layering: 0° due to folding
Sharp contact

7,30 - 8,11: Garnet-bear. phyllosilicate-rich quartzite
(meta - qtz arenite)
similar: 0,00 - 2,02 m, but with garnet which joins laminae composed of phyllosilicates, it tends to be strongly squeezed and stretched.
Layering: 0° due to folding
Sharp contact

8,11 - 9,63: Quartzite
(meta-chert)
grwhite locally with faint bluish tint which is due to dusty mt, dense, extremely fine-grained, clusters and trains of granules of pyrite which amounts to 3 Vol-%, submacroscopic mt as low-grade dissemination only within the lower portion.
Knife sharp contact, 17°

9,63 - 13,10: Chlorite-bear. sericite schist
(meta - pelite with volcanic impurity)
gngr, homogenous, only locally with lenticular structure, rare porphyroblasts of garnet max. 0,5 cm across, mt forms a medium - grade dissemination the crystals being on average 0,05 cm large and randomly show idiomorphic outlines.
Schistosity: 15° - 0° due to folding.
10,33 - 10,48 and 11,40 - 11,82: infolded magnetite-bearing quartzite (meta - chert) which contains little pyrite forming trains of granules, repetition of chert is due to folding, the true thickness of the layers is about 5 cm.

13,10 - 15,87: Phyllosilicate-rich quartzite
(meta - qtz arenite)
similar: 0,00 - 2,02 m but strongly folded, no mt.

15,87 - 18,95: Milky qtz

18,95 - 20,35: Phyllosilicate-rich quartzite
(meta - qtz arenite)
similar: 0,00 - 2,02 m

20,35 - 20,63: Milky qtz

20,63 - 20,82: Phyllosilicate-rich quartzite
(meta - qtz arenite)
similar: 18,95 - 20,35 m

20,82 - 21,98: Milky qtz

21,98 - 22,34: High calcareous biotite-chlorite schist and phyllosilicate-rich quartzite disharmonically folded, strongly sheared and squeezed material partly looking mylonitic.

AA/C

22,34 - 23,15: Milky qtz

23,15 - 23,45: High calcareous biotite - chlorite schist
(mylonite with rock alteration)

23,45 - 23,88: Milky qtz

23,88 - 24,09: High calcareous biotite - chlorite schist
(strongly folded and partly sheared meta - tuff)
gn with brown schlieren and white to yellowishwhite clusters, heterogeneous schist, stressinduced chlorite - biotite lamination, carbonate forms discontinous trains of granules or displays clusters, py rarely occurs, it constitutes schlieren and small clusters.

24,09 - 24,28: Milky qtz

24,28 - 25,88: Slightly calcareous epidote - biotite - chlorite - qtz schist
(strongly folded and sheared tuffaceous meta-sediment)
gn, brown, grwhite, heterogeneous schist strongly disharmonically folded, qtz and/or epidote form big lenses or layers and irregular shaped aggregates which are surrounded by interleaved, parallel biotite and chlorite flakes; py sporadically is present.
Transition into following schist

25,88 - 28,49: Calcarous biotite - chlorite - qtz - fspar schist
(strongly folded and sheared meta-tuffite)
grwhite, yellowish (weathered carbonate),
gn, brown, heterogeneous schist strongly disharmonically folded and sheared, interlocking qtz and fspar crystals which may be accompanied by carbonate as disrupted, squeezed layers in irregular alternation with strongly folded laminae composed of biotite and chlorite; pyrite forms discontinuous trains of granules, nerve-like features and sometimes clusters, its amount being 2 Vol-%.
Gradually changing into following schist

chemical analysis
25,88 - 26,88 m
26,88 - 28,10 m

28,49 - 40,30: High calcareous epidote-bear. biotite- amphibolite - chlorite schist
(meta - mafic tuff) (very similar metatuffs from Nivå IV below ore-zone IV)
gn with abundant brown rods and spots and white stripes and lenses, heterogeneous, intensity of folding slowly decreases upsection, fine - fibrous chlorite and sericite are accompanied by slightly porphyritic crystals or crystall aggregates of biotite which tend to be not

oriented, they locally further carry porphyroblasts of amphibole, the acicular crystals max. 0,15 cm long, scattered and not oriented; carbonate forms lenses, schlieren and clusters often containing some crystals of biotite;

chemical analysis
29,00 - 29,20 m
30,82 - 30,91 m
32,61 - 32,84 m
33,85 - 34,11 m
34,83 - 34,93 m

py occurs with subordinate amount between 29,00 - 29,20 m 30,82 - 30,91 m, 32,61 - 32,84 m, 33,85 - 34,11 m, 34,83 - 34,93 m,it is associated with qtz and carbonate within discontinuous layers; ilmenite displays a low-grade dissemination composed of tiny xenomorphic crystals between 32,55 - 33,85 m.

34,28 - 34,93: phyllosilicate-rich qtz-fspar rock
(meta- arenite with volcanic impurity)
grwhite with greenishgr and brown schlieren, interlocking qtz and fspar crystals as schlieren and lenses alternate with schlieren and laminae composed of either biotite or biotite and chlorite or chlorite with sericite; pyrite is present as rare spots while ilmenite forms a low-grade dissemination.

Lamination, schistosity: folded, thus no even dip until 38,55 m, from there 32°- 35°.

40,30 - 50,12: a) calcareous to high calcareous epidote-bear. biotite - sericite - chlorite schist, b) biotite - sericite schist, c) qtz-rich biotite - chlorite - sericite schist
(meta - tuffs and tuffites and tuffaceous sediments)
distinct grwhite - gn striping, abundant brown rods and spots, laminated, in places banded, sporadically with lenticular structure, heteroblastic , slight textural and compositional changes. a. and c.: interlocking qtz, fspar and epidote crystals as laminae and lenses i close alternation with mm - thick, locally cm - thick, layers or schlieren composed of fine - crystalline chlorite or chlorite and sericite which are always accompanied by scattered porphyroblasts or bundles of biotite, the crystals or crystal aggregates on average 0,1 cm large, biotite locally also forms discrete layers or schlieren or trains of granules, carbonate is submicroscopic,it seems to be associated with the felsic compounds, only locally it displays discrete layers. c.: palegn with abundant brown spots, homogenous, porphyritic texture, medium-crystalline sericite forms a slight orientation of the rock, biotite occurs as scattered porphyroblasts which are on average 0,1 cm large and show no orientation. Several occurences of medium - to high-grade pyrite mineralization (exhalative sulphide) which occurs within qtz-carbonate layers: (40,69 m, 41,67 m, 43,98 - 44,06 m, 44,39 - 44,67 m, 45,91 - 45,99 m, 48,80 - 48,85 m, 49,24 - 49,44 m, 49,76 m, 50,11 m); po occurs as tiny streaks or stringers and sometimes within a web-like pattern: within:42,56 - 42,63 m several schlieren and tiny streaks (1 Vol-%); 43,86 - 43,98 m several high-grade layers and also tiny streaks (2 Vol-%); 44,12 - 44,39 m schlieren, streaks, nearly massive bands (10 Vol-%); 44,67 - 45,91 m schlieren

chemical analyses:
42-56 - 42,63 m
43,86 - 43,98 m
44.12 - 44,38 m
44,39 - 44,67 m
44,67 - 45,91 m

45,91 - 45,99 m
45,99 - 46,23 m
46,66 - 47,09 m
48.01 - 48,27 m
49,24 - 49,44 m
49,71 - 49,79 m

tiny streaks, web-like mineralization (3 Vol-%); 46,66 - 47,09 m schlieren, tiny streaks,web-like features (20 Vol-%).

Lamination: 38° changing to 42° downwards.
Gradual contact.

50,12 - 54,21

Epidote - plagioclase-rich schistose amphibolite
(meta-basalt flow)
gr with faint yellowish tint, fine-crystalline, often distinctly layered, here close alternation of bands and lenses of amphibole and laminae or schlieren mainly composed of carbonate which locally may contain biotite, carbonate also develops clusters and crosscutting veins; ilmenite forms scattered, round globular crystals with sutured boundaries, they are on average 0,12 cm across.
Banding: 46°.

52,91 - 52,93: high calcareous pyrrhotite-rich qtz rock
(meta - iron sulphide and hydrothermal silica and carbonate)
web-like or ribbon-shaped po mineralization within a groundmass composed of qtz and carbonate; sulphide estimates to 10 % by volume of the rock.
Sharp boundaries, 45°.

53,64 - 53,78: sericite - biotite-bear. qtz - fspar rock/schist
(qtz - keratophyr)
grwhite, fine - crystalline, tiny streaks and seams of sericite and biotite in alternation with layers of interlocking qtz and fspar crystals.
Knife sharp boundaries, 45°.

54,21 - 60,20:

Calcareous garnet - chlorite-bear. qtz - fspar - biotite - epidote gneiss/schist
(meta - mafic sediment)
yellowishgr with transition into darkgn or bluishgr, abundant brown stripes, distinctly banded, layers composed of epidote, plagioclase and chlorite which are interlaminated by schlieren of biotite alternate with discontinuous stripes and laminae of biotite and lenses or thin layers composed of carbonate; interlayers of carbonate and qtz containing py occur between 55,98 - 58,08 m and 59,51 - 60,20 m, py shows high concentrations between 56,32 - 56,76 m and 59,51 - 60,20 m.
Fault mylonite: 57,50 - 57,60 m, 57,67 - 57,86 m, 58,03 - 58,20 m, 60,06 - 60,20 m.
Lamination: 42°.
Fault contact.

chemical analysis
55,98 - 56,23 m
56,32 - 56,77 m
56,77 - 57,31 m
57,41 - 58,07 m
59,51 - 60,20 m

60,20 - 63,20:

Epidote- bear. biotite - sericite schist
(meta-pelite)
gr with faint greenish and yellowish tint (footwall),

abundant brown spots, porphyroblastic, gradual decrease in the amount of epidote upsection. Footwall: laminated, with local occurrence of flaser an lenticular structure, epidote and sericite as layers and schlieren in alternation with schlieren or laminae of biotite and lense-shaped aggregates of carbonate and qtz; hanging portion: typical biotite - sericite schist with crudely developed lamination or lenticular structure, biotite forms scattered porphyroblasts being not oriented, they sometimes form trains of flakes; py is enriched within cm-thick qtz-carbonate layers at: 61,43 - 61,48 m, 61,51 - 61,59 m, 61,67 - 61,80 m, 62,26 - 62,29 m, 62,51 - 62,59 m, 62,70 - 62,78 m, 62,81 - 63,10 m; quartzite (meta-chert) with rare spots of pyrite occurs between: 61,83 - 62,00 m and 62,78 - 62,80 m. Lamination: 45°. Gradual contact.

chemical analysis
61,43 - 62,00 m
62,23 - 62,32 m
62,49 - 62,64 m
62,70 - 63,11 m

63,20 - 65,17: Calcareous to high calcareous feldspar-rich biotite - epidote - chlorite schist/phyllite
(meta - mafic volcanic)
gr with faint yellowish tint, abundant brown schlieren, lenticular and flaser structure, locally with distinct lamination, chlorite and serisite which are accompanied by epidote constitute a fine-crystalline groundmass which is distinctly foliated, biotite always forms porphyroblasts on average 0,07 cm large, the flakes having a clear tendency to collect into schlieren and laminae, they often are accompanied by carbonate, qtz and fspar; po occurs as tiny streaks and schlieren and in places forms ribbon - shaped patterns, it estimates to 5 Vol-%. Sharp contact.

sample 75/1
65,88 - 66,00 m
thinsection

65,17 - 84,79: Calcareous to high calcareous feldspar-rich biotite - epidote - chlorite schist/phyllite
(meta - mafic volcanic)
palegn, abundant brown spots mainly concentrated within schlieren and lenticular bodies, indistinct banding while slight compositional and textural changes, locally with lenticular or flaser structure caused by deformation, fine - crystalline, interleaved chlorite associated by epidote, fspar and porphyritic biotite as lenses and bands of varying thickness in irregular alternation with grains of flakes of biotite which often are joined by epidote, qtz and carbonate and bands or lenses composed of carbonate and qtz.

74,62 - 74,71: calcareous quartzite (meta. hydrothermal silica and carbonate adjoined by sulphides)
grwhite, fine - crystalline, interlocking qtz and carbonate crystals as bands and lenses in alternation with mm - thick layers of surrounding schist; pyrite forms trains of granules within the quartzite, it grades 2 Vol-%.

81,12 - 81,18: high calcareous pyrite - qtz rock
(meta. exhalative iron-sulphide, silica and carbonate)
high - grade py mineralization within a granoblastic

carbonate - qtz groundmass.
Layering: 66,60 m 45°, 69,40 m 42°, 72,50 m 38°, 84,50 m 45°.
Transgoing into following schist.

84,79 - 93,05: Calcareous to high calcareous epidote - biotite - chlorite schist
(meta - mafic volcanic)
distinct striping due to marked colour changes: palegn, gr, yellowishgn and brown.
Laminated, compositional and textural banding, porphyroblastic, bands and schlieren composed of chlorite and epidote which normally carry some scattered blasts of biotite alternate with bands, schlieren and laminae composed of either qtz and epidote or epidote and carbonate or biotite, epidote and carbonate, biotite frequently also constitutes trains of flakes.
Banding: 50°- 45° throughout.

93,05 - 97,40: Calcareous to high calcareous biotite - epidote - chlorite schist/phyllite
(meta - mafic volcanic)
variably coloured: palegn, gn, yellowishgn, grwhite, brown. Laminated, banded, locally disharmonically folded, crenulation cleavages; sericite, chlorite and epidote as laminae and bands in alternation with epidote + carbonate + biotite and carbonate + epidote layers and schlieren, locally biotite is enriched forming a calcareous sericite - chlorite-bear. epidote - biotite schist; low-grade py within carbonate + qtz layer at 95,01 m; ilmenite as scattered globular crystals with sutured boundaries between 95,01 - 96,07 m.
Lamination: 50°.
Transgoing into following schist.

97,40 - 100,70: Calcareous to high calcareous epidote - biotite - chlorite schist/phyllite
(meta - mafic volcanic)
similar: 84,79 - 93,05 m
Transgoing into following rock

100,70 - 105,87: Calcareous biotite-bear. feldspar-rich epidote - chlorite schist/phyllite
(meta - mafic volcanic)
similar: 63,20 - 65,17 m
Lamination: 55°.

101,25 - 101,28: layers of nearly massive py.

105,87 - 106,56: Tectonic breccia

106,56 - 111,10: Slightly calcareous chlorite-bear. biotite - sericite schist.
(meta - pelite with volcanic related impurity)
gngr with abundant brown schlieren and rods, mostly with distinct lenticular structure, crude development of lamination, interlocking qtz crustals as lenses surrounded by fine - crystalline sericite which is

accompanied by scattered not oriented crystals or crystal aggregates of biotite, the latter often forms trains of flakes or discontinous laminae.
Lamination: 45°- 50°.
Sharp contact.

111,10 - 128,19: Calcarous to high calcareous feldspar-rich biotite - epidote - chlorite schist/phyllite
(meta - mafic volcanic)
similar: 63,20 - 65,17 m
Lamination/layering: 60° often disturbed. Strongly schistose (45°) between 126,65 - 128,19 m.

128,19 - 129,65: Phyllosilicate-bear. quartzite
(meta - arenite)
grwhite with gnbrown laminae, interlocking qtz-crystals as cm-thick bands in alteration with mm - layers composed of biotite + epidote + sericite and chlorite.
Layering tends to be deformed.
Sharp contact.

129,65 - 133,25: High calcareous amphibole - chlorite phyllite
(meta - mafic volcanic, tuff)
gn with faint bluish tint, laminated, in places homogeneous, fine-fibrous chlorite forms schlieren and layers which alternate with laminae and schlieren mainly composed of carbonate, the latter also but locally occurs as scattered hypidiomorphic crystals being 0,1 cm large, amphibole displays tiny acicular crystals (porphyroblasts) of max. 0,3 cm length which randomly are oriented, they sometimes show a tendency to collect within layers; ilmenite is present as tiny, round grobular crystals within the lower portion; py crystals hosted by granoblastic qtz and carbonate as mm-thick interlayers occur at: 129,65 - 129,69 m and 130,49 - 130,54 m.
Lamination: 50°.
Gradual contact.

133,25 - 135,10: Calcareous to high calcareous chlorite - amphibole schist
(meta - basalt flow)
darkgn, fine-in places medium-crystalline, crude development of layering/lamination due to carbonate which tends to form trains of granules, locally crosscutting qtz and carbonate veins; ilmenite occurs as round globular crystals with sutured boundaries throughout, its amount being 2 % by volume of the rock.
Lamination: 55°.

135,10 m End of DDH.

F.D. Priesemann
1986

CHEMICAL ANALYSIS

	% Cu:	% Zn:	% S:
6,70 - 7,25 m	0,04	0,02	4,63
25,88 - 26,88 m	0,04	0,03	2,01
26,88 - 28,10 m	0,03	0,03	0,34
29,00 - 29,20 m	0,03	0,02	2,77
30,32 - 30,91 m	0,03	0,02	0,31
32,61 - 32,84 m	0,03	0,02	0,81
33,85 - 34,11 m	0,02	0,01	8,39
34,83 - 34,93 m	0,04	0,02	0,28
42,56 - 42,63 m	0,04	0,03	4,18
43,86 - 43,98 m	0,03	0,04	5,79
44,12 - 44,67 m	0,03	0,04	14,3
44,67 - 45,91 m	0,03	0,04	4,70
45,91 - 45,99 m	0,04	0,03	18,7
45,99 - 46,23 m	0,04	0,07	4,46
46,66 - 47,09 m	0,04	0,03	12,7
48,01 - 48,27 m	0,03	0,03	7,31
49,24 - 49,44 m	0,03	0,02	12,8
49,71 - 49,79 m	0,05	0,02	8,23
55,98 - 56,23 m	0,04	0,03	2,74
56,32 - 56,77 m	0,03	0,02	15,9
56,77 - 57,31 m	0,04	0,02	7,44
57,41 - 58,07 m	0,05	0,03	5,38
59,51 - 60,20 m	0,03	0,02	19,3
61,43 - 62,00 m	0,03	0,03	20,7
62,23 - 62,32 m	0,03	0,02	17,8
62,49 - 62,64 m	0,03	0,03	13,4
62,70 - 63,11 m	0,03	0,02	19,6

SUSCEPTIBILITY: DDH 75.

m:		m:		m:	
0,50	0,9	37,00	0,0	57,60	0,8
1,00	1,3	38,00	0,0	58,50	0,3
1,50	0,0	39,00	0,1	59,00	0,0
2,00	0,8	40,00	0,1	59,50	0,0
3,50	1,3	41,00	0,1	59,60	0,2
4,00	1,0	42,00	0,0	59,90	0,1
5,00	0,8	42,60	0,1	60,50	0,0
5,50	4,1	43,00	0,0	61,00	0,0
6,00	3,2	43,50	0,3	61,35	0,1
7,50	2,9	43,70	0,2	61,50	0,1
7,85	1,1	43,90	0,2	61,70	0,1
8,20	4,2	44,00	0,3	61,90	0,0
8,50	0,9	44,20	0,1	62,15	0,2
8,90	1,1	44,40	0,2	62,25	0,2
9,00	0,4	44,50	0,1	62,40	0,3
9,50	1,6	44,70	0,1	62,55	0,2
10,00	3,4	45,00	0,1	62,65	0,0
10,45	14,0	45,50	0,1	62,75	0,1
11,00	7,4	45,70	0,1	63,00	0,3
11,50	6,4	45,80	0,1	63,30	0,0
12,00	4,0	46,00	0,1	64,00	0,3
12,50	3,2	46,20	0,1	65,00	0,2
13,00	2,6	46,50	0,0	66,00	0,1
13,50	0,0	46,70	0,0	67,00	0,0
14,00	0,0	46,85	0,1	68,00	0,1
14,50	0,0	47,00	0,2	69,00	0,0
15,00	0,2	47,50	0,1	70,00	0,0
15,50	0,5	47,80	0,1	71,00	0,0
15,80	1,7	48,05	0,2	72,00	0,0
18,00	0,0	48,25	0,1	73,00	0,0
19,00	1,6	48,50	0,0	74,00	0,1
20,00	1,3	48,81	0,1	75,00	0,0
21,00	0,0	49,00	0,0	76,00	0,1
22,00	0,0	49,30	0,0	78,00	0,1
23,00	0,0	49,50	0,1	79,00	0,1
24,00	0,1	49,75	0,2	80,00	0,1
25,00	0,1	50,00	0,1	81,00	0,0
26,00	0,0	51,00	0,1	81,15	0,0
27,00	0,1	52,00	0,1	82,00	0,1
28,00	0,2	53,00	0,2	83,00	0,3
29,00	0,1	54,00	0,1	84,00	0,1
30,00	0,2	55,00	0,0	85,00	0,1
31,00	0,1	55,50	0,1	86,00	0,1
32,00	0,1	55,90	0,3	87,00	0,1
32,50	0,2	56,00	0,2	88,00	0,0
33,00	0,1	56,20	0,2	89,00	0,0
33,70	0,0	56,30	0,2	90,00	0,0
33,90	0,1	56,50	0,3	91,00	0,1
34,00	0,1	56,70	0,6	92,00	0,1
34,90	0,0	57,00	0,3	93,00	0,2
35,00	0,0	57,25	0,2	94,00	0,2
36,00	0,1	57,35	0,3	95,50	0,3

m:

95,00	0,2
96,00	0,1
97,00	0,1
98,00	0,1
99,00	0,0
100,00	0,1
101,00	0,0
101,30	0,0
102,00	0,0
103,00	0,0
104,00	0,0
105,00	0,1
106,00	0,0
107,00	0,0
108,00	0,0
109,40	0,0
110,00	0,1
111,00	0,1
112,00	0,0
113,00	0,1
114,00	0,1
115,00	0,1
116,00	0,0
117,00	0,0
118,00	0,0
119,00	0,0
120,00	0,1
121,00	0,1
122,00	0,1
123,00	0,1
124,00	0,1
125,00	0,0
126,00	0,1
127,00	0,0
128,00	0,1
129,00	0,0
129,50	0,0
129,70	0,1
130,00	0,0
131,00	0,1
132,00	0,2
133,00	0,1
134,00	0,1
135,00	0,1

DIAMOND DRILL HOLE 76

Hjerkinn, east of main fault, 1966.
Location: Hjerkinnhø 2600 Ø - 200 S.
Azimuth: 157° N.
Inclination: 50°.
Total length: 62.90 m, 4.52 m overburden.

Description:

4.52 - 5.15 : Amphibolite
(meta - basalt flow)
gn with faint bluish tint, extremely fine - grained upwards grading into fine - grained to even medium - grained rock, massive, within the upper portion crude development of foliation, abundant crosscutting veinlets filled with qtz, ilmenite forms scattered crystals mostly being less 0.1 cm large, it reaches about 3 Vol.-%.

5.15 - 11.18 : Calcareous to high calcareous amphibole bear. chlorite schist/phyllite
(meta - mafic volcanic sediment often strongly altered)
gn with faint bluish tint, laminated, in places banded, fine - fibrous and sometimes medium - crystalline chlorite is nearly always accompanied by porphyroblasts (acicular crystals) of amphibole grading 0.15 cm to 1.0 cm in size which mostly are not oriented, qtz and carbonate form mm - thick interlayers or lenses, carbonate causes locally a spotted texture of the rock as it occurs as scattered xenomorphic crystals of 0.2 cm size, biotite sometimes is present, it either forms scattered flakes being slightly coarser than chlorite and aligned along the major foliation of the rock, or forms discrete max. 10 cm thick bands where it is accompanied by porphyroblasts of amphibole.
Lamination: 56°.
8.42 - 8.62 m: Slightly calcareous chlorite - biotite - amphibole gneiss (meta - mafic tuff)
gn with brown stripes, banded, cm - alternation of

C
(AA/C)

bands composed either of amphibole and chlorite or biotite or biotite and amphibole or amphibole or magnetite - qtz, the layers are always accentuated by sharp boundaries, amphibole tends to form coarse porphyroblasts mainly lens - like in shape which are oriented at random, biotite and chlorite are fine - crystalline and seem to be strongly parallel.

8.62 - 8.77 : Magnetite quartzite (meta - oxide facies meta - chert)
violet, sometimes white, interlocked fine - grained qtz crystals, mt is varyably distributed, it sometimes is absent while it elsewhere forms a high - grade dissemination.
Sharp boundaries.

11.18 - 12.73 : High calcareous chlorite - amphibole bear. biotite - schist
(meta - tuff)
brown with abundant white spots, crudely developed lamination, web - like texture, medium - crystalline biotite which is accompanied by fine - fibrous chlorite and acicular crystals of amphibole max. 0.15 cm large form the foliation of the rock, carbonate is abundant, it predominately occurs as scattered 0.1 cm large round crystals or crystal - aggregates which locally have been stretched forming schlieren and lenses which are conformable with the foliation of the rock.
Foliation: 58°.
Gradual footwall, sharp hanging wall.

C

12.73 - 19.54 : Plagioclase amphibolite
(meta - basalt flow)
gn rods within a pale - white matrix, medium - crystalline, porphyroblastic texture, lense - like crystals or crystal aggregates of amphibole on average 0.15 cm and max. 0.3 cm large may be parallel but mostly are not oriented, they lie within a matrix predominately composed of plagioclase; ilmenite occurs as scattered tiny crystals the amount being subordinate between 13.30 - 15.60 m, rare idiomorphic crystals of py are present between 13.27 - 13.30 m.

19.54 - 21.13 : Epidote - plagioclase amphibolite
(meta - basalt flow)
dark gn with yellowish white nerve - like features, coarse - crystalline, crude development of foliation, leopard texture, fascicular bundles and imperfect crystal aggregates of amphibole on average 0.5 cm in diameter are surrounded by fine - grained granoblastic plagioclase and epidote, the latter in places also occurs as schlieren which are conformable with a slight orientation of the amphibole multi - crystals blasts; rare spots of py.
Sharp contacts on either side.

21.13 - 24.00 : Plagioclase amphibolite / schistose plagioclase amphibolite
(meta - basalt flow)
gn, medium crystalline within hanging portion fine crystalline, massive or with crude development of mineral preferred orientation, between 21.90 - 22.90 m strongly schistose and folded, here single clusters of milky qtz, amphibole forms acicular crystals, fascicular bundles and imperfect radiating aggregates being surrounded by plagioclase which surely contains some epidote, the distinction between amphibole and plagioclase matrix starts to get lost which may be due to a slight alteration; ilmenite forms scattered tiny crystals between 23.40 - 24.00 m.
Sharp boundary.

24.00 - 24.53 : Garnet bear. magnetite - biotite - amphibole schist
(meta - oxide - silicate fazies BIF)
dark-brown with greenish tint, crude development of lamination, only in places distinctly layered, more or less homogenous distribution of flakes of biotite and acicular crystals of amphibole on average 0.2 cm long which show a pronounced mineral preferred orientation, garnet forms tiny idiomorphic (?) crystals which tend to produce trains of granules; mt forms a medium to high - grade dissemination, the crystals

being of mikroskopic size.
Sharp contact.

24.53 - 31.50 : Calcareous to high calcareous epidote - plagioclase - chlorite - amphibole rock / schist
(meta - basalt flow,looking extremely leached)
(similar BH 768^{g} 322.50 - 336.70 m and Svåni - Profile, here footwall basalt section)
gn lenses or stringers within a whitegn matrix, strongly schistose sections alternate with are as being not foliated, the former present a distinct lenticular to flaser structure while the latter is characterized by a nebulous leopard texture, amphibole forms scattered lense - like crystal aggregates of 0.25 to 0.4 cm size which are decomposed in varying degree into a fibrous mass of chlorite, the crystal aggregates are surrounded by a fine - crystalline matrix composed of carbonate, epidote, plagioclase and some chlorite, it sometimes carries flakes of biotite, the contacts between the coloured crystal aggregates and the light matrix are faded due to the intense alteration of the rock.
Sharp contact.

31.50 - 32.50 : Calcareous epidote - amphibole - chlorite schist
(meta - mafic volcanic sediment, near footwall very similar to banded amphibolite) (similar chlorite schists from DDH 51)
lightgn with abundant darkgn needles, laminated, porphyritic texture, fine - fibrous chlorite which is accompanied by randomly oriented acicular crystals of amphibole of average 0.25 cm needle length (footwall portion: lense - like amphibole porphyroblasts of max. 0.7 cm length) forms schlieren, lenses and layers being interlaminated by mm- thick lenses or discontinuous laminae composed of qtz and / or carbonate.
Lamination: 55°.
Gradual hanging wall.
31.96 - 32.03m: Amphibole bear. quartzite (meta - oxide - silicate BIF)
gr white, violet, greenish, cm - banded rock, alter-

nation of po bearing quartzite bands with layers composed of amphibolite and stripes of magnetite - quartzite, the stratigraphically upper part is composed of amphibole, qtz, magnetite and po, amphibole forms here 0.15 cm large acicular crystals which form a distinct foliation.
Both sides with sharp contacts.

32.50 - 37.32 : Plagioclase amphibolite
(meta - basalt flow)
lightgn, medium - crystalline, lense - like crystals or crystal aggregates of amphibole on average 0.2 cm large and often with no preferred orientation are surrounded by fine - grained granoblastic plagioclase which is suggested to carry qtz and epidote, qtz and carbonate sometimes constitute small veins or lense - like clusters, strong foliation is present between 34.62 - 35.43 m; band of massive py occurs at 34.61 m.
Gradual contact.

37.32 - 38.20 : Calcareous epidote - amphibole - chlorite schist
(meta - mafic volcanic sediment)
(similar chlorite schists from DDH 51)
similar: 31.50 - 32.50 m hanging portion.
Lamination: 54°.
Gradually changing into amphibolite.

38.20 - 55.69 : Amphibolite to schistose amphibolite
(meta - basalt flow)
gn, fine - grained with intersections being medium - crystalline, in general crudely developed foliation, closely packed lense - like crystals or crystal aggregates of amphibole surrounded by a sparce matrix composed of plagioclase which truely is accompanied by epidote, sometimes irregular qtz or carbonate veining; ilmenite occurs as round spots having sutured boundaries but also as idiomorphic crystals being homogeneously distributed between: 37.90 - 38.72 m, 40.10 - 41.10 m, 47.47 - 48.81 m, 48.30 - 49.79 m and 52.05 - 55.69 m, the amount in il. estimates to 2 Vol.-%.

41.67 - 41.69 : Massive pyrrhotite layer (meta-iron-sulphide enrichment formed by exhalation) (correlates with DDH 51 68.59 - 68.61 m)
massive pyrrhotite accompanied by fine - crystalline quartz , po is found also within the surrounding amphibolite close to the sulphide layer, it forms here minor 1.0 cm large platelets which are conformable to the schistosity of the rock.
Knife sharp boundaries, 57°.

49.79 - 49.92 : Quartzite (meta - chert)
whitegr, layered to laminated, dense, fine - crystalline quartzite is interstratified by schlieren and trains of granules of po and schlieren of chlorite; the sulphide content estimates to 3 Vol.-%.
Lamination: 52°.
Knife sharp boundaries.

50.60 - 51.27 : High calcareous sulphide rich quartzite (meta - iron - sulphide, amorphous silica and carbonate of exhalative origin)

chem. analysis 50.72-51.27m

quartz and carbonate form the matrix for pyrite and po (less abundant) which occur as scattered xenomorphic to idiomorphic crystals or form trains of granules or nearly massive layers, within footwall portion scattered needles of amphibole occur the crystals max. 0.3 cm long and not oriented; mt is present as tiny crystals at the hanging wall of the layer; sulphides amount to 30 Vol.-%.
Sharp contact.

52.44 - 52.58 : High calcareous sulphide - rich quartzite (meta - iron - sulphide, amorphous silica and carbonate from hydrothermal exhalation)

chem. analysis 52.48-52.58m

quartz and carbonate form the fine - crystalline granoblastic host for pyrite which constitutes schlieren and web - like features; mt forms a low - grade dissemination throughout the layer, it seems to be concentrated near the footwall; py amounts to 30 Vol.-%.
Knife sharp contacts, 49°.

55.69 - 55.96 : Slightly calcareous amphibole bear. epidote - qtz - fspar - chlorite schist

(meta - mafic volcanic sediment)
(similar chlorite pelites from DDH 51)
lightgn, laminated, layers composed of fine - fibrous chlorite which is accompanied by single acicular crystals of amphibole alternate with mm- thick lenses and laminae composed of carbonate and qtz; rare platelets of po being confromable with the foliation of the rock.
Lamination: 65°.
Gradual footwall, sharp hanging contact.

55.96 - 57.08 : High calcareous pyrite qtz rock

(meta - hydrothermal silica and iron - sulphides)
qtz and carbonate form the matrix for pyrite enrichments which occur as either low - grade disseminations or high - grade mineralizations, the latter form layers of dm thickness, py is concentrated within the lower halfpart of the section where it amounts to 20 Vol.-%, the upper part contains only subordinate py which is accompanied by po, the both sulphides form schlieren or locally low - grade disseminations, the rock contains several interlayers composed of chlorite which normally carries acicular crystals of amphibole but sometimes also biotite.
Gradual contact.

● hem. analysis 56.05-56.65m

57.08 - 57.95 : Calcareous to high calcareous amphibole bear. epidote - qtz - fspar - chlorite schist

(meta - tuffite)
gn with faint bluish tint, laminated or with lenticular structure, fine - fibrous chlorite as layers and schlieren in alternation with mm - thick discontinuous bands and lenses composed of carbonate, qtz and fspar, amphibole forms tiny but anyways porphyritic crystals, the needles being not oriented, they occur within the chlorite layers as well as in the light coloured bands, carbonate sporadically forms scattered isolated crystals of max. 0.2 cm size, they cause a spotted appearence of the rock.
Lamination: 55°.
Sharp contact.

57.95 - 58.18 : Amphibole bear. quartzite

(meta - chert)
palewhite with gn interlayers, laminated to banded, gradual changes between qtz dominated bands and laminae which often contain stringers of po and scattered acicular crystals of amphibole with thin bands and laminae predominated by amphibole, within the upper portion mt forms a medium - grade mineralization being characterized by a dissemination of idio- to hypidiomorphic crystals of 0.1 cm size; po amounts to 1 Vol.-% of the total.
Lamination: 55°.
Knife sharp contact.

58.18 - 59.00 : Calcareous amphibole bear. epidote - qtz - fspar - chlorite schist
(meta - mafic volcanic sediment) (similar chlorite schists from DDH 51).
Similar: 55.69 - 55.96 m, but without po.
Lamination: 56°.
Gradual contact.

59.00 - 62.34 : Schistose amphibolite, amphibolite
(meta - basalt flow)
gn, fine - crystalline, sections with mineral preferred orientation gradually pass into unfoliated rock, rich in carbonate and qtz veining; ilmenite occurs as scattered spots max. 0.15 cm across between 59.00 - 60.50 m, it amounts to lesser 2 Vol.-%.
62.07 - 62.17 : Sulphide - rich quartzite (meta - sulphide fazies chert)
chem. analysis 62.07 - 62.17m
dense fine - grained quartzite with high - grade py - po mineralization, rare crystals of amphibole which are aligned to the crudely developed banding of the rock.
Sharp contact.

62.34 - 62.51 : High calcareous amphibole bear. qtz - chlorite - biotite schist
(meta - cherty tuff) (similar: 31.96 - 32.03 m)
brown and blackishgn, nonrhythmic alternation of layers

composed of biotite - amphibole and carbonate and bands predominated by fine - fibrous chlorite, carbonate tends to from round globular crystals max. 0.1 cm across which are variably distributed, they are mainly enriched within the biotite - amphibole layers; po occurs as fine platelets throughout, it is enriched within 62.27 - 62.28 m where it displays a massive sulphide layer.
Banding: 57°.
Sharp contact.

62.51 - 62.90 : Biotite - amphibolite
(meta - basalt flow)
dark-browngn, fine - crystalline, homogeneous distribution of biotite, tiny veins of carbonate, in places spotted carbonate.

62.90 m end of DDH

F.D.Priesemann, 1986.

Suszeptibility: DDH 76

4.70	0.0	42.00	0.0
6.00	0.0	42.60	0.3
7.00	0.0	42.70	0.7
8.00	0.1	42.80	0.2
8.55	3.8	43.00	0.0
8.65	31.0	44.00	0.0
8.90	0.0	45.00	0.0
9.00	0.0	46.00	0.0
10.00	0.1	47.00	0.0
11.00	0.0	48.00	0.0
12.00	0.0	49.00	0.0
13.00	0.0	50.00	0.0
14.00	0.0	51.00	0.1
15.00	0.0	51.10	0.2
16.00	0.0	51.50	0.0
17.00	0.0	51.75	-0.1
18.00	0.0	51.00	-0.1
19.00	0.1	51.40	0.0
20.00	0.1	52.00	0.1
21.00	0.1	52.45	0.3
22.00	0.1	52.50	0.5
23.00	0.1	52.60	0.0
23.50	0.0	52.98	0.1
23.90	0.0	53.00	0.1
24.10	0.1	54.00	0.0
24.20	16.0	55.00	-0.1
24.30	2.0	55.80	0.0
24.70	0.0	56.00	0.0
25.00	0.0	56.10	0.0
26.00	0.0	56.10	0.1
27.00	0.0	56.30	0.1
28.00	0.0	56.40	0.0
29.00	0.0	56.70	-0.1
30.00	0.0	56.90	0.0
31.00	0.0	57.10	0.0
31.90	0.0	57.30	0.0
32.00	7.0	57.90	0.0
32.10	0.1	58.00	0.5
33.00	0.0	58.10	17.0
33.80	0.0	58.30	0.0
34.00	0.0	59.00	0.0
35.00	0.0	60.00	0.0
36.00	0.0	61.00	0.0
37.00	0.0	61.10	0.2
38.00	0.0	61.27	0.4
39.00	0.0	61.50	1.2
40.00	0.0	61.60	0.1
41.00	0.0	61.90	0.1

Chemical analysis:

	%Cu	%Zn	% S
50.72 - 51.27 m	0.05	0.04	24.1
52.48 - 52.58 m	0.03	0.01	23.9
56.05 - 56.65 m	0.03	0.02	26.1
62.07 - 52.17 m	0.03	0.01	30.2

DIAMOND DRILL HOLE 76

Hjerkinn, east of main fault, 1966.
Location: Hjerkinnhø 2600 Ø - 200 S.
Azimuth: 157° N.
Inclination: 50°.
Total length: 62.90 m, 4.52 m overburden.

Description:

4.52 - 5.15 : Amphibolite
(meta - basalt flow)
gn with faint bluish tint, extremely fine - grained upwards grading into fine - grained to even medium - grained rock, massive, within the upper portion crude development of foliation, abundant crosscutting veinlets filled with qtz, ilmenite forms scattered crystals mostly being less 0.1 cm large, it reaches about 3 Vol.-%.

5.15 - 11.18 : Calcareous to high calcareous amphibole bear. chlorite schist/phyllite
(meta - mafic volcanic sediment often strongly altered)
C
(AA/C)
gn with faint bluish tint, laminated, in places banded, fine - fibrous and sometimes medium - crystalline chlorite is nearly always accompanied by porphyroblasts (acicular crystals) of amphibole grading 0.15 cm to 1.0 cm in size which mostly are not oriented, qtz and carbonate form mm - thick interlayers or lenses, carbonate causes locally a spotted texture of the rock as it occurs as scattered xenomorphic crystals of 0.2 cm size, biotite sometimes is present, it either forms scattered flakes being slightly coarser than chlorite and aligned along the major foliation of the rock, or forms discrete max. 10 cm thick bands where it is accompanied by porphyroblasts of amphibole.
Lamination: 56°.
8.42 - 8.62 m: Slightly calcareous chlorite - biotite - amphibole gneiss (meta - mafic tuff)
gn with brown stripes, banded, cm - alternation of

bands composed either of amphibole and chlorite or biotite or biotite and amphibole or amphibole or magnetite - qtz, the layers are always accentuated by sharp boundaries, amphibole tends to form coarse porphyroblasts mainly lens - like in shape which are oriented at random, biotite and chlorite are fine - crystalline and seem to be strongly parallel.

8.62 - 8.77 : Magnetite quartzite (meta - oxide facies meta - chert)
violet, sometimes white, interlocked fine - grained qtz crystals, mt is varyably distributed, it sometimes is absent while it elsewhere forms a high - grade dissemination.
Sharp boundaries.

11.18 - 12.73 : High calcareous chlorite - amphibole bear. biotite - schist
(meta - tuff)
brown with abundant white spots, crudely developed lamination, web - like texture, medium - crystalline biotite which is accompanied by fine - fibrous chlorite and acicular crystals of amphibole max. 0.15 cm large form the foliation of the rock, carbonate is abundant, it predominately occurs as scattered 0.1 cm large round crystals or crystal - aggregates which locally have been stretched forming schlieren and lenses which are conformable with the foliation of the rock.
Foliation: 58°.
Gradual footwall, sharp hanging wall.

C

12.73 - 19.54 : Plagioclase amphibolite
(meta - basalt flow)
gn rods within a pale - white matrix, medium - crystalline, porphyroblastic texture, lense - like crystals or crystal aggregates of amphibole on average 0.15 cm and max. 0.3 cm large may be parallel but mostly are not oriented, they lie within a matrix predominately composed of plagioclase; ilmenite occurs as scattered tiny crystals the amount being subordinate between 13.30 - 15.60 m; rare idiomorphic crystals of py are present between 13.27 - 13.30 m.

19.54 - 21.13 : Epidote - plagioclase amphibolite
(meta - basalt flow)
dark gn with yellowish white nerve - like features, coarse - crystalline, crude development of foliation, leopard texture, fascicular bundles and imperfect crystal aggregates of amphibole on average 0.5 cm in diameter are surrounded by fine - grained granoblastic plagioclase and epidote, the latter in places also occurs as schlieren which are conformable with a slight orientation of the amphibole multi - crystals blasts; rare spots of py.
Sharp contacts on either side.

21.13 - 24.00 : Plagioclase amphibolite / schistose plagioclase amphibolite
(meta - basalt flow)
gn, medium crystalline within hanging portion fine crystalline, massive or with crude development of mineral preferred orientation, between 21.90 - 22.90 m strongly schistose and folded, here single clusters of milky qtz, amphibole forms acicular crystals, fascicular bundles and imperfect radiating aggregates being surrounded by plagioclase which surely contains some epidote, the distinction between amphibole and plagioclase matrix starts to get lost which may be due to a slight alteration; ilmenite forms scattered tiny crystals between 23.40 - 24.00 m.
Sharp boundary.

24.00 - 24.53 : Garnet bear. magnetite - biotite - amphibole schist
(meta - oxide - silicate fazies BIF)
dark-brown with greenish tint, crude development of lamination, only in places distinctly layered, more or less homogenous distribution of flakes of biotite and acicular crystals of amphibole on average 0.2 cm long which show a pronounced mineral preferred orientation, garnet forms tiny idiomorphic (?) crystals which tend to produce trains of granules; mt forms a medium to high - grade dissemination, the crystals

being of mikroskopic size.
Sharp contact.

24.53 - 31.50 : Calcareous to high calcareous epidote - plagioclase - chlorite - amphibole rock / schist
(meta - basalt flow,looking extremely leached)
(similar BH 768^{g} 322.50 - 336.70 m and Svåni - Profile, here footwall basalt section)
gn lenses or stringers within a whitegn matrix, strongly schistose sections alternate with are as being not foliated, the former present a distinct lenticular to flaser structure while the latter is characterized by a nebulous leopard texture, amphibole forms scattered lense - like crystal aggregates of 0.25 to 0.4 cm size which are decomposed in varying degree into a fibrous mass of chlorite, the crystal aggregates are surrounded by a fine - crystalline matrix composed of carbonate, epidote, plagioclase and some chlorite, it sometimes carries flakes of biotite, the contacts between the coloured crystal aggregates and the light matrix are faded due to the intense alteration of the rock.
Sharp contact.

31.50 - 32.50 : Calcareous epidote - amphibole - chlorite schist
(meta - mafic volcanic sediment, near footwall very similar to banded amphibolite) (similar chlorite schists from DDH 51)
lightgn with abundant darkgn needles, laminated, porphyritic texture, fine - fibrous chlorite which is accompanied by randomly oriented acicular crystals of amphibole of average 0.25 cm needle length (footwall portion: lense - like amphibole porphyroblasts of max. 0.7 cm length) forms schlieren, lenses and layers being interlaminated by mm- thick lenses or discontinuous laminae composed of qtz and / or carbonate.
Lamination: 55^{o}.
Gradual hanging wall.
31.96 - 32.03m: Amphibole bear. quartzite (meta - oxide - silicate BIF)
gr white, violet, greenish, cm - banded rock, alter-

nation of po bearing quartzite bands with layers composed of amphibolite and stripes of magnetite - quartzite, the stratigraphically upper part is composed of amphibole, qtz, magnetite and po, amphibole forms here 0.15 cm large acicular crystals which form a distinct foliation.
Both sides with sharp contacts.

32.50 - 37.32 : Plagioclase amphibolite
(meta - basalt flow)
lightgn, medium - crystalline, lense - like crystals or crystal aggregates of amphibole on average 0.2 cm large and often with no preferred orientation are surrounded by fine - grained granoblastic plagioclase which is suggested to carry qtz and epidote, qtz and carbonate sometimes constitute small veins or lense - like clusters, strong foliation is present between 34.62 - 35.43 m; band of massive py occurs at 34.61 m.
Gradual contact.

37.32 - 38.20 : Calcareous epidote - amphibole - chlorite schist
(meta - mafic volcanic sediment)
(similar chlorite schists from DDH 51)
similar: 31.50 - 32.50 m hanging portion.
Lamination: 54°.
Gradually changing into amphibolite.

38.20 - 55.69 : Amphibolite to schistose amphibolite
(meta - basalt flow)
gn, fine - grained with intersections being medium - crystalline, in general crudely developed foliation, closely packed lense - like crystals or crystal aggregates of amphibole surrounded by a sparce matrix composed of plagioclase which truely is accompanied by epidote, sometimes irregular qtz or carbonate veining; ilmenite occurs as round spots having sutured boundaries but also as idiomorphic crystals being homogeneously distributed between: 37.90 - 38.72 m, 40.10 - 41.10 m, 47.47 - 48.81 m, 48.30 - 49.79 m and 52.05 - 55.69 m, the amount in il. estimates to 2 Vol.-%.

41.67 - 41.69 : Massive pyrrhotite layer (meta-iron-sulphide enrichment formed by exhalation) (correlates with DDH 51 68.59 - 68.61 m)
massive pyrrhotite accompanied by fine - crystalline quartz , po is found also within the surrounding amphibolite close to the sulphide layer, it forms here minor 1.0 cm large platelets which are conformable to the schistosity of the rock.
Knife sharp boundaries, 57°.

49.79 - 49.92 : Quartzite (meta - chert)
whitegr, layered to laminated, dense, fine - crystalline quartzite is interstratified by schlieren and trains of granules of po and schlieren of chlorite; the sulphide content estimates to 3 Vol.-%.
Lamination: 52°.
Knife sharp boundaries.

50.60 - 51.27 : High calcareous sulphide rich quartzite (meta - iron - sulphide, amorphous silica and carbonate of exhalative origin)

chem. analysis 50.72-51.27m

quartz and carbonate form the matrix for pyrite and po (less abundant) which occur as scattered xenomorphic to idiomorphic crystals or form trains of granules or nearly massive layers, within footwall portion scattered needles of amphibole occur the crystals max. 0.3 cm long and not oriented; mt is present as tiny crystals at the hanging wall of the layer; sulphides amount to 30 Vol.-%.
Sharp contact.

52.44 - 52.58 : High calcareous sulphide - rich quartzite (meta - iron - sulphide, amorphous silica and carbonate from hydrothermal exhalation)

chem. analysis 52.48-52.58m

quartz and carbonate form the fine - crystalline granoblastic host for pyrite which constitutes schlieren and web - like features; mt forms a low - grade dissemination throughout the layer, it seems to be concentrated near the footwall; py amounts to 30 Vol.-%.

Knife sharp contacts, 49°.

55.69 - 55.96 : Slightly calcareous amphibole bear. epidote - qtz - fspar - chlorite schist

(meta - mafic volcanic sediment)
(similar chlorite pelites from DDH 51)
lightgn, laminated, layers composed of fine - fibrous chlorite which is accompanied by single acicular crystals of amphibole alternate with mm- thick lenses and laminae composed of carbonate and qtz; rare platelets of po being confromable with the foliation of the rock.
Lamination: 65°.
Gradual footwall, sharp hanging contact.

55.96 - 57.08 : High calcareous pyrite qtz rock

(meta - hydrothermal silica and iron - sulphides)
qtz and carbonate form the matrix for pyrite enrichments which occur as either low - grade disseminations or high - grade mineralizations, the latter form layers of dm thickness, py is concentrated within the lower halfpart of the section where it amounts to 20 Vol.-%, the upper part contains only subordinate py which is accompanied by po, the both sulphides form schlieren or locally low - grade disseminations, the rock contains several interlayers composed of chlorite which normally carries acicular crystals of amphibole but sometimes also biotite.
Gradual contact.

chem. analysis 56.05-56.65m

57.08 - 57.95 : Calcareous to high calcareous amphibole bear. epidote - qtz - fspar - chlorite schist

(meta - tuffite)
gn with faint bluish tint, laminated or with lenticular structure, fine - fibrous chlorite as layers and schlieren in alternation with mm - thick discontinuous bands and lenses composed of carbonate, qtz and fspar, amphibole forms tiny but anyways porphyritic crystals, the needles being not oriented, they occur within the chlorite layers as well as in the light coloured bands, carbonate sporadically forms scattered isolated crystals of max. 0.2 cm size, they cause a spotted appearence of the rock.
Lamination: 55°.
Sharp contact.

57.95 - 58.18 : Amphibole bear. quartzite

(meta - chert)
palewhite with gn interlayers, laminated to banded, gradual changes between qtz dominated bands and laminae which often contain stringers of po and scattered acicular crystals of amphibole with thin bands and laminae predominated by amphibole, within the upper portion mt forms a medium - grade mineralization being characterized by a dissemination of idio- to hypidiomorphic crystals of 0.1 cm size; po amounts to 1 Vol.-% of the total.
Lamination: 55°.
Knife sharp contact.

58.18 - 59.00 : Calcareous amphibole bear. epidote - qtz - fspar - chlorite schist
(meta - mafic volcanic sediment) (similar chlorite schists from DDH 51).
Similar: 55.69 - 55.96 m, but without po.
Lamination: 56°.
Gradual contact.

59.00 - 62.34 : Schistose amphibolite, amphibolite
(meta - basalt flow)
gn, fine - crystalline, sections with mineral preferred orientation gradually pass into unfoliated rock, rich in carbonate and qtz veining; ilmenite occurs as scattered spots max. 0.15 cm across between 59.00 - 60.50 m, it amounts to lesser 2 Vol.-%.
62.07 - 62.17 : Sulphide - rich quartzite (meta - sulphide fazies chert)
chem. analysis 62.07 - 62.17m
dense fine - grained quartzite with high - grade py - po mineralization, rare crystals of amphibole which are aligned to the crudely developed banding of the rock.
Sharp contact.

62.34 - 62.51 : High calcareous amphibole bear. qtz - chlorite - biotite schist
(meta - cherty tuff) (similar: 31.96 - 32.03 m)
brown and blackishgn, nonrhythmic alternation of layers

composed of biotite - amphibole and carbonate and bands predominated by fine - fibrous chlorite, carbonate tends to from round globular crystals max. 0.1 cm across which are variably distributed, they are mainly enriched within the biotite - amphibole layers; po occurs as fine platelets throughout, it is enriched within 62.27 - 62.28 m where it displays a massive sulphide layer.
Banding: 57°.
Sharp contact.

62.51 - 62.90 : Biotite - amphibolite
(meta - basalt flow)
dark-browngn, fine - crystalline, homogeneous distribution of biotite, tiny veins of carbonate, in places spotted carbonate.

62.90 m end of DDH

F.D.Priesemann, 1986.

Suszeptibility: DDH 76

4.70	0.0	42.00	0.0
6.00	0.0	42.60	0.3
7.00	0.0	42.70	0.7
8.00	0.1	42.80	0.2
8.55	3.8	43.00	0.0
8.65	31.0	44.00	0.0
8.90	0.0	45.00	0.0
9.00	0.0	46.00	0.0
10.00	0.1	47.00	0.0
11.00	0.0	48.00	0.0
12.00	0.0	49.00	0.0
13.00	0.0	50.00	0.0
14.00	0.0	51.00	0.1
15.00	0.0	51.10	0.2
16.00	0.0	51.50	0.0
17.00	0.0	51.75	-0.1
18.00	0.0	51.00	-0.1
19.00	0.1	51.40	0.0
20.00	0.1	52.00	0.1
21.00	0.1	52.45	0.3
22.00	0.1	52.50	0.5
23.00	0.1	52.60	0.0
23.50	0.0	52.98	0.1
23.90	0.0	53.00	0.1
24.10	0.1	54.00	0.0
24.20	16.0	55.00	-0.1
24.30	2.0	55.80	0.0
24.70	0.0	56.00	0.0
25.00	0.0	56.10	0.0
26.00	0.0	56.10	0.1
27.00	0.0	56.30	0.1
28.00	0.0	56.40	0.0
29.00	0.0	56.70	-0.1
30.00	0.0	56.90	0.0
31.00	0.0	57.10	0.0
31.90	0.0	57.30	0.0
32.00	7.0	57.90	0.0
32.10	0.1	58.00	0.5
33.00	0.0	58.10	17.0
33.80	0.0	58.30	0.0
34.00	0.0	59.00	0.0
35.00	0.0	60.00	0.0
36.00	0.0	61.00	0.0
37.00	0.0	61.10	0.2
38.00	0.0	61.27	0.4
39.00	0.0	61.50	1.2
40.00	0.0	61.60	0.1
41.00	0.0	61.90	0.1

Chemical analysis:

	%Cu	%Zn	% S
50.72 - 51.27 m	0.05	0.04	24.1
52.48 - 52.58 m	0.03	0.01	23.9
56.05 - 56.65 m	0.03	0.02	26.1
62.07 - 52.17 m	0.03	0.01	30.2

DIAMOND DRILL HOLE 685 D

Hjerkinn, east of main fault, 1981.
Location : X = - 16, Y = 1082, Z = 1019 (1040 N - 600 V).
Azimuth : 16^g (mine grid).
Inclination : 52^o S.
Total length : 610.65 m.

Description:

0.00 - 64.50 : Calcareous to high calcareous biotite - epidote - (sericite - chlorite) - chlorite - sericite schist
(meta - pelitic sediment composed of volcanic related and terrigeneous clastic material; supp. distal facies of meta - lahar (see also DDH 768 G 52.15 - 111.20 m and DDH 769 G 57.50 - 218.18 m, correlates with section 0.00 - 91.25 m of DDH 2000 D)
variation in the amount of qtz may result in phyllosilicate - rich quartzites, carbonate is variably distributed, gradually changes in the amount of sericite and chlorite.
Greenishgr, with abundant yellowishwhite lenses and layers, distinct lenticular structure sometimes lamination or banding, interlocking qtz, fspar and carbonate crystals as lenses or bands in alternation with cm - thick bands or schlieren composed of sericite, chlorite, epidote and biotite, the latter tend to form scattered porphyroblasts mainly not aligned with the foliation of the rock; abundant round - globular spots of mt between: 56.50 - 57.10 m, 60.40 - 61.65 m; tiny scattered crystals of ilmenite between: 33.80 - 34.50 m, 41.40 - 42.00 m, 46.20 - 47.30 m, 50.70 - 56.40 m; some spots of py: 39.00 - 39.20 m (here also spots of mt), 39.30 - 57.10 m,
faults and fault mylonite : 20.00 - 21.40 m,
always distinct crenulation cleavage, F_2 - schistosity between 40^o and 50^o.
Gradual contact.

Sample:
685D/5 : 57.80 m,
685D/6 : 34.40 m,
685D/7 : 27.10 m.
Thinsection

64.50 - 70.90 : Calcareous biotite bear. epidote - chlorite - sericite schist
(meta - pelitic sediment composed of volcanic related and terrigeneous clastic material; supp. distal facies of meta - lahar)
darkgr with green tint, strongly foliated, irregular alternation of lenses, laminae and bands composed of either qtz, fspar and carbonate or carbonate and bands or laminae made by phyllosilicates, biotite in places occurs as randomly oriented porphyroblasts; finest dissemination of mt from footwall until 70.10 m.

70.90 - 77.04 : Epidote bear. phyllosilicate - fspar - qtz schist
(meta - arkosic sandstone supp. with minor volcanic impurity)
milkywhite with gr to greenishgr schlieren and laminae, lenticular structure and lamination, interlocking qtz, fspar and locally epidote crystals as lenses and thin bands in close alternation with schlieren or laminae composed of sericite and subordinate biotite; sparce scattered idioblasts of py the crystals max. 0.5 cm across at: 74.45 - 76.00 m; low - grade dissemination of mt - crystals (0.05 - 0.15 cm Ø) throughout, the crystals getting more obvious within the upper part of the section.
Schistosity: 60°.
Gradual hanging wall and sharp footwall.

77.04 - 79.60 : Calcareous chlorite schist
(supp. consolidated fault zone)
gn, homogeneous crudely developed lamination between carbonate seams and chlorite - bands, within footwall slowly decreasing qtz - fspar amount and transgoing into pyllosilicate - rich fspar - qtz schist (s.b.); sporadically round globular porphyroblasts of mt: 78.85 m, 79.06 - 79.14 m; sparce, scattered idioblasts of py between: 77.30 - 77.50 m.
Schistosity : 56°.

79.60 - 91.15: Phyllosilicate - rich fspar - qtz schist/gneiss

(meta - arkosic sandstone)
grwhite with darkgr bands and schlieren, banded or with pseudoconglomerate structure, rhythmic alternation of cm - thick bands composed of qtz and fspar and little biotite and sericite and mm - thick layers or schlieren made by phyllosilicates.

Sample:
685D/4, 83.30m
Thinsection

Banding: 52°.
Sharp boundary.

91.15 - 131.20 : Phyllosilicate - rich quartzite
(meta - qtz - arenite)
gr, distinctly banded in places with pseudoconglomerate structure which originates from two - fold deformation, rhythmic alternation of mm - thick layers or schlieren of sericite which carries little amounts of biotite and cm - thick bands of quartz which contain subordinate sericite; locally slightly epidote-and chlorite-bear. (121.00 - 122.70 m) ; scattered round globular porphyroblasts of mt at the following positions: 120.90-121.00m, 126.25 m, 126.44 m, 126.70 m, 127.02 - 127.64 m, 128.40 - 128.75 m, 130.70 - 131.20 m.
Banding: 45 - 50°.
Gradual contact.

131.20 - 135.50 : Slightly calcareous biotite - bear. qtz - sericite schist
(meta - qtz pelite or siltstone, transitional interlayer between quartzite and pelite)
gr, fine - crystalline, lenticular structure and locally with crudely developed lamination, close alternation of phyllosilicate layers and schlieren with lenses and bands composed of qtz; scattered xenomorphic poikiloblasts of mt between: 131.20 - 133.20 m and 135.40 - 135.50 m.
Lamination/schistosity: 60°.
Gradual contact.

135.50 - 137.40 : Slightly calcareous biotite - sericite schist
(meta - pelite)
gr with abundant tiny brown rods, banded but in places

with crudely developed lenticular structure, interlocking qtz crystals as tiny schlieren or lenses in close alternation with phyllosilicate bands and schlieren, biotite forms slightly porphyritic crystals which tend to be aligned with the major plane of foliation of the rock, several 0.5 cm thick bands and flat lenses composed of carbonate and qtz; from 137.00 m upsection dusty mt which increases in its amounts towards the footwall of the layer.
Banding: 60°.
Gradual contact.
136.38 - 136.44 m: Magnetite - quartzite (meta - chert) crude development of banding due to variation in the amount of dusty mt.

137.40 - 141.00 : Sericite - rich magnetite quartzite
(meta - chert with pelitic sedimentary impurity)
violet, fine - crystalline, laminated and banded, rhythmic alternation of mm - to cm - thick bands composed of either qtz or sericite, qtz and magnetite or sporadically of carbonate, locally scattered, tiny flakes of biotite which tend to be not oriented.
Lamination: 62°.
Sharp contact.

141.00 - 141.09 : Quartzite
(meta - chert)
gr, dense, crude development of layering due to sparce trains of granules of mt and py, hanging and footwall marked by cm - thick layers of medium - crystalline biotite - sericite schist which carries scattered idioblasts of mt and py, the latter forms trains of granules, schlieren or nearly cm - thick bands, it amounts to 3 Vol.-%.
Sharp contact.

Chemical analysis 141.00 - 141.09m.

141.09 - 141.32 : Calcareous biotite bear. qtz - sericite schist
(meta - qtz-pelite or siltstone)
similar: 144.10 - 146.13 m.

141.32 - 144.10 : Slightly calcareous biotite - sericite schist
(meta - pelite with minor volcanic impurity)
gr with brown rods several white bands and lenses, textural and compositional banding, irregular alternation of medium - crystalline biotite - sericite schist locally carring garnets and calcareous biotite bear. qtz - sericite schist which is fine - crystalline and shows a distinct lamination, interbeds of quartz which is remobelized; random occurrence of py; rare tiny spots of mt.
Banding : 60°.

144.10 - 146.13 : Calcareous fspar - bear. qtz - biotite - sericite schist
(meta - qtz-pelite or siltstone with minor volcanic impurity)
gr, fine - crystalline, homogeneous with crude development of layering due to carbonate which has the tendency to collect within tiny bands of flat lenses; tiny rare spots of mt throughout.
Schistosity : 60°.

146.13 - 146.90 : Calcareous biotite - sericite schist
(meta - pelite or tuffaceous pelite)
similar : 153.30 - 166.30 m.
Gradual contact.
146.77 - 146.84 m : close together bands of dense quartzite (supp. meta - cherts).

146.90 - 148.05 : Slightly calcareous biotite bear. qtz - sericite schist
Sample 685D/8 whole rock analysis.
chemical analysis 147.58 - 147.63m.
(meta - qtz-pelite or siltstone with minor volcanic impurity)
similar : 148.43 - 150.39 m, crystals of py which form discontinuous trains of granules between : 147.58 - 147.63 m.
Lamination : 60°.

148.05 - 148.13 : Quartzite
(meta - chert)

grwhite, dense, contact with surrounding rocks over 2 cm thick zones of coarse - crystalline garnet - biotite - sericite schist (altered) which in the case of the lying zone carries big clusters of py. Gradual contact.

148.13 - 148.28 : Garnet bear. biotite - qtz - sericite schist
(meta - qtz-pelite)
gr with abundant brown rods, fine - crystalline with scattered, randomly oriented porphyroblasts of biotite and subidiomorphic crystals of garnet (0.15 cm across), lenticular structure, interlocking qtz crystals as lenses in alternation with schlieren or layers composed of sericite, biotite and garnet; within hanging portion several trains of granules of py.
Schistosity: 65°.
Sharp contact.

chemical analysis 148.13 - 148.28m.

148.28 - 148.43 : Sericite bear. quartzite
(meta - qtz arenite)
gr, lenticular structure and lamination, close alternation of cm - thick layers of qtz and schlieren or laminae composed of sericite.
Lamination: 70°.
Gradual contact.

148.43 - 150.39 : Slightly calcareous biotite bear. qtz - sericite schist
(meta - qtz-pelite or siltstone with volcanic impurity, interlayers of tuffite)
gr, fine - crystalline, cm - banding with transition into laminated rock, interlocking qtz crystals sporadically being accompanied by carbonate as tiny layers in rhythmic alternation with either laminae or schlieren or bands dominated by sericite which sometimes carry scattered, strongly parallel crystals of biotite and sporadically idioblasts of garnet, locally interlayers with gradual boundaries of garnet - biotite - sericite schist (al - rich meta - sediments supp. with

Sample 685D/8 whole rock analysis see too: section 146.90-148.05m.

volcanic impurity) which show porphyroblasts of biotite (cross - biotite) and homogeneously distributed sudidiomorphic crystals of garnet (max. 0.4 cm in diameter); scattered round globular blasts of mt.

chemical analysis 148.87-149.66m.

Lamination: 64°.

Gradual contact.

148.89 - 149.66 m : Quartzite (meta hydrothermal silica, typical for borderzones of sulphide deposits) gr to whithgr, dense, irregular distribution of single crystals or multi crystal aggregates of py and mt, coarse-crystalline biotite - sericite schist (altered rock,tuffite) at the contacts with the surrounding schist as well as within the quartzite layer, the rock contains sufficient py as scattered idioblasts and as trains of granules (3 Vol.-%).

150.39 - 150.55 : Biotite bear. qtz - sericite schist (semipelite) (meta - qtz-pelite or siltstone)
gr, fine - crystalline, homogeneous, biotite forms slightly porphyritic crystals being aligned with the major foliation of the rock; spotted tiny crystals of mt.
Sharp contact.

150.55 - 153.30 : Calcareous to high calcareous biotite bear. qtz - fspar - sericite schist
(meta - tuffite)
gr with faint greenish tint, fine - crystalline, laminated,rhythmic alternation of mm - thick layers composed of sericite with mm - thick bands made by qtz and fspar or carbonate, locally the small qtz - carbonate bands carry sudidiomorphic blasts of py, they also are enriched by scattered tiny crystals of mt, py tends to form trains of granules or is collected within lense - shaped aggregates, biotite occurs as randomly oriented porphyroblasts (0.05 - 0.15 cm) (cross - biotite) the crystals being scattered within some bands which thus show a typical spotted appearence, garnet is found,

chemical analysis 150.55-151.05m, 151.05-151.60m, 152.19-152.69m, 152.69-153.19m.

locally either as scattered idiomorphic crystals or as irregularily shaped aggregates; more or less homogeneous distribution of tiny crystals of mt; spots of py at several locations, sulphide amount 1Vol.-%; interlayers with sharp boundaries of dense quartzite (meta - chert) which contains subordinate dusty mt between: 151.60 - 151.70 m, 151.71 - 152.19 m.
Lamination: 55°.
Gradual contact.

153.30 - 160.30 : Calcareous biotite - sericite schist

(meta - tuffaceous pelitic sediment) (similar sericite schists from 40.30 - 50.12 m DDH 75, 112.75 - 126.25 m DDH 768 G or 142.70 - 165.35 m DDH 768 G or 190.10 - 210.10 m DDH 768 G and 226.75 - 245.80 m DDH 769 G or 387.80 - 440.40 m DDH 769 G and Tverrfjell - ore zone)

Sample 685D/9 155.00-157.00m whole rock analysis.

chemical analysis 154.30-154.83m, 155.25-155.55m, 155.55-156.28m.

gr, medium crystalline, gradual increase in the amount of qtz from 158.50 m upsection, interleaved sericite flakes which locally are accompanied by randomly oriented porphyroblasts of biotite as mm - and cm - thick bands in alternation with discontinuous tiny bands and thin layers composed of carbonate and qtz and tiny lenses of carbonate, qtz and carbonate form big clusters and vein - like features within 155.30 - 155.97m, the upper part of the layer is strongly foliated and shows a distinct lenticular structure, the section contains some porphyroblasts of garnet which have been partly chloritizated and epidotized; abundant mt as scattered, tiny, often idiomorphic porphyroblasts; rare schlieren of cy often joined by clusters of qtz.
Banding: 60°.

160.30 - 195.65 : Sericite bear. quartzite

(meta - qtz arenite)

gr with slightly greenish schlieren, flaser structure, alternation of qtz - bands which sporadically carry small amounts of dusty epidote and schlieren composed of sericite which is accompanied by some flakes of biotite, the crystals always parallel the major folia-

tion of the rock; sometimes phyllosilicate - qtz lamination, occasional garnet crystals; single idiomorphic crystals of mt between : 184.80 - 185.70 m, scattered tiny, mostly idiomorphic crystals of mt between: 161.29 - 161.57 m, 162.90 - 163.13 m, 168.19 - 183.75 m; at some locations idioblasts of py: 175.20-175.75 m.
Fault mylonite: 160.30 - 160.55m, 191.05 - 192.10 m.
Gradual contact.

176.00 - 178.70 m: Biotite bear. sericite - qtz - fspar schist (meta - qtz - rich epiclastic sediment with felsic impurity)
grwhite with greenishgr schlieren and blackish spots, banded with transitions into lenticular structured rock, interlocking qtz and fspar crystals as cm - thick bands and lenses in alternation with laminae or schlieren composed of sericite which carry sparce crystals of biotite and sometimes blasts of garnet, little epidote is found as dusty impregnation within the qtz - fspar bands; idioblasts and xenomorphic poikiloblasts of mt are homogeneously distributed.

195.65 - 203.67 : Biotite bear. sericite - rich quartzite
(meta - qtz arenite)
gr with greenish tint, distinct crenulation cleavage, laminated or with flaser structure, close alternation of lenses or laminae dominated by qtz and laminae or schlieren composed of sericite and biotite, the latter is strongly aligned with the main foliation of the rock, epidote is found locally, it shows a clear tendency to join qtz; scattered 0.1 - 0.2 cm large idioblasts of mt between: 195.65 - 203.67 m.
Gradual contact.

203.67 - 203.82 : Garnet - bear. epidote - qtz - sericite schist
(meta - qtz-pelite or siltstone)
gr with yellowishgn lenses and black spots, distinct crenulation cleavage lenticular structure, interlocking qtz and epidote crystals as lenses in alternation with bands and schlieren composed of fine - crystalline

sericite and porphyritic biotite, irregular distributed hypdiomorphic blasts of garnet on average 0.2 cm across; scattered idioblasts of mt.
Sharp contact.

203.82 - 208.85 : Biotite - sericite - quartzite
(meta - pelitic arenite)
similar: 214.90 - 222.00 m, but with more biotite, the porphyroblasts being not oriented, often dusty epidote, subidioblastic crystals of garnet which join the phyllosilicates between: 204.20 - 204.30 m, 204.92 - 208.85 m; scattered idioblasts of mt throughout; single crystals of py at: 204.40 - 204.92 m, 207.39 - 208.85 m.
Gradual contact.

208.85 - 214.90 : Biotite - sericite - qtz rock
(meta - pelitic arenite)
gr with abundant browngn schlieren, distinct flaser and lenticular structure which is due to small - scale isoclinal folding and shearing, in places laminated, interlocking qtz as lenses surrounded by interleaved sericite and biotite, the latter tends to form not oriented porphyroblasts but locally may be aligned with the foliation of the rock (tiny shear planes), epidote is variably distributed, it occurs with subordinate amount and is mostly associated with qtz; idioblasts of mt on average 0.1 cm across are found throughout; several occurrences of idioblasts of py of 0.1 - 0.4 cm size: 213.96 m, 214.50 - 214.90 m.
Gradual contact.

214.90 - 222.00 : Sericite - quartzite
(meta - qtz arenite)
gr with grgn schlieren, sometimes with distinct yellowishgn tint, pseudoconglomerate structure, due to two different styles of folding, interlocking qtz crystals as big lenses surrounded by fine - crystalline zick - zack folded sericite, which is accompanied by tiny flakes of biotite, sparce epidote follows qtz but also

forms discrete schlieren which are most frequent between: 217.90 - 219.42 m and 221.37 - 222.00 m; idioblasts of mt (0.1 - 0.2 cm size) throughout; scattered idioblasts of py the crystals up to 0.35 cm in size at: 217.40 m, 217.50 - 218.00 m, 219.00 - 219.10 m, 219.38 - 222.00 m.
Gradual contact.

222.00 - 229.50 : Biotite bear. sericite - quartzite
(meta - qtz arenite)
similar: 229.50 - 264.20 m but with higher amount of biotite the porphyroblasts being randomly oriented; within the lower portion sparce occurrence of epidote; idioblasts of mt of 0.1 - 0.2 cm size throughout; scattered idioblasts of py up to 0.35 cm across at 222.13 m.
Gradual contact.

229.50 - 264.20 : Sericite - quartzite
(meta - qtz arenite)
gr with faint greenish tint, flaser and lenticular structure, caused by two - fold folding, interlocking qtz crystals as bands and lenses in alternation with schlieren and thin layers of sericite which locally carry flakes of biotite which are strongly aligned with the foliation of the rock; mt as idioblasts and xenomorphic poikiloblasts of 0.1 - 0.2 cm size occurs between: 229.50 - 231.80 m, 233.86 - 233.96 m, 236.60 - 237.95 m, 239.10 - 239.85 m, 242.20 - 242.50 m, 242.90 - 243.10 m, 243.55 m, 243.86 m, 244.50 m, 246.00 - 248.15 m, 253.25 - 254.60 m, 259.90 - 264.40 m, the crystals are variably distributed.
Fault mylonite: 260.93 - 261.10 m.
Schistosity: 70°:
Gradual contact.

264.20 - 267.73 : Chlorite bear. qtz - biotite - sericite schist
(meta - qtz-pelite)
gr with faint greenish tint, abundant brown spots,

distinct lenticular structure, interlocking qtz as lenses and layers in alternation with bands and schlieren composed of sericite, biotite and chlorite, biotite forms scattered porphyroblasts which tend to be not oriented, they only in places are parallel to the major foliation of the rock which karacterizes a late deformation.
Compositional banding: 70°.
Gradual contact.

267.73 - 274.25 : Chlorite - epidote bear. qtz - biotite - sericite schist
(meta - pelite with volcanic impurity)
similar: 285.50 - 288.50 m.
Schistosity , banding:68°.
Gradual contact.

Sample:685D/3
273.62-273.74m
and
270.25-271.25 m
whole rock
analysis.

274.25 - 278.11 : Chlorite - epidote bear. biotite - sericite schist
(meta - pelite with volcanic impurity)
gngr, with faint yellowish tint, cm - banded, non-rhythmic alternation of fine - crystalline sericite - epidote - chlorite layers with lenses and bands composed of qtz and with bands made by sericite, qtz and biotite, biotite is slightly porphyritic and of scattered occurrence and parallels the banding of the rock; rare spots of il.
Schistosity: 68°.
Gradual contact.

278.11 - 281.25 : Epidote bear. qtz - biotite - sericite schist
(meta - pelite)
gr, homogeneous, crudely developed lenticular structure, locally with indistinct compositional banding, interlocking qtz crystals as tiny lenses in close alternation with stringers composed of sericite and biotite, the latter mineral is slightly coarser than sericite the flakes being aligned with the major foliation of the rock, locally cm - thick interlayers rich in epidote, the bands have sharp as well as gradual boundaries with the surrounding; often tiny

bands and discontinuous layers of carbonate which are conformable with the foliation of the rock, rare tiny idioblasts of il.
Schistosity : 67°.
Gradual footwall.

281.25 - 285.20 : Chlorite - epidote bear. qtz - biotite - sericite schist
(meta - pelite with volcanic impurity)
similar : 285.50 - 288.50 m.
Schistosity , layering : 63°.

285.20 - 285.50 : Chlorite - epidote bear. biotite - qtz - sericite schist
(meta - qtz - pelite)
gr with faint greenish tint, lenticular structure, locally with crudely developed compositional banding, interlocking qtz crystals as lenses in close alternation with schlieren and bands dominated by phyllosilicates.
Schistosity : 65°.

285.50 - 288.50 : Chlorite - epidote bear. qtz - biotite - sericite schist
(meta - pelite with volcanic impurity)
gr with faint greenish tint, fine - crystalline with biotite forming scattered porphyroblasts of average 0.1 cm size which mainly are aligned with the foliation of the rock, crude development of banding due to slight compositional and textural changes, may be a primary pelite - silt alternation, interlocking qtz crystals as lenses and thin bands in alternation with fine - crystalline sericite - chlorite - epidote bands and schlieren and bands composed of qtz, sericite and biotite, the latter mineral is widely scattered but sometimes collects to form trains of flakes, carbonate is present locally as flat lenses which are conformable with the layering of the rock.
Schistosity, layering : 64°.
Sharp contact.

288.50 - 292.70 : Epidote - biotite - qtz - chlorite schist
(meta - pelitic sediment with volcanic impurity)
similar: 293.50 - 294.10 m, qtz sometimes forms lense - shaped clusters; submakroskopic dissemination of mt.
Schistosity, layering : 65°.
Knife sharp contact.

292.70 - 293.50 : High calcareous biotite - sericite - chlorite rock
A (meta - tuffaceous sediment or tuffite, altered)
gngr, medium - crystalline, massive, homogeneous, lense - shaped crystal aggregates of chlorite and sericite max. 0.15 cm large and flakes of biotite are homogeneously distributed and not oriented within a groundmass composed of qtz (fspar ?), carbonate forms round globular crystals (blasts) on average 0.15 cm large which are homogeneously distributed.
Sharp contact.

293.50 - 294.10 : Epidote - biotite - qtz - chlorite schist
(meta- pelitic sediment with volcanic impurity)
lightgn with faint yellowish tint, brown schlieren and flakes, white stripes and lenses, flaser and lenticular structure which changes locally into a distinct lamination, interlocking qtz crystals as lenses and laminae in alternation with bands and schlieren composed of chlorite, biotite and epidote, biotite often is homogeneously distributed, the flakes being slightly coarser than chlorite, it sometimes seems to be collected forming schlieren and thin laminae.
Lamination: 62°.
Gradually passing into footwall rock.

294.10 - 295.25 : Slightly calcareous chlorite - bear. garnet - amphibole - biotite - magnetite - quartz gneiss
(meta - silicate facies BIF)
gr, reddishbrown, brown, greenishbrown, distinct compositional banding with either sharp or gradual contacts between the different layers, cm - alternation of layers composed of qtz with bands or sometimes

schlieren of variable composition (mt + qtz + biotite, garnet + biotite, qtz + biotite + mt + garnet, qtz + biotite + amphibole or chlorite + mt).
Banding :65°.
Knife sharp contact.

295.25 - 295.78 : Slightly calcareous amphibole bear. epidote - rich chlorite schist
(meta - mafic volcanic sediment)
lightgn, fine - crystalline, layered with changes into flaser and lenticular structure, interlocking qtz and/or carbonate crystals as laminae, lenses and schlieren in close alternation with layers and schlieren composed of fine - crystalline chlorite which is accompanied by acicular crystals of amphibole, the latter are parallel to the major foliation of the rock; rare tiny spots of il.
Lamination :52°.
Transitional footwall.

295.78 - 305.10 : Epidote - qtz - plagioclase - chlorite - amphibole schist/rock

Sample 685D/10
298.75-302.90m
whole rock
analysis.

(meta - basalt flow)
similar: 316.15 - 322.11 m but with much better developed distinction between chlorite - amphibole multi - crystal aggregates and felsic groundmass.

305.10 - 308.20 : Magnetite - chert
(meta - oxied facies BIF)
gr and violet, nonrhythmic cm - alternation of mt - barren dense quartzite layers, magnetite - qtz bands and magnetite bear. quartzite layers, often knife - sharp boundaries between the different layers but also gradual contacts, within the lower portion of the layer infolded sections of chlorite - amphibolite (footwall rock)
Layering : 72°.
Knife sharp hanging wall and footwall.

308.20 - 314.26 : Epidote bear. chlorite - amphibole schist
(meta - basalt flow)
gn to bluishgn, fine - crystalline, locally transgoing into medium - crystalline rock, homogeneous with local occurrence of cm - compositional banding, here alternation of chlorite bands with layers composed of amphibole, qtz veining; abundant spots (poikiloblasts) of ilmenite max. 0.2 cm across and with sutured boundaries are nearly homogeneously distributed; several interlayers of quartzite (meta - chert) which normally contain no mt : 308.70 - 309.13 m magnetite - quartzite, 309.45 m with scattered porphyroblasts of py, 309.50 m with scattered porphyroblasts of py, 309.73 - 309.74 m, 310.40 m, 311.27 - 311.34 m alternation with bands of chlorite - amphibole schist, 311.78 - 311.88 m alternation with bands of chlorite - amphibole schist).
Schistosity, banding : 63°.
Transitional contact.

314.26 - 314.90 : Slightly calcareous amphibole bear. epidote - rich chlorite schist / gneiss
(meta - mafic volcanic sediment)
similar: 324.05 - 330.20 m but no crosscutting qtz veins.
Lamination : 72°.

314.90 - 316.50 : Amphibole - chlorite bear. biotite - epidote - quartz gneiss
(meta silicate facies chert or tuffaceous sediment with chert interlayers)
similar: 322.25 - 323.80 m but with local occurrence of randomly oriented porphyroblasts of amphibole;
315.86 - 316.02 m amphibole - chlorite bear. biotite - epidote - magnetite - qtz gneiss
similar: 323.80 - 324.05 m with gradual borders to the surrounding.
Lamination : 68°.
Sharp contact.

316.50 - 322.11 : Slightly calcareous qtz - plagioclase - epidote - biotite - chlorite - amphibole schist / rock

(meta - basalt flow, leached supp. due to ascending autohydrothermal fluids or water - contact) (same as leached amphibole schists and amphibolited from DDH 768 G (322.50-336.70 m) and DDH 76 (24.53-31.50 m) and Svåni - profile)

Sample:685D/11 319.43-320.48m whole rock analysis

lightgn, crudely developed leopard texture, lense - shaped amphibole - chlorite - biotite crystal aggregates are homogeneously distributed within a groundmass composed of plagioclase, epidote, qtz and carbonate, the boundaries between the coloured crystal aggregates get blurred which is caused by "hydrothermal alternation" of the rock, the foliation is most pronounced the outer parts of the layer while the middel section nearly is massive.

Sharp contact.

322.11 - 322.25 : Magnetite - quartzite

(meta - oxide facies BIF)

gr and violet, extremely fine - grained, dense mt - barren quartzite layer of 3 - cm thickness is flanked on both sides by mt - layered quartzite which occasionally shows cm - thick interbeds composed of chlorite and amphibole or schlieren and laminae of chlorite - biotite schist, garnet occurs forming trains of granules or lense - shaped crystal aggregates; rare schlieren and spots of py.

Layering : 64^{O}.

Sharp contact.

322.25 - 323.80 : Chlorite bear. biotite - epidote - qtz gneiss/schist

(meta - silicate facies BIF or qtz - rich epiclastic sediment with volcanic impurity)

gr, gngr, brown, yellowishbrown, laminated, sometimes with flaser and lenticular structure, interlocking tiny qtz crystals as laminae, bands and lenses in alternation with laminae, layers and schlieren composed of either epidote and biotite or biotite or chlorite, biotite tends to form porphyroblasts which

are crudely oriented, they often are stretched and flattened thus conformable with the lamination of the rock; rare occurrence of idioblasts of mt and schlieren of po.
Lamination : 65°.
Gradual contact.

323.80 - 324.05 : Amphibole - chlorite bear. biotite - epidote - magnetite - qtz gneiss
(meta - oxide - silicate facies BIF)
white, gr, gn, yellowishgn, brown, violet, fine - crystalline with sporadic occurrence of randomly oriented porphyroblasts of amphibole, laminated and also cm - banded, interlocking tiny qtz crystals as laminae and cm - bands in close alternation with layers composed of either qtz and magnetite or biotite and epidote of amphibole and chlorite, always sharp or knife sharp boundaries between the different bands, rare schlieren and small clusters of po.
Sharp contact.

324.05 - 330.20 : Amphibole bear. epidote - rich chlorite schist
(meta-mafic volcanic sediment)
gn, fine - crystalline, crude development of cm - to dm - banding, interleaved chlorite and amphibole crystals as cm-to dm-thick layers in alternation with lenses tiny bands and schlieren composed of qtz which in places are disconformable to the major foliation of the rock, locally interlayers of chlorite - amphibole schist or mt - banded cherts which often contain schlieren of sulphide and tiny crystals of garnet which tend to collect or form trains of granules (324.60 - 324.80 m, 325.00 - 325.23 m, 325.33 - 325.35 m, 325.40 - 325.45 m, 327.63 - 327.69 m, 327.76 - 327.88 m, 327.99 - 328.12 m, 328.35 - 328.58 m, 329.58 - 329.79 m); il occurs as scattered tiny crystals only within the chlorite layers; between 325.50 - 325.78 m biotite - epidote - quartz schist (meta - silicate facies BIF) brownishgr with faint

yellowish tint, laminated and with flaser and lenticular structure, interlocking qtz crystals as mm - thick layers and lenses in alternation with laminae and layers composed of biotite, epidote and qtz, sometimes interlayers of chlorite schist; sporadically tiny idioblasts of mt and schlieren of py.
Layering : 60°.
Sharp contact.

330.20 - 335.85 : Slightly calcareous epidote - qtz - fspar - chlorite - amphibole gneiss
(meta - mafic volcanic sediment)
gn to grgn, dm - banding with superimposed lamination or cm - textural banding, nonrhythmic alternation of fine - crystalline layers dominated by chlorite and sections characterized by randomly oriented porphyroblasts of amphibole which are embedded in a fine - grained groundmass composed of chlorite, epidote, qtz and fspar, the amphibole needles are variably distributed they either are widely scattered or can be enriched within cm - thick bands, carbonate tends to form scattered idioblasts the crystals on average 0.1 cm large; at several locations cm - thick interlayers of meta - chert which carries with 330.56 m, 334.79 - 334.85 m and 334.93 - 334.98 m some mt and with 335.30 - 335.32 m and 335.41 - 335.53 m either medium - grade py or stringers of po.
Layering : 72°.

335.85 - 335.95 : Milky qtz

335.95 - 336.15 : Sulphide bear. mt - rich quartzite
(meta - oxide and sulphide facies BIF)
gr with violet tint, strongly disturbed cm - banding composed of alternate dense quartzite layers and bands characterized by fine - crystalline magnetite, the upper portion shows a web - like pattern of pyrite, the sulphide grading 5% by volume of the rock.
Sharp contact.

336.15 - 341.22 : Slightly calcareous biotite bear. epidote - qtz - chlorite schist
(meta - mafic volcanic sediment or meta - pelite with mafic volcanic impurity)
similar : 342.06 - 343.50 m; several interlayers rich in py (337.00 - 337.25 m, 338.15 - 338.28 m, 338.80 - 339.00 m, 339.59 - 339.73 m, 340.02 - 340.04 m).
Lamination : 50°.
Sharp contact.

341.22 - 342.06 : Slightly calcareous biotite - sericite schist
(meta - pelite)
similar : 343.50 - 346.00 m, seems to be placed into the volcanic series by folding.

342.06 - 343.50 : Slightly calcareous amphibole - biotite bear. chlorite schist
(meta - mafic volcanic sediment or meta - pelite with mafic volcanic impurity)
lightgn, fine - crystalline, laminated or with crudely developed lenticular structure, nonrhythmic alternation of bands predominated by fine - crystalline chlorite, the crystals showing a preferred orientation, with laminae or lenses made by qtz and carbonate, biotite forms slightly porphyritic crystals which show a tendency to collect within lenses or discontinuous layers which are conformable with the major foliation of the rock; il occurs as xenomorphic crystals (poikiloblasts) which show sutured boundaries, it amounts to lesser 1% by volume of the rock; py sporadically is present as subidiomorphic porphyroblasts which often form trains of granules.
Lamination : 49°.
Sharp contact.

343.50 - 346.00 : Slightly calcareous biotite - sericite schist
(meta - pelite)
similar : 349.10 - 353.70 m but strongly deformed;

tectonized rock between 344.30 - 344.95 m which is due to folding.
Gradual contact.

346.00 - 349.10 : Calcareous to high calcareous sericite schist
(meta - pelite)
similar : 353.70 - 357.70 m, within the lower portion some cm- and dm - thick interlayers of calcareous biotite - sericite schist (see below) the bands with sharp boundaries of the surrounding schist.
Schistosity : 63°.
Gradual contact.

349.10 - 353.70 : Calcareous biotite - sericite schist
(meta - pelite)
gr with faint greenish tint, abundant brown spots, flaser and lenticular structure, interlocked qtz and carbonate crystals as laminae and lenses in close alternation with bands and schlieren composed of fine - crystalline sericite, biotite joins sericite, it forms 0.2 cm large porphyroblasts or imperfect spherulites the crystals and crystal aggregates nearly being homogeneously distributed thus causing a spotted appearence of the rock, biotite mostly is not aligned with the major foliation of the rock; high - grade sulphide of either combined po and py or py between 351.52 - 351.55 m and 351.36 - 351.41 m.
Tectonized rock between : 349.80 - 351.01 m.
Schistosity : 64°.
Gradual contact.

353.70 - 357.70 : Calcareous sericite schist
(meta - pelite)
gr, distinct lenticular structure, locally crude development of lamination, heterogeneous, interlocking qtz and carbonate crystals as lenses and layers or sometimes crosscutting bands in alternation with schlieren and layers composed of fine - crystalline sericite and subordinate biotite, the upper portion is enriched in carbonate, partly it forms idiomorphic

crystals being 0.05 cm across which are scattered.
Gradual contact.

357.70 - 363.10 : High calcareous sericite schist
(meta - pelite)
similar : 374.40 - 378.50 m, but with scattered xenomorphic crystals of mt between 361.25 - 362.20 m; interlayers of nearly massive py within 362.65 - 362.80 m and 360.75 - 361.02 m, the latter band is accompanied by dense quartzite containing scattered py crystals what is situated at the footwall of the layer.
Schistosity : 70°.
Sharp contact.

363.10 - 374.40 : Slightly calcareous biotite - sericite schist
(meta - pelite)
gr with abundant brown rods, flaser and lenticular structure, heterogeneous, interlocking qtz crystals as lenses, schlieren and layers in alternation with schlieren and bands composed of sericite and biotite the latter is variably distributed forming randomly oriented porphyroblasts max. 0.15 cm large, within the upper portion biotite is finer - crystalline and tends to be aligned with the major foliation of the rock, idioblasts of garnet occur within the lower portion of the layer and between 365.80 - 371.10 m, and 364.25 - 364.97 m, it may be equally distributed but mostly forms scattered agglomerates, the subidiomorphic crystals are between 1 and 5 mm across.
Frequent occurrence of po as schlieren, laminae and within ribbon - shaped patterns, high - grade nearly massive po mineralization which contains some spots of py occurs between 364.12 - 364.19 m, 364.95 m, 365.00 m, 370.00 - 370.10 m, elsewhere, po amounts to 1 % of the total or lesser; py displays a medium - grade mineralization between 363.79 - 364.00 m, it occurs within a matrix of qtz (meta - chert, sulfid-facies); mt displays idioblasts and big xenomorphic

crystals with often sutured boundaries between 364.25 - 364.97 m and 368.50 - 372.00 m, it grades lesser 1% by volume of the rock.
Schistosity : 72°.
Sharp contact.

374.40 - 378.50 : Calcareous qtz - rich sericite schist
(meta - pelite)
gr, distinct flaser and lenticular structure, interlocking qtz and/or carbonate crystals as lenses and schlieren in alternation with schlieren of sericite; frequent occurrence of po which forms flakes, schlieren and ribbon - shaped patterns, the amount being 1 Vol.-%.
Tectonic zone between 375.00 - 375.27 m.
Schistosity : 73°.
Gradual contact.

378.50 - 385.30 : Biotite - sericite schist
(meta - pelite)
gr with brown rods and spots, distinct flaser and lenticular structure, interlocking qtz and carbonate as lenses and schlieren in alternation with schlieren and layers composed of sericite and biotite, the latter occurs as porphyroblasts on average 0.2 cm large which are scattered and randomly oriented.
Sharp contact.

385.30 - 399.80 : Biotite - sericite schist
(meta - pelite)
gr with brown spots, homogeneous, locally laminated due to carbonate which forms tiny layers being in rhythmic alternation with cm - thick bands composed of sericite + biotite + qtz, biotite forms scattered porphyroblasts and bundle - like aggregates on average 0.2 cm large which are slightly flattened thus often parallel to the major plane of foliation of the rock. Fault zone: 390.40 - 390.70 m.
Lamination : 65° within lower portion, 45° at hanging wall.
Sharp contact.

399.80 - 410.00 : Qtz - rich biotite bear. sericite phyllite
(meta - qtz - pelite)
gr, with random brown spots, porphyroblastic texture, homogeneous, in places laminated, single porphyroblasts of biotite on average 0.15 cm across are scattered within a groundmass composed of fine - crystalline sericite and qtz, the mica forming the foliation. Strongly tectonized between : 410.00 - 406.00 m, discovery od several tiny faults and disharmonic folding.
Gradual contact.

410.00 - 436.80 : Biotite - sericite schist
(meta - pelite)
gr, homogeneous, sporadical tendency to lenticular structure, groundmass composed of fine - crystalline sericite and qtz, biotite occurs as scattered porphyroblasts and bundle - like aggregates on average 0.1 cm across which are randomly oriented, rock in places rich in carbonate, here often with distinct flaser and lenticular structure being due to a close alternation of mm - large lenses of carbonate and streaks made by sericite.
Tectonic zones : 412.47 - 411.80 m several tiny faults, 411.65 - 410.40 m.
Gradual contact.

Sample:685D/2
chemical analysis
424.45-425.70 m
whole rock

436.80 - 439.50 : Qtz - rich biotite - sericite schist/rock
(meta - qtz - pelite)
gr, fine - crystalline, crudely schistose, homogeneous, groundmass composed of tiny crystals of sericite and qtz, the former causes a slight foliation, biotite forms slightly porphyritic crystals which are homogeneously distributed and not but sometimes oriented.
Fault zones :439.23 - 439.40 m., 437.60 - 438.75 m, 437.15 - 437.36 m.
Sharp contact.

439.50 - 440.83 : Calcareous qtz - rich biotite - sericite schist/rock
(meta - pelite)
gr, homogeneous, crude development of foliation,

interlocking fine - crystalline sericite and qtz crystals as groundmass with scattered slightly porphyritic crystals of biotite which partly are oriented, carbonate forms tiny xenomorphic crystals (spots) which are homogeneously distributed.
Sharp contact.

440.83 - 441.17 : Phyllosilicate - rich quartzite
(meta - graywacke)
similar : 441.17 - 442.15 m continuous transition from coarse sand fraction (footwall) to fine sand within hanging wall.
Sharp contact, 80°.

441.17 - 442.15 : Phyllosilicate - rich quartzite
(meta - graywacke)
gr, blastopsammitic texture, flattened and stretched rounded fragments of qtz and qtz - fspar rock from fine pebble to medium sand fraction embedded in a phyllosilicate dominated matrix composed of sericite + biotite + qtz, within the upper portion gradual decrease in grain size and transition into fine graywacke or qtz - arenite.
Sharp contact, 80°.

442.15 - 443.80 : Biotite bear. sericite - rich quartzite
(meta - qtz arenite)
gr, fine - crystalline, homogeneous distribution of tiny sericite flakes within a fine - grained granoblastic groundmass composed of qtz, a slight foliation is caused by parallel alignment of sericite crystals.
Sharp contact.

443.80 - 444.40 : Qtz - rich biotite - sericite schist
(meta - pelite)
gr with brown spots, homogeneous, cm - banding within 10 cm of footwall, here alternation of fine - grained granoblastic phyllosilicate - rich quartzite layers and bands of qtz - rich biotite - sericite schist which always have sharp contacts, elsewhere

fine - crystalline sericite and qtz forming a granoblastic groundmass which contain scattered tiny blasts of biotite being randomly oriented.
Banding : 70°.
Sharp contact.

444.40 - 445.15 : Phyllosilicate - rich quartzite
(meta - graywacke)
similar : 446.05 - 446.20 m gradually decreasing in grain size from fine pebble to fine sand upsection.
Sharp contact.

445.15 - 448.05 : Slightly calcareous phyllosilicate - fspar - qtz rock
(meta - paraconglomerate, pebbly mudstone)
similar : 449.80 - 450.75 m but slightly increased in phyllosilicate matrix.
Sharp contact.
446.05 - 446.20 m: Phyllosilicate - rich quartzite
(meta - graywacke)
gr, blastopsammitic texture, slightly stretched and flattened rounded fragments of qtz or qtz - fspar rock embedded in abundant matrix composed of biotite + sericite + qtz.
Sharp contact.

448.05 - 449.80 : Biotite - sericite schist
(meta - pelite)
gr with some brown spots, porphyroblastic, homogeneous, biotite froms scattered porphyroblasts or bundle - like aggregates on average 0.15 cm large which tend to be not oriented sometimes carbonate as vein - fillings.
Sharp contact.

449.80 - 450.75 : Calcareous phyllosilicate bear. fspar - qtz rock
(meta - paraconglomerate, pebbly mudstone)
gr, white, gn, distinct blastopsephitic texture, stretched and flattened subrounded to rounded fragments of cobble to pebble size composed of either qtz or qtz + fspar (qtz - keratophyr) are closely packed but surrounded by a sparce schistose matrix

made of sericite and chlorite which locally carry some porphyroblasts or bundles of biotite, carbonate forms mm - thick schlieren which may constitute strongly deformed clasts, it further occurs as irregular dissemination within qtz - debris.
Sharp contact.

450.75 - 469.00 : Biotite - sericite schist
(meta - pelite)
gr with faint greenish tint, homogeneous, only sporadically with lenticular structure, biotite forms scattered porphyroblasts, fascicular bundles or imperfect spherulites on average 0.25 cm large which are homogeneously distributed within a fine - crystalline lepidoblastic matrix composed of sericite and qtz.
Tectonic zones characterized by closely spaced tiny faults at : 453.15 - 454.60 m and 458.85 - 460.60 m.
Sharp contact.

469.00 - 473.70 : Biotite - chlorite bear. sericite schist
(meta-pelite)
gr with faint greenish tint, scattered brown flakes, banded, interleaved sericite and chlorite flakes as cm - thick homogeneous bands alternate with max. 0.5 cm thick layers composed of sericite + qtz, biotite forms scattered porphyroblasts or fascicular bundles on average 0.15 cm large which are homogeneously distributed.
Layering : 80°.
Sharp contact.

473.70 - 477.10 : High calcareous biotite bear. qtz - sericite schist
(meta - graywacke)
grwhite with abundant brown rods, blastopsammitic texture, lense - shaped fragments of sand size mainly composed of qtz (vein - qtz) are embedded in a fine-crystalline crudely schistose matrix made of carbonate, sericite and biotite, the latter often forms porhpyroblasts or fascicular bundles or bow - tie crystal aggregates which tend to be aligned with the foliation

of the rock.
Foliation : 80^0-75^o.

477.10 - 478.75 : Tectonized zone biotite bear. qtz - sericite schist

478.75 - 486.00 : Biotite - sericite schist
(meta - pelite)
gr with faint greenish tint, abundant brown rods and spots, homogeneous, crudely developed lenticular structure, fine - crystalline granoblastic sericite - qtz groundmass, biotite forms porphyritic crystals or crystal - aggregates lesser 0.1 cm large which are homogeneously distributed while they are oriented at random, very rare are bands of carbonate.
Schistosity, lamination : 80^o.
Gradual contact.
485.18 - 485.40 m : Calcareous qtz - biotite - sericite schist (meta - graywacke)
gr, blastopsammitic texture, lense - shaped fragments of pure qtz (vein - qtz) on average 0.5 cm large are embedded in a schistose matrix composed of carbonate + biotite + sericite.
Gradual contacts on both side of the layer.

486.00 - 487.85 : Garnet - sericite bear. biotite - rich quartzite
(meta - qtz arenite)
brownishgr, fine - crystalline, crude development of lamination, tiny crystals of biotite are scattered within a fine - grained granoblastic matrix of qtz, biotite also shows a tendency to collect within mm - thick bands which causes a lamination of the rock, garnet forms widely scattered idioblasts max. 0.15 cm across.
Lamination : 85^o.
Gradual contact.

487.85 - 492.80 : Phyllosilicate poor quartzite
(meta - qtz arenite)
gr, fine - grained granoblastic qtz with schlieren and streaks composed of sericite which contain sometimes idioblasts of garnet.
Folded and sometimes tectonized.

492.80 - 494.95 : Pyrrhotite - rich qtz - biotite - sericite schist
(meta - qtz - rich pelite with iron sulphide supp. formed by iron - reducing bacteria)
gr, shear-induced flaser and lenticular structure, irregular alternation of layers and lenses of granoblastic schlieren of sericite; po composes a ribbon - shaped pattern, it grades on average 5% by volume of the rock.
Strongly folded.
Sharp contact.

494.95 - 496.00 : High calcareous biotite - poor qtz - sericite schist
(meta - qtz - rich pelite)
gr with faint greenish tint, distinct lenticular structure, irregular alternation of lenses and layers composed of qtz with schlieren and bands made by sericite + carbonate + biotite, carbonate tends to form tiny lenses or schlieren.
Strongly folded.
Sharp contact.

496.00 - 496.65 : Slightly calcareous biotite - sericite schist/phyllite
(meta - pelite)
similar : 497.55 - 498.85 m.
Sharp contact.

496.65 - 497.00 : High calcareous sericite schist / phyllite
(meta - pelite)
gr, homogeneous, tiny lenses composed of carbonate are surrounded by interleaved sericite flakes which compose a web - like feature.
Sharp contacts.

497.00 - 497.55 : Slightly calcareous epidote - chlorite bear. biotite - sericite phyllite
(meta - pelite with volcanic impurity)
browngr with greenish tint, laminated, interleaved sericite and chlorite flakes as schlieren and layers in close alternation with mm - thick bands and schlieren composed of biotite, epidote and carbonate.
Lamination : 85°.

497.55 - 498.85 : Slightly calcareous biotite - sericite schist/phyllite
(meta - pelite)
gr with faint greenish tint, homogeneous with crude development of banding, abundant tiny crystals of biotite which tend to be not oriented are scattered within a matrix of fine - crystalline interleaved sericite flakes, biotite causes an indistinct banding due to its tendency to collect within bands, some cm - thick interlayers of high calcareous biotite bear. sericite phyllite (s. below).
Schistosity : 80°.
Sharp contact.

498.85 - 500.75 : Calcareous to high calcareous biotite bear. sericite schist / phyllite
(meta - pelite)
gr with faint greenish tint, crudely developed lamination, lenticular structure, mm - thick lense - like spots and schlieren composed of carbonate embedded in a matrix of fine - crystalline sericite with rare occurrence of porphyritic biotite.
Lamination : 80°.
Sharp contact.

500.75 - 507.90 : Calcareous biotite bear. sericite schist
(meta - pelite)
similar : 525.60 - 543.80 m.
Lamination : 80° - 75°.
Sharp contact.

507.90 - 520.57 : Calcareous biotite - sericite schist
(meta - carbonate banded pelite)
gr with faint greenish tint, abundant white stripes and brown schlieren and rods, laminated, interlocked qtz and carbonate crystals as mm - thick layers in close alternation with laminae composed of sericite and biotite, the latter tends to form mm - large porphyritic crystals or fascicular bundles which may be scattered while not oriented but often form trains of flakes, carbonate often occurs as lenses or cm - thick bands.

Lamination : 85° - 90°, folded and partly tectonized between : 509.50 - 512.00 m here sometimes clusters of milky qtz.

520.57 - 525.60 : Tectonic zone within biotite - sericite schist.

525.60 - 543.80 : Calcareous biotite bear. sericite schist
(meta - carbonate banded pelite)
gr with faint greenish tint, often white coloured bands, rare brown spots and lenses, homogeneous or with lenticular structure, sporadically with indistinct lamination, interleaved sericite flakes as bands and schlieren in wide alternation with lenses or schlieren composed of qtz and carbonate, the latter also forms cm - thick bands and lenses which have a frequent occurrence, biotite either occurs as imperfect spherulites and fascicular bundles of max. 0.5 cm size and often conformable with the major foliation of the rock or it displays schlieren and trains of flakes.
Gradual contact.

543.80 - 601.70 : High calcareous epidote bear. biotite - fspar - qtz - chlorite schist
(meta - pelite with carbonate bands)
gr with faint greenish tint, sometimes yellowish, abundant brown rods, porhpyroblastic, homogeneous or with lamination, the latter sometimes is crudely developed, or with lenticular structure, interlocked chlorite flakes often as schlieren and layers alternate with lenses or bands composed of qtz + fspar and carbonate which sporadically contain abundant epidote, biotite displays schlieren which are conformable with the major foliation of the rock, it locally too forms scattered flakes or bow - tie shaped aggregates, carbonate often occurs as layers up to cm - thickness, it is concentrated within lenses or irregular shaped bodies within lower portion, sometimes occur cm - thick interlayers of calcareous epidote - biotite schist which have a distinct flaser structure due to a close alter-

Sample:685D/1
551.25 m
whole rock
analysis
561.15 - 562.44m.

nation of epidote schlieren and bands and schlieren composed of biotite and carbonate, the layers normally have gradual contacts with the surrounding schist.
Lamination : 85° - 80°.
Gradual contact.
545.75 - 545.18 m : Calcareous sericite schist
(meta - pelite)
gr, homogeneous with crudely developed lenticular structure supp. due to crenulation, interlocked carbonate crystals as lenses or tiny schlieren surrounded by fine - crystalline sericite.
Gradual contact.
Schistosity : 85°.

601.70 - 602.85 : Calcareous epidote bear. biotite - sericite schist
(meta - pelite, supp. conglomeratic tilloide, pebbly mudstone)
similar : 606.65 - 610.45 m.
Gradual contact.

602.85 - 606.65 : Slightly calcareous biotite - sericite schist
(meta - pelite)
similar : 610.45 - 610.65 m.
Gradual contact.

606.65 - 610.45 : Calcareous epidote bear. biotite - sericite schist
(meta - pelite, supp. conglomeratic tilloide, pebbly mudstone)
lightgr with abundant brown stripes, supposed blastopsephitic texture, lenses composed of biotite + carbonate + qtz + fspar are surrounded by interleaved fine - crystalline sericite and biotite crystals which carry abundant carbonate and some epidote, biotite besides that constitutes distinct laminae or sometimes schlieren which cause a banding of the rock, carbonate in places occurs as idioblasts max. 0.2 cm across.
Sharp contact.

610.45 - 610.65 : Slightly calcareous biotite - sericite schist
(meta - pelite)
gr with faint greenish tint, crudely developed lamination and lenticular structure, porphyroblastic, interlocking qtz or qtz and carbonate crystals as schlieren and lenses in alternation with interleaved sericite flakes forming schlieren and layers, biotite displays scattered 0.1 cm large porphyroblasts or bow - tie shaped crystal aggregates which are oriented at random. Lamination : 85°.

610.65 end of DDH 685 D.

F.D.Priesemann, 1986.

Susceptibility DDH 685 D

10.00	0.3	65.00	0.3	115.00	0.0
11.00	0.5	66.00	1.2	116.00	0.1
12.00	0.3	67.00	0.2	117.00	0.0
13.00	0.4	67.50	0.2	118.00	0.0
14.00	0.2	68.00	0.4	119.00	0.0
15.00	0.3	68.50	0.3	120.00	0.0
16.00	0.4	69.00	0.4	121.00	0.0
17.00	0.3	69.50	0.4	122.00	0.0
18.00	0.6	70.00	0.4	123.00	0.0
19.00	0.1	70.50	1.0	124.00	0.0
20.00	0.4	71.00	2.1	125.00	0.0
21.00	0.1	71.50	2.1	126.00	0.0
22.00	0.7	72.00	1.9	126.50	0.4
23.00	0.2	72.50	1.0	127.00	3.0
24.00	0.1	73.00	1.6	127.50	0.7
25.00	0.1	74.00	1.2	128.00	0.4
26.00	0.1	75.00	0.4	128.50	1.2
27.00	0.1	76.00	0.7	129.00	0.2
28.00		77.00	0.2	129.50	0.3
29.00	0.4	78.00	0.0	130.00	0.2
30.00	0.1	79.00	0.0	131.00	1.5
31.00	0.2	80.00	0.0	131.50	0.3
32.00	0.2	81.00	0.0	132.00	1.1
33.00	0.2	82.00	0.0	132.50	1.3
34.00	0.3	83.00	0.0	133.00	0.2
35.00	0.6	84.00	0.0	133.50	0.2
36.00	0.1	85.00	0.0	134.00	0.1
37.00	0.3	86.00	0.0	134.50	0.2
38.00	0.3	87.00	0.0	135.00	0.3
39.00	1.5	88.00	0.1	135.40	1.5
40.00	0.4	89.00	0.0	135.70	3.3
41.00	0.1	90.00	0.0	136.10	0.6
42.00	0.4	91.00	0.0	136.40	17.0
43.00	1.5	92.00	0.0	136.50	4.6
44.00	0.2	93.00	0.0	137.00	2.2
45.00	0.1	94.00	0.0	137.50	16.0
46.00	0.1	95.00	0.0	138.00	13.0
47.00	0.1	96.00	0.0	138.50	35.0
48.00	0.0	97.00	0.2	139.00	6.3
49.00	0.2	98.00	0.1	139.50	7.0
50.00	0.2	99.00	0.0	140.00	26.0
51.00	0.2	100.00	0.0	140.50	28.0
52.00	0.1	101.00	0.1	141.00	35.0
53.00	0.2	102.00	0.1	141.10	4.1
54.00	0.2	103.00	0.1	141.20	1.9
55.00	0.2	104.00	0.0	143.00	5.1
56.00	0.2	105.00	0.1	144.00	1.7
57.00	0.6	106.00	0.1	146.00	2.8
58.00	0.8	107.00	0.0	146.50	2.1
59.00	0.4	108.00	0.0	147.00	1.5
60.00	0.7	109.00	0.0	147.50	2.4
60.50	3.9	110.00	0.0	148.00	0.5
61.00	0.2	111.00	0.0	148.50	2.5
62.00	0.3	112.00	0.1	149.00	0.5
63.00	2.1	113.00	0.0	149.50	0.1
64.00	0.2	114.00	0.0	150.00	1.4

150.50	1.2	180.50	1.2	214.00	1.2
151.00	6.6	181.00	0.9	214.50	1.2
151.50	2.3	181.50	1.2	215.00	1.9
151.70	0.3	182.00	1.6	215.50	1.9
152.00	0.8	182.50	1.2	216.00	2.9
152.50	3.7	183.00	1.2	216.50	2.7
153.00	1.0	184.00	0.1	217.00	0.5
153.50	5.1	185.00	1.2	217.50	0.8
154.00	3.4	186.00	0.0	218.00	1.0
154.50	3.1	187.00	0.0	218.50	4.5
155.00	3.9	188.00	0.0	219.00	2.1
155.50	2.7	189.00	0.0	219.50	0.7
156.00	5.2	190.00	0.0	220.00	0.3
156.50	4.4	191.00	0.0	220.50	0.5
157.00	4.5	192.00	0.1	221.00	1.0
157.50	2.6	193.00	0.0	221.50	3.0
158.00	3.1	194.00	0.0	222.00	1.2
158.50	1.1	194.50	0.0	222.50	0.1
159.00	0.3	195.00	0.2	223.00	0.0
160.00	0.1	195.50	0.0	223.50	1.0
161.00	0.1	196.00	0.0	224.00	0.7
161.50	0.3	196.50	0.1	224.50	3.1
162.00	0.4	197.00	0.3	225.00	2.1
162.50	0.1	197.50	3.7	225.50	0.4
163.00	5.2	198.00	2.2	226.00	3.4
163.50	0.0	198.50	1.2	226.50	4.3
164.00	0.1	199.00	2.2	227.00	2.1
165.00	0.1	199.50	1.3	227.50	0.4
166.00	0.2	200.00	0.9	228.00	0.6
167.00	0.1	200.50	0.4	228.50	1.8
167.50	0.1	201.00	0.3	229.00	1.4
168.00	0.3	201.50	0.9	229.50	1.2
168.50	0.0	202.00	1.8	230.00	0.2
169.00	0.1	202.50	5.4	230.50	2.0
169.50	0.0	203.00	2.6	231.00	0.4
170.00	0.4	203.50	3.5	231.50	0.4
170.50	0.2	204.00	2.3	232.00	0.3
171.00	0.6	204.50	0.5	232.50	0.1
171.50	0.6	205.00	1.7	233.00	0.2
172.00	0.4	205.50	1.8	233.50	0.1
172.50	1.3	206.00	2.2	234.00	0.7
173.00	5.9	206.50	2.7	234.50	0.0
173.50	2.4	207.00	1.7	235.00	0.1
174.00	3.4	207.50	1.7	236.00	0.2
174.50	0.1	208.00	0.4	236.50	0.3
175.00	0.1	208.50	2.9	237.00	2.3
175.50	2.9	209.00	3.0	237.50	2.1
176.00	1.4	209.50	2.1	238.00	1.7
176.50	2.6	210.00	3.5	239.00	0.6
177.00	0.4	210.50	4.2	239.50	0.3
177.50	0.4	211.00	2.2	240.00	0.0
178.00	2.5	211.50	7.0	241.00	0.0
178.50	1.9	212.00	1.2	242.00	0.1
179.00	0.6	212.50	4.1	243.00	2.4
179.50	0.6	213.00	2.0	244.00	0.0
180.00	1.7	213.50	6.6	244.50	0.5

245.00	0.0	291.00	1.8	323.30	0.1
246.00	0.0	292.00	0.7	323.50	0.1
246.50	0.0	293.00	0.1	323.70	0.1
247.00	0.0	294.00	0.1	323.90	4.0
247.50	0.1	294.20	31.0	324.00	0.2
248.00	0.6	294.50	28.0	324.20	0.3
249.00	0.0	295.00	22.0	324.50	0.3
250.00	0.0	295.50	0.1	324.75	16.0
251.00	0.0	296.00	0.1	325.00	0.0
252.00	0.1	297.00	0.2	325.05	18.0
253.00	0.1	298.00	0.1	325.20	5.9
253.50	0.1	299.00	0.0	325.30	15.0
254.00	1.3	300.00	0.0	325.43	7.8
254.50	1.2	301.00	0.1	325.60	0.7
255.00	0.1	302.00	0.1	326.00	0.0
256.00	0.1	303.00	0.1	326.50	0.1
257.00	0.0	304.00	0.1	327.00	0.1
258.00	0.1	304.50	0.1	327.40	0.1
258.50	0.2	305.00	27.0	327.50	0.0
259.00	0.4	305.50	23.0	327.60	12.0
259.50	1.3	306.00	13.0	327.80	39.0
260.00	1.5	306.50	21.8	327.90	0.2
260.50	2.1	307.00	27.8	328.00	18.0
261.00	0.7	307.50	25.8	328.10	0.2
261.50	0.2	308.00	24.0	328.20	2.5
262.00	0.1	308.30	0.1	328.30	14.0
262.50	1.1	308.50	0.1	328.40	18.0
263.00	3.2	308.75	22.0	328.50	0.8
263.50	4.7	308.90	37.0	329.00	0.2
264.00	4.1	309.00	0.2	329.50	0.2
265.00	0.1	309.50	0.2	329.65	12.0
266.00	0.0	310.00	0.2	330.00	0.6
267.00	0.0	311.00	0.1	330.56	0.5
268.00	0.0	311.30	0.1	331.00	0.4
269.00	0.0	311.50	0.0	331.50	2.4
270.00	0.0	311.80	0.3	332.00	0.5
271.00	0.0	312.00	0.1	332.50	0.6
272.00	0.0	313.00	0.1	333.00	0.5
273.00	0.0	314.00	0.0	334.00	0.4
274.00	0.0	315.00	0.0	334.50	2.1
275.00	0.0	315.50	0.1	334.80	5.9
276.00	0.1	316.00	11.4	334.95	6.7
277.00	0.1	316.50	0.0	335.00	0.1
278.00	0.1	317.00	0.0	335.80	0.5
279.00	0.1	318.00	0.0	336.00	17.0
280.00	0.1	319.00	0.0	336.20	0.0
281.00	0.1	320.00	0.0	337.00	0.4
282.00	0.1	321.00	0.1	338.00	0.0
283.00	0.0	321.50	0.1	339.00	1.3
284.00	0.0	322.00	0.1	340.00	0.2
285.00	0.0	322.20	1.3	341.00	0.0
286.00	0.0	322.30	12.3	342.00	0.1
287.00	0.0	322.40	0.1	343.00	0.0
288.00	0.0	322.50	0.1	344.00	0.0
289.00	1.7	322.75	0.1	345.00	0.0
290.00	2.2	323.00	0.1	346.00	0.0

347.00	0.0
348.00	0.0
349.00	0.0
350.00	3.4
351.00	0.0
352.00	0.0
353.00	0.0
354.00	0.0
355.00	0.0
356.00	0.0
357.00	0.0
358.00	0.0
359.00	0.0
360.00	0.0
360.50	0.0
360.80	0.0
361.00	0.0
361.50	1.0
362.00	0.7
362.50	0.0
362.70	0.2
363.00	0.1
363.50	0.0
363.90	0.1
364.00	0.1
364.50	3.4
364.90	1.7
364.99	0.2
365.00	0.1
365.50	0.0
366.00	0.0
366.50	0.0
367.00	0.0
367.50	0.0
368.00	0.0
368.50	1.4
369.00	1.5
369.50	1.8
369.80	0.2
369.90	0.5
370.20	3.1
371.00	0.1
371.50	0.1
372.00	0.9
372.10	0.2
372.50	0.0
373.00	0.0
373.50	0.0
374.00	0.0
374.50	0.0
375.00	0.0
375.50	0.0
376.00	0.0
376.50	0.1
377.00	0.0
378.00	0.0
379.00	0.0
380.00	0.0

DDH 685 D

Occurrence of chert :

136.38 - 136.44 m	:	mt - quartzite
141.00 - 141.09 m	:	quartzite
146.77 - 146.84 m	:	"
148.05 - 148.13 m	:	"
148.89 - 149.66 m	:	"
294.10 - 295.25 m	:	silicate - oxide facies BIF
305.10 - 308.20 m	:	mt - quartzite
308.70 - 309.13 m	:	"
309.45 m	:	quartzite
309.50 m	:	"
309.73 - 309.74 m	:	"
310.40 m	:	"
311.27 - 311.34 m	:	quartzite with chlorite - amphibole schist
322.11 - 322.25 m	:	"
322.11 - 322.25 m	:	mt - quartzite
322.25 - 323.80 m	:	silicate - facies BIF
324.60 - 324.80 m	:	mt - quartzite
325.00 - 325.23 m	:	"
325.33 - 325.35 m	:	"
325.40 - 325.45 m	:	"
325.50 - 325.78 m	:	silicate - facies BIF
327.63 - 327.69 m	:	mt - quartzite
327.76 - 327.88 m	:	"
327.99 - 328.12 m	:	"
328.35 - 328.58 m	:	"
329.58 - 329.79 m	:	"
330.56 m	:	"
334.79 - 334.85 m	:	"
334.93 - 334.98 m	:	"
335.30 - 335.32 m	:	quartzite
335.41 - 335.53 m	:	"
335.95 - 336.15 m	:	mt - rich quartzite

DDH 685 D

Occurrence of sulfide:

74.45 - 76.00 m	: sparce idioblasts, py
77.30 - 77.50 m	: "
141.00 - 141.09 m	: scattered idioblasts, py
141.32 - 144.10 m	: random occ., py
147.58 - 147.63 m	: crystals of py
148.13 m	: big clusters of py
148.13 - 148.28 m	: crystals of py
148.89 - 149.48 m	: scattered idioblasts, py, 3 Vol.-%
150.55 - 153.30 m	: several spots, py, 1 Vol.-%
175.20 - 175.75 m	: idioblasts, py
204.40 - 204.92 m	: single crystals, py
207.39 - 208.85 m	: "
213.96 m	: idioblasts, py
214.50 - 214.90 m	: "
217.40 m	: scattered idioblasts, py
217.50 - 218.00 m	: "
219.00 - 219.10 m	: "
219.38 - 222.00 m	: "
222.13 m	: "
309.45 m	: scattered porphyroblasts, py
309.50 m	: "
322.11 - 322.25 m	: rare schlieren and spots, py
322.25 - 323.80 m	: rare schlieren, po
323.80 - 324.05 m	: rare schlieren and clusters of po
325.50 - 325.78 m	: schlieren of py
335.30 - 335.32 m	: medium - grade py
335.95 - 336.15 m	: stringers of po
335.95 - 336.15 m	: web - like py, 5 Vol.-%
337.00 - 337.25 m	: rich py
338.15 - 338.28 m	: "
338.80 - 339.00 m	: "
339.59 - 339.73 m	: "
340.02 - 340.04 m	: "
342.06 - 343.50 m	: sparce crystals, py
351.36 - 351.41 m	: high - grade py and po
351.52 - 351.55 m	: "
360.75 - 361.02 m	: nearly mass. py
362.65 - 362.80 m	: "
363.10 - 374.04 m	: schlieren, laminae, ribbon-shaped patterns of po, 1 Vol.-% 364.12 - 364.19m: high - grade po with spots of py 364.95 m: high-grade po with spots of py 365.00 m: high-grade po with spots of py 370.00 - 370.10 m: high-grade po with spots of py
363.79 - 364.00 m	: medium - grade py
374.40 - 378.50 m	: flakes, schlieren, ribbon-shaped patterns of po, 1 Vol.-%
492.80 - 494.95 m	: ribbon-shaped patterns of po, 5 Vol.-%.

Chemical analysis from samples of DDH 685 D:

141.00 - 141.10 m : 0.05 % Cu, 0.03 % Zn, 1.93 % S,
147.58 - 147.63 m : 0.04 % Cu, 0.02 % Zn, 1.01 % S,
148.13 - 148.25 m : 0.05 % Cu, 0.02 % Zn, 1.52 % S,
148.87 - 149.66 m : 0.04 % Cu, 0.01 % Zn, 0.80 % S,
150.55 - 151.05 m : 0.02 % Cu, 0.02 % Zn, -
151.05 - 151.60 m : 0.03 % Cu, 0.02 % Zn, -
152.19 - 152.69 m : 0.03 % Cu, 0.03 % Zn, -
152.69 - 153.19 m : 0.03 % Cu, 0.02 % Zn, -
154.30 - 154.83 m : 0.03 % Cu, 0.02 % Zn, -
155.25 - 155.55 m : 0.04 % Cu, 0.02 % Zn, -
155.55 - 156.28 m : 0.03 % Cu, 0.02 % Zn, -

Chemical analysis from samples of DDH 685 D which have been analyzed in 1980 :

294.00 - 294.70 m : 0.00 % Cu, 0.11 % Zn, 0.60 % S,
294.70 - 295.25 m : 0.00 % Cu, 0.10 % Zn, 0.60 % S,
295.25 - 305.70 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
305.70 - 306.10 m : 0.00 % Cu, 0.09 % Zn, 0.60 % S,
306.10 - 306.80 m : 0.00 % Cu, 0.11 % Zn, 0.60 % S,
306.80 - 307.50 m : 0.00 % Cu, 0.9 % Zn, 0.60 % S,
307.50 - 308.05 m : 0.00 % Cu, 0.9 % Zn, 0.60 % S,
308.05 - 308.70 m : 0.00 % Cu, 0.12 % Zn, 0.60 % S,
308.70 - 309.05 m : 0.00 % Cu, 0.11 % Zn, 0.60 % S,
323.00 - 323.80 m : 0.00 % Cu, 0.10 % Zn, 0.60 % S,
323.80 - 324.00 m : 0.00 % Cu, 0.11 % Zn, 0.60 % S,
324.00 - 324.50 m : 0.00 % Cu, 0.13 % Zn, 0.60 % S,
324.50 - 325.00 m : 0.00 % Cu, 0.31 % Zn, 0.60 % S,
325.00 - 325.20 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
325.20 - 325.80 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
325.80 - 326.80 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
326.80 - 327.65 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
327.65 - 327.80 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
327.80 - 328.05 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
328.05 - 328.20 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
328.20 - 328.40 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
328.40 - 328.65 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
328.65 - 329.20 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
334.50 - 335.30 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
335.30 - 335.35 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
335.35 - 336.30 m : 0.00 % Cu, 0.08 % Zn, 0.88 % S,
336.30 - 336.45 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
336.45 - 337.20 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
337.20 - 337.40 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
337.40 - 338.15 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
338.15 - 338.35 m : 0.00 % Cu, 0.08 % Zn, 2.53 % S,
338.35 - 338.85 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
338.85 - 338.95 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
338.95 - 339.30 m : 0.00 % Cu, 0.07 % Zn, 3.97 % S,
339.30 - 339.45 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
339.45 - 340.02 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
340.02 - 340.60 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,

351.35 - 351.55 m : 0.00 % Cu, 0.13 % Zn, 0.00 % S,
360.75 - 360.95 m : 0.00 % Cu, 0.11 % Zn, 15.70 % S,
360.95 - 361.05 m : 0.06 % Cu, 0.10 % Zn, 2.41 % S,
361.05 - 361.10 m : 0.00 % Cu, 0.10 % Zn, 18.71 % S,
361.10 - 361.20 m : 0.00 % Cu, 0.12 % Zn, 0.00 % S,
361.20 - 361.25 m : 0.03 % Cu, 0.11 % Zn, 1.28 % S,
361.25 - 361.50 m : 0.03 % Cu, 0.10 % Zn, 0.00 % S,
362.65 - 362.80 m : 0.00 % Cu, 0.09 % Zn, 19.41 % S,
362.80 - 363.80 m : 0.00 % Cu, 0.09 % Zn, 0.00 % S,
363.80 - 364.00 m : 0.00 % Cu, 0.08 % Zn, 15.33 % S,
364.00 - 364.20 m : 0.00 % Cu, 0.09 % Zn, 28.79 % S,
364.20 - 364.35 m : 0.00 % Cu, 0.11 % Zn, 2.19 % S,
364.35 - 364.85 m : 0.00 % Cu, 0.10 % Zn, 5.21 % S,
364.85 - 364.95 m : 0.00 % Cu, 0.08 % Zn, 3.17 % S,
364.95 - 365.00 m : 0.00 % Cu, 0.09 % Zn, 2.91 % S,
365.00 - 365.10 m : 0.00 % Cu, 0.09 % Zn, 2.46 % S,
365.10 - 365.60 m : 0.00 % Cu, 0.09 % Zn, 0.60 % S,
368.90 - 369.90 m : 0.00 % Cu, 0.10 % Zn, 0.60 % S,
369.90 - 370.00 m : 0.00 % Cu, 0.08 % Zn, 20.19 % S,
370.00 - 370.10 m : 0.00 % Cu, 0.09 % Zn, 0.60 % S,
370.10 - 370.50 m : 0.00 % Cu, 0.10 % Zn, 0.60 % S,
370.50 - 370.70 m : 0.00 % Cu, 0.14 % Zn, 1.18 % S,
370.70 - 370.80 m : 0.00 % Cu, 0.08 % Zn, 17.44 % S,
370.80 - 371.25 m : 0.00 % Cu, 0.08 % Zn, 0.99 % S,
371.25 - 372.00 m : 0.00 % Cu, 0.09 % Zn, 0.60 % S,
372.00 - 373.00 m : 0.00 % Cu, 0.09 % Zn, 0.60 % S,
373.00 - 373.80 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
373.80 - 374.60 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
374.60 - 375.30 m : 0.00 % Cu, 0.09 % Zn, 0.60 % S,
375.30 - 376.00 m : 0.01 % Cu, 0.08 % Zn, 0.60 % S,
376.00 - 377.00 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
492.00 - 492.80 m : 0.00 % Cu, 0.09 % Zn, 0.60 % S,
492.80 - 493.60 m : 0.00 % Cu, 0.09 % Zn, 0.60 % S,
493.60 - 494.50 m : 0.00 % Cu, 0.10 % Zn, 0.60 % S,
494.50 - 495.00 m : 0.00 % Cu, 0.09 % Zn, 0.60 % S,
495.00 - 496.00 m : 0.00 % Cu, 0.09 % Zn, 0.60 % S.

BH 685D

DIAMOND DRILL HOLE 685 D

Hjerkinn, east of main fault, 1981.
Location : X = - 16, Y = 1082, Z = 1019 (1040 N - 600 V).
Azimuth : 16^g (mine grid).
Inclination : 52^o S.
Total length : 610.65 m.

Description:

0.00 - 64.50 : Calcareous to high calcareous biotite - epidote - (sericite - chlorite) - chlorite - sericite schist
(meta - pelitic sediment composed of volcanic related and terrigeneous clastic material; supp. distal facies of meta - lahar (see also DDH 768 G 52.15 - 111.20 m and DDH 769 G 57.50 - 218.18 m, correlates with section 0.00 - 91.25 m of DDH 2000 D)
variation in the amount of qtz may result in phyllosilicate - rich quartzites, carbonate is variably distributed, gradually changes in the amount of sericite and chlorite.
Greenishgr, with abundant yellowishwhite lenses and layers, distinct lenticular structure sometimes lamination or banding, interlocking qtz, fspar and carbonate crystals as lenses or bands in alternation with cm - thick bands or schlieren composed of sericite, chlorite, epidote and biotite, the latter tend to form scattered porphyroblasts mainly not aligned with the foliation of the rock; abundant round - globular spots of mt between: 56.50 - 57.10 m, 60.40 - 61.65 m; tiny scattered crystals of ilmenite between: 33.80 - 34.50 m, 41.40 - 42.00 m, 46.20 - 47.30 m, 50.70 - 56.40 m; some spots of py: 39.00 - 39.20 m (here also spots of mt), 39.30 - 57.10 m,
faults and fault mylonite : 20.00 - 21.40 m,
always distinct crenulation cleavage, F_2 - schistosity between 40^o and 50^o.
Gradual contact.

Sample:
685D/5 : 57.80 m,
685D/6 : 34.40 m,
685D/7 : 27.10 m.
Thinsection

64.50 - 70.90 : Calcareous biotite bear. epidote - chlorite - sericite schist

(meta - pelitic sediment composed of volcanic related and terrigeneous clastic material; supp. distal facies of meta - lahar)

darkgr with green tint, strongly foliated, irregular alternation of lenses, laminae and bands composed of either qtz, fspar and carbonate or carbonate and bands or laminae made by phyllosilicates, biotite in places occurs as randomly oriented porphyroblasts; finest dissemination of mt from footwall until 70.10 m.

70.90 - 77.04 : Epidote bear. phyllosilicate - fspar - qtz schist

(meta - arkosic sandstone supp. with minor volcanic impurity)

milkywhite with gr to greenishgr schlieren and laminae, lenticular structure and lamination, interlocking qtz, fspar and locally epidote crystals as lenses and thin bands in close alternation with schlieren or laminae composed of sericite and subordinate biotite; sparce scattered idioblasts of py the crystals max. 0.5 cm across at: 74.45 - 76.00 m; low - grade dissemination of mt - crystals (0.05 - 0.15 cm Ø) throughout, the crystals getting more obvious within the upper part of the section.

Schistosity: 60°.

Gradual hanging wall and sharp footwall.

77.04 - 79.60 : Calcareous chlorite schist

(supp. consolidated fault zone)

gn, homogeneous crudely developed lamination between carbonate seams and chlorite - bands, within footwall slowly decreasing qtz - fspar amount and transgoing into pyllosilicate - rich fspar - qtz schist (s.b.); sporadically round globular porphyroblasts of mt: 78.85 m, 79.06 - 79.14 m; sparce, scattered idioblasts of py between: 77.30 - 77.50 m.

Schistosity : 56°.

79.60 - 91.15: Phyllosilicate - rich fspar - qtz schist/gneiss

(meta - arkosic sandstone)
grwhite with darkgr bands and schlieren, banded or with pseudoconglomerate structure, rhythmic alternation of cm - thick bands composed of qtz and fspar and little biotite and sericite and mm - thick layers or schlieren made by phyllosilicates.

Sample:
685D/4, 83.30m

Thinsection

Banding: 52°.
Sharp boundary.

91.15 - 131.20 : Phyllosilicate - rich quartzite

(meta - qtz - arenite)
gr, distinctly banded in places with pseudoconglomerate structure which originates from two - fold deformation, rhythmic alternation of mm - thick layers or schlieren of sericite which carries little amounts of biotite and cm - thick bands of quartz which contain subordinate sericite; locally slightly epidote-and chlorite-bear. (121.00 - 122.70 m) ; scattered round globular porphyroblasts of mt at the following positions: 120.90-121.00m, 126.25 m, 126.44 m, 126.70 m, 127.02 - 127.64 m, 128.40 - 128.75 m, 130.70 - 131.20 m.
Banding: 45 - 50°.
Gradual contact.

131.20 - 135.50 : Slightly calcareous biotite - bear. qtz - sericite schist

(meta - qtz pelite or siltstone, transitional interlayer between quartzite and pelite)
gr, fine - crystalline, lenticular structure and locally with crudely developed lamination, close alternation of phyllosilicate layers and schlieren with lenses and bands composed of qtz; scattered xenomorphic poikiloblasts of mt between: 131.20 - 133.20 m and 135.40 - 135.50 m.
Lamination/schistosity: 60°.
Gradual contact.

135.50 - 137.40 : Slightly calcareous biotite - sericite schist

(meta - pelite)
gr with abundant tiny brown rods, banded but in places

with crudely developed lenticular structure, interlocking qtz crystals as tiny schlieren or lenses in close alternation with phyllosilicate bands and schlieren, biotite forms slightly porphyritic crystals which tend to be aligned with the major plane of foliation of the rock, several 0.5 cm thick bands and flat lenses composed of carbonate and qtz; from 137.00 m upsection dusty mt which increases in its amounts towards the footwall of the layer.
Banding: 60°.
Gradual contact.
136.38 - 136.44 m: Magnetite - quartzite (meta - chert) crude development of banding due to variation in the amount of dusty mt.

137.40 - 141.00 : Sericite - rich magnetite quartzite
(meta - chert with pelitic sedimentary impurity)
violet, fine - crystalline, laminated and banded, rhythmic alternation of mm - to cm - thick bands composed of either qtz or sericite, qtz and magnetite or sporadically of carbonate, locally scattered, tiny flakes of biotite which tend to be not oriented.
Lamination: 62°.
Sharp contact.

141.00 - 141.09 : Quartzite
(meta - chert)
gr, dense, crude development of layering due to sparce trains of granules of mt and py, hanging and footwall marked by cm - thick layers of medium - crystalline biotite - sericite schist which carries scattered idioblasts of mt and py, the latter forms trains of granules, schlieren or nearly cm - thick bands, it amounts to 3 Vol.-%.
Sharp contact.

Chemical analysis 141.00 - 141.09m.

141.09 - 141.32 : Calcareous biotite bear. qtz - sericite schist
(meta - qtz-pelite or siltstone)
similar: 144.10 - 146.13 m.

141.32 - 144.10 : Slightly calcareous biotite - sericite schist
(meta - pelite with minor volcanic impurity)
gr with brown rods several white bands and lenses, textural and compositional banding, irregular alternation of medium - crystalline biotite - sericite schist locally carring garnets and calcareous biotite bear. qtz - sericite schist which is fine - crystalline and shows a distinct lamination, interbeds of quartz which is remobelized; random occurrence of py; rare tiny spots of mt.
Banding : 60°.

144.10 - 146.13 : Calcareous fspar - bear. qtz - biotite - sericite schist
(meta - qtz-pelite or siltstone with minor volcanic impurity)
gr, fine - crystalline, homogeneous with crude development of layering due to carbonate which has the tendency to collect within tiny bands of flat lenses; tiny rare spots of mt throughout.
Schistosity : 60°.

146.13 - 146.90 : Calcareous biotite - sericite schist
(meta - pelite or tuffaceous pelite)
similar : 153.30 - 166.30 m.
Gradual contact.
146.77 - 146.84 m : close together bands of dense quartzite (supp. meta - cherts).

146.90 - 148.05 : Slightly calcareous biotite bear. qtz - sericite schist
Sample 685D/8 whole rock analysis.
chemical analysis 147.58 - 147.63m.
(meta - qtz-pelite or siltstone with minor volcanic impurity)
similar : 148.43 - 150.39 m, crystals of py which form discontinuous trains of granules between : 147.58 - 147.63 m.
Lamination : 60°.

148.05 - 148.13 : Quartzite
(meta - chert)

grwhite, dense, contact with surrounding rocks over 2 cm thick zones of coarse - crystalline garnet - biotite - sericite schist (altered) which in the case of the lying zone carries big clusters of py. Gradual contact.

148.13 - 148.28 : Garnet bear. biotite - qtz - sericite schist
(meta - qtz-pelite)
gr with abundant brown rods, fine - crystalline with scattered, randomly oriented porphyroblasts of biotite and subidiomorphic crystals of garnet (0.15 cm across), lenticular structure, interlocking qtz crystals as lenses in alternation with schlieren or layers composed of sericite, biotite and garnet; within hanging portion several trains of granules of py.
Schistosity: 65°.
Sharp contact.

chemical analysis 148.13 - 148.28m.

148.28 - 148.43 : Sericite bear. quartzite
(meta - qtz arenite)
gr, lenticular structure and lamination, close alternation of cm - thick layers of qtz and schlieren or laminae composed of sericite.
Lamination: 70°.
Gradual contact.

148.43 - 150.39 : Slightly calcareous biotite bear. qtz - sericite schist
(meta - qtz-pelite or siltstone with volcanic impurity, interlayers of tuffite)
gr, fine - crystalline, cm - banding with transition into laminated rock, interlocking qtz crystals sporadically being accompanied by carbonate as tiny layers in rhythmic alternation with either laminae or schlieren or bands dominated by sericite which sometimes carry scattered, strongly parallel crystals of biotite and sporadically idioblasts of garnet, locally interlayers with gradual boundaries of garnet - biotite - sericite schist (al - rich meta - sediments supp. with

Sample 685D/8 whole rock analysis see too: section 146.90-148.05m.

volcanic impurity) which show porphyroblasts of biotite (cross - biotite) and homogeneously distributed sudidiomorphic crystals of garnet (max. 0.4 cm in diameter); scattered round globular blasts of mt.
Lamination: 64°.
Gradual contact.

chemical analysis 148.87-149.66m.

148.89 - 149.66 m : Quartzite (meta hydrothermal silica, typical for borderzones of sulphide deposits) gr to whithgr, dense, irregular distribution of single crystals or multi crystal aggregates of py and mt, coarse-crystalline biotite - sericite schist (altered rock,tuffite) at the contacts with the surrounding schist as well as within the quartzite layer, the rock contains sufficient py as scattered idioblasts and as trains of granules (3 Vol.-%).

150.39 - 150.55 : Biotite bear. qtz - sericite schist (semipelite) (meta - qtz-pelite or siltstone)
gr, fine - crystalline, homogeneous, biotite forms slightly porphyritic crystals being aligned with the major foliation of the rock; spotted tiny crystals of mt.
Sharp contact.

150.55 - 153.30 : Calcareous to high calcareous biotite bear. qtz - fspar - sericite schist
(meta - tuffite)
gr with faint greenish tint, fine - crystalline, laminated,rhythmic alternation of mm - thick layers composed of sericite with mm - thick bands made by qtz and fspar or carbonate, locally the small qtz - carbonate bands carry sudidiomorphic blasts of py, they also are enriched by scattered tiny crystals of mt, py tends to form trains of granules or is collected within lense - shaped aggregates, biotite occurs as randomly oriented porphyroblasts (0.05 - 0.15 cm) (cross - biotite) the crystals being scattered within some bands which thus show a typical spotted appearence, garnet is found,

chemical analysis 150.55-151.05m, 151.05-151.60m, 152.19-152.69m, 152.69-153.19m.

locally either as scattered idiomorphic crystals or as irregularily shaped aggregates; more or less homogeneous distribution of tiny crystals of mt; spots of py at several locations, sulphide amount 1Vol.-%; interlayers with sharp boundaries of dense quartzite (meta - chert) which contains subordinate dusty mt between: 151.60 - 151.70 m, 151.71 - 152.19 m.
Lamination: 55°.
Gradual contact.

153.30 - 160.30 : Calcareous biotite - sericite schist

(meta - tuffaceous pelitic sediment) (similar sericite schists from 40.30 - 50.12 m DDH 75, 112.75 - 126.25 m DDH 768 G or 142.70 - 165.35 m DDH 768 G or 190.10 - 210.10 m DDH 768 G and 226.75 - 245.80 m DDH 769 G or 387.80 - 440.40 m DDH 769 G and Tverrfjell - ore zone)

Sample 685D/9 155.00-157.00m whole rock analysis.

chemical analysis 154.30-154.83m, 155.25-155.55m, 155.55-156.28m.

gr, medium crystalline, gradual increase in the amount of qtz from 158.50 m upsection, interleaved sericite flakes which locally are accompanied by randomly oriented porphyroblasts of biotite as mm - and cm - thick bands in alternation with discontinuous tiny bands and thin layers composed of carbonate and qtz and tiny lenses of carbonate, qtz and carbonate form big clusters and vein - like features within 155.30 - 155.97m, the upper part of the layer is strongly foliated and shows a distinct lenticular structure, the section contains some porphyroblasts of garnet which have been partly chloritizated and epidotized; abundant mt as scattered, tiny, often idiomorphic porphyroblasts; rare schlieren of cy often joined by clusters of qtz.
Banding: 60°.

160.30 - 195.65 : Sericite bear. quartzite

(meta - qtz arenite)

gr with slightly greenish schlieren, flaser structure, alternation of qtz - bands which sporadically carry small amounts of dusty epidote and schlieren composed of sericite which is accompanied by some flakes of biotite, the crystals always parallel the major folia-

tion of the rock; sometimes phyllosilicate - qtz lamination, occasional garnet crystals; single idiomorphic crystals of mt between : 184.80 - 185.70 m, scattered tiny, mostly idiomorphic crystals of mt between: 161.29 - 161.57 m, 162.90 - 163.13 m, 168.19 - 183.75 m; at some locations idioblasts of py: 175.20-175.75 m.
Fault mylonite: 160.30 - 160.55m, 191.05 - 192.10 m.
Gradual contact.
176.00 - 178.70 m: Biotite bear. sericite - qtz - fspar schist (meta - qtz - rich epiclastic sediment with felsic impurity)
grwhite with greenishgr schlieren and blackish spots, banded with transitions into lenticular structured rock, interlocking qtz and fspar crystals as cm - thick bands and lenses in alternation with laminae or schlieren composed of sericite which carry sparce crystals of biotite and sometimes blasts of garnet, little epidote is found as dusty impregnation within the qtz - fspar bands; idioblasts and xenomorphic poikiloblasts of mt are homogeneously distributed.

195.65 - 203.67 : Biotite bear. sericite - rich quartzite
(meta - qtz arenite)
gr with greenish tint, distinct crenulation cleavage, laminated or with flaser structure, close alternation of lenses or laminae dominated by qtz and laminae or schlieren composed of sericite and biotite, the latter is strongly aligned with the main foliation of the rock, epidote is found locally, it shows a clear tendency to join qtz; scattered 0.1 - 0.2 cm large idioblasts of mt between: 195.65 - 203.67 m.
Gradual contact.

203.67 - 203.82 : Garnet - bear. epidote - qtz - sericite schist
(meta - qtz-pelite or siltstone)
gr with yellowishgn lenses and black spots, distinct crenulation cleavage lenticular structure, interlocking qtz and epidote crystals as lenses in alternation with bands and schlieren composed of fine - crystalline

sericite and porphyritic biotite, irregular distributed hypdiomorphic blasts of garnet on average 0.2 cm across; scattered idioblasts of mt.
Sharp contact.

203.82 - 208.85 : Biotite - sericite - quartzite
(meta - pelitic arenite)
similar: 214.90 - 222.00 m, but with more biotite, the porphyroblasts being not oriented, often dusty epidote, subidioblastic crystals of garnet which join the phyllosilicates between: 204.20 - 204.30 m, 204.92 - 208.85 m; scattered idioblasts of mt throughout; single crystals of py at: 204.40 - 204.92 m, 207.39 - 208.85 m.
Gradual contact.

208.85 - 214.90 : Biotite - sericite - qtz rock
(meta - pelitic arenite)
gr with abundant browngn schlieren, distinct flaser and lenticular structure which is due to small - scale isoclinal folding and shearing, in places laminated, interlocking qtz as lenses surrounded by interleaved sericite and biotite, the latter tends to form not oriented porphyroblasts but locally may be aligned with the foliation of the rock (tiny shear planes), epidote is variably distributed, it occurs with subordinate amount and is mostly associated with qtz; idioblasts of mt on average 0.1 cm across are found throughout; several occurrences of idioblasts of py of 0.1 - 0.4 cm size: 213.96 m, 214.50 - 214.90 m.
Gradual contact.

214.90 - 222.00 : Sericite - quartzite
(meta - qtz arenite)
gr with grgn schlieren, sometimes with distinct yellowishgn tint, pseudoconglomerate structure, due to two different styles of folding, interlocking qtz crystals as big lenses surrounded by fine - crystalline zick - zack folded sericite, which is accompanied by tiny flakes of biotite,sparce epidote follows qtz but also

forms discrete schlieren which are most frequent between: 217.90 - 219.42 m and 221.37 - 222.00 m; idioblasts of mt (0.1 - 0.2 cm size) throughout; scattered idioblasts of py the crystals up to 0.35 cm in size at: 217.40 m, 217.50 - 218.00 m, 219.00 - 219.10 m, 219.38 - 222.00 m.
Gradual contact.

222.00 - 229.50 : Biotite bear. sericite - quartzite
(meta - qtz arenite)
similar: 229.50 - 264.20 m but with higher amount of biotite the porphyroblasts being randomly oriented; within the lower portion sparce occurrence of epidote; idioblasts of mt of 0.1 - 0.2 cm size throughout; scattered idioblasts of py up to 0.35 cm across at 222.13 m.
Gradual contact.

229.50 - 264.20 : Sericite - quartzite
(meta - qtz arenite)
gr with faint greenish tint, flaser and lenticular structure, caused by two - fold folding, interlocking qtz crystals as bands and lenses in alternation with schlieren and thin layers of sericite which locally carry flakes of biotite which are strongly aligned with the foliation of the rock; mt as idioblasts and xenomorphic poikiloblasts of 0.1 - 0.2 cm size occurs between: 229.50 - 231.80 m, 233.86 - 233.96 m, 236.60 - 237.95 m, 239.10 - 239.85 m, 242.20 - 242.50 m, 242.90 - 243.10 m, 243.55 m, 243.86 m, 244.50 m, 246.00 - 248.15 m, 253.25 - 254.60 m, 259.90 - 264.40 m, the crystals are variably distributed.
Fault mylonite: 260.93 - 261.10 m.
Schistosity: 70°:
Gradual contact.

264.20 - 267.73 : Chlorite bear. qtz - biotite - sericite schist
(meta - qtz-pelite)
gr with faint greenish tint, abundant brown spots,

distinct lenticular structure, interlocking qtz as lenses and layers in alternation with bands and schlieren composed of sericite, biotite and chlorite, biotite forms scattered porphyroblasts which tend to be not oriented, they only in places are parallel to the major foliation of the rock which karacterizes a late deformation.
Compositional banding: 70°.
Gradual contact.

267.73 - 274.25 : Chlorite - epidote bear. qtz - biotite - sericite schist

(meta - pelite with volcanic impurity)
similar: 285.50 - 288.50 m.
Schistosity , banding:68°.
Gradual contact.

Sample:685D/3
273.62-273.74m
and
270.25-271.25 m
whole rock
analysis.

274.25 - 278.11 : Chlorite - epidote bear. biotite - sericite schist

(meta - pelite with volcanic impurity)
gngr, with faint yellowish tint, cm - banded, non-rhythmic alternation of fine - crystalline sericite - epidote - chlorite layers with lenses and bands composed of qtz and with bands made by sericite, qtz and biotite, biotite is slightly porphyritic and of scattered occurrence and parallels the banding of the rock; rare spots of il.
Schistosity: 68°.
Gradual contact.

278.11 - 281.25 : Epidote bear. qtz - biotite - sericite schist

(meta - pelite)
gr, homogeneous, crudely developed lenticular structure, locally with indistinct compositional banding, interlocking qtz crystals as tiny lenses in close alternation with stringers composed of sericite and biotite, the latter mineral is slightly coarser than sericite the flakes being aligned with the major foliation of the rock, locally cm - thick interlayers rich in epidote, the bands have sharp as well as gradual boundaries with the surrounding; often tiny

bands and discontinuous layers of carbonate which are conformable with the foliation of the rock, rare tiny idioblasts of il.
Schistosity : 67°.
Gradual footwall.

281.25 - 285.20 : Chlorite - epidote bear. qtz - biotite - sericite schist
(meta - pelite with volcanic impurity)
similar : 285.50 - 288.50 m.
Schistosity , layering : 63°.

285.20 - 285.50 : Chlorite - epidote bear. biotite - qtz - sericite schist
(meta - qtz - pelite)
gr with faint greenish tint, lenticular structure, locally with crudely developed compositional banding, interlocking qtz crystals as lenses in close alternation with schlieren and bands dominated by phyllosilicates.
Schistosity : 65°.

285.50 - 288.50 : Chlorite - epidote bear. qtz - biotite - sericite schist
(meta - pelite with volcanic impurity)
gr with faint greenish tint, fine - crystalline with biotite forming scattered porphyroblasts of average 0.1 cm size which mainly are aligned with the foliation of the rock, crude development of banding due to slight compositional and textural changes, may be a primary pelite - silt alternation, interlocking qtz crystals as lenses and thin bands in alternation with fine - crystalline sericite - chlorite - epidote bands and schlieren and bands composed of qtz, sericite and biotite, the latter mineral is widely scattered but sometimes collects to form trains of flakes, carbonate is present locally as flat lenses which are conformable with the layering of the rock.
Schistosity, layering : 64°.
Sharp contact.

288.50 - 292.70 : Epidote - biotite - qtz - chlorite schist
(meta - pelitic sediment with volcanic impurity)
similar: 293.50 - 294.10 m, qtz sometimes forms lense - shaped clusters; submakroskopic dissemination of mt.
Schistosity, layering : 65°.
Knife sharp contact.

292.70 - 293.50 : High calcareous biotite - sericite - chlorite rock
A (meta - tuffaceous sediment or tuffite, altered)
gngr, medium - crystalline, massive, homogeneous, lense - shaped crystal aggregates of chlorite and sericite max. 0.15 cm large and flakes of biotite are homogeneously distributed and not oriented within a groundmass composed of qtz (fspar ?), carbonate forms round globular crystals (blasts) on average 0.15 cm large which are homogeneously distributed.
Sharp contact.

293.50 - 294.10 : Epidote - biotite - qtz - chlorite schist
(meta- pelitic sediment with volcanic impurity)
lightgn with faint yellowish tint, brown schlieren and flakes, white stripes and lenses, flaser and lenticular structure which changes locally into a distinct lamination, interlocking qtz crystals as lenses and laminae in alternation with bands and schlieren composed of chlorite, biotite and epidote, biotite often is homogeneously distributed, the flakes being slightly coarser than chlorite, it sometimes seems to be collected forming schlieren and thin laminae.
Lamination: 62°.
Gradually passing into footwall rock.

294.10 - 295.25 : Slightly calcareous chlorite - bear. garnet - amphibole - biotite - magnetite - quartz gneiss
(meta - silicate facies BIF)
gr, reddishbrown, brown, greenishbrown, distinct compositional banding with either sharp or gradual contacts between the different layers, cm - alternation of layers composed of qtz with bands or sometimes

schlieren of variable composition (mt + qtz + biotite, garnet + biotite, qtz + biotite + mt + garnet, qtz + biotite + amphibole or chlorite + mt).
Banding :65°.
Knife sharp contact.

295.25 - 295.78 : Slightly calcareous amphibole bear. epidote - rich chlorite schist
(meta - mafic volcanic sediment)
lightgn, fine - crystalline, layered with changes into flaser and lenticular structure, interlocking qtz and/or carbonate crystals as laminae, lenses and schlieren in close alternation with layers and schlieren composed of fine - crystalline chlorite which is accompanied by acicular crystals of amphibole, the latter are parallel to the major foliation of the rock; rare tiny spots of il.
Lamination :52°.
Transitional footwall.

295.78 - 305.10 : Epidote - qtz - plagioclase - chlorite - amphibole schist/rock
(meta - basalt flow)
similar: 316.15 - 322.11 m but with much better developed distinction between chlorite - amphibole multi - crystal aggregates and felsic groundmass.

Sample 685D/10
298.75-302.90m
whole rock
analysis.

305.10 - 308.20 : Magnetite - chert
(meta - oxied facies BIF)
gr and violet, nonrhythmic cm - alternation of mt - barren dense quartzite layers, magnetite - qtz bands and magnetite bear. quartzite layers, often knife - sharp boundaries between the different layers but also gradual contacts, within the lower portion of the layer infolded sections of chlorite - amphibolite
(footwall rock)
Layering : 72°.
Knife sharp hanging wall and footwall.

308.20 - 314.26 : Epidote bear. chlorite - amphibole schist
(meta - basalt flow)
gn to bluishgn, fine - crystalline, locally transgoing into medium - crystalline rock, homogeneous with local occurrence of cm - compositional banding, here alternation of chlorite bands with layers composed of amphibole, qtz veining; abundant spots (poikiloblasts) of ilmenite max. 0.2 cm across and with sutured boundaries are nearly homogeneously distributed; several interlayers of quartzite (meta - chert) which normally contain no mt : 308.70 - 309.13 m magnetite - quartzite, 309.45 m with scattered porphyroblasts of py, 309.50 m with scattered porphyroblasts of py, 309.73 - 309.74 m, 310.40 m, 311.27 - 311.34 m alternation with bands of chlorite - amphibole schist, 311.78 - 311.88 m alternation with bands of chlorite - amphibole schist).
Schistosity, banding : 63°.
Transitional contact.

314.26 - 314.90 : Slightly calcareous amphibole bear. epidote - rich chlorite schist / gneiss
(meta - mafic volcanic sediment)
similar: 324.05 - 330.20 m but no crosscutting qtz veins.
Lamination : 72°.

314.90 - 316.50 : Amphibole - chlorite bear. biotite - epidote - quartz gneiss
(meta silicate facies chert or tuffaceous sediment with chert interlayers)
similar: 322.25 - 323.80 m but with local occurrence of randomly oriented porphyroblasts of amphibole;
315.86 - 316.02 m amphibole - chlorite bear. biotite - epidote - magnetite - qtz gneiss
similar: 323.80 - 324.05 m with gradual borders to the surrounding.
Lamination : 68°.
Sharp contact.

316.50 - 322.11 : Slightly calcareous qtz - plagioclase - epidote - biotite - chlorite - amphibole schist / rock

(meta - basalt flow, leached supp. due to ascending autohydrothermal fluids or water - contact) (same as leached amphibole schists and amphibolited from DDH 768 G (322.50-336.70 m) and DDH 76 (24.53-31.50 m) and Svåni - profile)

Sample:685D/11
319.43-320.48m
whole rock
analysis

lightgn, crudely developed leopard texture, lense - shaped amphibole - chlorite - biotite crystal aggregates are homogeneously distributed within a groundmass composed of plagioclase, epidote, qtz and carbonate, the boundaries between the coloured crystal aggregates get blurred which is caused by "hydrothermal alternation" of the rock, the foliation is most pronounced the outer parts of the layer while the middel section nearly is massive.
Sharp contact.

322.11 - 322.25 : Magnetite - quartzite

(meta - oxide facies BIF)
gr and violet, extremely fine - grained, dense mt - barren quartzite layer of 3 - cm thickness is flanked on both sides by mt - layered quartzite which occasionally shows cm - thick interbeds composed of chlorite and amphibole or schlieren and laminae of chlorite - biotite schist, garnet occurs forming trains of granules or lense - shaped crystal aggregates; rare schlieren and spots of py.
Layering : 64°.
Sharp contact.

322.25 - 323.80 : Chlorite bear. biotite - epidote - qtz gneiss/schist

(meta - silicate facies BIF or qtz - rich epiclastic sediment with volcanic impurity)
gr, gngr, brown, yellowishbrown, laminated, sometimes with flaser and lenticular structure, interlocking tiny qtz crystals as laminae, bands and lenses in alternation with laminae, layers and schlieren composed of either epidote and biotite or biotite or chlorite, biotite tends to form porphyroblasts which

are crudely oriented, they often are stretched and flattened thus conformable with the lamination of the rock; rare occurrence of idioblasts of mt and schlieren of po.
Lamination : 65°.
Gradual contact.

323.80 - 324.05 : Amphibole - chlorite bear. biotite - epidote - magnetite - qtz gneiss
(meta - oxide - silicate facies BIF)
white, gr, gn, yellowishgn, brown, violet, fine - crystalline with sporadic occurrence of randomly oriented porphyroblasts of amphibole, laminated and also cm - banded, interlocking tiny qtz crystals as laminae and cm - bands in close alternation with layers composed of either qtz and magnetite or biotite and epidote of amphibole and chlorite, always sharp or knife sharp boundaries between the different bands, rare schlieren and small clusters of po.
Sharp contact.

324.05 - 330.20 : Amphibole bear. epidote - rich chlorite schist
(meta-mafic volcanic sediment)
gn, fine - crystalline, crude development of cm - to dm - banding, interleaved chlorite and amphibole crystals as cm-to dm-thick layers in alternation with lenses tiny bands and schlieren composed of qtz which in places are disconformable to the major foliation of the rock, locally interlayers of chlorite - amphibole schist or mt - banded cherts which often contain schlieren of sulphide and tiny crystals of garnet which tend to collect or form trains of granules (324.60 - 324.80 m, 325.00 - 325.23 m, 325.33 - 325.35 m, 325.40 - 325.45 m, 327.63 - 327.69 m, 327.76 - 327.88 m, 327.99 - 328.12 m, 328.35 - 328.58 m, 329.58 - 329.79 m); il occurs as scattered tiny crystals only within the chlorite layers; between 325.50 - 325.78 m biotite - epidote - quartz schist (meta - silicate facies BIF) brownishgr with faint

yellowish tint, laminated and with flaser and lenticular structure, interlocking qtz crystals as mm - thick layers and lenses in alternation with laminae and layers composed of biotite, epidote and qtz, sometimes interlayers of chlorite schist; sporadically tiny idioblasts of mt and schlieren of py.
Layering : 60°.
Sharp contact.

330.20 - 335.85 : Slightly calcareous epidote - qtz - fspar - chlorite - amphibole gneiss
(meta - mafic volcanic sediment)
gn to grgn, dm - banding with superimposed lamination or cm - textural banding, nonrhythmic alternation of fine - crystalline layers dominated by chlorite and sections characterized by randomly oriented porphyroblasts of amphibole which are embedded in a fine - grained groundmass composed of chlorite, epidote, qtz and fspar, the amphibole needles are variably distributed they either are widely scattered or can be enriched within cm - thick bands, carbonate tends to form scattered idioblasts the crystals on average 0.1 cm large; at several locations cm - thick interlayers of meta - chert which carries with 330.56 m, 334.79 - 334.85 m and 334.93 - 334.98 m some mt and with 335.30 - 335.32 m and 335.41 - 335.53 m either medium - grade py or stringers of po.
Layering : 72°.

335.85 - 335.95 : Milky qtz

335.95 - 336.15 : Sulphide bear. mt - rich quartzite
(meta - oxide and sulphide facies BIF)
gr with violet tint, strongly disturbed cm - banding composed of alternate dense quartzite layers and bands characterized by fine - crystalline magnetite, the upper portion shows a web - like pattern of pyrite, the sulphide grading 5% by volume of the rock.
Sharp contact.

336.15 - 341.22 : Slightly calcareous biotite bear. epidote - qtz - chlorite schist
(meta - mafic volcanic sediment or meta - pelite with mafic volcanic impurity)
similar : 342.06 - 343.50 m; several interlayers rich in py (337.00 - 337.25 m, 338.15 - 338.28 m, 338.80 - 339.00 m, 339.59 - 339.73 m, 340.02 - 340.04 m).
Lamination : 50°.
Sharp contact.

341.22 - 342.06 : Slightly calcareous biotite - sericite schist
(meta - pelite)
similar : 343.50 - 346.00 m, seems to be placed into the volcanic series by folding.

342.06 - 343.50 : Slightly calcareous amphibole - biotite bear. chlorite schist
(meta - mafic volcanic sediment or meta - pelite with mafic volcanic impurity)
lightgn, fine - crystalline, laminated or with crudely developed lenticular structure, nonrhythmic alternation of bands predominated by fine - crystalline chlorite, the crystals showing a preferred orientation, with laminae or lenses made by qtz and carbonate, biotite forms slightly porphyritic crystals which show a tendency to collect within lenses or discontinuous layers which are conformable with the major foliation of the rock; il occurs as xenomorphic crystals (poikiloblasts) which show sutured boundaries, it amounts to lesser 1% by volume of the rock; py sporadically is present as subidiomorphic porphyroblasts which often form trains of granules.
Lamination : 49°.
Sharp contact.

343.50 - 346.00 : Slightly calcareous biotite - sericite schist
(meta - pelite)
similar : 349.10 - 353.70 m but strongly deformed;

tectonized rock between 344.30 - 344.95 m which is due to folding.
Gradual contact.

346.00 - 349.10 : Calcareous to high calcareous sericite schist
(meta - pelite)
similar : 353.70 - 357.70 m, within the lower portion some cm- and dm - thick interlayers of calcareous biotite - sericite schist (see below) the bands with sharp boundaries of the surrounding schist.
Schistosity : 63°.
Gradual contact.

349.10 - 353.70 : Calcareous biotite - sericite schist
(meta - pelite)
gr with faint greenish tint, abundant brown spots, flaser and lenticular structure, interlocked qtz and carbonate crystals as laminae and lenses in close alternation with bands and schlieren composed of fine - crystalline sericite, biotite joins sericite, it forms 0.2 cm large porphyroblasts or imperfect spherulites the crystals and crystal aggregates nearly being homogeneously distributed thus causing a spotted appearence of the rock, biotite mostly is not aligned with the major foliation of the rock; high - grade sulphide of either combined po and py or py between 351.52 - 351.55 m and 351.36 - 351.41 m.
Tectonized rock between : 349.80 - 351.01 m.
Schistosity : 64°.
Gradual contact.

353.70 - 357.70 : Calcareous sericite schist
(meta - pelite)
gr, distinct lenticular structure, locally crude development of lamination, heterogeneous, interlocking qtz and carbonate crystals as lenses and layers or sometimes crosscutting bands in alternation with schlieren and layers composed of fine - crystalline sericite and subordinate biotite, the upper portion is enriched in carbonate, partly it forms idiomorphic

crystals being 0.05 cm across which are scattered. Gradual contact.

357.70 - 363.10 : High calcareous sericite schist
(meta - pelite)
similar : 374.40 - 378.50 m, but with scattered xenomorphic crystals of mt between 361.25 - 362.20 m; interlayers of nearly massive py within 362.65 - 362.80 m and 360.75 - 361.02 m, the latter band is accompanied by dense quartzite containing scattered py crystals what is situated at the footwall of the layer.
Schistosity : 70°.
Sharp contact.

363.10 - 374.40 : Slightly calcareous biotite - sericite schist
(meta - pelite)
gr with abundant brown rods, flaser and lenticular structure, heterogeneous, interlocking qtz crystals as lenses, schlieren and layers in alternation with schlieren and bands composed of sericite and biotite the latter is variably distributed forming randomly oriented porphyroblasts max. 0.15 cm large, within the upper portion biotite is finer - crystalline and tends to be aligned with the major foliation of the rock, idioblasts of garnet occur within the lower portion of the layer and between 365.80 - 371.10 m, and 364.25 - 364.97 m, it may be equally distributed but mostly forms scattered agglomerates, the subidiomorphic crystals are between 1 and 5 mm across.
Frequent occurrence of po as schlieren, laminae and within ribbon - shaped patterns, high - grade nearly massive po mineralization which contains some spots of py occurs between 364.12 - 364.19 m, 364.95 m, 365.00 m, 370.00 - 370.10 m, elsewhere, po amounts to 1 % of the total or lesser; py displays a medium - grade mineralization between 363.79 - 364.00 m, it occurs within a matrix of qtz (meta - chert, sulfid-facies); mt displays idioblasts and big xenomorphic

crystals with often sutured boundaries between 364.25 - 364.97 m and 368.50 - 372.00 m, it grades lesser 1% by volume of the rock.
Schistosity : 72°.
Sharp contact.

374.40 - 378.50 : Calcareous qtz - rich sericite schist
(meta - pelite)
gr, distinct flaser and lenticular structure, interlocking qtz and/or carbonate crystals as lenses and schlieren in alternation with schlieren of sericite; frequent occurrence of po which forms flakes, schlieren and ribbon - shaped patterns, the amount being 1 Vol.-%.
Tectonic zone between 375.00 - 375.27 m.
Schistosity : 73°.
Gradual contact.

378.50 - 385.30 : Biotite - sericite schist
(meta - pelite)
gr with brown rods and spots, distinct flaser and lenticular structure, interlocking qtz and carbonate as lenses and schlieren in alternation with schlieren and layers composed of sericite and biotite, the latter occurs as porphyroblasts on average 0.2 cm large which are scattered and randomly oriented.
Sharp contact.

385.30 - 399.80 : Biotite - sericite schist
(meta - pelite)
gr with brown spots, homogeneous, locally laminated due to carbonate which forms tiny layers being in rhythmic alternation with cm - thick bands composed of sericite + biotite + qtz, biotite forms scattered porphyroblasts and bundle - like aggregates on average 0.2 cm large which are slightly flattened thus often parallel to the major plane of foliation of the rock. Fault zone: 390.40 - 390.70 m.
Lamination : 65° within lower portion, 45° at hanging wall.
Sharp contact.

399.80 - 410.00 : Qtz - rich biotite bear. sericite phyllite
(meta - qtz - pelite)
gr, with random brown spots, porphyroblastic texture, homogeneous, in places laminated, single porphyroblasts of biotite on average 0.15 cm across are scattered within a groundmass composed of fine - crystalline sericite and qtz, the mica forming the foliation.
Strongly tectonized between : 410.00 - 406.00 m, discovery od several tiny faults and disharmonic folding.
Gradual contact.

410.00 - 436.80 : Biotite - sericite schist
(meta - pelite)
gr, homogeneous, sporadical tendency to lenticular structure, groundmass composed of fine - crystalline sericite and qtz, biotite occurs as scattered porphyroblasts and bundle - like aggregates on average 0.1 cm across which are randomly oriented, rock in places rich in carbonate, here often with distinct flaser and lenticular structure being due to a close alternation of mm - large lenses of carbonate and streaks made by sericite.
Tectonic zones : 412.47 - 411.80 m several tiny faults, 411.65 - 410.40 m.
Gradual contact.

Sample:685D/2
chemical analysis
424.45-425.70 m
whole rock

436.80 - 439.50 : Qtz - rich biotite - sericite schist/rock
(meta - qtz - pelite)
gr, fine - crystalline, crudely schistose, homogeneous, groundmass composed of tiny crystals of sericite and qtz, the former causes a slight foliation, biotite forms slightly porphyritic crystals which are homogeneously distributed and not but sometimes oriented.
Fault zones :439.23 - 439.40 m , 437.60 - 438.75 m, 437.15 - 437.36 m.
Sharp contact.

439.50 - 440.83 : Calcareous qtz - rich biotite - sericite schist/rock
(meta - pelite)
gr, homogeneous, crude development of foliation,

interlocking fine - crystalline sericite and qtz crystals as groundmass with scattered slightly porphyritic crystals of biotite which partly are oriented, carbonate forms tiny xenomorphic crystals (spots) which are homogeneously distributed.
Sharp contact.

440.83 - 441.17 : Phyllosilicate - rich quartzite
(meta - graywacke)
similar : 441.17 - 442.15 m continuous transition from coarse sand fraction (footwall) to fine sand within hanging wall.
Sharp contact, 80°.

441.17 - 442.15 : Phyllosilicate - rich quartzite
(meta - graywacke)
gr, blastopsammitic texture, flattened and stretched rounded fragments of qtz and qtz - fspar rock from fine pebble to medium sand fraction embedded in a phyllosilicate dominated matrix composed of sericite + biotite + qtz, within the upper portion gradual decrease in grain size and transition into fine graywacke or qtz - arenite.
Sharp contact, 80°.

442.15 - 443.80 : Biotite bear. sericite - rich quartzite
(meta - qtz arenite)
gr, fine - crystalline, homogeneous distribution of tiny sericite flakes within a fine - grained granoblastic groundmass composed of qtz, a slight foliation is caused by parallel alignment of sericite crystals.
Sharp contact.

443.80 - 444.40 : Qtz - rich biotite - sericite schist
(meta - pelite)
gr with brown spots, homogeneous, cm - banding within 10 cm of footwall, here alternation of fine - grained granoblastic phyllosilicate - rich quartzite layers and bands of qtz - rich biotite - sericite schist which always have sharp contacts, elsewhere

fine - crystalline sericite and qtz forming a grano-blastic groundmass which contain scattered tiny blasts of biotite being randomly oriented.
Banding : 70°.
Sharp contact.

444.40 - 445.15 : Phyllosilicate - rich quartzite
(meta - graywacke)
similar : 446.05 - 446.20 m gradually decreasing in grain size from fine pebble to fine sand upsection.
Sharp contact.

445.15 - 448.05 : Slightly calcareous phyllosilicate - fspar - qtz rock
(meta - paraconglomerate, pebbly mudstone)
similar : 449.80 - 450.75 m but slightly increased in phyllosilicate matrix.
Sharp contact.
446.05 - 446.20 m: Phyllosilicate - rich quartzite
(meta - graywacke)
gr, blastopsammitic texture, slightly stretched and flattened rounded fragments of qtz or qtz - fspar rock embedded in abundant matrix composed of biotite + sericite + qtz.
Sharp contact.

448.05 - 449.80 : Biotite - sericite schist
(meta - pelite)
gr with some brown spots, porphyroblastic, homogeneous, biotite froms scattered porphyroblasts or bundle - like aggregates on average 0.15 cm large which tend to be not oriented sometimes carbonate as vein - fillings.
Sharp contact.

449.80 - 450.75 : Calcareous phyllosilicate bear. fspar - qtz rock
(meta - paraconglomerate, pebbly mudstone)
gr, white, gn, distinct blastopsephitic texture, stretched and flattened subrounded to rounded fragments of cobble to pebble size composed of either qtz or qtz + fspar (qtz - keratophyr) are closely packed but surrounded by a sparce schistose matrix

made of sericite and chlorite which locally carry some porphyroblasts or bundles of biotite, carbonate forms mm - thick schlieren which may constitute strongly deformed clasts, it further occurs as irregular dissemination within qtz - debris.
Sharp contact.

450.75 - 469.00 : Biotite - sericite schist
(meta - pelite)
gr with faint greenish tint, homogeneous, only sporadically with lenticular structure, biotite forms scattered porphyroblasts, fascicular bundles or imperfect spherulites on average 0.25 cm large which are homogeneously distributed within a fine - crystalline lepidoblastic matrix composed of sericite and qtz.
Tectonic zones characterized by closely spaced tiny faults at : 453.15 - 454.60 m and 458.85 - 460.60 m.
Sharp contact.

469.00 - 473.70 : Biotite - chlorite bear. sericite schist
(meta-pelite)
gr with faint greenish tint, scattered brown flakes, banded, interleaved sericite and chlorite flakes as cm - thick homogeneous bands alternate with max. 0.5 cm thick layers composed of sericite + qtz, biotite forms scattered porphyroblasts or fascicular bundles on average 0.15 cm large which are homogeneously distributed.
Layering : 80^{o}.
Sharp contact.

473.70 - 477.10 : High calcareous biotite bear. qtz - sericite schist
(meta - graywacke)
grwhite with abundant brown rods, blastopsammitic texture, lense - shaped fragments of sand size mainly composed of qtz (vein - qtz) are embedded in a fine-crystalline crudely schistose matrix made of carbonate, sericite and biotite, the latter often forms porhpyroblasts or fascicular bundles or bow - tie crystal aggregates which tend to be aligned with the foliation

of the rock.
Foliation : 80^{0}-75^{o}.

477.10 - 478.75 : Tectonized zone biotite bear. qtz - sericite schist

478.75 - 486.00 : Biotite - sericite schist
(meta - pelite)
gr with faint greenish tint, abundant brown rods and spots, homogeneous, crudely developed lenticular structure, fine - crystalline granoblastic sericite - qtz groundmass, biotite forms porphyritic crystals or crystal - aggregates lesser 0.1 cm large which are homogeneously distributed while they are oriented at random, very rare are bands of carbonate.
Schistosity, lamination : 80^{o}.
Gradual contact.
485.18 - 485.40 m : Calcareous qtz - biotite - sericite schist (meta - graywacke)
gr, blastopsammitic texture, lense - shaped fragments of pure qtz (vein - qtz) on average 0.5 cm large are embedded in a schistose matrix composed of carbonate + biotite + sericite.
Gradual contacts on both side of the layer.

486.00 - 487.85 : Garnet - sericite bear. biotite - rich quartzite
(meta - qtz arenite)
brownishgr, fine - crystalline, crude development of lamination, tiny crystals of biotite are scattered within a fine - grained granoblastic matrix of qtz, biotite also shows a tendency to collect within mm - thick bands which causes a lamination of the rock, garnet forms widely scattered idioblasts max. 0.15 cm across.
Lamination : 85^{o}.
Gradual contact.

487.85 - 492.80 : Phyllosilicate poor quartzite
(meta - qtz arenite)
gr, fine - grained granoblastic qtz with schlieren and streaks composed of sericite which contain sometimes idioblasts of garnet.
Folded and sometimes tectonized.

492.80 - 494.95 : Pyrrhotite - rich qtz - biotite - sericite schist
(meta - qtz - rich pelite with iron sulphide supp. formed by iron - reducing bacteria)
gr, shear-induced flaser and lenticular structure, irregular alternation of layers and lenses of granoblastic schlieren of sericite; po composes a ribbon - shaped pattern, it grades on average 5% by volume of the rock.
Strongly folded.
Sharp contact.

494.95 - 496.00 : High calcareous biotite - poor qtz - sericite schist
(meta - qtz - rich pelite)
gr with faint greenish tint, distinct lenticular structure, irregular alternation of lenses and layers composed of qtz with schlieren and bands made by sericite + carbonate + biotite, carbonate tends to form tiny lenses or schlieren.
Strongly folded.
Sharp contact.

496.00 - 496.65 : Slightly calcareous biotite - sericite schist/phyllite
(meta - pelite)
similar : 497.55 - 498.85 m.
Sharp contact.

496.65 - 497.00 : High calcareous sericite schist / phyllite
(meta - pelite)
gr, homogeneous, tiny lenses composed of carbonate are surrounded by interleaved sericite flakes which compose a web - like feature.
Sharp contacts.

497.00 - 497.55 : Slightly calcareous epidote - chlorite bear. biotite - sericite phyllite
(meta - pelite with volcanic impurity)
browngr with greenish tint, laminated, interleaved sericite and chlorite flakes as schlieren and layers in close alternation with mm - thick bands and schlieren composed of biotite, epidote and carbonate.
Lamination : 85°.

497.55 - 498.85 : Slightly calcareous biotite - sericite schist/phyllite
(meta - pelite)
gr with faint greenish tint, homogeneous with crude development of banding, abundant tiny crystals of biotite which tend to be not oriented are scattered within a matrix of fine - crystalline interleaved sericite flakes, biotite causes an indistinct banding due to its tendency to collect within bands, some cm - thick interlayers of high calcareous biotite bear. sericite phyllite (s. below).
Schistosity : 80°.
Sharp contact.

498.85 - 500.75 : Calcareous to high calcareous biotite bear. sericite schist / phyllite
(meta - pelite)
gr with faint greenish tint, crudely developed lamination, lenticular structure, mm - thick lense - like spots and schlieren composed of carbonate embedded in a matrix of fine - crystalline sericite with rare occurrence of porphyritic biotite.
Lamination : 80°.
Sharp contact.

500.75 - 507.90 : Calcareous biotite bear. sericite schist
(meta - pelite)
similar : 525.60 - 543.80 m.
Lamination : 80° - 75°.
Sharp contact.

507.90 - 520.57 : Calcareous biotite - sericite schist
(meta - carbonate banded pelite)
gr with faint greenish tint, abundant white stripes and brown schlieren and rods, laminated, interlocked qtz and carbonate crystals as mm - thick layers in close alternation with laminae composed of sericite and biotite, the latter tends to form mm - large porphyritic crystals or fascicular bundles which may be scattered while not oriented but often form trains of flakes, carbonate often occurs as lenses or cm - thick bands.

Lamination : 85° - 90°, folded and partly tectonized between : 509.50 - 512.00 m here sometimes clusters of milky qtz.

520.57 - 525.60 : Tectonic zone within biotite - sericite schist.

525.60 - 543.80 : Calcareous biotite bear. sericite schist
(meta - carbonate banded pelite)
gr with faint greenish tint, often white coloured bands, rare brown spots and lenses, homogeneous or with lenticular structure, sporadically with indistinct lamination, interleaved sericite flakes as bands and schlieren in wide alternation with lenses or schlieren composed of qtz and carbonate, the latter also forms cm - thick bands and lenses which have a frequent occurrence, biotite either occurs as imperfect spherulites and fascicular bundles of max. 0.5 cm size and often conformable with the major foliation of the rock or it displays schlieren and trains of flakes.
Gradual contact.

543.80 - 601.70 : High calcareous epidote bear. biotite - fspar - qtz - chlorite schist
(meta - pelite with carbonate bands)
gr with faint greenish tint, sometimes yellowish, abundant brown rods, porhpyroblastic, homogeneous or with lamination, the latter sometimes is crudely developed, or with lenticular structure, interlocked chlorite flakes often as schlieren and layers alternate with lenses or bands composed of qtz + fspar and carbonate which sporadically contain abundant epidote, biotite displays schlieren which are conformable with the major foliation of the rock, it locally too forms scattered flakes or bow - tie shaped aggregates, carbonate often occurs as layers up to cm - thickness, it is concentrated within lenses or irregular shaped bodies within lower portion, sometimes occur cm - thick interlayers of calcareous epidote - biotite schist which have a distinct flaser structure due to a close alter-

Sample:685D/1
551.25 m
whole rock
analysis
561.15 - 562.44m.

nation of epidote schlieren and bands and schlieren composed of biotite and carbonate, the layers normally have gradual contacts with the surrounding schist.
Lamination : 85° - 80°.
Gradual contact.
545.75 - 545.18 m : Calcareous sericite schist
(meta - pelite)
gr, homogeneous with crudely developed lenticular structure supp. due to crenulation, interlocked carbonate crystals as lenses or tiny schlieren surrounded by fine - crystalline sericite.
Gradual contact.
Schistosity : 85°.

601.70 - 602.85 : Calcareous epidote bear. biotite - sericite schist
(meta - pelite, supp. conglomeratic tilloide, pebbly mudstone)
similar : 606.65 - 610.45 m.
Gradual contact.

602.85 - 606.65 : Slightly calcareous biotite - sericite schist
(meta - pelite)
similar : 610.45 - 610.65 m.
Gradual contact.

606.65 - 610.45 : Calcareous epidote bear. biotite - sericite schist
(meta - pelite, supp. conglomeratic tilloide, pebbly mudstone)
lightgr with abundant brown stripes, supposed blastopsephitic texture, lenses composed of biotite + carbonate + qtz + fspar are surrounded by interleaved fine - crystalline sericite and biotite crystals which carry abundant carbonate and some epidote, biotite besides that constitutes distinct laminae or sometimes schlieren which cause a banding of the rock, carbonate in places occurs as idioblasts max. 0.2 cm across.
Sharp contact.

610.45 - 610.65 : Slightly calcareous biotite - sericite schist
(meta - pelite)
gr with faint greenish tint, crudely developed lamination and lenticular structure, porphyroblastic, interlocking qtz or qtz and carbonate crystals as schlieren and lenses in alternation with interleaved sericite flakes forming schlieren and layers, biotite displays scattered 0.1 cm large porphyroblasts or bow - tie shaped crystal aggregates which are oriented at random. Lamination : 85°.

610.65 end of DDH 685 D.

F.D.Priesemann, 1986.

Susceptibility DDH 685 D

10.00	0.3	65.00	0.3	115.00	0.0
11.00	0.5	66.00	1.2	116.00	0.1
12.00	0.3	67.00	0.2	117.00	0.0
13.00	0.4	67.50	0.2	118.00	0.0
14.00	0.2	68.00	0.4	119.00	0.0
15.00	0.3	68.50	0.3	120.00	0.0
16.00	0.4	69.00	0.4	121.00	0.0
17.00	0.3	69.50	0.4	122.00	0.0
18.00	0.6	70.00	0.4	123.00	0.0
19.00	0.1	70.50	1.0	124.00	0.0
20.00	0.4	71.00	2.1	125.00	0.0
21.00	0.1	71.50	2.1	126.00	0.0
22.00	0.7	72.00	1.9	126.50	0.4
23.00	0.2	72.50	1.0	127.00	3.0
24.00	0.1	73.00	1.6	127.50	0.7
25.00	0.1	74.00	1.2	128.00	0.4
26.00	0.1	75.00	0.4	128.50	1.2
27.00	0.1	76.00	0.7	129.00	0.2
28.00		77.00	0.2	129.50	0.3
29.00	0.4	78.00	0.0	130.00	0.2
30.00	0.1	79.00	0.0	131.00	1.5
31.00	0.2	80.00	0.0	131.50	0.3
32.00	0.2	81.00	0.0	132.00	1.1
33.00	0.2	82.00	0.0	132.50	1.3
34.00	0.3	83.00	0.0	133.00	0.2
35.00	0.6	84.00	0.0	133.50	0.2
36.00	0.1	85.00	0.0	134.00	0.1
37.00	0.3	86.00	0.0	134.50	0.2
38.00	0.3	87.00	0.0	135.00	0.3
39.00	1.5	88.00	0.1	135.40	1.5
40.00	0.4	89.00	0.0	135.70	3.3
41.00	0.1	90.00	0.0	136.10	0.6
42.00	0.4	91.00	0.0	136.40	17.0
43.00	1.5	92.00	0.0	136.50	4.6
44.00	0.2	93.00	0.0	137.00	2.2
45.00	0.1	94.00	0.0	137.50	16.0
46.00	0.1	95.00	0.0	138.00	13.0
47.00	0.1	96.00	0.0	138.50	35.0
48.00	0.0	97.00	0.2	139.00	6.3
49.00	0.2	98.00	0.1	139.50	7.0
50.00	0.2	99.00	0.0	140.00	26.0
51.00	0.2	100.00	0.0	140.50	28.0
52.00	0.1	101.00	0.1	141.00	35.0
53.00	0.2	102.00	0.1	141.10	4.1
54.00	0.2	103.00	0.1	141.20	1.9
55.00	0.2	104.00	0.0	143.00	5.1
56.00	0.2	105.00	0.1	144.00	1.7
57.00	0.6	106.00	0.1	146.00	2.8
58.00	0.8	107.00	0.0	146.50	2.1
59.00	0.4	108.00	0.0	147.00	1.5
60.00	0.7	109.00	0.0	147.50	2.4
60.50	3.9	110.00	0.0	148.00	0.5
61.00	0.2	111.00	0.0	148.50	2.5
62.00	0.3	112.00	0.1	149.00	0.5
63.00	2.1	113.00	0.0	149.50	0.1
64.00	0.2	114.00	0.0	150.00	1.4

150.50	1.2	180.50	1.2	214.00	1.2
151.00	6.6	181.00	0.9	214.50	1.2
151.50	2.3	181.50	1.2	215.00	1.9
151.70	0.3	182.00	1.6	215.50	1.9
152.00	0.8	182.50	1.2	216.00	2.9
152.50	3.7	183.00	1.2	216.50	2.7
153.00	1.0	184.00	0.1	217.00	0.5
153.50	5.1	185.00	1.2	217.50	0.8
154.00	3.4	186.00	0.0	218.00	1.0
154.50	3.1	187.00	0.0	218.50	4.5
155.00	3.9	188.00	0.0	219.00	2.1
155.50	2.7	189.00	0.0	219.50	0.7
156.00	5.2	190.00	0.0	220.00	0.3
156.50	4.4	191.00	0.0	220.50	0.5
157.00	4.5	192.00	0.1	221.00	1.0
157.50	2.6	193.00	0.0	221.50	3.0
158.00	3.1	194.00	0.0	222.00	1.2
158.50	1.1	194.50	0.0	222.50	0.1
159.00	0.3	195.00	0.2	223.00	0.0
160.00	0.1	195.50	0.0	223.50	1.0
161.00	0.1	196.00	0.0	224.00	0.7
161.50	0.3	196.50	0.1	224.50	3.1
162.00	0.4	197.00	0.3	225.00	2.1
162.50	0.1	197.50	3.7	225.50	0.4
163.00	5.2	198.00	2.2	226.00	3.4
163.50	0.0	198.50	1.2	226.50	4.3
164.00	0.1	199.00	2.2	227.00	2.1
165.00	0.1	199.50	1.3	227.50	0.4
166.00	0.2	200.00	0.9	228.00	0.6
167.00	0.1	200.50	0.4	228.50	1.8
167.50	0.1	201.00	0.3	229.00	1.4
168.00	0.3	201.50	0.9	229.50	1.2
168.50	0.0	202.00	1.8	230.00	0.2
169.00	0.1	202.50	5.4	230.50	2.0
169.50	0.0	203.00	2.6	231.00	0.4
170.00	0.4	203.50	3.5	231.50	0.4
170.50	0.2	204.00	2.3	232.00	0.3
171.00	0.6	204.50	0.5	232.50	0.1
171.50	0.6	205.00	1.7	233.00	0.2
172.00	0.4	205.50	1.8	233.50	0.1
172.50	1.3	206.00	2.2	234.00	0.7
173.00	5.9	206.50	2.7	234.50	0.0
173.50	2.4	207.00	1.7	235.00	0.1
174.00	3.4	207.50	1.7	236.00	0.2
174.50	0.1	208.00	0.4	236.50	0.3
175.00	0.1	208.50	2.9	237.00	2.3
175.50	2.9	209.00	3.0	237.50	2.1
176.00	1.4	209.50	2.1	238.00	1.7
176.50	2.6	210.00	3.5	239.00	0.6
177.00	0.4	210.50	4.2	239.50	0.3
177.50	0.4	211.00	2.2	240.00	0.0
178.00	2.5	211.50	7.0	241.00	0.0
178.50	1.9	212.00	1.2	242.00	0.1
179.00	0.6	212.50	4.1	243.00	2.4
179.50	0.6	213.00	2.0	244.00	0.0
180.00	1.7	213.50	6.6	244.50	0.5

245.00	0.0	291.00	1.8	323.30	0.1
246.00	0.0	292.00	0.7	323.50	0.1
246.50	0.0	293.00	0.1	323.70	0.1
247.00	0.0	294.00	0.1	323.90	4.0
247.50	0.1	294.20	31.0	324.00	0.2
248.00	0.6	294.50	28.0	324.20	0.3
249.00	0.0	295.00	22.0	324.50	0.3
250.00	0.0	295.50	0.1	324.75	16.0
251.00	0.0	296.00	0.1	325.00	0.0
252.00	0.1	297.00	0.2	325.05	18.0
253.00	0.1	298.00	0.1	325.20	5.9
253.50	0.1	299.00	0.0	325.30	15.0
254.00	1.3	300.00	0.0	325.43	7.8
254.50	1.2	301.00	0.1	325.60	0.7
255.00	0.1	302.00	0.1	326.00	0.0
256.00	0.1	303.00	0.1	326.50	0.1
257.00	0.0	304.00	0.1	327.00	0.1
258.00	0.1	304.50	0.1	327.40	0.1
258.50	0.2	305.00	27.0	327.50	0.0
259.00	0.4	305.50	23.0	327.60	12.0
259.50	1.3	306.00	13.0	327.80	39.0
260.00	1.5	306.50	21.8	327.90	0.2
260.50	2.1	307.00	27.8	328.00	18.0
261.00	0.7	307.50	25.8	328.10	0.2
261.50	0.2	308.00	24.0	328.20	2.5
262.00	0.1	308.30	0.1	328.30	14.0
262.50	1.1	308.50	0.1	328.40	18.0
263.00	3.2	308.75	22.0	328.50	0.8
263.50	4.7	308.90	37.0	329.00	0.2
264.00	4.1	309.00	0.2	329.50	0.2
265.00	0.1	309.50	0.2	329.65	12.0
266.00	0.0	310.00	0.2	330.00	0.6
267.00	0.0	311.00	0.1	330.56	0.5
268.00	0.0	311.30	0.1	331.00	0.4
269.00	0.0	311.50	0.0	331.50	2.4
270.00	0.0	311.80	0.3	332.00	0.5
271.00	0.0	312.00	0.1	332.50	0.6
272.00	0.0	313.00	0.1	333.00	0.5
273.00	0.0	314.00	0.0	334.00	0.4
274.00	0.0	315.00	0.0	334.50	2.1
275.00	0.0	315.50	0.1	334.80	5.9
276.00	0.1	316.00	11.4	334.95	6.7
277.00	0.1	316.50	0.0	335.00	0.1
278.00	0.1	317.00	0.0	335.80	0.5
279.00	0.1	318.00	0.0	336.00	17.0
280.00	0.1	319.00	0.0	336.20	0.0
281.00	0.1	320.00	0.0	337.00	0.4
282.00	0.1	321.00	0.1	338.00	0.0
283.00	0.0	321.50	0.1	339.00	1.3
284.00	0.0	322.00	0.1	340.00	0.2
285.00	0.0	322.20	1.3	341.00	0.0
286.00	0.0	322.30	12.3	342.00	0.1
287.00	0.0	322.40	0.1	343.00	0.0
288.00	0.0	322.50	0.1	344.00	0.0
289.00	1.7	322.75	0.1	345.00	0.0
290.00	2.2	323.00	0.1	346.00	0.0

347.00	0.0
348.00	0.0
349.00	0.0
350.00	3.4
351.00	0.0
352.00	0.0
353.00	0.0
354.00	0.0
355.00	0.0
356.00	0.0
357.00	0.0
358.00	0.0
359.00	0.0
360.00	0.0
360.50	0.0
360.80	0.0
361.00	0.0
361.50	1.0
362.00	0.7
362.50	0.0
362.70	0.2
363.00	0.1
363.50	0.0
363.90	0.1
364.00	0.1
364.50	3.4
364.90	1.7
364.99	0.2
365.00	0.1
365.50	0.0
366.00	0.0
366.50	0.0
367.00	0.0
367.50	0.0
368.00	0.0
368.50	1.4
369.00	1.5
369.50	1.8
369.80	0.2
369.90	0.5
370.20	3.1
371.00	0.1
371.50	0.1
372.00	0.9
372.10	0.2
372.50	0.0
373.00	0.0
373.50	0.0
374.00	0.0
374.50	0.0
375.00	0.0
375.50	0.0
376.00	0.0
376.50	0.1
377.00	0.0
378.00	0.0
379.00	0.0
380.00	0.0

DDH 685 D

Occurrence of chert :

136.38 - 136.44 m	:	mt - quartzite
141.00 - 141.09 m	:	quartzite
146.77 - 146.84 m	:	"
148.05 - 148.13 m	:	"
148.89 - 149.66 m	:	"
294.10 - 295.25 m	:	silicate - oxide facies BIF
305.10 - 308.20 m	:	mt - quartzite
308.70 - 309.13 m	:	"
309.45 m	:	quartzite
309.50 m	:	"
309.73 - 309.74 m	:	"
310.40 m	:	"
311.27 - 311.34 m	:	quartzite with chlorite - amphibole schist
322.11 - 322.25 m	:	"
322.11 - 322.25 m	:	mt - quartzite
322.25 - 323.80 m	:	silicate - facies BIF
324.60 - 324.80 m	:	mt - quartzite
325.00 - 325.23 m	:	"
325.33 - 325.35 m	:	"
325.40 - 325.45 m	:	"
325.50 - 325.78 m	:	silicate - facies BIF
327.63 - 327.69 m	:	mt - quartzite
327.76 - 327.88 m	:	"
327.99 - 328.12 m	:	"
328.35 - 328.58 m	:	"
329.58 - 329.79 m	:	"
330.56 m	:	"
334.79 - 334.85 m	:	"
334.93 - 334.98 m	:	"
335.30 - 335.32 m	:	quartzite
335.41 - 335.53 m	:	"
335.95 - 336.15 m	:	mt - rich quartzite

DDH 685 D

Occurrence of sulfide:

74.45 - 76.00 m	:	sparce idioblasts, py
77.30 - 77.50 m	:	"
141.00 - 141.09 m	:	scattered idioblasts, py
141.32 - 144.10 m	:	random occ., py
147.58 - 147.63 m	:	crystals of py
148.13 m	:	big clusters of py
148.13 - 148.28 m	:	crystals of py
148.89 - 149.48 m	:	scattered idioblasts, py, 3 Vol.-%
150.55 - 153.30 m	:	several spots, py, 1 Vol.-%
175.20 - 175.75 m	:	idioblasts, py
204.40 - 204.92 m	:	single crystals, py
207.39 - 208.85 m	:	"
213.96 m	:	idioblasts, py
214.50 - 214.90 m	:	"
217.40 m	:	scattered idioblasts, py
217.50 - 218.00 m	:	"
219.00 - 219.10 m	:	"
219.38 - 222.00 m	:	"
222.13 m	:	"
309.45 m	:	scattered porphyroblasts, py
309.50 m	:	"
322.11 - 322.25 m	:	rare schlieren and spots, py
322.25 - 323.80 m	:	rare schlieren, po
323.80 - 324.05 m	:	rare schlieren and clusters of po
325.50 - 325.78 m	:	schlieren of py
335.30 - 335.32 m	:	medium - grade py
335.95 - 336.15 m	:	stringers of po
335.95 - 336.15 m	:	web - like py, 5 Vol.-%
337.00 - 337.25 m	:	rich py
338.15 - 338.28 m	:	"
338.80 - 339.00 m	:	"
339.59 - 339.73 m	:	"
340.02 - 340.04 m	:	"
342.06 - 343.50 m	:	sparce crystals, py
351.36 - 351.41 m	:	high - grade py and po
351.52 - 351.55 m	:	"
360.75 - 361.02 m	:	nearly mass. py
362.65 - 362.80 m	:	"
363.10 - 374.04 m	:	schlieren, laminae, ribbon-shaped patterns of po, 1 Vol.-% 364.12 - 364.19m: high - grade po with spots of py 364.95 m: high-grade po with spots of py 365.00 m: high-grade po with spots of py 370.00 - 370.10 m: high-grade po with spots of py
363.79 - 364.00 m	:	medium - grade py
374.40 - 378.50 m	:	flakes, schlieren, ribbon-shaped patterns of po, 1 Vol.-%
492.80 - 494.95 m	:	ribbon-shaped patterns of po, 5 Vol.-%.

Chemical analysis from samples of DDH 685 D:

141.00 - 141.10 m : 0.05 % Cu, 0.03 % Zn, 1.93 % S,
147.58 - 147.63 m : 0.04 % Cu, 0.02 % Zn, 1.01 % S,
148.13 - 148.25 m : 0.05 % Cu, 0.02 % Zn, 1.52 % S,
148.87 - 149.66 m : 0.04 % Cu, 0.01 % Zn, 0.80 % S,
150.55 - 151.05 m : 0.02 % Cu, 0.02 % Zn, -
151.05 - 151.60 m : 0.03 % Cu, 0.02 % Zn, -
152.19 - 152.69 m : 0.03 % Cu, 0.03 % Zn, -
152.69 - 153.19 m : 0.03 % Cu, 0.02 % Zn, -
154.30 - 154.83 m : 0.03 % Cu, 0.02 % Zn, -
155.25 - 155.55 m : 0.04 % Cu, 0.02 % Zn, -
155.55 - 156.28 m : 0.03 % Cu, 0.02 % Zn. -

Chemical analysis from samples of DDH 685 D which have been analyzed in 1980 :

294.00 - 294.70 m : 0.00 % Cu, 0.11 % Zn, 0.60 % S,
294.70 - 295.25 m : 0.00 % Cu, 0.10 % Zn, 0.60 % S,
295.25 - 305.70 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
305.70 - 306.10 m : 0.00 % Cu, 0.09 % Zn, 0.60 % S,
306.10 - 306.80 m : 0.00 % Cu, 0.11 % Zn, 0.60 % S,
306.80 - 307.50 m : 0.00 % Cu, 0.9 % Zn, 0.60 % S,
307.50 - 308.05 m : 0.00 % Cu, 0.9 % Zn, 0.60 % S,
308.05 - 308.70 m : 0.00 % Cu, 0.12 % Zn, 0.60 % S,
308.70 - 309.05 m : 0.00 % Cu, 0.11 % Zn, 0.60 % S,
323.00 - 323.80 m : 0.00 % Cu, 0.10 % Zn, 0.60 % S,
323.80 - 324.00 m : 0.00 % Cu, 0.11 % Zn, 0.60 % S,
324.00 - 324.50 m : 0.00 % Cu, 0.13 % Zn, 0.60 % S,
324.50 - 325.00 m : 0.00 % Cu, 0.31 % Zn, 0.60 % S,
325.00 - 325.20 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
325.20 - 325.80 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
325.80 - 326.80 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
326.80 - 327.65 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
327.65 - 327.80 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
327.80 - 328.05 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
328.05 - 328.20 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
328.20 - 328.40 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
328.40 - 328.65 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
328.65 - 329.20 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
334.50 - 335.30 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
335.30 - 335.35 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
335.35 - 336.30 m : 0.00 % Cu, 0.08 % Zn, 0.88 % S,
336.30 - 336.45 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
336.45 - 337.20 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
337.20 - 337.40 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
337.40 - 338.15 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
338.15 - 338.35 m : 0.00 % Cu, 0.08 % Zn, 2.53 % S,
338.35 - 338.85 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
338.85 - 338.95 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
338.95 - 339.30 m : 0.00 % Cu, 0.07 % Zn, 3.97 % S,
339.30 - 339.45 m : 0.00 % Cu, 0.08 % Zn, 0.60 % S,
339.45 - 340.02 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,
340.02 - 340.60 m : 0.00 % Cu, 0.07 % Zn, 0.60 % S,

351.35	-	351.55	m	:	0.00	%	Cu,	0.13	%	Zn,	0.00 % S,
360.75	-	360.95	m	:	0.00	%	Cu,	0.11	%	Zn,	15.70 % S,
360.95	-	361.05	m	:	0.06	%	Cu,	0.10	%	Zn,	2.41 % S,
361.05	-	361.10	m	:	0.00	%	Cu,	0.10	%	Zn,	18.71 % S,
361.10	-	361.20	m	:	0.00	%	Cu,	0.12	%	Zn,	0.00 % S,
361.20	-	361.25	m	:	0.03	%	Cu,	0.11	%	Zn,	1.28 % S,
361.25	-	361.50	m	:	0.03	%	Cu,	0.10	%	Zn,	0.00 % S,
362.65	-	362.80	m	:	0.00	%	Cu,	0.09	%	Zn,	19.41 % S,
362.80	-	363.80	m	:	0.00	%	Cu,	0.09	%	Zn,	0.00 % S,
363.80	-	364.00	m	:	0.00	%	Cu,	0.08	%	Zn,	15.33 % S,
364.00	-	364.20	m	:	0.00	%	Cu,	0.09	%	Zn,	28.79 % S,
364.20	-	364.35	m	:	0.00	%	Cu,	0.11	%	Zn,	2.19 % S,
364.35	-	364.85	m	:	0.00	%	Cu,	0.10	%	Zn,	5.21 % S,
364.85	-	364.95	m	:	0.00	%	Cu,	0.08	%	Zn,	3.17 % S,
364.95	-	365.00	m	:	0.00	%	Cu,	0.09	%	Zn,	2.91 % S,
365.00	-	365.10	m	:	0.00	%	Cu,	0.09	%	Zn,	2.46 % S,
365.10	-	365.60	m	:	0.00	%	Cu,	0.09	%	Zn,	0.60 % S,
368.90	-	369.90	m	:	0.00	%	Cu,	0.10	%	Zn,	0.60 % S,
369.90	-	370.00	m	:	0.00	%	Cu,	0.08	%	Zn,	20.19 % S,
370.00	-	370.10	m	:	0.00	%	Cu,	0.09	%	Zn,	0.60 % S,
370.10	-	370.50	m	:	0.00	%	Cu,	0.10	%	Zn,	0.60 % S,
370.50	-	370.70	m	:	0.00	%	Cu,	0.14	%	Zn,	1.18 % S,
370.70	-	370.80	m	:	0.00	%	Cu,	0.08	%	Zn,	17.44 % S,
370.80	-	371.25	m	:	0.00	%	Cu,	0.08	%	Zn,	0.99 % S,
371.25	-	372.00	m	:	0.00	%	Cu,	0.09	%	Zn,	0.60 % S,
372.00	-	373.00	m	:	0.00	%	Cu,	0.09	%	Zn,	0.60 % S,
373.00	-	373.80	m	:	0.00	%	Cu,	0.08	%	Zn,	0.60 % S,
373.80	-	374.60	m	:	0.00	%	Cu,	0.08	%	Zn,	0.60 % S,
374.60	-	375.30	m	:	0.00	%	Cu,	0.09	%	Zn,	0.60 % S,
375.30	-	376.00	m	:	0.01	%	Cu,	0.08	%	Zn,	0.60 % S,
376.00	-	377.00	m	:	0.00	%	Cu,	0.08	%	Zn,	0.60 % S,
492.00	-	492.80	m	:	0.00	%	Cu,	0.09	%	Zn,	0.60 % S,
492.80	-	493.60	m	:	0.00	%	Cu,	0.09	%	Zn,	0.60 % S,
493.60	-	494.50	m	:	0.00	%	Cu,	0.10	%	Zn,	0.60 % S,
494.50	-	495.00	m	:	0.00	%	Cu,	0.09	%	Zn,	0.60 % S,
495.00	-	496.00	m	:	0.00	%	Cu,	0.09	%	Zn,	0.60 % S.

DIAMOND DRILL HOLE 762 D

Hjerkinn, east of main fault, 1981.
Location: 2125 Ø - 360 S.
Azimuth: 214.28^{g}.
Inclination: 25^{o} N.
Total length: 364.60 m.

Description:

0.00 - 112.50 : Biotite - sericite schist
(meta - pelite often with marble bands)
gr with faint greenish tint, abundant brown spots and schlieren, predominately with flaser and lenticular structure, locally laminated or banded, porphyroblastic, interlocking qtz - crystals as lenses and layers in alternation with interleaved sericite flakes as schlieren and layers, biotite forms porphyroblasts, bow - tie aggregates or fascicular bundles which are variably distributed, carbonate has a frequent occurrence it displays bands and/or lenses which tend to be conformable with the major foliation of the rock. From the beginning and until 28.50 m the biotite - sericite schist is interlayered by zones rich in epidote and biotite which sometimes carry significant amounts in fspar (keratophyric material).
Gradual contact.

112.50 - 114.65 : Calcareous epidote - qtz - fspar - chlorite schist
(meta - mafic volcanic sediment)
(similar chlorite schists from DDH 51)
lightgn, fine - crystalline, flaser and lenticular structure with tendency to laminated rock, interlocking qtz and fspar crystals as tiny lenses and laminae in close alternation with schlieren and layers composed of chlorite - epidote, carbonate forms scattered xenomorphic blasts max. 0.07 cm across it sometimes collects and displays mm - thick layers.

114.65 - 116.85 : Schistose amphibolite
(meta - basalt flow)

lightgn, fine - crystalline, homogeneous, acicular crystals of amphibole show a preferred orientation; scattered crystals of ilmenite, the blasts on average 0.1 cm across and with sutured boundaries.

116.85 - 118.00 : Amphibole bear. epidote - qtz - fspar - chlorite schist
(meta - mafic volcanic sediment)
(similar chlorite schists from DDH 51)
similar: 112.50 - 114.65 m but with scattered acicular crystals of amphibole; interlayers of qtz - fspar rich rock (qtz - keratophyrs).

118.00 - 121.70 : Schistose amphibolite
(meta - basalt flow)
similar: 114.65 - 116.85 m, interbeds of high calcareous biotite - qtz - fspar schist/rock (meta - tuffs).

121.70 - 123.60 : Calcareous biotite - qtz - fspar gneiss/schist
(meta - felsic tuff)
121.65 - 121.77 : Quartzite (meta - chert).

123.60 - 124.60 : Schistose amphibolite
(meta - basalt flow)
similar: 114.65 - 116.85 m.

124.60 - 127.90 : Epidote bear. qtz - fspar - biotite schist/gneiss
(meta - felsic tuff)
several interlayers of meta - chert: 125.70 - 126.00 m, 126.20 - 126.60 m, 126.70 - 126.80 m, 127.10 - 127.45 m.

127.90 - 128.70 : Calcareous amphibole bear. epidote - qtz - fspar - chlorite gneiss
(meta - tuff with carbonate interlayers)
close alternation of mafic and felsic layers and bands of carbonate.

128.70 - 129.10 : Epidote bear. qtz - fspar - biotite schist/gneiss
(meta - tuff)

129.10 - 130.45 : Quartzite
(meta - chert; silicate and sulphide facies)

hanging wall rich in biotite and carbonate and with medium - grade py mineralization (130.00 - 130.50 m).

130.45 - 136.40 : Calcareous amphibole bear. epidote - qtz - fspar - chlorite schist
(meta - mafic volcanic sediment)
(similar chlorite schists from DDH 51)
similar: 116.85 - 118.00 m; spotted porphyroblasts of il between 132.80 - 136.40 m; some spots of py between 130.45 - 130.55 m.

136.40 - 147.70 : Schistose amphibolite
(meta - basalt flow)
similar: 114.65 - 116.85 m; rich in il; several bands of qtz which contain schlieren, flakes and ribbon - shaped patterns of po: 138.73 m, 138.78 m, 139.14 m, 141.00 m, 141.14 m, 141.35 m, 141.76 m, 141.94 - 142.08 m, 144.35 - 144.68 m.

147.70 - 148.10 : Qtz - fspar - chlorite gneiss
(meta - tuff)
sporadically tiny flakes of po.

148.10 - 151.10 : Schistose amphibolite
(meta - basalt flow)
similar: 114.65 - 116.85 m; several interlayers of calcareous quartzite which contains bands, ribbon - shaped patterns and schlieren of po: 148.90 - 149.00 m, 149.20 - 149.32 m, 149.42 - 149.62 m, 150.30 - 151.10 m.

151.10 - 163.40 : Amphibolite
(meta - basalt flow)
gn, fine - and medium - crystalline, massive with crudely develpoed mineral preferred orientation, homogeneous but variation in grain size, amphibole forms patch - like crystal aggregates which are surrounded by grandoblastic plagioclase, epidote and qtz; spotted ilmenite thoughout.

163.40 - 169.13 : Schistose amphibolite and amphibolite

(meta - basalt flow)
similar: 114.65 - 116.85 m.

169.13 - 169.36 : Amphibolite
(meta - basalt flow)
similar: 151.10 - 163.40 m.

169.36 - 192.95 : Schistose amphibolite and amphibolite
(meta - basalt flow)
rock similar 114.65 - 116.85 m alternates with rock similar 151.10 - 163.40 m; at several locations mineralization of po: 169.75 - 170.15 m flakes, 170.05 - 170.15 m high - grade po, 171.75 - 171.85 m flakes, 173.02 - 173.10 m schlieren.

192.95 - 193.40 : Calcareous qtz - fspar - epidote - amphibole - chlorite schist
(meta - mafic volcanic sediment)
(similar chlorite schists from DDH 51)
and close banded amphibolite)
lightgn with abundant white stripes, laminated, porphyroblastic texture, interlocked qtz and fspar crystals as lenses and laminae in close alternation with schlieren and bands composed of fine - crystalline chlorite and porphyroblasts of amphibole, the acicular crystals max. 0.5 cm long and randomly oriented.

193.40 - 227.65 : Schistose amphibolite
(meta - basalt flow)
similar: 114.65 - 116.85 m with local interlayers of medium - crystalline amphibolite from 151.10 - 163.40 m, coarse - grained leopard textured amphibolite occurs between 224.75 - 225.95 m.

227.65 - 228.15 : Calcareous amphibole bear. epidote - qtz - fspar - chlorite schist
(meta - mafic volcanic sediment)
(similar chlorite schists from DDH 51)
similar: 192.95 - 193.40 m.

228.15 - 247.95 : Schistose amphibolite

(meta - basalt flow)
similar: 114.65 - 116.85 m, fractures until 239.75 m.

247.95 - 248.65 : Calcareous qtz - fspar - epidote - amphibole - chlorite schist
(meta - mafic volcanic sediment)
(similar chlorite schists from DDH 51)
similar: 192.95 - 193.40 m.

248.65 - 256.40 : Schistose amphibolite
(meta - basalt flow)
similar: 114.65 - 116.85 m.

256.40 - 256.50 : Calcareous amphibole bear. epidote - qtz - fspar - chlorite schist
(meta - mafic volcanic sediment)
(similar chlorite schists from DDH 51)
similar: 112.50 - 114.65 m but with acicular crystals of amphibole; sporadically schlieren and flakes of po.

256.50 - 260.00 : Schistose amphibolite
(meta - basalt flow)
similar: 114.65 - 116.85 m.

260.00 - 260.70 : Epidote - rich amphibole - biotite - qtz schist/gneiss
(meta - silicate facies BIF)
high - grade mt mineralization, po as schlieren throughout, massive po layer at 260.65 - 260.70 m.

260.70 - 265.70 : Calcareous epidote - qtz - fspar - amphibole - chlorite schist
(meta - mafic volcanic sediment)
(similar chlorite schists from DDH 51)
similar: 192.95 - 193.40 m, several interlayers of medium - crystalline amphibolite which is similar 151.10 - 163.40 m; silicate facies meta - chert with low - grade po mineralization within 262.10 - 262.28 m; frequent occurrence of sulphides mainly as py which tends to be highly enriched: 261.59 - 261.61 m, 261.79 - 261.90 m several mass. py bands,

263.00 - 263.10 m, 263.10 - 263.14 m, schlieren of po, 263.75 - 263.77 m medium - grade py enrichment, 264.26 - 264.27 m rare crystals of py, 264.42 - 264.50 m, 264.76 - 264.79 m.

265.70 - 267.60 : Schistose amphibolite
(meta - basalt flow)
similar: 114.65 - 116.85 m, within 266.45 - 266.50 m two bands of medium - grade py.

267.60 - 268.85 : Calcareous amphibole bear. epidote - qtz - fspar - chlorite schist
(meta - mafic volcanic sediment)
(similar chlorite schists from DDH 51)
similar: 256.40 - 256.50 m.

268.85 - 274.20 : Schistose amphibolite
(meta - basalt flow)
similar: 114.65 - 116.85 m but without ilmenite.

274.20 - 274.80 : Calcareous epidote - qtz - fspar - amphibole - chlorite gneiss/schist
(meta tuff) (very similar banded amphibolite)
massive py mineralization at 274.20 m, medium - grade po enrichment between 274.59 - 274.64 m.

274.80 - 275.30 : Schistose amphibolite
(meta - basalt flow)
similar: 114.65 - 116.85 m but without il.

275.30 - 275.90 : Calcareous epidote - qtz - fspar - amphibole - chlorite gneiss/schist
(meta - tuff) (very similar banded amphibolite)
similar: 274.20 - 274.80 m , local changes into banded amphibolite.

275.90 - 286.90 : Calcareous amphibole bear. epidote - qtz - fspar - chlorite schist
(meta - mafic volcanic sediment)
(similar chlorite schists from DDH 51)

similar: 130.45 - 136.40 m.
Several sulphide interlayers: 285.35 - 285.44 m po py, 285.60 - 285.78 m py, 285.90 - 286.10 m py, 286.40 - 286.45 m py, 286.63 - 286.68 m py, 286.76 - 286.80 m py.
276.90 - 278.50 m: Garnet - magnetite - biotite rock/ gneiss (meta - chert).

286.90 - 289.60 : Amphibolite
(meta - basalt flow)
similar: 151.10 - 163.40 m with distinct leopard textur, no il.

289.60 - 290.10 : Calcareous epidote - qtz - fspar - chlorite - amphibole gneiss/schist
(meta - tuff) (very similar banded amphibolite)
high - grade py between 290.13 - 290.21 m.

290.10 - 308.25 : Schistose amphibolite and amphibolite
(meta - basalt flow)
rock similar: 114.65 - 116.85 m but with no il alternates with medium - crystalline amphibolite from 151.10 - 163.40 m which sporadically occurs with distinct leopard textur; schlieren of py and po between 306.93 - 306.95 m.

308.25 - 309.30 : Calcareous epidote - qtz - fspar - chlorite - amphibole gneiss
(meta - tuff) (very similar banded amphibolite).

309.30 - 352.50 : Schistose amphibolite
(meta - basalt flow)
similar: 114.65 - 119.85 m, sometimes interlayers of calcareous epidote - qtz - fspar - chlorite schist; rare schlieren of po between 313.87 - 313.92 m.

352.50 - 353.65 : Calcareous biotite bear. epidote - qtz - fspar - chlorite schist
(meta - mafic volcanic sediment)
(similar chlorite schists from DDH 51)
similar: 112.50 - 114.65 m.

353.65 - 364.60 : Schistose amphibolite and amphibolite
(meta - basalt flow)
similar: 290.10 - 308.25 m.

364.60 m end of DDH 762 D

F.D.Priesemann, 1986.

FOLLDAL VERK A/S

1:2500

626 m ≙ 25 cm

1 cm = 25 m

DIAMOND DRILL HOLE 767 G

Tverrfjellet mine, Pilotort Nivå VII, 1982
Location: X - 152,94, Y - 814,71, Z - 671,99
Azimuth: 237,84
Inclination: 0°, measured deviation
Total length: 626,51 m

Descripion:

0,00 - 66,00: Shistose amphibolite (meta-basalt flows)

Palegn, extremely fine-crystalline, sometimes dm-thick interlayers of medium-grained amphibolite (22,00 - 22,15 m, 27,97 - 28,34 m, 29,60 - 29,90 m, 32,80 - 33,46 m, 48,43 - 49,30 m, 58,47 - 58,75 m, 59,62 - 60,06 m, 60,98 - 61,15 m, 64,53 - 64,87 m), nemøtoblastic texture, in places development of tiny lenses and schlieren of plagioclase which are supposed to represent extremely stretched amygdules, frequent occurrence of mm - to cm-thick bands of carbonate which are comformable with the foliation of the rock but may also crosscut it; abundant scattered poikiloblasts (average 0,15 cm size) of ilmenite with sutured boundaries between 0,00 - 2,10 m, elsewhere il forms extremely small crystals which are variably distributed.
Several cm-thick but sometimes dm-thick interlayers of slightly calcareous biotite - epidote - qtz - chlorite schist which always have knife-sharp boundaries with surrounding (6,70 - 7,16 m, 9,45 - 9,49 m, 9,64 - 9,70 m, 12,28 - 12,55 m, 24,85 - 25,19 m, 38,55 - 38,72 m, 40,83 - 40,93 m, 42,25 - 42,42 m, 59,05 - 59,25 m, 60,00 - 60,27 m).

1,10 - 1,20: Quartzite (meta-chert)
gr, extremely fine-grained, massive.

4,50 - 4,69 m: Quartzite (meta-chert)
gr, extremely fine-grained, massive, only hanging portion with idioblasts of py which tend to form trains of granules.

34.24 - 34,40: magnetite quartzite (meta-chert)
violet, extremely fine-crystalline, massive, homogenous distribution of dusty mt, irregular veins of epidote and carbonate.

39,40 - 39,65: magnetite quartzite (meta-chert)
see above.

40,05 - 40,17: magnetite-bear. quartzite (meta-chert) grwhite with faint violet tint, extremely fine-crystalline, appearence of dust-like epidote forming irregular shapes, sparce porphroblasts of amphibole (0,4 cm length) which are oriented parallel to the lower contact with amphibolite.

44,48 - 44,82: magnetite - quartzite (meta-chert) same as: 34,20 - 34,40 m.

54,55 - 54,58: quartzite (meta-chert) same as: 1,10 - 1,20 m

Schistosity/banding: 9,00 m 70°, 19,50 m 58°, 27,00 m 74°, 36,70 m 76°, 47,45 m 74°, 55,15 m 76°, 64,10 m 76°.

66,00 - 75,90: Slightly calcareous amphibolite or amphibole schist (meta-basalt flows)
gn, medium-crystalline, crude development of mineral preferred orientation, close to leopard texture, amphibole forms lense-like crystal aggregates of 0,15 cm size which are surrounded by sparce groundmass composed of plagioclase and epidote but sometimes also carbonate, variation in the amount of plagioclase and epidote causes differences in colour and texture.

Sample: 767 G-1
67,62 - 69,35 m
Thinsection
whole rock
analyses

Several interlayers of calcareous biotite - epidote - qtz - chlorite schist which is characterized by a more ore less distinct alternation of bands and lenses composed of either carbonate or epidote, biotite, qtz and carbonate and cm-thick, swelling ~~up and down~~ and pinching layers made by fine-fibrous chlorite, epidote and biotite, biotite always occurs within stretched, lense-shaped crystal aggregates which are comforable with the banding of the rock (70,13 - 70,35 m, 71,18 - 71,70 m, 71,80 - 71,85 m, 72,02 - 72,35 m, 72,49 - 72,60 m).
Foliation: 85°.
Sharp hanging wall.

75,90 - 83,25: Schistose amphibolite (meta-basalt flows)
Similar: 0,00 - 66,00 m variable grain-size , gradually changing into fine- and medium-grained varieties, the latter often looking quite similar amphibolite from 66,00 - 75,90 m. Several interlayers of calcarous biotite - epidote ~~- epidote~~ - qtz - chlorite schist which is similar chlorite schists from section 66,00 - 75,90 m; space idioblasts of py occur at: 76,65 - 76,85 m.
Schistosity: 85°.
Knife sharp contact.

83,25 - 83,77: Epidote-bear. magnetite-rich garnet - biotite - sericite schist (meta-tuffite or tuffaceous sediment) (very similar in texture with mt - marker tuff which lies strati-

grafically further down and near the footwall of meta lahar)
gr with faint greenish tint, abundant brown rods and flakes, medium - crystalline, schlieren structure with transitions into crudely layered rock, tiny lenses and laminae dominated by qtz which is accompanied by sericite and biotite, in alternation with schlieren and bands composed of sericite, garnet and biotite, garnet crystals mainly with subidiomorphic outlines and sizes from 0,1 to 0,2 cm, biotite forms porphyroblasts or bundle-like aggregates which are homogenously distributed, they mostly are cross the major foliation of the rock but may also be parallel; big crystals of py are concentrated within the footwall portion of the layer, the sulphide reaches 1 - 2 % of the total; abundant scattered idioblasts of mt which decrease in size and abundancy upsection.
Schistosity: 85°
Sharp contact.

83,77 - 86,25: Calcareous magnetite-bear. epidote - biotite - qtz - sericite schist/gneiss
(meta-cherty tuffite) (similar mt-marker tuff which lies stratigrafically further down and near the footwall of meta-lahar)
gr with faint greenish tint, sometimes yellowish, abundant brown schlieren, strong variation in compostion and texture, mostly cm-layered, here alternation of bands composed of sericite and biotite with layers highly enriched in qtz (cherty intersections) and bands or lenses made by qtz, epidote and carbonate, locally dm-thick interbeds of qtz-rich biotite - sericite schist; big spots of py at 83,53 m; low-grade dissemination of mostly tiny crystals of mt.
Banding: 80°- 85°
Gradual contact.

86,25 - 100,41: Slightly calcareous amphibole-bear. epidote - biotite - qtz - fspar gneiss
(meta-felsic tuff with meta-chert interlayers)
gr, yellowishgr, brown, milkywhite, dinstinct mm- and cm-compostional layering with mostly sharp contacts but nearly even so often transitional boundaries between the different layers, locally lesser distinct stratified, rhytmic alternation of feldspatic bands which always contain some biotite, amphibole and qtz with layers mainly composed of biotite but also rich in epidote, qtz and fspar, occasional cm-thick massive quartzite (meta-chert) interlayers which contain subordinate amounts of dusty mt, carbonate tends to join fspar in the felsic layers and forms here thin lenses or trains of granules but sometimes it is homogeneously distributed; sparce crystals of py occur sporadically; a low-grade dissemination of tiny crystals of mt seems to be present throughout.
Banding: 90,00 m 86°
Gradual contact.

100,41 - 103,00 : Slightly calcareous biotite-bear. amphibole schist (meta-basalt flows)
lightgn, abundant palewhite augen, some brown rods, blasto-amygdaloidal texture, stretched and flattened augen of plagioclase on average 0,2 cm in diameter are scattered within a fine-crystalline amphibole groundmass rich in epidote, biotite forms fascicular bundles and lense-shaped crystal aggregates which are parallel to the major foliation of the rock, they are homogeneously distributed, carbonate occurs within mm-thick layers or lense-shaped aggregates which only in places cross the foliation; sudidioblastic porphyroblasts at several locations, the ~~sulphide amount~~ remains lower 1 % by volume of the rock.
Schistosity: 82°
Gradual contact.

103,00 - 127,60: Schistose amphibolite (meta-basal flows)
gn with faint yellowish tint, medium - crystalline, amphibole forms lense - like crystals or crystal aggregates of max 0,1 cm size which show a ~~mineral~~ preferred orientation, the crystals are surrounded by plagioclase and epidote causing a ribbon - shaped pattern, the texture sometimes gets blurred where the amphibole - crystals have been closely packed, at several locations abundant lense shaped aggregates of biotite which always are aligned with the major foliation of the rock, sometimes biotite gets accompanied by chlorite and carbonate to form a calcareous biotite - chlorite schist (altered amphibolite) (110,00 - 110,58 m, 111,50 - 111,73 m, 113,93 - 114,08 m, 114,71 - 116,30 m, 117,73 - 118,64 m, 127,47 - 127,50 m); very rich in scattered tiny crystals of il.
Schistosity: 82°
Transition into following rock.

107,73 - 108,25: Epidote-bear. biotite - qtz - fspar schist (meta-intermediate to felsic tuff)
browngr with faint yellowish tint, crude development of layering which is due to the tendency of biotite to be concentrated within thin layers, ~~fine-crystalline~~, slightly porphyritic crystals of biotite which randomly are oriented are scattered within a granoblastic matrix composed of fspar, epidote and qtz.
Lamination: 80°.

127,60 - 132,60: Slightly calcareous biotite-bear. amphibole schist (meta-basalt flow)
similar: 100,41 - 103,00 m, several interlayers of calcareous amphibole-bear. biotite - chlorite schist (altered amphibolite) which is similar chlorite schists from section 103,00 - 127,60 m, always gradual contacts between amphibole schist and chloritic interlayers; scattered crystals of ilmenit throughout.
Gradually passing in following rock.

132,60 - 142,30: Slightly calcareous biotite - epidote-bear. apmhibole schist
(meta-basalt flows)
similar: 103,00 - 127,60 m, but locally rich in epidote, intersections of amygdaloidal meta-basalt similar 100,41 - 103,00 m between: 137,23 - 137,75 m, 137,99 - 138,03 m, 138,15 - 138,69 m, 138,95 - 139,38 m, 139,73 - 139,96 m, 140,24 - 141,20 m; several dm-thick interlayers of calcareous biotite - qtz - epidote - chlorite schist (supp. representing former weathering surfaces); spots of py forming a mm-thick sulphide-band at 146,57 m; spots of ilmenite are mainly concentrated within the lower position of the layer, they decrease in abundance and size upsection.
Schistosity: 75°
Gradual contact.

142,30 - 145,29: Amphibole-bear. epidote - biotite - qtz - fspar schist
(meta-tuff)
brownish gr with faint yellowish tint, crudely developed compositional layering, heterogeneous, interlocking fspar and qtz crystals as tiny lenses in alternation with interleaved biotite crystals ~~as~~ which form schlieren and mm-thick discontinuous layers, biotite in places geset displaced by amphibole, the acicular crystals always being parallel to the foliation or layering of the rock, epidote is variably distributed, it tends to join feldspar and qtz as dusty impregnations, sometimes epidote seem to form pseudomorphs after garnet; low-grade dissemination of mt; locally idioblasts of py.
Schistosity/lamination: 85°
Sharp, distorted hanging wall.

144,02 - 144,27: slightly calcareous biotite-bear. epidote - amphibole schist (meta-basal flow)
gn with faint yellowish tint, fine-crystalline, with ghoast-like blasto-amygdaloidal texture, crude development of layering due to variation in the amount of epidote, fine crystalline amphibole forms the schistose matrix for closely packed flat, lense-like augen of plagioclase which are suggested to represent deformed amygdules, several bands and lenses of carbonate, scattered lenticular crystal aggregates of biotite; spotted il.
Schistosity: 85°
Gradually passing into surrounding tuff via ~~over~~ 2 cm thick zones of calcareous epidote - biotite - chlorite schist

145,29 - 177,52: Schistose amphibolite
(meta-basalt flow)
gn, fine-crystalline, homogeneous, several mm-thick bands of carbonate or qtz, locally slight indication for a blasto-amygdaloidal texture, (150,77 - 150,96 m, 153,65 - 153,96 m, 154,83 - 154,96 m, 156,35 - 156,40 m, 157,39 - 157,97 m, 158,50 - 158,75 m, 171,73 - 172,44 m), the sparce felsic (plagioclase or carbonate) augen are extremely stretched and occur mainly

sample: 767 G-2
~~chemical analysis~~
145,29 - 152,00 m
thin section
whole rock analysis

as flat lenses or streaks, locally biotite occurs forming lense-like crystals or crystal aggregates which are conformable with the schistosity of the rock, the biotite bearing zones often contain high amounts in finely dispersed epidote, and lenses or schlieren of carbonate, these altered (weathered) zones always have gradual contacts with the surrounding; (149,02 - 149,05 m, 149,88 - 149,95 m, 158,08 - 158,09 m, 158,20 m, 158,31 m, 158,34 m, 158,43 - 158,48 m, 158,79 - 158,80 m, 158,90 - 158,92 m, 159,35 - 159,38 m, 159,47 - 159,50 m, 161,58 - 161,64 m, 161,88 - 162,85, 162,88 - 171,20 m, 171,99 - 174,04 m, 172,73 - 172,95 m, 173,32 - 173,39 m, 174,65 - 174,85 m, 175,46 - 175,52 m, 176,20 - 176,31 m, 177,16 - 177,23 m); poikiloblasts of il throughout; sometimes py occurs forming trains of granules or widely scattered porphyroblasts (147,56 m, 153,40 - 153,42 m, 160,15 m, 161,15 m)
Schistosity: 85°
Gradually passing into following rock.

177,52 - 188,91: Calcareous epidote - biotite-bear. plagioclase-rich amphibole schist
(meta-amygdaloidal basalt)
palegn with grassgn areas and white to yellowish bands and brown schlieren, abundant white augen, blasto-amygdaloidal texture, inhomogeneous, often with nebulous compositional and textural banding, fine-fibrous amphibole as groundmass forming the foliation of the rock, abundant 0,1 - 0,5 cm large plagioclase augen which often have been stretched causing an indistinct lineation, schlieren of biotite which mainly parallel the foliation of the rock are variably distributed, they are highly concentrated within areas rich in epidote and carbonate which also carry some chlorite and which normally lack augen of plagioclase (177,64 - 177,96 m, 178,02 - 178,13 m, 178,19 - 178,23 m, 178,63 - 178,80 m, 178,91 - 179,09 m, 179,23 - 179,25 m, 179,49 - 179,53 m, 179,77 m, 179,99 - 180,01 m, 180,57 - 180,60 m, 180,77 - 180,84 m, 180,99 - 181,08 m, 181,46 - 182,13 m, 182,68 - 182,80 m, 182,95 - 183,64 m, 184,18 - 184,21 m, 184,43 - 184,55 m, 184,58 - 184,70 m, 185,80 - 185,87 m, 188,14 - 188,23 m, 188,30 - 188,75 m), the layers always have gradual contacts with the surrounding vesiculated meta-basalt: finest crystals of il forming a low - sometimes medium-grade dissemination throughout; locally sparce crystals of py (177,92 m, 178,35 m, 180,57 m, 182,47 m, 183,63 m, 184,74 m), they tend to join quartzite interlayers (meta-cherts) always being lesser 2 cm thick which occur at: 177,96 m, 180,33 m, 180,41 m, 181,51 m, 182,47 m, 183,63 m.
Schistosity: 80° - 75°
Sharp contact.

188,91 - 193,70: Schlightly calcareous chlorite-bear. biotite - epidote - amphibole schist
(meta-strongly weathered basalt flow)
palegn with yellowish tint, abundant brown schlieren crudely developed layering due to slow changes in mineral compostion, cm - to dm - thick interlayers of biotite-bear. epidote-amphibole schist alternate with schlieren and cm- to dm-thick bands composed of epidote, biotite and amphibole, and in parts also of chlorite, the latter sections contain considerable amounts of carbonate which forms up to 1 cm thick bands or lenses and thin schlieren, biotite is the most conspicious mineral as it exists as fascicular bundles and sperulitic aggregates of 0,5 cm size; scattered crystals of il throughout.
Schistosity: 80°- 75°
Gradual contact.

191,77 - 191,83: quartzite (meta-chert)
white, massive, extremely fine-crystalline, near footwall abundant porphyroblasts of amphibole (0,1 - 0,4 cm) which are randomly oriented and form a framework of touching crystals; py (1 Vol-%) is found as scattered crystals within the amphibole-rich lower portion but forms trains of granules within the middel part of the layer.
Sharp contacts.

193,70 - 244,90: Slightly calcareous biotite-bear. epidote - plagioclase-rich amphibolite.
(meta-amygdaloidal basalt in alternation with nonamygdaloidal meta-basalts)
similar: 177,52 - 188,91 m with intersections similar to rock discribed with 188,91 - 193,70 m (194,70 - 194,92 m, 195,12 - 195,19 m, 195,44 - 197,63 m, 198,40 - 199,20 m, 201,25 - 202,50 m, 202,60 - 203,10 m, 207,88 - 208,35 m, 208,66 - 209,73 m, 212,08 - 213,80 m, 214,60 - 214,90 m, 215,25 - 217,05 m, 218,15 - 218,63 m, 220,58 - 221,00 m, 225,51 - 226,03 m, 232,64 - 233,09 m, 233,80 - 239,30 m, 239,80 -240,55 m, 240,95 - 242,08 m, 242,18 - 243,07 m), several interlayers of calcareous amphibole - biotite - epidote - qtz - chlorite schist with either gradual or sharp boundaries to surrounding amphibolites (195,19 - 195,44 m, 196,30 - 196,40 m, 198,20 - 198,40 m, 202,50 - 202,60 m, 203,48 - 203,86 m, 204,33 - 204,70 m, 205,96 - 207,20 m, 209,73 - 209,95 m, 210,42 - 209,57 m, 211,42 - 211,57 m, 213,80 - 214,60 m, 214,90 - 215,25 m, 217,05 - 217,25 m, 221,40 - 221,69 m, 225,25 - 225,43 m, 226,03 - 226,43 m, 226,68 - 226,74 m226,98 - 227,86 m, 233,52 - 233,80 m, 242,08 - 242,18 m, 243,07 - 244,90 m), at some locations bands of quartzite (meta-chert): 196,98 - 197,04m, 206,19 - 206,34 m, 206,45 - 206,57 m with dusty mt, 206,69 m with dusty mt, 213,70 - 213,74 m rare spots of py, 238,71 - 238,74 m; scattered tiny crystals of ilmenite throughout, il is strongly enriched (5 Vol-%) between 234,13 - 243,07 m, here it forms 0,1 - 0,25 cm

large porphyroblasts and poikiloblasts which are homogeneously distributed.
Schistosity: 75°- 80°, sometimes dm-thick zones with small scale disharmonic folding.
Fault zone: 197,45 - 197,63 m
Gradual hanging wall.

244,90 - 246,86: High calcareous amphibole - epidote-bear. chlorite - biotite - qtz - fspar schist/gneiss
(meta-tuff, altered)
browngr with faint greenish tint, schlieren texture with local transition into a distinct lamination, heterogeneous schist changing composition from chlorite - domination to biotite-rich rock, close alternation of schlieren and laminae composed of either biotite or biotite and chlorite with lenses, mm-thick bands and schlieren dominated by felsic constituents as fspar, qtz and carbonate, the latter mineral locally also forms discrete laminae and schlieren, amphibole accompanies the felsic bands as acicular crystals while epidote occurs both within the phyllosilicate and fspar - qtz layers, biotite is the most conspicious mineral as it sporadically forms up to 0,2 cm large porphyroblasts which randomly are oriented; low-grade dissemination of tiny crystals of il throughout.
Schistosity/lamination: 85°, between 246,52 - 246,86 m disharmonic folded.
Sharp hanging wall.

246,86 - 247,84: High calcareous amphibole-bear. chlorite - biotite (biotite-chlorite) schist
(meta-mafic tuff or altered meta-basalt)
browngn, medium-crystalline, homogeneous, abundant lense-shaped aggregates of carbonate, amphibole forms scattered acicular crystals which are strongly parallel the major foliation of the rock; low degree in spots of il.
Schistosity: 80°- 85°.
Gradual hanging wall.

247,84 - 248,10: High calcareous epidote - chlorite-bear. amphibole schist
(meta-basalt flow)
gn, fine-crystalline, bands and schlieren made by amphibole, epidote and chlorite in alternation with aggregates of carbonate and/or qtz as lenses and discontinuous bands; scattered flaky crystals of ilmenite amounting to 3 % by volume of the rock.
Schistosity: 75°- 80°.
Sharp hanging wall.

248,10 - 249,20: Chlorite-bear. epidote - qtz - fspar - biotite schist
(meta-tuff)
brown with faint greenish or yellowish tint, medium - crystalline, homogeneous with in places crudely developed lamination caused by a close alternation of felsic (keratophyric) layers and biotite bands, biotite both

is arranged within a parallel fashion and crosses the foliation of the rock; several crystals of py at footwall contact.
Schistosity: 80° - 85°.
Sharp contact.

249,20 - 250,80: High calcareous biotite - chlorite - qtz - fspar schist
(meta-altered tuff)
gr with browngn schlieren and stripes, heterogeneous, schlieren, lenses and laminae made by phyllosilicates in alternation with lenses, spots and discontinuous bands composed of fspar, carbonate and qtz, sometimes "chicken-wire" texture between phyllosilicates and felsic compounds; rare spots of py.
Strongly deformed with disharmonic folding.
Sharp hanging contact.

AA

250,80 - 256,47: Slightly calcareous amphibole schist
(meta-basalt flow)
gn, fine-crystalline, rhytmic alternation of cm-thick bands made by amphibole and laminae but sometimes bands composed of carbonate which always are conformable with the foliation of the rock, slowly incomming biotite within upper portion of the layer, biotite also is enriched within folded areas; scattered crystals of il.
Schistosity: 80° - 85°, hinge zones of faults at 252,15 m and 254,80 m.
Gradually passing into following rock.

256,47 - 260,35: High calcareous amphibole-bear. epidote - qtz - fspar biotite schist
(meta-tuff, altered)
similar: 244,90 - 246,86 m, interlayers with gradual contacts of calcareous amphibole schist which is similar rock at 250,80 - 256,47 m.
Lamination: 80°.
Gradually passing into following rock.

260,35 - 261,85: Calcareous biotite - amphibole schist
(meta-basalt flow, weakly altered)
similar: 250,80 - 256,47 m but enriched in biotite and carbonate, biotite displays scattered flakes which are conformable to the major foliation of the rock or it forms schlieren or cm-thick interlayers; high amount in il which occurs as porphyroblasts max. 0,15 cm across.
Foliation: 80°.
Gradual contact.

261,85 - 270,10 : High calcareous epidote - sericite - chlorite - fspar - biotite schist
(meta-altered tuff with keratophyric interlayers and bands of meta-chert)
brown with faint greenish tint, abundant pale-white bands, schlieren texture which transgoes locally into a distinct lamination or even banding, schlieren and

AA

layers of biotite or biotite and chlorite in close alternation with lenses and discontinuous bands composed of fspar and qtz, in places layers made by epidote, chlorite and amphibole, the latter forms acicular crystals which tend to be not oriented, sometimes cm-thick interbeds of felsic tuff (qtz-keratophyr), carbonate displays schlieren and bands being parallel the lamination of the rock it also forms trains of granules or is homogeneously distributed (spotted carbonate), magnetite-quartzite (meta-chert) occurs between 266,38 - 266,43 m and 269,41 - 269,45 m.
Schistosity: 75°- 85°, local accurence of small-scale disharmonic folding, several foldhinges between 265,57 - 265,95 m.
Gradually passing into folowwing rock.

270,10 - 277,73: High calcareous epidote - biotite - qtz - fspar - chlorite schist/gneiss
(meta-tuff or tuffite mainly composed of mafic volcanic material)
browngr with abundant gr stripes, distinctly layered, rhytmic alternation of up to 1 cm thick bands made by chlorite, biotite and epidote with layers and flat lenses composed either of carbonate or carbonate and qtz, in places biotite also forms discrete laminae, sometimes dm-thick intervals rich in keratophyric layers (270,80 - 270,95 m, 271,10 - 271,30 m, 271,50 - 271,65 m, 272,36 -272,77 m), between 270,60 - 270,69 m severals cm-thick bands of mt-bear. quartzite (meta-chert) and at 270,95 - 271,10 m chert-layers which contains widely scattered porphyroblasts of py (1 Vol-%); sparce crystals of py at 270,62 m; tiny spots og il within the lower portion of the layer, the hanging part contains coarse scattered porphyroblasts which locally may amount to 5 % by volume of the rock.
Layering: 80°-85°, from 273,00 m to 275,40 m hindge of large fold.
Gradual contact.

277,73 - 279,50: Calcareous epidote - biotite - amphibole - chlorite gneiss
(intermittent basalt - flows and mafic tuff layers)

AA

gn and browngn, cm-banding, rhythmic alternation of medium - to coarse crystalline chlorite-biotite bands which contain sufficient carbonate and layers of amphibole schist or amphibole - plagioclase schist (qtz - keratophyr), the latter layers always contain scattered porphyroblasts of il and spots, schlieren and lenses of carbonate.
Banding: 80°- 85°, small scale disharmonic folding between 276,85 - 277,90 m.
Gradually passing into following rock.

279,50 - 289,95: Calcareous epidote - chlorite-bear. biotite - qtz - fspar gneiss
(meta-felsic tuff with highly altered mafic volcanic interlayers)
greenish brown, pale white, distinct cm-layering which locally gets isoclinally folded, rhytmic alternation of fine-grained, granoblastic felsic tuff bands (fspar, qtz, carbonate, some flakes of biotite, spotted ilmenite) and layers sometimes also schlieren

AA

dominated by medium-crystalline biotite which is accompanied by varying amounts of gn chlorite, epdote carbonate, biotite tends to be oriented parallel to the layering of the rock but may also be not oriented forming a "chicken-wire" texture, carbonate in places forms trains of granules, here it constitutes sub-idiomorphic blasts of max. 0,25 cm size, from 288,40 m upsection decrease in carbonate and substitution of il by idioblasts of mt and increasing qtz-amount within the felsic bands, the section thus contains considerable amounts in terrigeneous epiclastic material.
Layering: 85° - 90°, tight isoclinal folding occurs between 285,40 - 285,85 m, upper portion with banding at 45° - 65°, banding parallel core axis develops between 288,26 - 288,65 m, 30° layering is found within the hanging wall.
Gradually passing into following rock.

289,95 - 290,32: Epidote - biotite - sericite-rich quartzite
(meta-qtz arenite with volcanic impurity)
gr with abundant pale gn stripes with faint yellowish tint, laminated or with schlieren texture, rhytmic alternation of mm- to cm-thick bands and flat lenses composed of granoblastic qtz and schlieren and mm-thick layers composed of sericite, epidote and biotite.
Lamination: 30°, infolded section from further upsection.
Sharp folded contact.

290,32 - 291,87: Calcareous epidote - chlorite-bear. biotite - qtz - fspar gneiss
(meta-felsic tuff with highly altered mafic volcanic interlayers)
similar: 279,50 - 289,45 m
Strongly folded with occurence of several foldhindges, from 291,40 m until hangingwall the layering remains at 85°.
Sharp contact.

291-87 - 293,70: Epidote - sericite - biotite-bear. qtz - fspar rock/ gneiss
(meta-felsic tuff, qtz - keratophyr)
milkywhite with yellowishgn and brown schlieren lower portion fine-grained granoblastic, homogeneous, scattered tiny flakes of sericite cause a distinct foliation, upper portion mainly with gneissic tecture, rhytmic alternation of mm- to cm-thick layers composed

nearly exclusively of fspar and qtz and schlieren and thin bands made by biotite, epidote and sericite, the section carries some carbonate which forms scattered lense-like aggregates.
Schistosity/lamination: 72° until 292,90 m and from 293,22 m until hanging wall, between 292,90 - 293,22 m small-scale isoclinal folding.
Gradual contact.

293,70 - 312,90: Qtz - chlorite - biotite - sericite schist
(meta-semipelite with volcanic impurity)
greenishgr, flaser- and lenticular structure, interlocking qtz-crystals as lenses and mm-thick layers in rhytmic alternation with schlieren and layers of phyllosilicates, chlorite and sericite appear to be fine-crystalline while biotite shows a slight tendency to form porphyroblasts which sporadically - only within lesser foliated areas - is oriented at random (cross-biotite); sparce blasts of py within 3 m from footwall.
Schistosity/lamination: 80° - 85°, but often strongly disharmonic or isoclinally folded (small-scale): 293,70 - 298,74 m, 300,30 - 300,60 m, 301,54 - 301,70 m, 302,27 - 304,41 m, 304,63 - 306,80 m, 307,15 - 311,90 m.
Gradual contact.

311,90 - 328,20: Epidote - chlorite-bear. sericite - biotite-rich quartzite
(meta-qtz arenite with transition into semipelite)
gr with abundant greenish gr stripes, laminated and with schlieren and lenticular structure, interlocking qtz-crystals as bands and lenses in close alternation with laminae or thin schlieren composed of phyllosilicates and epidote, from 317,85 - 322,60 m abundant sudidiomorphic blasts of carbonate which are homogeneously distributed but also may form trains of granules.
Schistosity: 80° - 85°, small-scale disharmonic and/or isoklinal folding between: 311,90 - 314,50 m, 324,37 - 324,55 m, 325,26 - 325,36 m, 326,00 - 326,30 m, 326,50 - 326,90 m.
Gradually passing into following semipelite.

328,20 - 344,10: Epidote - chlorite-bear.qtz - biotite - sericite schist
(meta-semipelite or siltstone)
similar: 293,70 - 312,90 m, sporadically with dusty carbonate within qtz aggregates, within 337,10 - 337,20 m strong concentration of hinge idioblasts of carbonate.
Schistosity: 80° - 85°, at several locations strongly disharmonic or isoclinally folded: 328,60 - 328,75 m, 329,00 - 329,16 m, 330,60 - 329,16 m, 334,65 - 335,65 m, 336,20 - 336,85 m, 339,25 - 339,80 m, 340,10 - 341,00 m, 341,80 - 342,10 m, 342,50 - 342,75 m, 342,90 - 343,00 m.
Gradually passing into following rock.

344,10 - 345,12: Qtz-rich biotite - sericite schist
(meta-pelite)
gr with faint greenish tint, flaser- and lenticular structure, interlocking qtz-crystals as lenses and discontinuous bands of mm-thickness in alternation with schlieren and laminae composed of sericite and biotite which form the foliation of the rock, sporadically mm-thick interlayers rich in carbonate, increasing phyllisilicate amount towards hanging contact.
Schistosity: 75°- 80°
Knife sharp contact.

345,12 - 346,74: Biotite - sericite-rich qtz - fspar schist/rock
(meta-felsic tuff, qtz - keratophyr)
milkywhite with brown and gr schlieren and rods, homogeneous with crudely developed lamination, fine-grained granoblastic fspar - qtz lenses and layers in close alternation with streaks and sometimes laminae of sericite and biotite, the latter sometimes forms slightly porphyritic crystals which have the tendency to be oriented cross the main foliation.
Schistosity: 80°- 85°.
Sharp contacts.

sample: 767 G/3
345,12 - 346,60 m
whole rock analysis

346,74 - 353,80: Chlorite-bear. qtz- rich biotite - sericite schist
(meta-pelite to semipelite)
similar: 293,70 - 312,90 m but with minor qtz, scattered idioblasts of carbonate on average 0,2 cm large within 350,14 - 353,80 m, interlayers of qtz-keratophyr with idioblasts of plagioclase scattered through between 349,64 - 350,14 m.
Schistosity: 80°- 85°.
Gradual contact.

353,80 - 384,65 Chlorite-bear. biotite - sericite schist
(meta-pelite)
gr with faint greenish tint, dinstinct flaser- and lenticular structure, in places laminated, close alternation of lenses and schlieren or laminae of quartz and bands and schlieren composed of phyllosilicates, biotite tends to form porphyroblasts which often are not oriented, slight variation in the amount of qtz, sometimes grading into semipelite: 358,40 - 359,24 m, carbonate occurs sporadically as dusty impregnation within qtz, but sometimes it forms scattered idioblasts: 372,20 - 372,68 m; sparce crystals of mt within 353,80 - 354,35 m and between 378,55 -384,65 m. Gradually passing into calcareous qtz-rich biotite - sericite schist.

sample: 767 G/4
370,15 - 372,20 m
whole rock chmeical analysis

361,59 - 363,25: sericite - chlorite-bear, qtz - fspar rock
(meta-qtz - keratophyr)
milkywhite, fine-crystalline, granoblastic, homogeneour, crude development of foliation caused by preferred orientation of flakes and schlieren of

sericite and chlorite.
Schistosity: 80° - 85°.
Knife sharp boundaries.

377,55 - 378,55: sericite-bear. fspar rock
(meta-rhyolite)
milky-white with faint reddish tint, fine-grained, granoblastic, massive with some schlieren of sericite, hanging wall sericite schist shows sparce needles of amphibole and idioblasts of mt.
Gradual borders.

380,75 - 380,94: sericite - chlorite-bear. qtz - fspar rock
(meta-qtz-keratophyr)
similar: 361,59 - 363,25 m

384,65 - 399,89: Calcareous qtz-rich biotite - sericite schist
(meta-pelite or may be even semipelite)
gr with greenish tint, lamination which may in places transgo into a lenticular texture, porphyroblastic texture alternation of nearly cm-thick bands or lenses of qtz and mm- to cm-thick layers or sometimes schlieren made by phyllosilicates, biotite mainly is oriented parallel the major foliation/lamination of the rock but locally occurs as cross-biotite, abundant scattered idioblasts of carbonate on average 0,2 cm across locations dm-thick interlayers with gradual borders of high calcareous biotite - sericite schist which is characterized by abundant scattered porphyroblasts of carbonate reaching locally 0,45 cm size (388,70 - 388,78 m, 392,21 - 392,70 m, 393,70 m, 393,82 - 394,25 m, 394,50 - 394,60 m)
Schistosity/foliation: 75° - 85°.
Sharp contact.

which sometimes have been stretched, at several

399,89 - 418,10: Biotite - sericite schist
(meta-pelite)
similar: 353,80 - 384,65 m, interlayers with sharp boundaries of phyllosilicate-bear. qtz - fspar rock/schist (qtz - keratophyr) at: 411,78 - 412,14 m, 414,97 - 415,80 m.
Strongly schistose with locally distinct crenulation and small-scale folding.
Gradually passing into following rock.

418,10 - 419,35: Slightly calcareous phyllosilicate - qtz schist
(meta - semipelite or siltstone)
gr, fine-crystalline, distinct flaser and lenticular structure which transgoes into a lamination, close alternation of lenses or laminae made by qtz which often carry dust-like carbonate and schlieren or thin bands of sericite which occasionally is joined by biotite.
Crenulated rock with often occurring small-scale folding.
Gradual contact.

419,35 - 435,15: Slightly calcareous biotite-bear. qtz-rich sericite schist.
(meta-pelite with tendency to semipelite)
gr with some brown flakes, fine-crystalline, lenticular structure which may pass into a lamination, interlocking qtz-crystals as lenses, discontinuous layers, laminae and bands in alternation with bands and schlieren composed by sericite which either carries scattered, not oriented flakes of biotite (cross-mica) or biotite schlieren which are parallel to the major foliation of the rock, carbonate forms sparce porphyroblasts which locally are stretched or it displays a dusty impregnation within qtz-layers, it is heterogeneously distributed, abundant idioblasts occur at: 425,83 - 425,96 m, 428,88 - 430,15 m. Strongly schistose, often with small scale folding and distinct crenulation, foliation at 75° - 85°. Gradual contact.

420,95 - 421,35 m: phyllosilicate-rich quartzite (meta-qtz arenite), strongly folded and with distinct crenulation.

345,15 - 437,50: Slightly calcareous biotite - qtz - sericite schist
(meta-semipelite or siltstone)
similar: 418,10 - 419,35 m, but enriched in biotite which mainly forms spotted, not oriented crystals. Strongly schistose and locally with small-scale folding.
Sharp contact.

437,50 - 626,51: Slightly calcareous qtz-rich biotite - sericite schist
(meta-pelite)
similar: 419,35 - 435,15 m, interlayers of calcareous to high calcareous (biotite) - sericite schist at: 444,19 - 444,27 m, 444,55 - 445,05 m, 512,50 - 512,88 m, 513,29 - 514,15 m, 517,00 - 520,80 m, 538,67 - 539,05 m, 605,20 - 605,70 m, 622,55 - 623,05 m. At several locations qtz-enriched and more likely metamorphic semipelite: 440,00 - 444,00 m, 476,40 - 480,10 m, 529,65 - 530,90 m, 541,00 - 546,70 m, 566,50 - 566,60 m, 566,75 - 567,50 m, 567,70 - 571,70 m, 573,45 - 576,60 m, 585,50 - 587,00 m, 598,95 - 599,01 m, 600,15 - 601,20 m, 608,55 - 610,25 m, 617,70 - 620,45 m, 623,50 - 626,51 m. Interlayers of quartzite or phyllosilicate-rich quartzites at: 601,20 - 604,90 m, 612,70 - 617,70 m, 620,45 - 622,55 m, 623,05 - 623,50 m. Between 550,00 - 554,10 m, 558,50 - 561,50 m, 561,70 - 562,30 m, 563,03 - 563,50 m, 564,30 - 565,00 m, 566,23 - 566,50 m, calcareous biotite - sericite - fspar - qtz schist (meta-felsic volcanic pyroclastic with epiclastic sedimentary impurity, qtz-keratophyric tuffite) white with abundant brown and gr schlieren, flaser structure, in places laminated, porphyroblastic texture due to scattered idioblasts of carbonate on average 0,35 cm across, biotite and sericite as schlieren in close alternation with lenses composed of qtz and fspar, occasionally cm-thick bands of slightly violet,

due to disseminated mt, mylonite. Intersections of biotite - sericite-rich qtz - fspar schist/rock (meta-qtz-keratophyr) at: 461,84 - 462,05 m, 487,75 - 487,85 m, 539,44 - 539,72 m, 595,90 - 596,02 m, 596,07 - 596,13 m, 610,25 - 610,84 m.

626,51 m End of DDH

By Frank Dieter Priesemann
Mai 1986

SUSCEPTIBILITY: DDH 767 G

0,50	0,0	44,60	14,0	89,00	1,1
1,00	0,0	44,80	9,4	90,00	1,9
1,10	0,0	45,00	0,1	91,00	2,4
1,20	0,0	46,00	0,2	92,00	0,3
2,00	0,0	47,00	0,2	93,00	1,7
3,00	- 0,1	48,00	0,0	94,00	0,4
4,00	0,0	49,00	0,0	95,00	1,1
4,60	- 0,1	50,00	0,0	96,00	2,5
4,70	0,0	51,00	0,0	97,00	4,6
5,00	0,1	52,00	0,0	98,00	0,9
6,00	0,1	53,00	0,0	99,00	0,3
7,00	0,1	54,00	0,0	100,00	4,6
8,00	0,0	55,00	0,0	101,00	0,1
9,00	0,1	56,00	0,0	102,00	0,1
10,00	0,0	57,00	0,1	103,00	0,1
11,00	0,0	58,00	0,1	104,00	0,2
12,00	0,0	59,00	0,1	105,00	0,0
13,00	0,0	60,00	0,1	106,00	0,0
14,00	0,0	61,00	0,0	107,00	0,0
15,00	0,0	62,00	0,1	108,00	0,1
16,00	0,0	63,00	0,1	109,00	0,0
17,00	0,0	64,00	0,2	110,00	0,1
18,00	0,0	65,00	0,1	111,00	0,0
19,00	0,0	66,00	0,0	112,00	0,1
20,00	0,0	67,00	0,0	113,00	0,1
21,00	0,0	68,00	0,0	114,00	0,1
22,00	0,1	69,00	0,0	115,00	0,0
23,00	0,0	70,00	0,0	116,00	0,0
24,00	0,0	71,00	0,0	117,00	0,0
25,00	0,1	72,00	0,0	118,00	0,0
26,00	0,0	73,00	0,0	119,00	0,1
27,00	0,0	74,00	0,0	120,00	0,1
28,00	0,0	75,00	0,1	121,00	0,0
29,00	0,0	76,00	0,0	122,00	0,0
30,00	0,1	77,00	0,0	123,00	0,1
31,00	0,1	78,00	0,0	124,00	0,2
32,00	0,1	79,00	0,0	125,00	0,1
33,00	0,1	80,00	0,1	126,00	0,1
34,00	0,0	81,00	0,1	127,00	0,0
34,30	20,0	82,00	0,2	128,00	0,0
35,00	0,1	83,00	4,8	129,00	0,1
36,00	0,0	83,25	9,7	130,00	0,0
37,00	0,0	83,50	1,2	131,00	0,0
38,00	0,1	83,70	2,4	132,00	0,0
39,00	0,0	83,90	0,6	133,00	0,1
39,50	33,0	84,00	2,1	134,00	0,0
40,00	0,1	84,50	3,3	135,00	0,0
40,10	0,0	84,70	1,4	136,00	0,1
40,20	0,1	85,00	0,5	137,00	0,1
40,30	0,0	85,50	0,4	138,00	0,1
41,00	0,1	86,00	9,0	139,00	0,1
42,00	0,1	86,50	1,8	140,00	0,0
43,00	0,0	87,00	1,0	141,00	0,0
44,00	0,1	87,50	1,4	142,00	0,0
44,50	13,0	88,00	0,4	142,50	0,0

142,89	1,5	195,00	0,0	251,00	0,1
142,98	0,2	196,00	0,0	252,00	0,1
143,07	1,8	197,00	0,0	253,00	0,1
143,25	0,3	198,00	0,1	254,00	0,1
143,50	0,2	199,00	0,0	255,00	0,0
144,00	0,0	200,00	0,0	256,00	0,1
144,50	0,1	201,00	0,0	257,00	0,1
145,00	0,1	202,00	0,1	258,00	0,2
146,00	0,1	203,00	0,0	259,00	0,1
147,00	0,0	204,00	0,0	260,00	0,1
148,00	0,0	205,00	0,0	261,00	0,2
149,00	0,1	206,00	0,0	262,00	0,9
150,00	0,0	206,50	7,4	263,00	7,1
151,00	0,1	206,69	0,1	264,00	1,6
152,00	0,1	207,00	0,0	265,00	0,2
153,00	0,0	208,00	0,0	266,00	0,2
154,00	0,0	209,00	0,0	266,40	10,0
155,00	0,1	210,00	0,0	267,00	0,3
156,00	0,1	211,00	0,0	268,00	0,5
157,00	0,0	212,00	0,0	269,00	0,5
158,00	0,0	213,00	0,0	269,43	19,0
159,00	0,0	214,00	0,1	270,00	4,9
160,00	0,0	215,00	0,1	270,50	0,3
161,00	0,1	216,00	0,1	270,65	0,9
162,00	0,0	217,00	0,0	271,00	0,4
163,00	0,0	218,00	0,0	271,50	0,6
164,00	0,1	219,00	0,1	272,00	0,4
165,00	0,1	220,00	0,1	272,50	9,8
166,00	0,1	221,00	0,1	273,00	0,3
167,00	0,0	222,00	0,0	273,50	0,3
168,00	0,0	223,00	0,0	274,00	0,8
169,00	0,0	224,00	0,0	274,50	0,1
170,00	0,1	225,00	0,0	275,00	0,3
171,00	0,0	226,00	0,0	275,50	0,2
172,00	0,0	227,00	0,0	276,00	0,3
173,00	0,0	228,00	0,1	276,50	0,2
174,00	0,0	229,00	0,0	277,00	0,2
175,00	0,1	230,00	0,0	277,50	0,4
176,00	0,0	231,00	0,0	278,00	0,4
177,00	0,0	232,00	0,1	278,50	0,3
178,00	0,1	233,00	0,0	279,00	0,4
179,00	0,0	234,00	0,1	279,50	0,3
180,00	0,0	235,00	0,1	280,00	2,1
181,00	0,1	236,00	0,1	280,50	2,6
182,00	0,0	237,00	0,0	281,00	2,8
182,00	0,1	238,00	0,0	281,50	5,1
184,00	0,1	239,00	0,0	282,00	4,1
185,00	0,0	240,00	0,0	282,50	0,9
186,00	0,1	241,00	0,1	283,00	1,7
187,00	0,0	242,00	0,1	283,50	0,5
188,00	0,0	243,00	0,0	284,00	0,5
189,00	0,0	244,00	0,1	284,50	2,6
190,00	0,1	245,00	0,1	285,00	1,0
191,00	0,1	246,00	0,0	285,50	0,9
192,00	0,1	247,00	0,1	286,00	2,0
192,00	0,1	248,00	0,1	286,50	0,7
193,00	0,0	249,00	0,2	287,00	1,3
194,00	0,0	250,00	0,0	287,50	0,5

288,00	2,6	338,00	0,1	396.00	0,0
288,50	4,2	339,00	0,1	397,00	0,1
289,00	3,2	340,00	0,2	398,00	0,1
289,50	2,6	341,00	0,1	399,00	0,3
290,00	1,3	342,00	0,2	400,00	0,2
290,50	0,3	343,00	0,3	401,00	0,3
291,00	1,1	344,00	0,2	402,00	0,0
291,50	0,6	345,00	0,0	403,00	0,0
292,00	0,1	346,00	0,1	404,00	0,1
292,50	1,0	347,00	0,3	405,00	0,2
293,00	0,0	348,00	0,4	406,00	0,2
293,50	0,0	349,00	0,4	407,00	0,2
294,00	0,1	350,00	0,2	408,00	0,1
294,50	0,3	351,00	0,3	409,00	0,2
295,00	0,2	352,00	0,3	410,00	0,3
295,50	0,3	353,00	0,2	411,00	0,2
296,00	0,1	354,00	0,3	412,00	0,0
297,00	0,2	355,00	0,2	413,00	0,1
298,00	0,2	356,00	0,2	414,00	0,2
299,00	0,2	357,00	0,4	415,00	0,1
300,00	0,4	358,00	0,2	416,00	0,1
301,00	0,3	359,00	0,2	417,00	0,2
302,00	0,3	360,00	0,3	418,00	0,2
303,00	0,3	361,00	0,2	419,00	0,2
304,00	0,3	362,00	0,0	420,00	0,5
305,00	0,3	363,00	0,1	421,00	0,4
306,00	0,3	364,00	0,3	422,00	0,3
307,00	0,3	365,00	0,2	423,00	0,2
308,00	0,4	366,00	0,2	424,00	0,2
309,00	0,4	367,00	0,4	425,00	0,4
310,00	0,3	368,00	0,4	426,00	0,3
311,00	0,3	369,00	0,3	427,00	0,3
312,00	0,1	370,00	0,2	428,00	0,1
313,00	0,1	371,00	0,1	429,00	0,0
314,00	0,2	372,00	0,2	430,00	0,0
315,00	0,2	373,00	0,3	431,00	0,4
316,00	0,1	374,00	0,3	432,00	0,1
317,00	0,1	375,00	0,3	433,00	0,2
318,00	0,1	376,00	0,3	434,00	0,2
319,00	0,1	377,00	0,5	435,00	0,0
320,00	0,1	378,00	0,2	436,00	0,1
321,00	0,1	379,00	0,3	437,00	0,2
322,00	0,1	380,00	0,7	438,00	0,1
323,00	0,1	381,00	0,6	439,00	0,2
324,00	0,1	382,00	0,5	440,00	0,3
325,00	0,1	383,00	0,5	441,00	0,3
326,00	0,2	384,00	0,8	442,00	0,2
327,00	0,3	385,00	0,4	443,00	0,4
328,00	0,2	386,00	0,4	444,00	0,2
329,00	0,0	387,00	0,3	445,00	0,1
330,00	0,2	388,00	0,2	446,00	0,4
331,00	0,3	389,00	0,0	447,00	0,2
332,00	0,1	390,00	0,1	448,00	0,0
333,00	0,0	391,00	0,2	449,00	0,2
334,00	0,1	392,00	0,3	450,00	0,1
335,00	0,1	393,00	0,2	451,00	0,0
336,00	0,2	394,00	0,0	452,00	0,2
337,00	0,0	395,00	0,0	453,00	0,3

454,00	0,5	513,00	0,3	571,00	0,1
455,00	0,1	514,00	0,3	572,00	0,2
456,00	0,3	515,00	0,3	573,00	0,1
457,00	0,3	516,00	0,6	574,00	0,1
458,00	0,6	517,00	0,6	575,00	0,1
459,00	0,5	518,00	0,4	576,00	0,3
460,00	0,4	519,00	0,1	577,00	0,3
461,00	0,1	520,00	0,3	578,00	0,1
462,00	0,0	521,00	0,4	579,00	0,2
463,00	0,1	522,00	0,4	580,00	0,4
464,00	0,1	523,00	0,3	581,00	0,5
465,00	0,1	524,00	0,3	582,00	0,8
466,00	0,1	525,00	0,2	583,00	0,4
467,00	0,4	526,00	0,3	584,00	0,4
468,00	0,1	527,00	0,4	585,00	0,2
469,00	0,1	528,00	0,3	586,00	0,0
470,00	0,0	529,00	0,3	587,00	0,1
471,00	0,1	530,00	0,2	588,00	0,0
472,00	0,1	531,00	0,2	589,00	0,1
473,00	0,1	532,00	0,0	590,00	0,1
474,00	0,0	533,00	0,0	591,00	0,2
475,00	0,1	534,00	0,0	592,00	0,1
476,00	0,1	535,00	0,2	593,00	0,2
477,00	0,1	536,00	0,0	594,00	0,2
478,00	0,1	537,00	0,2	595,00	0,1
479,00	0,1	538,00	0,3	596,00	0,0
480,00	0,2	539,00	0,3	597,00	0,3
481,00	0,2	540,00	0,3	598,00	0,2
482,00	0,3	541,00	0,1	599,00	0,1
483,00	0,2	542,00	0,3	600,00	0,1
484,00	0,2	543,00	0,2	601,00	0,2
485,00	0,3	544,00	0,2	602,00	0,2
486,00	0,2	545,00	0,1	603,00	0,1
488,00	0,2	546,00	0,2	604,00	0,2
489,00	0,1	547,00	0,1	605,00	0,5
490,00	0,2	548,00	0,3	606,00	0,2
491,00	0,1	549,00	0,5	607,00	0,2
492,00	0,2	550,00	0,3	608,00	0,2
493,00	0,2	551,00	0,4	609,00	0,1
494,00	0,3	552,00	0,4	610,00	0,2
495,00	0,1	553,00	0,3	611,00	0,2
496,00	0,3	554,00	0,4	612,00	0,1
497,00	0,1	555,00	0,4	613,00	0,1
498,00	0,1	556,00	0,3	614,00	0,2
499,00	0,1	557,00	0,3	615,00	0,3
500,00	0,1	558,00	0,4	616,00	0,1
501,00	0,1	559,00	0,3	617,00	0,1
502,00	0,2	560,00	0,2	618,00	0,1
503,00	0,1	561,00	0,2	619,00	0,1
504,00	0,3	562,00	0,4	620,00	0,1
505,00	0,1	563,00	0,3	621,00	0,2
506,00	0,2	564,00	0,2	622,00	0,4
507,00	0,0	565,00	0,2	623,00	0,3
508,00	0,1	566,00	0,0	624,00	0,1
509,00	0,1	567,00	0,1	625,00	0,1
510,00	0,1	568,00	0,1	626,00	0,1
511,00	0,1	569,00	0,1		
512,00	0,2	570,00	0,2		

DIAMOND DRILL HOLE 767 G

Tverrfjellet mine, Pilotort Nivå VII, 1982
Location: X - 152,94, Y - 814,71, Z - 671,99
Azimuth: 237,84°
Inclination: 0°, deviation measured
Total length: 626,51 m

Descripion:

0,00 - 66,00: Schistose amphibolite
(meta-basalt flows)

palegn, extremely fine-crystalline, sometimes dm-thick interlayers of medium-grained amphibolite (22,00 - 22,15 m, 27,97 - 28,34 m, 29,60 - 29,90 m, 32,80 - 33,46 m, 48,43 - 49,30 m, 58,47 - 58,75 m, 59,62 - 60,06 m, 60,98 - 61,15 m, 64,53 - 64,87 m), nematoblastic texture, in places development of tiny lenses and schlieren of plagioclase which are supposed to represent extremely stretched amygdules, frequent occurrence of mm - to cm-thick bands of carbonate which are comformable with the foliation of the rock but may also crosscut it; abundant scattered poikiloblasts (average 0,15 cm size) of ilmenite with sutured boundaries between 0,00 - 2,10 m, elsewhere il forms extremely small crystals which are variably distributed.
Several cm-thick but sometimes dm-thick interlayers of slightly calcareous biotite - epidote - qtz - chlorite schist which always have knife-sharp boundaries with surrounding (6,70 - 7,16 m, 9,45 - 9,49 m, 9,64 - 9,70 m, 12,28 - 12,55 m, 24,85 - 25,19 m, 38,55 - 38,72 m, 40,83 - 40,93 m, 42,25 - 42,42 m, 59,02 - 59,25 m, 60,00 - 60,27 m).

1,10 - 1,20: quartzite (meta-chert)
gr, extremely fine-grained, massive.

4,50 - 4,69 m: quartzite (meta-chert)
gr, extremely fine-grained, massive, only hanging portion with idioblasts of py which tend to form trains of granules.

34.24 - 34,40: magnetite quartzite (meta-chert)
violet, extremely fine-crystalline, massive, homogenous distribution of dusty mt, irregular veins of epidote and carbonate.

39,40 - 39,65: magnetite quartzite (meta-chert)
see above.

40,05 - 40,17: magnetite-bear. quartzite (meta-chert) grwhite with faint violet tint, extremely fine-crystalline, appearence of dust-like epidote forming irregular shapes, sparce porphroblasts of amphibole (0,4 cm length) which are oriented parallel to the lower contact with amphibolite.

44,48 - 44,82: magnetite - quartzite (meta-chert) same as: 34,20 - 34,40 m.

54,55 - 54,58: quartzite (meta-chert) same as: 1,10 - 1,20 m

Schistosity/banding: 9,00 m 70°, 19,50 m 58°, 27,00 m 74°, 36,70 m 76°, 47,45 m 74°, 55,15 m 76°, 64,10 m 76°.

66,00 - 75,90: Slightly calcareous amphibolite or amphibole schist (meta-basalt flows)
gn, medium-crystalline, crude development of mineral preferred orientation, close to leopard texture, amphibole forms lense-like crystal aggregates of 0,15 cm size which are surrounded by sparce groundmass composed of plagioclase and epidote but sometimes also carbonate, variation in the amount of plagioclase and epidote causes differences in colour and texture.

Sample: 767 G-1
67,62 - 69,35 m
Thinsection
whole rock
analyses

Several interlayers of calcareous biotite - epidote - qtz - chlorite schist which is characterized by a more ore less distinct alternation of bands and lenses composed of either carbonate or epidote, biotite, qtz and carbonate and cm-thick, swelling and pinching layers made by fine-fibrous chlorite, epidote and biotite, biotite always occurs within stretched, lense-shaped crystal aggregates which are comformable with the banding of the rock (70,13 - 70,35 m, 71,18 - 71,70 m, 71,80 - 71,85 m, 72,02 - 72,35 m, 72,49 - 72,60 m).
Foliation: 85°.
Sharp hanging wall.

75,90 - 83,25: Schistose amphibolite (meta-basalt flows)
Similar: 0,00 - 66,00 m variable grain-size , gradually changing into fine- and medium-grained varieties, the latter often looking quite similar amphibolite from 66,00 - 75,90 m. Several interlayers of calcarous biotite - epidote - qtz - chlorite schist which is similar chlorite schists from section 66,00 - 75,90 m; sparce idioblasts of py occur at: 76,65 - 76,85 m.
Schistosity: 85 .
Knife sharp contact.

83,25 - 83,77: Epidote-bear. magnetite-rich garnet - biotite - sericite schist (meta-tuffite or tuffaceous sediment) (very similar in texture with mt - marker tuff which lies strati-

graphically further down and near the footwall of meta lahar)
gr with faint greenish tint, abundant brown rods and flakes, medium - crystalline, schlieren structure with transitions into crudely layered rock, tiny lenses and laminae dominated by qtz which is accompanied by sericite and biotite in alternation with schlieren and bands composed of sericite, garnet and biotite, garnet crystals mainly with subidiomorphic outlines and sizes from 0,1 to 0,2 cm, biotite forms porphyroblasts or bundle-like aggregates which are homogenously distributed, they mostly are cross the major foliation of the rock but may also be parallel; big crystals of py are concentrated within the footwall portion of the layer, the sulphide reaches 1 - 2 % of the total; abundant scattered idioblasts of mt which decrease in size and abundancy upsection.
Schistosity: 85°
Sharp contact.

83,77 - 86,25: Calcareous magnetite-bear. epidote - biotite - qtz - sericite schist/gneiss
(meta-cherty tuffite) (similar mt-marker tuff which lies stratigraphically further down and near the footwall of meta-lahar)
gr with faint greenish tint, sometimes yellowish, abundant brown schlieren, strong variation in composition and texture, mostly cm-layered, here alternation of bands composed of sericite and biotite with layers highly enriched in qtz (cherty intersections) and bands or lenses made by qtz, epidote and carbonate, locally dm-thick interbeds of qtz-rich biotite - sericite schist; big spots of py at 83,53 m; low-grade dissemination of mostly tiny crystals of mt.
Banding: 80° - 85°
Gradual contact.

86,25 - 100,41: Slightly calcareous amphibole-bear. epidote - biotite - qtz - fspar gneiss
(meta-felsic tuff with meta-chert interlayers)
gr, yellowishgr, brown, milkywhite, dinstinct mm- and cm-compositional layering with mostly sharp contacts but nearly even so often transitional boundaries between the different layers, locally lesser distinct stratified, rhythmic alternation of feldspatic bands which always contain some biotite, amphibole and qtz with layers mainly composed of biotite but also rich in epidote, qtz and fspar, occasional cm-thick massive quartzite (meta-chert) interlayers which contain subordinate amounts of dusty mt, carbonate tends to join fspar in the felsic layers and forms here thin lenses or trains of granules but sometimes it is homogeneously distributed; sparce crystals of py occur sporadically; a low-grade dissemination of tiny crystals of mt seems to be present throughout.
Banding: 90,00 m 86°
Gradual contact.

100,41 - 103,00: Slightly calcareous biotite-bear. amphibole schist (meta-basalt flows)
lightgn, abundant palewhite augen, some brown rods, blasto-amygdaloidal texture, stretched and flattened augen of plagioclase on average 0,2 cm in diameter are scattered within a fine-crystalline amphibole groundmass rich in epidote, biotite forms fascicular bundles and lense-shaped crystal aggregates which are parallel to the major foliation of the rock, they are homogeneously distributed, carbonate occurs within mm-thick layers or lense-shaped aggregates which only in places cross the foliation; sudidioblastic porphyroblasts of py at several locations, the amount of sulphide remains lower 1 % by volume of the rock.
Schistosity: 82°
Gradual contact.

103,00 - 127,60: Schistose amphibolite (meta-basalt flows)
gn with faint yellowish tint, medium - crystalline, amphibole forms lense - like crystals or crystal aggregates of max 0,1 cm size which show a mineral preferred orientation, the crystals are surrounded by plagioclase and epidote causing a ribbon - shaped pattern, the texture sometimes gets blurred where the amphibole - crystals have been closely packed, at several locations abundant lense shaped aggregates of biotite which always are aligned with the major foliation of the rock, sometimes biotite gets accompanied by chlorite and carbonate to form a calcareous biotite - chlorite schist (altered amphibolite) (110,00 - 110,58 m, 111,50 - 111,73 m, 113,93 -114,08 m, 114,71 - 116,30 m, 117,73 - 118,64 m, 127,47 - 127,50 m); very rich in scattered tiny crystals of il.
Schistosity: 82°
Transition into following rock.

107,73 - 108,25: Epidote-bear. biotite - qtz - fspar schist (meta-intermediate to felsic tuff)
browngr with faint yellowish tint, crude development of layering which is due to the tendency of biotite to be concentrated within thin layers, slightly porphyritic crystals of biotite which randomly are oriented are scattered within a fine-crystalline granoblastic matrix composed of fspar, epidote and qtz.
Lamination: 80°.

127,60 - 132,60: Slightly calcareous biotite-bear. amphibole schist (meta-basalt flow)
similar: 100,41 - 103,00 m, several interlayers of calcareous amphibole-bear. biotite - chlorite schist (altered amphibolite) which is similar chlorite schists from section 103,00 - 127,60 m, always gradual contacts between amphibole schist and chloritic interlayers; scattered crystals of ilmenit throughout.
Gradually passing in following rock.

132,60 - 142,30: Slightly calcareous biotite - epidote-bear. amphibole schist
(meta-basalt flows)
similar: 103,00 - 127,60 m, but locally rich in epidote, intersections of amygdaloidal meta-basalt similar 100,41 - 103,00 m between: 137,23 - 137,75 m, 137,99 - 138,03 m, 138,15 - 138,69 m, 138,95 - 139,38 m, 139,73 - 139,96 m, 140,24 - 141,20 m; several dm-thick interlayers of calcareous biotite - qtz - epidote - chlorite schist (supp. representing former weathering surfaces); spots of py forming a mm-thick sulphide-band at 146,57 m; spots of ilmenite are mainly concentrated within the lower portion of the layer, they decrease in abundance and size upsection.
Schistosity: 75°
Gradual contact.

142,30 - 145,29: Amphibole-bear. epidote - biotite - qtz - fspar schist
(meta-tuff)
brownishgr with faint yellowish tint, crudely developed compositional layering, heterogeneous, interlocking fspar and qtz crystals as tiny lenses in alternation with interleaved biotite crystals which form schlieren and mm-thick discontinuous layers, biotite in places gets displaced by amphibole, the acicular crystals always being parallel to the foliation or layering of the rock, epidote is variably distributed, it tends to join feldspar and qtz as dusty impregnations, sometimes epidote seem to form pseudomorphs after garnet; low-grade dissemination of mt; locally idioblasts of py.
Schistosity/lamination: 85°
Sharp, distorted hanging wall.

144,02 - 144,27: slightly calcareous biotite-bear. epidote - amphibole schist (meta-basalt flow)
gn with faint yellowish tint, fine-crystalline, with ghoast-like blasto-amygdaloidal texture, crude development of layering due to variation in the amount of epidote, fine crystalline amphibole forms the schistose matrix for closely packed, flat, lense-like augen of plagioclase which are suggested to represent deformed amygdules, several bands and lenses of carbonate, scattered lenticular crystal aggregates of biotite; spotted il.
Schistosity: 85°
Gradually passing into surrounding tuff via 2 cm thick zones of calcareous epidote - biotite - chlorite schist

145,29 - 177,52: Schistose amphibolite
(meta-basalt flow)
gn, fine-crystalline, homogeneous, several mm-thick bands of carbonate or qtz, locally slight indication for a blasto-amygdaloidal texture, (150,77 - 150,96 m, 153,65 - 153,96 m, 154,83 - 154,96 m, 156,35 - 156,40 m, 157,39 - 157,97 m, 158,50 - 158,75 m, 171,73 -

172,44 m), the sparce felsic (plagioclase or carbonate) augen are extremely stretched and occur mainly as flat lenses or streaks, locally biotite occurs forming lense-like crystals or crystal aggregates which are conformable with the schistosity of the rock, the biotite bearing zones often contain high amounts in finely dispersed epidote, and lenses or schlieren of carbonate, these altered (weathered) zones always have gradual contacts with the surrounding; (149,02 - 149,05 m, 149,88 - 149,95 m, 158,08 - 158,09 m, 158,20 m, 158,31 - 158,34 m, 158,43 - 158,48 m, 158,79 - 158,80 m, 158,90 - 158,92m, 159,35 - 159,38 m, 159,47 - 159,50 m, 161,58 - 161,64 m, 161,88 - 162,85,162,88 - 171,20 m, 171,99 - 174,04 m, 172,73 - 172,95 m, 173,32 - 173,39 m, 174,65 - 174,85 m, 175,46 - 175,52 m, 176,20 - 176,31 m, 177,16 - 177,23 m); poikiloblasts of il throughout; sometimes py occurs forming trains of granules or widely scattered porphyroblasts (147,56 m, 153,40 - 153,42 m, 160,15 m, 161,15 m)
Schistosity: 85°
Gradually passing into following rock.

sample: 767 G-2

145,29 - 152,00 m
Thinsection
Whole rock analysis

177,52 - 188,91:

Calcareous epidote - biotite-bear. plagioclase-rich amphibole schist
(meta-amygdaloidal basalt)
palegn with grassgn areas and white to yellowish bands and brown schlieren, abundant white augen, blasto-amygdaloidal texture, inhomogeneous, often with nebulous compositional and textural banding, fine-fibrous amphibole as groundmass forming the foliation of the rock, abundant 0,1 - 0,5 cm large plagioclase augen which often have been stretched causing an indistinct lineation, schlieren of biotite which mainly parallel the foliation of the rock are variably distributed, they are highly concentrated within areas rich in epidote and carbonate which also carry some chlorite and which normally lack augen of plagioclase (177,64 - 177,96 m, 178,02 - 178,13 m, 178,19 - 178,23 m, 178,63 - 178,80 m, 178,91 - 179,09 m, 179,23 - 179,25 m, 179,49 - 179,53 m, 179,77 m, 179,99 - 180,01 m, 180,57 - 180,60 m, 180,77 - 180,84 m, 180,99 - 181,08 m, 181,46 - 182,13 m, 182,68 - 182,80 m, 182,95 - 183,64 m, 184,18 - 184,21 m, 184,43 - 184,55 m, 184,58 - 184,70 m, 185,80 - 185,87 m, 188,14 - 188,23 m, 188,30 - 188,75 m), the layers always have gradual contacts with the surrounding vesiculated meta-basalt: finest crystals of il forming a low - sometimes medium-grade dissemination throughout; locally sparce crystals of py (177,92 m, 178,35 m, 180,57 m, 182,47 m, 183,63 m, 184,74 m), they tend to join quartzite interlayers (meta-cherts) always being lesser 2 cm thick which occur at: 177,96 m, 180,33 m, 180,41 m, 181,51 m, 182,47 m, 183,63 m.
Schistosity: 80° - 75°
Sharp contact.

188,91 - 193,70: Slightly calcareous chlorite-bear. biotite - epidote - amphibole schist
(meta-strongly weathered basalt flow)
palegn with yellowish tint, abundant brown schlieren crudely developed layering due to slow changes in mineral composition, cm - to dm - thick interlayers of biotite-bear. epidote-amphibole schist alternate with schlieren and cm- to dm-thick bands composed of epidote, biotite and amphibole, and in parts also of chlorite, the latter sections contain considerable amounts of carbonate which forms up to 1 cm thick bands or lenses and thin schlieren, biotite is the most conspicious mineral as it exists as fascicular bundles and spherulitic aggregates of 0,5 cm size; scattered crystals of il throughout.
Schistosity: 80° - 75°
Gradual contact.

191,77 - 191,83: quartzite (meta-chert)
white, massive, extremely fine-crystalline, near footwall abundant porphyroblasts of amphibole (0,1 - 0,4 cm) which are randomly oriented and form a framework of touching crystals; py (1 Vol-%) is found as scattered crystals within the amphibole-rich lower portion but forms trains of granules within the middel part of the layer.
Sharp contacts.

193,70 - 244,90: Slightly calcareous biotite-bear. epidote - plagioclase-rich amphibolite.
(meta-amygdaloidal basalt in alternation with nonamygdaloidal meta-basalts)
similar: 177,52 - 188,91 m with intersections similar to rock discribed with 188,91 - 193,70 m (194,70 - 194,92 m, 195,12 - 195,19 m, 195,44 - 197,63 m, 198,40 - 199,20 m, 201,25 - 202,50 m, 202,60 - 203,10 m, 207,88 - 208,35 m, 208,66 - 209,73 m, 212,08 - 213,80 m, 214,60 - 214,90 m, 215,25 - 217,05 m, 218,15 - 218,63 m, 220,58 - 221,00 m, 225,51 - 226,03 m, 232,64 - 233,09 m, 233,80 - 239,30 m, 239,80 -240,55 m, 240,95 - 242,08 m, 242,18 - 243,07 m), several interlayers of calcareous amphibole - biotite - epidote - qtz - chlorite schist with either gradual or sharp boundaries to surrounding amphibolites (195,19 - 195,44 m, 196,30 - 196,40 m, 198,20 - 198,40 m, 202,50 - 202,60 m, 203,48 - 203,86 m, 204,33 - 204,70 m, 205,96 - 207,20 m, 209,73 - 209,95 m, 210,42 - 210,57 m, 211,42 - 211,57 m, 213,80 - 214,60 m, 214,90 - 215,25 m, 217,05 - 217,25 m, 221,40 - 221,69 m, 225,25 - 225,43 m, 226,03 - 226,43 m, 226,68 - 226,74 m, 226,98 - 227,86 m, 233,52 - 233,80 m, 242,08 - 242,18 m, 243,07 - 244,90 m), at some locations bands of quartzite (meta-chert): 196,98 - 197,04m, 206,19 - 206,34 m, 206,45 - 206,57 m with dusty mt, 206,69 m with dusty mt, 213,70 - 213,74 m rare spots of py, 238,71 - 238,74 m; scattered tiny crystals of ilmenite throughout, il is strongly enriched (5 Vol-%)

between 234,13 - 243,07 m, here it forms 0,1 - 0,25 cm large porphyroblasts and poikiloblasts which are homogeneously distributed.
Schistosity: 75°- 80°, sometimes dm-thick zones with small scale disharmonic folding.
Fault zone: 197,45 - 197,63 m
Gradual hanging wall.

244,90 - 246,86: High calcareous amphibole - epidote-bear. chlorite - biotite - qtz - fspar schist/gneiss
(meta-tuff, altered)
browngr with faint greenish tint, schlieren texture with local transition into a distinct lamination, heterogeneous schist changing composition from chlorite - domination to biotite-rich rock, close alternation of schlieren and laminae composed of either biotite or biotite and chlorite with lenses, mm-thick bands and schlieren dominated by felsic constituents as fspar, qtz and carbonate, the latter mineral locally also forms discrete laminae and schlieren, amphibole accompanies the felsic bands as acicular crystals while epidote occurs both within the phyllosilicate and fspar - qtz layers, biotite is the most conspicious mineral as it sporadically forms up to 0,2 cm large porphyroblasts which randomly are oriented; low-grade dissemination of tiny crystals of il throughout.
Schistosity/lamination: 85°, between 246,52 - 246,86 m disharmonic folded.
Sharp hanging wall.

246,86 - 247,84: High calcareous amphibole-bear. chlorite - biotite (biotite-chlorite) schist
(meta-mafic tuff or altered meta-basalt)
browngn, medium-crystalline, homogeneous, abundant lense-shaped aggregates of carbonate, amphibole forms scattered acicular crystals which are strongly parallel the major foliation of the rock; low degree in spots of il.
Schistosity: 80°- 85°.
Gradual hanging wall.

247,84 - 248,10: High calcareous epidote - chlorite-bear. amphibole schist
(meta-basalt flow)
gn, fine-crystalline, bands and schlieren made by amphibole, epidote and chlorite in alternation with aggregates of carbonate and/or qtz as lenses and discontinuous bands; scattered flaky crystals of ilmenite amounting to 3 % by volume of the rock.
Schistosity: 75°- 80°.
Sharp hanging wall.

248,10 - 249,20: Chlorite-bear. epidote - qtz - fspar - biotite schist
(meta-tuff)
brown with faint greenish or yellowish tint, medium - crystalline, homogeneous with in places crudely developed lamination caused by a close alternation of

felsic (keratophyric) layers and biotite bands, biotite both is arranged within a parallel fashion and crosses the foliation of the rock; several crystals of py at footwall contact.
Schistosity: 80°- 85°.
Sharp contact.

249,20 - 250,80: High calcareous biotite - chlorite - qtz - fspar schist
(meta-altered tuff)
gr with browngn schlieren and stripes, heterogeneous, schlieren, lenses and laminae made by phyllosilicates in alternation with lenses, spots and discontinuous bands composed of fspar, carbonate and qtz, sometimes "chicken-wire" texture between phyllosilicates and felsic compounds; rare spots of py.
Strongly deformed with disharmonic folding.
Sharp hanging contact.

AA

250,80 - 256,47: Slightly calcareous amphibole schist
(meta-basalt flow)
gn, fine-crystalline, rhythmic alternation of cm-thick bands made by amphibole and laminae but sometimes bands composed of carbonate which always are conformable with the foliation of the rock, slowly incomming biotite within upper portion of the layer, biotite also is enriched within folded areas; scattered crystals of il.
Schistosity: 80°- 85°, hinge zones of faults at 252,15 m and 254,80 m.
Gradually passing into following rock.

256,47 - 260,35: High calcareous amphibole-bear. epidote - qtz - fspar biotite schist
(meta-tuff, altered)
similar: 244,90 - 246,86 m, interlayers with gradual contacts of calcareous amphibole schist which is similar rock at 250,80 - 256,47 m.
Lamination: 80°.
Gradually passing into following rock.

260,35 - 261,85: Calcareous biotite - amphibole schist
(meta-basalt flow, weakly altered)
similar: 250,80 - 256,47 m but enriched in biotite and carbonate, biotite displays scattered flakes which are conformable to the major foliation of the rock or it forms schlieren or cm-thick interlayers; high amount in il which occurs as porphyroblasts max. 0,15 cm across.
Foliation: 80°.
Gradual contact.

261,85 - 270,10 : High calcareous epidote - sericite - chlorite - fspar - biotite schist
(meta-altered tuff with keratophyric interlayers and bands of meta-chert)
brown with faint greenish tint, abundant pale-white bands, schlieren texture which transgoes locally into

AA

a distinct lamination or even banding, schlieren and layers of biotite or biotite and chlorite in close alternation with lenses and discontinuous bands composed of fspar and qtz, in places layers made by epidote, chlorite and amphibole, the latter forms acicular crystals which tend to be not oriented, sometimes cm-thick interbeds of felsic tuff (qtz-keratophyr), carbonate displays schlieren and bands being parallel the lamination of the rock, it also forms trains of granules or is homogeneously distributed (spotted carbonate), magnetite-quartzite (meta-chert) occurs between 266,38 - 266,43 m and 269,41 - 269,45 m.
Schistosity: 75°- 85°, local accurence of small-scale disharmonic folding, several foldhinges between 265,57 - 265,95 m.
Gradually passing into following rock.

270,10 - 277,73: High calcareous epidote - biotite - qtz - fspar - chlorite schist/gneiss
(meta-tuff or tuffite mainly composed of mafic volcanic material)
browngr with abundant gr stripes, distinctly layered, rhythmic alternation of up to 1 cm thick bands made by chlorite, biotite and epidote with layers and flat lenses composed either of carbonate or carbonate and qtz, in places biotite also forms discrete laminae, sometimes dm-thick intervals rich in keratophyric layers (270,80 - 270,95 m, 271,10 - 271,30 m, 271,50 - 271,65 m, 272,36 -272,77 m), between 270,60 - 270,69 m several cm-thick bands of mt-bear. quartzite (meta-chert) and at 270,95 - 271,10 m chert-layer which contains widely scattered porphyroblasts of py (1 Vol-%); sparce crystals of py at 270,62 m; tiny spots og il within the lower portion of the layer, the hanging part contains coarse, scattered porphyroblasts which locally may amount to 5 % by volume of the rock.
Layering: 80°- 85°, from 273,00 m to 275,40 m hindge of large fold.
Gradual contact.

277,73 - 279,50: Calcareous epidote - biotite - amphibole - chlorite gneiss
(intermittent basalt - flows and mafic tuff layers)

AA

gn and browngn, cm-banding, rhythmic alternation of medium - to coarse crystalline chlorite-biotite bands which contain sufficient carbonate and layers of amphibole schist or amphibole - plagioclase schist (qtz - keratophyr), the latter layers always contain scattered porphyroblasts of il and spots, schlieren and lenses of carbonate.
Banding: 80°- 85°, small scale disharmonic folding between 276,85 - 277,90 m.
Gradually passing into following rock.

279,50 - 289,95: Calcareous epidote - chlorite-bear. biotite - qtz - fspar gneiss
(meta-felsic tuff with highly altered mafic volcanic interlayers)
greenishbrown, pale white, distinct cm-layering which locally gets isoclinally folded, rhythmic alternation of fine-grained, granoblastic felsic tuff bands (fspar, qtz, carbonate, some flakes of biotite, spotted ilmenite) and layers sometimes also schlieren

AA dominated by medium-crystalline biotite which is accompanied by varying amounts of gn chlorite, epidote carbonate, biotite tends to be oriented parallel to the layering of the rock but may also be not oriented forming a "chicken-wire" texture, carbonate in places forms trains of granules, here it constitutes sub-idiomorphic blasts of max. 0,25 cm size, from 288,40 m upsection decrease in carbonate and substitution of il by idioblasts of mt and increasing qtz-amount within the felsic bands, the section thus contains considerable amounts in terrigeneous epiclastic material.
Layering: 85°- 90°, tight isoclinal folding occurs between 285,40 - 285,85 m, upper portion with banding at 45°- 65°, banding parallel core axis develops between 288,26 - 288,65 m, 30° layering is found within the hanging wall.
Gradually passing into following rock.

289,95 - 290,32: Epidote - biotite - sericite-rich quartzite
(meta-qtz arenite with volcanic impurity)
gr with abundant pale gn stripes with faint yellowish tint, laminated or with schlieren texture, rhythmic alternation of mm- to cm-thick bands and flat lenses composed of granoblastic qtz and schlieren and mm-thick layers composed of sericite, epidote and biotite.
Lamination: 30°, infolded section from further upsection.
Sharp folded contact.

290,32 - 291,87: Calcareous epidote - chlorite-bear. biotite - qtz - fspar gneiss
(meta-felsic tuff with highly altered mafic volcanic interlayers)
similar: 279,50 - 289,45 m
Strongly folded with occurrence of several foldhindges, from 291,40 m until hangingwall the layering remains at 85°.
Sharp contact.

291-87 - 293,70: Epidote - sericite - biotite-bear. qtz - fspar rock/ gneiss
(meta-felsic tuff, qtz - keratophyr)
milkywhite with yellowishgn and brown schlieren lower portion fine-grained granoblastic, homogeneous, scattered tiny flakes of sericite cause a distinct foliation, upper portion mainly with gneissic tecture,

rhythmic alternation of mm- to cm-thick layers composed nearly exclusively of fspar and qtz and schlieren and thin bands made by biotite, epidote and sericite, the section carries some carbonate which forms scattered lense-like aggregates.
Schistosity/lamination: 72° until 292,90 m and from 293,22 m until hanging wall, between 292,90 - 293,22 m small-scale isoclinal folding.
Gradual contact.

293,70 - 312,90: Qtz - chlorite - biotite - sericite schist
(meta-semipelite with volcanic impurity)
greenishgr, flaser- and lenticular structure, interlocking qtz-crystals as lenses and mm-thick layers in rhythmic alternation with schlieren and layers of phyllosilicates, chlorite and sericite appear to be fine-crystalline while biotite shows a slight tendency to form porphyroblasts which sporadically - only within lesser foliated areas - are oriented at random (cross-biotite); sparce blasts of py within 3 m from footwall.
Schistosity/lamination: 80° - 85°, but often strongly disharmonic or isoclinally folded (small-scale): 293,70 - 298,74 m, 300,30 - 300,60 m, 301,54 - 301,70 m, 302,27 - 304,41 m, 304,63 - 306,80 m, 307,15 - 311,90 m.
Gradual contact.

311,90 - 328,20: Epidote - chlorite-bear. sericite - biotite-rich quartzite
(meta-qtz arenite with transition into semipelite)
gr with abundant greenishgr stripes, laminated and with schlieren and lenticular structure, interlocking qtz-crystals as bands and lenses in close alternation with laminae or thin schlieren composed of phyllosilicates and epidote, from 317,85 - 322,60 m abundant sudidiomorphic blasts of carbonate which are homogeneously distributed but also may form trains of granules.
Schistosity: 80° - 85°, small-scale disharmonic and/or isoklinal folding between: 311,90 - 314,50 m, 324,37 - 324,55 m, 325,26 - 325,36 m, 326,00 - 326,30 m, 326,50 - 326,90 m.
Gradually passing into following semipelite.

328,20 - 344,10: Epidote - chlorite-bear.qtz - biotite - sericite schist
(meta-semipelite or siltstone)
similar: 293,70 - 312,90 m, sporadically with dusty carbonate within qtz aggregates, within 337,10 - 337,20 m strong concentration of huge idioblasts of carbonate.

Schistosity: 80°- 85°, at several locations strongly disharmonic or isoclinally folded: 328,60 - 328,75 m, 329,00 - 331,16 m, 330,60 - 329,16 m, 334,65 - 335,65 m, 336,20 - 336,85 m, 339,25 - 339,80 m, 340,10 - 341,00 m, 341,80 - 342,10 m, 342,50 - 342,75 m, 342,90 - 343,00 m.
Gradually passing into following rock.

344,10 - 345,12: Qtz-rich biotite - sericite schist
(meta-pelite)
gr with faint greenish tint, flaser- and lenticular structure, interlocking qtz-crystals as lenses and discontinuous bands of mm-thickness in alternation with schlieren and laminae composed of sericite and biotite which form the foliation of the rock, sporadically mm-thick interlayers rich in carbonate, increasing phyllisilicate amount towards hanging contact.
Schistosity: 75°- 80°
Knife sharp contact.

345,12 - 346,74: Biotite - sericite-rich qtz - fspar schist/rock
(meta-felsic tuff, qtz - keratophyr)
milkywhite with brown and gr schlieren and rods, homogeneous with crudely developed lamination, fine-grained granoblastic fspar - qtz lenses and layers in close alternation with streaks and sometimes laminae of sericite and biotite, the latter sometimes forms slightly porphyritic crystals which have the tendency to be oriented cross the main foliation.
Schistosity: 80°- 85°.
Sharp contacts.

sample: 767 G/3
345,12 - 346,60 m
whole rock
analysis

346,74 - 353,80: Chlorite-bear. qtz- rich biotite - sericite schist
(meta-pelite to semipelite)
similar: 293,70 - 312,90 m but with minor qtz, scattered idioblasts of carbonate on average 0,2 cm large within 350,14 - 353,80 m, interlayers of qtz-keratophyr with idioblasts of plagioclase scattered through between 349,64 - 350,14 m.
Schistosity: 80°- 85°.
Gradual contact.

353,80 - 384,65 Chlorite-bear. biotite - sericite schist
(meta-pelite)
gr with faint greenish tint, dinstinct flaser- and lenticular structure, in places laminated, close alternation of lenses and schlieren or laminae of quartz and bands and schlieren composed of phyllosilicates, biotite tends to form porphyroblasts which often are not oriented, slight variation in the amount of qtz, sometimes grading into semipelite: 358,40 - 359,24 m, carbonate occurs sporadically as dusty impregnation within qtz, but sometimes it forms scattered idioblasts: 372,20 - 372,68 m; sparce crystals of mt within 353,80 - 354,35 m and between 378,55 -384,65 m.

sample: 767 G/4
370,15 - 372,20 m
whole rock chmeical
analysis

Gradually passing into calcareous qtz-rich biotite - sericite schist.

361,59 - 363,25: sericite - chlorite-bear, qtz - fspar rock (meta-qtz - keratophyr)
milkywhite, fine-crystalline, granoblastic, homogeneous, crude development of foliation caused by preferred orientation of flakes and schlieren of sericite and chlorite.
Schistosity: 80° - 85°.
Knife sharp boundaries.

377,55 - 378,55: sericite-bear. fspar rock (meta-rhyolite)
milkywhite with faint reddish tint, fine-grained, granoblastic, massive with some schlieren of sericite, hanging wall sericite schist shows sparce needles of amphibole and idioblasts of mt.
Gradual borders.

380,75 - 380,94: sericite - chlorite-bear. qtz - fspar rock (meta-qtz-keratophyr)
similar: 361,59 - 363,25 m

384,65 - 399,89: Calcareous qtz-rich biotite - sericite schist (meta-pelite or may be even semipelite)
gr with greenish tint, lamination which may in places transgo into a lenticular texture, porphyroblastic texture, alternation of nearly cm-thick bands or lenses of qtz and mm- to cm-thick layers or sometimes schlieren made by phyllosilicates, biotite mainly is oriented parallel the major foliation/lamination of the rock but locally occurs as cross-biotite, abundant scattered idioblasts of carbonate on average 0,2 cm across which sometimes have been stretched, at several locations dm-thick interlayers with gradual borders of high calcareous biotite - sericite schist which is characterized by abundant scattered porphyroblasts of carbonate reaching locally 0,45 cm size (388,70 - 388,78 m, 392,21 - 392,70 m, 393,70 m, 393,82 - 394,25 m, 394,50 - 394,60 m)
Schistosity/foliation: 75° - 85°.
Sharp contact.

399,89 - 418,10: Biotite - sericite schist (meta-pelite)
similar: 353,80 - 384,65 m, interlayers with sharp boundaries of phyllosilicate-bear. qtz - fspar rock/schist (qtz - keratophyr) at: 411,78 - 412,14 m, 414,97 - 415,80 m.
Strongly schistose with locally distinct crenulation and small-scale folding.
Gradually passing into following rock.

418,10 - 419,35: Slightly calcareous phyllosilicate - qtz schist (meta - semipelite or siltstone)
gr, fine-crystalline, distinct flaser and lenticular structure which transgoes into a lamination, close

alternation of lenses or laminae made by qtz which often carry dust-like carbonate and schlieren or thin bands of sericite which occasionally is joined by biotite.
Crenulated rock with often occurring small-scale folding.
Gradual contact.

419,35 - 435,15: Slightly calcareous biotite-bear. qtz-rich sericite schist.
(meta-pelite with tendency to semipelite)
gr with some brown flakes, fine-crystalline, lenticular structure which may pass into a lamination, interlocking qtz-crystals as lenses, discontinuous layers, laminae and bands in alternation with bands and schlieren composed by sericite which either carries scattered, not oriented flakes of biotite (cross-mica) or biotite schlieren which are parallel to the major foliation of the rock, carbonate forms sparce porphyroblasts which locally are stretched or it displays a dusty impregnation within qtz-layers, it is heterogeneously distributed, abundant idioblasts occur at: 425,83 - 425,96 m, 428,88 - 430,15 m.
Strongly schistose, often with small scale folding and distinct crenulation, foliation at 75 - 85 .
Gradual contact.

420,95 - 421,35 m: phyllosilicate-rich quartzite (meta-qtz arenite), strongly folded and with distinct crenulation.

445,15 - 437,50: Slightly calcareous biotite - qtz - sericite schist
(meta-semipelite or siltstone)
similar: 418,10 - 419,35 m, but enriched in biotite which mainly forms spotted, not oriented crystals.
Strongly schistose and locally with small-scale folding.
Sharp contact.

437,50 - 626,51: Slightly calcareous qtz-rich biotite - sericite schist
(meta-pelite)
similar: 419,35 - 435,15 m, interlayers of calcareous to high calcareous (biotite) - sericite schist at: 444,19 - 444,27 m, 444,55 - 445,05 m, 512,50 - 512,88 m, 513,29 - 514,15 m, 517,00 - 520,80 m, 538,67 - 539,05 m, 605,20 - 605,70 m, 622,55 - 623,05 m. At several locations qtz-enriched and more likely metamorphic semipelite: 440,00 - 444,00 m, 476,40 - 480,10 m, 529,65 - 530,90 m, 541,00 - 546,70 m, 566,50 - 566,60 m, 566,75 - 567,50 m, 567,70 - 571,70 m, 573,45 - 576,60 m, 585,50 - 587,00 m, 598,95 - 599,01 m, 600,15 - 601,20 m, 608,55 - 610,25 m, 617,70 - 620,45 m, 623,50 - 626,51 m.
Interlayers of quartzite or phyllosilicate-rich quartzites at: 601,20 - 604,00 m, 612,70 - 617,17 m, 620,45 - 622,55 m, 623,05 - 623,50 m. Between 550,00 - 554,10 m, 558,50 - 561,50 m, 561,70 - 562,30 m, 563,03 - 563,50 m, 564,30 - 565,00 m, 566,23 - 566,50 m,

calcareous biotite - sericite - fspar - qtz schist (meta-felsic volcanic pyroclastic with epiclastic sedimentary impurity, qtz-keratophyr tuffite) white with abundant brown and gr schlieren, flaser structure, in places laminated, porphyroblastic texture due to scattered idioblasts of carbonate on average 0,35 cm across, biotite and sericite as schlieren in close alternation with lenses composed of qtz and fspar, occasionally cm-thick bands of slightly violet- due to disseminated mt- mylonite. Intersections of biotite - sericite-rich qtz - fspar schist/rock (meta-qtz-keratophyr) at: 461,84 - 462,05 m, 487,75 - 487,85 m, 539,44 - 539,72 m, 595,90 - 596,02 m, 596,07 - 596,13 m, 610,25 - 610,84 m.

626,51 m End of DDH

By Frank Dieter Priesemann
Mai 1986

SUSCEPTIBILITY: DDH 767 G

0,50	0,0	44,60	14,0	89,00	1,1
1,00	0,0	44,80	9,4	90,00	1,9
1,10	0,0	45,00	0,1	91,00	2,4
1,20	0,0	46,00	0,2	92,00	0,3
2,00	0,0	47,00	0,2	93,00	1,7
3,00	- 0,1	48,00	0,0	94,00	0,4
4,00	0,0	49,00	0,0	95,00	1,1
4,60	- 0,1	50,00	0,0	96,00	2,5
4,70	0,0	51,00	0,0	97,00	4,6
5,00	0,1	52,00	0,0	98,00	0,9
6,00	0,1	53,00	0,0	99,00	0,3
7,00	0,1	54,00	0,0	100,00	4,6
8,00	0,0	55,00	0,0	101,00	0,1
9,00	0,1	56,00	0,0	102,00	0,1
10,00	0,0	57,00	0,1	103,00	0,1
11,00	0,0	58,00	0,1	104,00	0,2
12,00	0,0	59,00	0,1	105,00	0,0
13,00	0,0	60,00	0,1	106,00	0,0
14,00	0,0	61,00	0,0	107,00	0,0
15,00	0,0	62,00	0,1	108,00	0,1
16,00	0,0	63,00	0,1	109,00	0,0
17,00	0,0	64,00	0,2	110,00	0,1
18,00	0,0	65,00	0,1	111,00	0,0
19,00	0,0	66,00	0,0	112,00	0,1
20,00	0,0	67,00	0,0	113,00	0,1
21,00	0,0	68,00	0,0	114,00	0,1
22,00	0,1	69,00	0,0	115,00	0,0
23,00	0,0	70,00	0,0	116,00	0,0
24,00	0,0	71,00	0,0	117,00	0,0
25,00	0,1	72,00	0,0	118,00	0,0
26,00	0,0	73,00	0,0	119,00	0,1
27,00	0,0	74,00	0,0	120,00	0,1
28,00	0,0	75,00	0,1	121,00	0,0
29,00	0,0	76,00	0,0	122,00	0,0
30,00	0,1	77,00	0,0	123,00	0,1
31,00	0,1	78,00	0,0	124,00	0,2
32,00	0,1	79,00	0,0	125,00	0,1
33,00	0,1	80,00	0,1	126,00	0,1
34,00	0,0	81,00	0,1	127,00	0,0
34,30	20,0	82,00	0,2	128,00	0,0
35,00	0,1	83,00	4,8	129,00	0,1
36,00	0,0	83,25	9,7	130,00	0,0
37,00	0,0	83,50	1,2	131,00	0,0
38,00	0,1	83,70	2,4	132,00	0,0
39,00	0,0	83,90	0,6	133,00	0,1
39,50	33,0	84,00	2,1	134,00	0,0
40,00	0,1	84,50	3,3	135,00	0,0
40,10	0,0	84,70	1,4	136,00	0,1
40,20	0,1	85,00	0,5	137,00	0,1
40,30	0,0	85,50	0,4	138,00	0,1
41,00	0,1	86,00	9,0	139,00	0,1
42,00	0,1	86,50	1,8	140,00	0,0
43,00	0,0	87,00	1,0	141,00	0,0
44,00	0,1	87,50	1,4	142,00	0,0
44,50	13,0	88,00	0,4	142,50	0,0

142,89	1,5	195,00	0,0	251,00	0,1
142,98	0,2	196,00	0,0	252,00	0,1
143,07	1,8	197,00	0,0	253,00	0,1
143,25	0,3	198,00	0,1	254,00	0,1
143,50	0,2	199,00	0,0	255,00	0,0
144,00	0,0	200,00	0,0	256,00	0,1
144,50	0,1	201,00	0,0	257,00	0,1
145,00	0,1	202,00	0,1	258,00	0,2
146,00	0,1	203,00	0,0	259,00	0,1
147,00	0,0	204,00	0,0	260,00	0,1
148,00	0,0	205,00	0,0	261,00	0,2
149,00	0,1	206,00	0,0	262,00	0,9
150,00	0,0	206,50	7,4	263,00	7,1
151,00	0,1	206,69	0,1	264,00	1,6
152,00	0,1	207,00	0,0	265,00	0,2
153,00	0,0	208,00	0,0	266,00	0,2
154,00	0,0	209,00	0,0	266,40	10,0
155,00	0,1	210,00	0,0	267,00	0,3
156,00	0,1	211,00	0,0	268,00	0,5
157,00	0,0	212,00	0,0	269,00	0,5
158,00	0,0	213,00	0,0	269,43	19,0
159,00	0,0	214,00	0,1	270,00	4,9
160,00	0,0	215,00	0,1	270,50	0,3
161,00	0,1	216,00	0,1	270,65	0,9
162,00	0,0	217,00	0,0	271,00	0,4
163,00	0,0	218,00	0,0	271,50	0,6
164,00	0,1	219,00	0,1	272,00	0,4
165,00	0,1	220,00	0,1	272,50	9,8
166,00	0,1	221,00	0,1	273,00	0,3
167,00	0,0	222,00	0,0	273,50	0,3
168,00	0,0	223,00	0,0	274,00	0,8
169,00	0,0	224,00	0,0	274,50	0,1
170,00	0,1	225,00	0,0	275,00	0,3
171,00	0,0	226,00	0,0	275,50	0,2
172,00	0,0	227,00	0,0	276,00	0,3
173,00	0,0	228,00	0,1	276,50	0,2
174,00	0,0	229,00	0,0	277,00	0,2
175,00	0,1	230,00	0,0	277,50	0,4
176,00	0,0	231,00	0,0	278,00	0,4
177,00	0,0	232,00	0,1	278,50	0,3
178,00	0,1	233,00	0,0	279,00	0,4
179,00	0,0	234,00	0,1	279,50	0,3
180,00	0,0	235,00	0,1	280,00	2,1
181,00	0,1	236,00	0,1	280,50	2,6
182,00	0,0	237,00	0,0	281,00	2,8
183,00	0,1	238,00	0,0	281,50	5,1
184,00	0,1	239,00	0,0	282,00	4,1
185,00	0,0	240,00	0,0	282,50	0,9
186,00	0,1	241,00	0,1	283,00	1,7
187,00	0,0	242,00	0,1	283,50	0,5
188,00	0,0	243,00	0,0	284,00	0,5
189,00	0,0	244,00	0,1	284,50	2,6
190,00	0,1	245,00	0,1	285,00	1,0
191,00	0,1	246,00	0,0	285,50	0,9
192,00	0,1	247,00	0,1	286,00	2,0
193,00	0,0	248,00	0,1	286,50	0,7
194,00	0,0	249,00	0,2	287,00	1,3
		250,00	0,0	287,50	0,5

288,00	2,6	338,00	0,1	396.00	0,0
288,50	4,2	339,00	0,1	397,00	0,1
289,00	3,2	340,00	0,2	398,00	0,1
289,50	2,6	341,00	0,1	399,00	0,3
290,00	1,3	342,00	0,2	400,00	0,2
290,50	0,3	343,00	0,3	401,00	0,3
291,00	1,1	344,00	0,2	402,00	0,0
291,50	0,6	345,00	0,0	403,00	0,0
292,00	0,1	346,00	0,1	404,00	0,1
292,50	1,0	347,00	0,3	405,00	0,2
293,00	0,0	348,00	0,4	406,00	0,2
293,50	0,0	349,00	0,4	407,00	0,2
294,00	0,1	350,00	0,2	408,00	0,1
294,50	0,3	351,00	0,3	409,00	0,2
295,00	0,2	352,00	0,3	410,00	0,3
295,50	0,3	353,00	0,2	411,00	0,2
296,00	0,1	354,00	0,3	412,00	0,0
297,00	0,2	355,00	0,2	413,00	0,1
298,00	0,2	356,00	0,2	414,00	0,2
299,00	0,2	357,00	0,4	415,00	0,1
300,00	0,4	358,00	0,2	416,00	0,1
301,00	0,3	359,00	0,2	417,00	0,2
302,00	0,3	360,00	0,3	418,00	0,2
303,00	0,3	361,00	0,2	419,00	0,2
304,00	0,3	362,00	0,0	420,00	0,5
305,00	0,3	363,00	0,1	421,00	0,4
306,00	0,3	364,00	0,3	422,00	0,3
307,00	0,3	365,00	0,2	423,00	0,2
308,00	0,4	366,00	0,2	424,00	0,2
309,00	0,4	367,00	0,4	425,00	0,4
310,00	0,3	368,00	0,4	426,00	0,3
311,00	0,3	369,00	0,3	427,00	0,3
312,00	0,1	370,00	0,2	428,00	0,1
313,00	0,1	371,00	0,1	429,00	0,0
314,00	0,2	372,00	0,2	430,00	0,0
315,00	0,2	373,00	0,3	431,00	0,4
316,00	0,1	374,00	0,3	432,00	0,1
317,00	0,1	375,00	0,3	433,00	0,2
318,00	0,1	376,00	0,3	434,00	0,2
319,00	0,1	377,00	0,5	435,00	0,0
320,00	0,1	378,00	0,2	436,00	0,1
321,00	0,1	379,00	0,3	437,00	0,2
322,00	0,1	380,00	0,7	438,00	0,1
323,00	0,1	381,00	0,6	439,00	0,2
324,00	0,1	382,00	0,5	440,00	0,3
325,00	0,1	383,00	0,5	441,00	0,3
326,00	0,2	384,00	0,8	442,00	0,2
327,00	0,3	385,00	0,4	443,00	0,4
328,00	0,2	386,00	0,4	444,00	0,2
329,00	0,0	387,00	0,3	445,00	0,1
330,00	0,2	388,00	0,2	446,00	0,4
331,00	0,3	389,00	0,0	447,00	0,2
332,00	0,1	390,00	0,1	448,00	0,0
333,00	0,0	391,00	0,2	449,00	0,2
334,00	0,1	392,00	0,3	450,00	0,1
335,00	0,1	393,00	0,2	451,00	0,0
336,00	0,2	394,00	0,0	452,00	0,2
337,00	0,0	395,00	0,0	453,00	0,3

454,00	0,5	513,00	0,3	571,00	0,1
455,00	0,1	514,00	0,3	572,00	0,2
456,00	0,3	515,00	0,3	573,00	0,1
457,00	0,3	516,00	0,6	574,00	0,1
458,00	0,6	517,00	0,6	575,00	0,1
459,00	0,5	518,00	0,4	576,00	0,3
460,00	0,4	519,00	0,1	577,00	0,3
461,00	0,1	520,00	0,3	578,00	0,1
462,00	0,0	521,00	0,4	579,00	0,2
463,00	0,1	522,00	0,4	580,00	0,4
464,00	0,1	523,00	0,3	581,00	0,5
465,00	0,1	524,00	0,3	582,00	0,8
466,00	0,1	525,00	0,2	583,00	0,4
467,00	0,4	526,00	0,3	584,00	0,4
468,00	0,1	527,00	0,4	585,00	0,2
469,00	0,1	528,00	0,3	586,00	0,0
470,00	0,0	529,00	0,3	587,00	0,1
471,00	0,1	530,00	0,2	588,00	0,0
472,00	0,1	531,00	0,2	589,00	0,1
473,00	0,1	532,00	0,0	590,00	0,1
474,00	0,0	533,00	0,0	591,00	0,2
475,00	0,1	534,00	0,0	592,00	0,1
476,00	0,1	535,00	0,2	593,00	0,2
477,00	0,1	536,00	0,0	594,00	0,2
478,00	0,1	537,00	0,2	595,00	0,1
479,00	0,1	538,00	0,3	596,00	0,0
480,00	0,2	539,00	0,3	597,00	0,3
481,00	0,2	540,00	0,3	598,00	0,2
482,00	0,3	541,00	0,1	599,00	0,1
483,00	0,2	542,00	0,3	600,00	0,1
484,00	0,2	543,00	0,2	601,00	0,2
485,00	0,3	544,00	0,2	602,00	0,2
486,00	0,2	545,00	0,1	603,00	0,1
488,00	0,2	546,00	0,2	604,00	0,2
489,00	0,1	547,00	0,1	605,00	0,5
490,00	0,2	548,00	0,3	606,00	0,2
491,00	0,1	549,00	0,5	607,00	0,2
492,00	0,2	550,00	0,3	608,00	0,2
493,00	0,2	551,00	0,4	609,00	0,1
494,00	0,3	552,00	0,4	610,00	0,2
495,00	0,1	553,00	0,3	611,00	0,2
496,00	0,3	554,00	0,4	612,00	0,1
497,00	0,1	555,00	0,4	613,00	0,1
498,00	0,1	556,00	0,3	614,00	0,2
499,00	0,1	557,00	0,3	615,00	0,3
500,00	0,1	558,00	0,4	616,00	0,1
501,00	0,1	559,00	0,3	617,00	0,1
502,00	0,2	560,00	0,2	618,00	0,1
503,00	0,1	561,00	0,2	619,00	0,1
504,00	0,3	562,00	0,4	620,00	0,1
505,00	0,1	563,00	0,3	621,00	0,2
506,00	0,2	564,00	0,2	622,00	0,4
507,00	0,0	565,00	0,2	623,00	0,3
508,00	0,1	566,00	0,0	624,00	0,1
509,00	0,1	567,00	0,1	625,00	0,1
510,00	0,1	568,00	0,1	626,00	0,1
511,00	0,1	569,00	0,1		
512,00	0,2	570,00	0,2		

Susceptibility measurements DDH 768 G (scintrex SM-5)
Results in 10 $^{-5}$egs units

1,00	0,0	56,00	0,2	105,00	0,4	132,00	5,6
2,00	0,0	57,00	0,1	106,00	2,2	132,50	3,5
3,00	0,0	58,00	0,1	106,75	1,3	133,00	4,1
4,00	0,0	59,00	0,0	107,00	1,3	133,50	4,0
5,00	0,0	60,00	0,1	107,50	1,4	134,00	3,1
6,00	0,0	61,00	0,2	108,00	1,1	135,50	3,8
7,00	0,0	62,00	0,2	108,50	0,3	136,00	3,5
8,00	0,0	63,00	0,2	109,00	0,5	136,50	5,6
9,00	0,0	64,00	0,1	110,00	1,2	137,00	4,9
10,00	0,1	65,00	0,0	111,00	2,0	137,50	16,6
11,00	0,1	66,00	0,1	111,50	3,6	138,00	2,2
12,00	0,0	67,00	0,0	112,00	2,6	139,00	0,9
13,00	0,1	68,00	0,0	112,50	2,3	140,00	1,4
14,00	0,1	69,00	0,1	113,00	2,9	141,00	0,2
15,00	0,1	70,00	0,1	114,00	5,3	142,00	4,4
16,00	0,1	71,00	0,1	114,50	2,8	143,00	0,1
17,00	0,1	72,00	0,1	115,00	1,2	144,00	0,2
18,00	0,0	73,00	0,1	115,25	8,9	145,00	0,3
19,00	0,1	74,00	0,0	115,50	2,4	145,75	5,4
20,00	0,0	75,00	0,0	116,00	2,2	146,00	7,2
21,00	0,1	76,00	0,0	116,50	1,9	146,60	36,7
22,00	0,1	77,00	0,0	117,00	3,3	147,00	4,6
23,00	0,0	78,00	0,0	117,50	2,6	148,00	0,5
24,00	0,1	79,00	0,2	118,00	11,0	149,00	1,0
25,00	0,0	80,00	0,0	118,50	0,7	150,00	0,7
26,00	0,1	81,00	0,0	119,00	0,4	150,50	17,7
27,00	0,0	82,00	0,0	119,50	1,1	151,00	7,0
28,00	0,1	83,00	0,0	120,00	1,1	151,50	5,3
29,00	0,0	84,00	0,0	120,50	0,2	152,00	1,0
30,00	0,0	85,00	0,0	121,00	0,1	153,00	2,6
31,00	0,0	86,00	0,0	122,00	0,1	154,00	0,4
32,00	0,0	87,00	0,0	123,00	0,0	155,00	6,6
33,00	0,0	88,00	0,0	124,00	0,2	155,50	46,7
34,00	0,0	89,00	0,0	125,00	0,4	155,90	3,1
35,00	0,1	90,00	0,0	125,50	0,4	156,40	2,8
36,00	0,0	91,00	0,1	126,00	0,2	157,00	5,1
37,00	0,0	92,00	0,1	126,20	26,3	157,50	10,7
38,00	0,0	93,00	0,1	126,50	5,2	158,00	3,6
39,00	0,0	94,00	0,2	127,00	4,0	158,50	0,3
40,00	0,0	95,00	0,2	127,35	18,0	159,00	1,0
41,00	0,0	96,00	0,3	127,45	19,2	159,50	6,9
42,00	0,0	97,00	0,3	127,70	2,6	160,00	5,9
43,00	0,0	97,30	0,6	128,00	0,4	160,50	7,1
44,00	0,0	97,70	2,9	128,30	19,3	161,00	2,9
45,00	0,0	98,00	2,6	128,65	44,3	161,50	4,1
46,00	0,0	98,50	1,7	128,90	21,6	162,00	3,6
47,00	0,0	99,00	1,8	129,00	3,1	162,50	2,8
48,00	0,0	99,50	3,4	129,50	3,0	163,00	8,7
49,00	0,1	100,00	2,5	130,00	8,6	163,50	12,7
50,00	0,1	100,50	2,3	130,50	4,5	164,00	8,0
51,00	0,1	101,00	3,3	130,60	32,6	164,50	11,7
52,00	0,1	101,70	0,4	130,80	13,6	165,00	8,7
53,00	0,0	102,00	0,4	131,10	12,6	165,50	20,7
54,00	0,1	103,00	0,7	131,50	6,3	166,00	8,7
55,00	0,0	104,00	0,6	131,80	19,6	166,50	13,7

167,00	9,7	204,00	0,3	231,50	4,8	272,00	0,0
167,50	35,7	204,50	3,6	232,00	0,7	273,00	0,0
168,00	3,3	205,00	1,1	232,50	3,4	274,00	0,0
168,50	1,0	205,20	13,4	233,00	3,5	275,00	0,0
169,00	0,7	205,50	13,4	233,50	1,7	276,00	0,0
169,50	0,7	206,00	4,6	234,00	1,9	277,00	0,0
170,00	0,7	206,50	14,4	234,50	1,6	278,00	0,0
170,50	0,5	206,90	7,6	235,00	2,4	279,00	0,1
171,00	0,4	207,00	4,1	235,50	8,6	280,00	0,1
171,50	3,5	207,50	1,6	236,00	3,5	281,00	0,0
171,70	9,7	208,00	2,5	236,20	3,1	282,00	0,0
172,00	0,7	208,50	0,3	236,50	4,6	283,00	0,0
172,50	0,0	209,00	0,6	236,70	8,5	284,00	0,0
173,50	0,1	209,50	0,3	236,90	14,5	285,00	0,0
174,00	0,2	210,00	0,1	238,00	22,5	286,00	0,0
175,00	0,9	210,50	1,7	238,20	9,5	287,00	0,0
176,00	0,1	211,00	0,3	238,50	10,5	288,00	0,0
177,00	0,1	212,00	0,5	239,00	0,0	289,00	0,0
178,00	0,0	213,00	1,1	239,30	22,5	290,00	0,0
179,00	0,2	213,80	12,6	239,70	0,0	291,00	0,0
180,00	0,4	214,00	0,2	240,00	0,1	292,00	0,0
181,00	0,3	214,30	1,3	240,60	0,3	293,00	0,0
182,00	0,2	214,50	0,3	241,10	0,3	294,00	0,0
183,00	0,1	215,00	0,2	241,50	0,4	295,00	0,0
184,00	0,3	216,00	0,4	242,00	0,1	296,00	0,0
185,00	0,2	217,00	0,4	242,40	0,7	297,00	0,0
186,00	0,2	218,00	1,9	243,00	1,3	298,00	0,0
187,00	0,3	218,50	0,0	243,40	0,8	299,00	0,0
188,00	0,3	218,90	18,6	244,00	0,2	300,00	0,0
189,00	0,1	219,00	27,6	244,50	0,3	301,00	0,0
190,00	0,3	219,20	20,6	245,00	0,4	302,00	0,0
190,60	6,5	219,50	12,6	246,00	0,2	303,00	0,0
191,00	0,2	219,80	9,6	247,00	0,7	304,00	0,0
192,00	0,8	220,00	3,5	248,00	0,5	305,00	0,0
192,40	4,1	220,40	10,0	249,00	0,1	306,00	0,0
192,60	6,5	220,60	7,4	249,50	0,0	307,00	0,0
193,00	1,1	220,90	20,4	250,00	0,7	308,00	0,0
193,50	0,9	221,30	25,4	251,00	0,1	309,00	0,0
194,00	2,3	221,50	21,5	252,00	0,1	310,00	0,0
194,50	0,7	222,00	1,2	253,00	0,1	311,00	0,0
195,00	1,1	222,50	9,4	254,00	0,1	312,00	0,0
195,50	3,1	223,00	14,4	255,00	0,0	313,00	0,0
196,00	4,3	223,50	2,6	256,00	0,0	314,00	0,0
196,50	0,3	224,00	4,9	257,00	0,0	315,00	0,0
197,00	1,1	224,50	3,5	258,00	0,0	316,00	0,0
197,50	10,4	225,00	2,8	259,00	0,0	317,00	0,0
198,00	2,6	225,50	3,3	260,00	0,0	318,00	0,0
198,50	0,6	226,00	3,2	261,00	0,0	318,50	0,0
199,00	1,7	226,50	2,6	262,00	0,0	318,65	1,3
199,50	0,2	227,00	1,9	263,00	0,0	318,70	17,4
200,00	9,4	227,50	0,7	264,00	0,0	318,80	29,3
200,50	4,2	228,00	2,2	265,00	0,0	318,90	13,3
201,00	6,5	228,50	4,2	266,00	0,0	320,00	2,7
201,50	1,4	229,00	0,0	267,00	0,0	320,10	19,3
202,00	3,6	229,50	1,5	268,00	0,0	320,20	38,3
202,50	3,0	230,00	2,4	269,00	0,0	320,40	25,3
203,00	3,8	230,70	2,0	270,00	0,0	320,60	31,3
203,50	51,4	231,00	2,3	271,00	0,0	320,70	42,3

320,80	0,4	355,00	0,0
321,00	0,3	355,60	0,5
321,30	25,3	356,00	0,0
321,50	5,2	356,66	0,7
321,60	26,3	357,00	0,1
321,70	19,3	358,00	0,0
321,80	0,9	359,00	0,0
322,00	1,3	360,00	0,0
322,30	5,2	361,00	0,0
322,50	39,5	362,00	0,0
322,70	27,5	363,00	0,0
322,80	21,5	364,00	0,0
323,00	32,5	365,00	0,0
323,10	26,5	366,00	0,0
323,30	25,5	367,00	0,0
323,50	2,8	368,00	0,0
323,70	1,3	369,00	0,0
323,90	0,0	370,00	0,0
324,30	0,2	371,00	0,0
324,50	0,1	372,00	0,0
325,00	0,1	373,00	0,0
326,00	0,0	374,00	0,0
327,00	0,0	375,00	0,0
328,00	0,0	376,00	0,0
329,00	0,0	377,00	0,0
330,00	0,0	378,00	0,0
331,00	0,1		
332,00	0,0		
333,00	0,0		
334,00	0,0		
335,00	0,0		
336,00	0,0		
337,00	0,0		
337,50	0,7		
337,60	11,7		
337,70	6,5		
337,90	0,0		
338,50	0,2		
339,00	0,2		
339,40	0,7		
339,80	0,0		
340,50	0,0		
341,35	0,0		
342,00	0,0		
343,20	0,0		
344,50	0,0		
345,00	0,0		
346,00	0,0		
347,00	0,0		
347,20	0,3		
347,90	0,3		
349,00	0,0		
350,00	0,1		
351,00	0,0		
352,00	0,0		
353,00	0,1		
353,80	0,4		
354,10	0,2		

Susceptibility measurements DDH 768 G (scintrex SM-5)
Results in 10^{-3} cgs units

1,00	0,0	56,00	0,2	105,00	0,4	132,00	5,6
2,00	0,0	57,00	0,1	106,00	2,2	132,50	3,5
3,00	0,0	58,00	0,1	106,75	1,3	133,00	4,1
4,00	0,0	59,00	0,0	107,00	1,3	133,50	4,0
5,00	0,0	60,00	0,1	107,50	1,4	134,00	3,1
6,00	0,0	61,00	0,2	108,00	1,1	135,50	3,8
7,00	0,0	62,00	0,2	108,50	0,3	136,00	3,5
8,00	0,0	63,00	0,2	109,00	0,5	136,50	5,6
9,00	0,0	64,00	0,1	110,00	1,2	137,00	4,9
10,00	0,1	65,00	0,0	111,00	2,0	137,50	16,6
11,00	0,1	66,00	0,1	111,50	3,6	138,00	2,2
12,00	0,0	67,00	0,0	112,00	2,6	139,00	0,9
13,00	0,1	68,00	0,0	112,50	2,3	140,00	1,4
14,00	0,1	69,00	0,1	113,00	2,9	141,00	0,2
15,00	0,1	70,00	0,1	114,00	5,3	142,00	4,4
16,00	0,1	71,00	0,1	114,50	2,8	143,00	0,1
17,00	0,1	72,00	0,1	115,00	1,2	144,00	0,2
18,00	0,0	73,00	0,1	115,25	8,9	145,00	0,3
19,00	0,1	74,00	0,0	115,50	2,4	145,75	5,4
20,00	0,0	75,00	0,0	116,00	2,2	146,00	7,2
21,00	0,1	76,00	0,0	116,50	1,9	146,60	36,7
22,00	0,1	77,00	0,0	117,00	3,3	147,00	4,6
23,00	0,0	78,00	0,0	117,50	2,6	148,00	0,5
24,00	0,1	79,00	0,2	118,00	11,0	149,00	1,0
25,00	0,0	80,00	0,0	118,50	0,4	150,00	0,7
26,00	0,1	81,00	0,0	119,00	0,4	150,50	17,7
27,00	0,0	82,00	0,0	119,50	1,1	151,00	7,0
28,00	0,1	83,00	0,0	120,00	1,1	151,50	5,3
29,00	0,0	84,00	0,0	120,50	0,2	152,00	1,0
30,00	0,0	85,00	0,0	121,00	0,1	153,00	2,6
31,00	0,0	86,00	0,0	122,00	0,1	154,00	0,4
32,00	0,0	87,00	0,0	123,00	0,0	155,00	6,6
33,00	0,0	88,00	0,0	124,00	0,2	155,50	46,7
34,00	0,0	89,00	0,0	125,00	0,4	155,90	3,1
35,00	0,1	90,00	0,0	125,50	0,4	156,40	2,8
36,00	0,0	91,00	0,1	126,00	0,2	157,00	5,1
37,00	0,0	92,00	0,1	126,20	26,3	157,50	10,7
38,00	0,0	93,00	0,1	126,50	5,2	158,00	3,6
39,00	0,0	94,00	0,2	127,00	4,0	158,50	0,3
40,00	0,0	95,00	0,2	127,35	18,0	159,00	1,0
41,00	0,0	96,00	0,3	127,45	19,2	159,50	6,9
42,00	0,0	97,00	0,3	127,70	2,6	160,00	5,9
43,00	0,0	97,30	0,6	128,00	0,4	160,50	7,1
44,00	0,0	97,70	2,9	128,30	19,3	161,00	2,9
45,00	0,0	98,00	2,6	128,65	44,3	161,50	4,1
46,00	0,0	98,50	1,7	128,90	21,6	162,00	3,6
47,00	0,0	99,00	1,8	129,00	3,1	162,50	2,8
48,00	0,0	99,50	3,4	129,50	3,0	163,00	8,7
49,00	0,1	100,00	2,5	130,00	8,6	163,50	12,7
50,00	0,1	100,50	2,3	130,50	4,5	164,00	8,0
51,00	0,1	101,00	3,3	130,60	32,6	164,50	11,7
52,00	0,1	101,70	0,4	130,80	13,6	165,00	8,7
53,00	0,0	102,00	0,4	131,10	12,6	165,50	20,7
54,00	0,1	103,00	0,7	131,50	6,3	166,00	8,7
55,00	0,0	104,00	0,6	131,80	19,6	166,50	13,7

167,00	9,7	204,00	0,3	231,50	4,8	272,00	0,0
167,50	35,7	204,50	3,6	232,00	0,7	273,00	0,0
168,00	3,3	205,00	1,1	232,50	3,4	274,00	0,0
168,50	1,0	205,20	13,4	233,00	3,5	275,00	0,0
169,00	0,7	205,50	13,4	233,50	1,7	276,00	0,0
169,50	0,7	206,00	4,6	234,00	1,9	277,00	0,0
170,00	0,7	206,50	14,4	234,50	1,6	278,00	0,0
170,50	0,5	206,90	7,6	235,00	2,4	279,00	0,1
171,00	0,4	207,00	4,1	235,50	2,6	280,00	0,1
171,50	3,5	207,50	1,6	236,00	3,5	281,00	0,0
171,70	9,7	208,00	2,5	236,20	3,1	282,00	0,0
172,00	0,7	208,50	0,3	236,50	4,6	283,00	0,0
172,50	0,0	209,00	0,6	236,70	8,5	284,00	0,0
173,50	0,1	209,50	0,3	236,90	14,5	285,00	0,0
174,00	0,2	210,00	0,1	238,00	22,5	286,00	0,0
175,00	0,9	210,50	1,7	238,20	9,5	287,00	0,0
176,00	0,1	211,00	0,1	238,50	10,5	288,00	0,0
177,00	0,1	212,00	0,1	239,00	0,0	289,00	0,0
178,00	0,0	213,00	1,1	239,30	22,5	290,00	0,0
179,00	0,2	213,80	12,6	239,70	0,0	291,00	0,0
180,00	0,4	214,00	0,2	240,00	0,1	292,00	0,0
181,00	0,3	214,30	1,3	240,60	0,3	293,00	0,0
182,00	0,2	214,50	0,3	241,10	0,3	294,00	0,0
183,00	0,1	215,00	0,2	241,50	0,4	295,00	0,0
184,00	0,3	216,00	0,4	242,00	0,1	296,00	0,0
185,00	0,2	217,00	0,4	242,40	0,7	297,00	0,0
186,00	0,2	218,00	1,9	243,00	1,3	298,00	0,0
187,00	0,3	218,50	0,0	243,40	0,8	299,00	0,0
188,00	0,3	218,90	18,6	244,00	0,2	300,00	0,0
189,00	0,1	219,00	27,6	244,50	0,3	301,00	0,0
190,00	0,3	219,20	20,6	245,00	0,4	302,00	0,0
190,60	6,5	219,50	12,6	246,00	0,2	303,00	0,0
191,00	0,2	219,80	9,6	247,00	0,7	304,00	0,0
192,00	0,8	220,00	3,5	248,00	0,5	305,00	0,0
192,40	4,1	220,40	10,0	249,00	0,1	306,00	0,0
192,60	6,5	220,60	7,4	249,50	0,0	307,00	0,0
193,00	1,1	220,90	20,4	250,00	0,7	308,00	0,0
193,50	0,9	221,30	25,4	251,00	0,1	309,00	0,0
194,00	2,3	221,50	21,5	252,00	0,1	310,00	0,0
194,50	0,7	222,00	1,2	253,00	0,1	311,00	0,0
195,00	1,1	222,50	9,4	254,00	0,1	312,00	0,0
195,50	3,1	223,00	14,4	255,00	0,0	313,00	0,0
196,00	4,3	223,50	2,6	256,00	0,0	314,00	0,0
196,50	0,3	224,00	4,9	257,00	0,0	315,00	0,3
197,00	1,1	224,50	3,5	258,00	0,0	316,00	0,1
197,50	10,4	225,00	2,8	259,00	0,0	317,00	0,0
198,00	2,6	225,50	3,3	260,00	0,0	318,00	0,0
198,50	0,6	226,00	3,2	261,00	0,0	318,50	0,0
199,00	1,7	226,50	2,6	262,00	0,0	318,65	1,3
199,50	0,2	227,00	1,9	263,00	0,0	318,70	17,4
200,00	9,4	227,50	0,7	264,00	0,0	318,80	29,3
200,50	4,2	228,00	2,2	265,00	0,0	318,90	13,3
201,00	6,5	228,50	4,2	266,00	0,0	320,00	2,7
201,50	1,4	229,00	0,0	267,00	0,0	320,10	19,3
202,00	3,6	229,50	1,5	268,00	0,0	320,20	38,3
202,50	3,0	230,00	2,4	269,00	0,0	320,40	25,3
203,00	3,8	230,70	2,0	270,00	0,0	320,60	31,3
203,50	51,4	231,00	2,3	271,00	0,0	320,70	42,3

320,80	0,4	355,00	0,0
321,00	0,3	355,60	0,5
321,30	25,3	356,00	0,0
321,50	5,2	356,66	0,7
321,60	26,3	357,00	0,1
321,70	19,3	358,00	0,0
321,80	0,9	359,00	0,0
322,00	1,3	360,00	0,0
322,30	5,2	361,00	0,0
322,50	39,5	362,00	0,0
322,70	27,5	363,00	0,0
322,80	21,5	364,00	0,0
323,00	32,5	365,00	0,0
323,10	26,5	366,00	0,0
323,30	25,5	367,00	0,0
323,50	2,8	368,00	0,0
323,70	1,3	369,00	0,0
323,90	0,0	370,00	0,0
324,30	0,2	371,00	0,0
324,50	0,1	372,00	0,0
325,00	0,1	373,00	0,0
326,00	0,0	374,00	0,0
327,00	0,0	375,00	0,0
328,00	0,0	376,00	0,0
329,00	0,0	377,00	0,0
330,00	0,0	378,00	0,0
331,00	0,1		
332,00	0,0		
333,00	0,0		
334,00	0,0		
335,00	0,0		
336,00	0,0		
337,00	0,0		
337,50	0,7		
337,60	11,7		
337,70	6,5		
337,90	0,0		
338,50	0,2		
339,00	0,2		
339,40	0,7		
339,80	0,0		
340,50	0,0		
341,35	0,0		
342,00	0,0		
343,20	0,0		
344,50	0,0		
345,00	0,0		
346,00	0,0		
347,00	0,0		
347,20	0,3		
347,90	0,3		
349,00	0,0		
350,00	0,1		
351,00	0,0		
352,00	0,0		
353,00	0,1		
353,80	0,4		
354,10	0,2		

SUSCEPTIBILITY MEASUREMENTS DDH 769 G (SCINTREX SM-5)

RESULTS IN 10^{-3} cgs units

146,00	0,3	172,00	0,1	198,50	0,2	224,00	0,0
146,50	0,3	172,50	0,4	199,00	0,7	224,50	0,0
147,00	0,2	173,00	0,7	199,50	0,2	225,00	0,1
147,50	0,4	173,50	0,3	200,00	0,2	225,25	0,9
148,00	0,2	174,00	1,1	201,00	0,2	225,50	0,5
148,50	0,5	174,50	0,2	201,50	0,1	226,00	6,7
149,00	0,4	175,00	0,2	202,00	0,2	226,50	0,2
149,50	0,2	175,50	0,2	202,50	0,2	226,75	2,2
150,00	0,2	176,00	0,2	203,00	0,2	227,00	0,3
150,50	0,3	176,50	0,2	203,50	0,4	227,50	0,2
151,00	0,3	177,00	0,4	204,00	0,4	228,00	3,9
151,50	0,2	177,50	0,4	204,50	0,2	228,10	2,9
152,00	0,3	178,00	0,4	205,00	0,4	228,50	0,3
152,50	0,2	178,50	0,5	205,50	0,3	229,00	0,3
153,00	0,2	179,00	0,7	206,00	0,2	229,50	0,2
153,50	0,3	179,50	0,7	206,50	2,7	230,00	0,3
154,00	0,2	180,00	0,2	207,00	0,4	230,50	0,3
154,50	0,2	180,50	0,2	207,50	0,0	231,00	0,2
155,00	0,2	181,00	0,3	208,00	0,3	231,50	0,2
155,50	0,2	181,50	0,2	208,50	0,3	232,00	0,1
155,75	0,2	182,00	0,3	209,00	0,4	232,50	0,0
156,25	0,0	182,50	0,2	209,50	0,4	233,00	0,1
156,75	0,1	183,00	0,4	210.00	0,4	233,50	0,3
157,25	0,1	183,50	0,5	210,50	0,1	234,00	0,2
157,75	0,0	184,00	0,3	211,00	0,2	234,50	0,2
158,25	0,1	184,50	0,2	211,50	0,2	235,00	0,2
158,75	0,0	185,00	0,3	212,00	0,2	235,50	0,1
159,25	0,3	185,50	0,2	212,50	0,3	236,00	0,2
159,75	0,3	186,00	0,3	213,00	0,5	236,50	0,1
160,25	0,2	186,50	0,3	213,50	3,2	237,00	0,0
160,75	0,3	187,00	0,4	214,00	4,9	237,50	0,2
161,25	0,4	187,50	0,4	214,50	0,3	238,00	0,0
161,75	0,4	188,00	0,6	215,00	0,3	238,50	0,0
162,25	0,8	188,50	0,4	215,50	0,2	238,65	3,3
162,75	1,1	189,00	0,5	216,00	0,5	238,80	6,0
162,25	0,4	189,50	0,1	216,50	0,3	239,05	7,9
163,75	0,3	190,00	0,4	217,00	0,2	239,70	0,4
164,25	0,9	190,50	0,1	217,50	0,6	239,55	7,5
164,75	2,1	191,00	0,7	218,00	0,3	239,70	1,7
165,05	0,5	191,50	0,3	218,50	0,2	240,00	0,8
165,50	0,4	192,00	0,0	219,00	4,8	240,20	0,0
166,00	0,3	192,50	0,1	219,30	0,9	240,60	1,2
166,50	0,3	193,00	0,2	219,80	0,3	241,00	6,8
167,00	0,7	193,50	0,4	220,00	0,6	241,20	0,0
167,50	0,4	194,00	0,5	220,50	2,0	241,25	1,6
168,00	0,2	194,50	0,2	220,90	4,3	241,50	1,4
168,50	0,3	195,00	1,0	221,20	4,3	241,80	11,0
169,00	0,2	195,50	0,8	221,50	1,0	241,90	45,0
169,50	0,2	196,00	1,1	221,90	2,8	242,00	6,5
170,00	0,2	196,50	0,6	222,30	0,8	242,10	2,0
170,50	0,1	197,00	0,6	222,50	1,5	242,50	0,2
171,00	0,1	197,50	0,3	223,00	0,3	242,90	4,9
171,50	0,2	198,00	0,4	223,50	0,1	243,50	4,2

243,90	2,9	286,00	0,0	328,95	3,4	350,00	2,4
244,30	1,7	287,00	0,0	329,05	0,0	350,30	7,3
244,80	4,7	288,00	0,0	329,20	6,7	350,55	0,5
245,20	3,0	289,00	0,1	329,25	3,4	350,65	0,3
245,90	6,3	290,00	0,0	329,50	0,1	351,00	0,6
246,60	0,1	290,40	0,1	329,70	6,6	351,50	0,6
247,00	0,7	291,10	0,2	330,00	0,0	352,15	0,6
247,60	0,4	292,00	0,0	331,00	0,0	352,55	0,6
248,00	0,7	293,00	0,0	332,00	0,0	352,85	0,7
248,70	0,6	294,00	0,0	333,00	0,0	353,10	1,0
249,10	0,0	294,70	10,0	333,75	1,6	353,50	1,3
249,60	0,0	295,00	0,0	333,85	0,2	353,80	2,2
250,00	0,0	295,25	6,0	334,25	13,0	354,00	0,8
251,00	0,0	295,50	1,3	334,50	7,1	354,50	3,2
252,00	0,0	296,00	0,1	334,80	7,4	354,65	3,6
253,00	0,0	297,00	0,1	334,90	0,2	354,90	4,0
254,00	0,0	298,00	0,1	335,40	1,6	355,25	17,0
255,00	0,0	299,00	0,1	335,80	0,3	355,55	43,0
256,00	0,0	299,90	0,9	336,30	0,0	355,65	34,0
256,50	0,8	300,20	2,4	337,00	0,2	356,05	54,0
256,80	1,8	300,40	0,1	337,50	0,0	356,35	0,9
257,10	2,4	300,55	0,2	338,00	0,7	356,65	0,1
257,40	1,4	300,75	0,4	338,50	0,2	357,00	0,3
257,60	0,0	301,00	0,0	338,90	7,7	357,50	0,3
257,90	0,0	301,25	3,3	339,25	8,4	357,85	3,0
259,00	0,0	301,50	0,0	339,50	0,3	358,15	0,2
260,00	0,0	302,00	0,0	339,90	0,6	358,40	1,5
261,00	0,0	303,00	0,0	340,35	0,4	358,70	0,5
261,30	0,1	304,00	0,0	340,80	5,4	359,00	4,9
261,90	0,0	305,00	0,0	341,20	14,0	359,50	0,1
262,00	0,0	306,00	0,0	341,40	5,2	359,80	0,0
262,50	4,2	307,00	0,0	341,70	3,4	360,00	0,3
263,00	2,0	308,00	0,0	342,00	3,8	360,40	0,2
263,50	10,0	309,00	0,0	343,20	7,7	360,75	0,2
264,00	7,0	310,00	0,0	343,50	10,0	361,00	0,3
264,20	17,0	311,00	0,0	343,90	3,3	361,50	0,3
264,40	1,3	312,00	0,0	343,30	0,3	362,00	0,8
265,00	0,1	313,00	0,0	343,40	3,0	362,40	0,0
266,00	0,0	314,00	0,0	343,95	0,6	362,80	0,0
267,00	0,0	315,00	0,0	344,20	0,7	363,30	1,7
268,00	0,0	316,00	0,0	344,50	3,6	363,50	3,2
269,00	0,0	317,00	0,0	344,80	1,6	364,05	0,0
270,00	0,0	318,00	0,0	345,15	0,4	364,50	1,9
271,00	0,0	319,00	0,0	345,50	1,3	364,75	2,5
272,00	0,0	320,00	0,0	345,80	1,9	365,05	2,8
273,00	0,0	321,00	0,0	346,05	0,3	365,30	2,1
274,00	0,0	322,00	0,0	346,45	0,7	365,50	0,8
275,00	0,0	323,00	0,0	347,00	1,0	365,80	3,4
276,00	0,0	324,00	0,0	347,40	5,7	366,00	2,4
277,00	0,0	324,40	0,7	347,60	1,6	366,40	1,6
278,00	0,0	325,70	7,5	348,00	0,6	366,85	0,3
279,00	0,0	326,05	0,3	348,45	1,5	367,05	1,2
280,00	0,0	326,50	1,5	348,80	0,7	367,30	1,4
281,00	0,0	327,15	0,3	349,00	2,8	367,70	2,0
282,00	0,1	327,50	0,1	349,20	0,6	368,00	1,7
283,00	0,0	328,10	0,3	349,45	0,9	368,40	11,0
284,00	0,0	328,50	0,3	349,55	7,9	368,50	16,0
285,00	0,0	328,65	17,7	349,80	2,5	368,85	1,0

369,30	0,8	393,80	0,3	430,00	0,0
369,50	1,2	394,10	1,0	431,00	0,0
369,80	1,4	394,40	0,4	432,00	0,0
369,95	22,0	394,50	1,2	433,00	0,0
370,15	10,0	394,80	0,5	434,00	0,0
370,50	16,0	395,10	1,3	435,00	0,0
370,80	30,0	395,40	2,2	436,00	0,0
370,95	27,0	395,80	0,4	437,00	0,0
371,15	26,0	396,00	0,2	438,00	0,0
371,40	2,7	396,60	0,0	439,00	0,0
371,70	1,0	398,00	0,0	440,00	0,0
371,80	2,0	399,00	0,0	441,00	0,0
371,95	1,7	400,00	0,0	442,00	0,0
372,20	1,1	401,00	0,0	443,00	0,0
372,50	0,9	402,00	0,6	443,50	0,2
372,80	1,0	402,50	0,3	444,00	0,0
373,00	0,4	403,00	1,0	445,00	0,0
373,50	0,4	403,50	0,6	446,00	0,0
373,80	1,3	404,00	0,2	447,00	0,0
374,00	0,6	404,40	0,7	448,00	0,0
374,50	0,3	404,80	0,9	448,60	0,2
375,00	0,4	405,15	0,3	449,00	0,2
375,00	0,4	405,50	0,0	449,50	0,0
375,50	1,4	405,80	0,7	450,00	0,2
375,80	0,3	406,00	0,0	450,50	0,3
376,20	0,1	406,30	0,3	451,00	0,2
376,60	0,9	406,80	0,3	452,50	3,9
377,00	0,3	407,00	0,0	451,60	1,8
377,30	0,3	409,00	0,0	452,00	0,9
377,50	0,4	409,50	0,7	452,40	1,5
377,70	0,1	410,15	0,6	452,50	0,1
378,00	0,1	410,50	0,6	453,00	0,0
378,50	0,1	411,00	0,1	453,50	0,3
379,00	0,1	411,50	0,6	454,00	0,4
379,50	0,1	412,00	0,1	454,50	0,0
380,00	0,1	412,50	0,9	455,00	0,2
380,50	0,1	413,00	0,0	455,50	0,0
381,00	0,1	413,50	0,0	456,00	0,1
381,50	0,1	414,00	0,0	456,50	0,0
382,00	0,1	414,50	0,0	457,00	0,0
382,50	0,1	415,00	0,0	458,00	0,0
383,00	0,1	415,50	0,0		
383,50	0,1	416,00	0,0		
384,00	0,1	416,50	0,0		
384,50	0,1	417,00	0,0		
385,50	0,1	417,50	0,0		
386,00	0,1	418,00	0,0		
386,50	0,1	419,00	0,0		
387,00	0,1	420,00	0,0		
387,50	0,1	421,00	0,0		
388,00	0,0	422,00	0,0		
389,00	0,0	423,00	0,0		
390,00	0,0	424,00	0,0		
391,00	0,0	425,00	0,0		
392,00	0,0	426,00	0,0		
393,00	0,0	427,00	0,0		
393,30	0,0	428,00	0,0		
393,50	0,0	429,00	0,0		

SUSCEPTIBILITY MEASUREMENTS DDH 769 G (SCINTREX SM-5)

RESULTS IN 10^{-3} cgs units

146,00	0,3	172,00	0,1	198,50	0,2	224,00	0,1
146,50	0,3	172,50	0,4	199,00	0,7	224,50	0,0
147,00	0,2	173,00	0,7	199,50	0,2	225,00	0,1
147,50	0,4	173,50	0,3	200,00	0,2	225,25	0,9
148,00	0,2	174,00	1,1	201,00	0,2	225,50	0,5
148,50	0,5	174,50	0,2	201,50	0,1	226,00	6,7
149,00	0,4	175,00	0,2	202,00	0,2	226,50	0,2
149,50	0,2	175,50	0,2	202,50	0,2	226,75	2,2
150,00	0,2	176,00	0,2	203,00	0,2	227,00	0,3
150,50	0,3	176,50	0,2	203,50	0,4	227,50	0,2
151,00	0,3	177,00	0,4	204,00	0,4	228,00	3,9
151,50	0,2	177,50	0,4	204,50	0,2	228,10	2,9
152,00	0,3	178,00	0,4	205,00	0,4	228,50	0,3
152,50	0,2	178,50	0,5	205,50	0,3	229,00	0,3
153,00	0,2	179,00	0,7	206,00	0,2	229,50	0,2
153,50	0,3	179,50	0,7	206,50	2,7	230,00	0,3
154,00	0,2	180,00	0,2	207,00	0,4	230,50	0,3
154,50	0,2	180,50	0,2	207,50	0,0	231,00	0,2
155,00	0,2	181,00	0,3	208,00	0,3	231,50	0,2
155,50	0,2	181,50	0,2	208,50	0,3	232,00	0,1
155,75	0,2	182,00	0,3	209,00	0,4	232,50	0,0
156,25	0,0	182,50	0,2	209,50	0,4	233,00	0,1
156,75	0,1	183,00	0,4	210.00	0,4	233,50	0,3
157,25	0,1	183,50	0,5	210,50	0,1	234,00	0,2
157,75	0,0	184,00	0,3	211,00	0,2	234,50	0,2
158,25	0,1	184,50	0,2	211,50	0,2	235,00	0,2
158,75	0,0	185,00	0,3	212,00	0,2	235,50	0,1
159,25	0,3	185,50	0,2	212,50	0,3	236,00	0,2
159,75	0,3	186,00	0,3	213,00	0,5	236,50	0,1
160,25	0,2	186,50	0,3	213,50	3,2	237,00	0,0
160,75	0,3	187,00	0,4	214,00	4,9	237,50	0,2
161,25	0,4	187,50	0,4	214,50	0,3	238,00	0,0
161,75	0,4	188,00	0,6	215,00	0,3	238,50	0,0
162,25	0,8	188,50	0,4	215,50	0,2	238,65	3,3
162,75	1,1	189,00	0,5	216,00	0,5	238,80	6,0
163,25	0,4	189,50	0,1	216,50	0,3	239,05	7,9
163,75	0,3	190,00	0,4	217,00	0,2	239,40	0,4
164,25	0,9	190,50	0,1	217,50	0,6	239,55	7,5
164,75	2,1	191,00	0,7	218,00	0,3	239,70	1,7
165,05	0,5	191,50	0,3	218,50	0,2	240,00	0,8
165,50	0,4	192,00	0,0	219,00	4,8	240,20	0,0
166,00	0,3	192,50	0,1	219,30	0,9	240,60	1,2
166,50	0,3	193,00	0,2	219,80	0,3	241,00	6,8
167,00	0,7	193,50	0,4	220,00	0,6	241,20	0,0
167,50	0,4	194,00	0,5	220,50	2,0	241,25	1,6
168,00	0,2	194,50	0,2	220,90	4,3	241,50	1,4
168,50	0,3	195,00	1,0	221,20	4,3	241,80	11,0
169,00	0,2	195,50	0,8	221,50	1,0	241,90	45,0
169,50	0,2	196,00	1,1	221,90	2,8	242,00	6,5
170,00	0,2	196,50	0,6	222,30	0,8	242,10	2,0
170,50	0,1	197,00	0,6	222,60	1,5	242,50	0,2
171,00	0,1	197,50	0,3	223,00	0,3	242,90	4,9
171,50	0,2	198,00	0,4	223,50	0,1	243,50	4,2

243,90	2,9	286,00	0,0	328,95	3,4	350,65	0,3
244,30	1,7	287,00	0,0	329,05	0,0	351,00	0,6
244,80	4,7	288,00	0,0	329,20	6,7	351,50	0,6
245,20	3,0	289,00	0,1	329,25	3,4	351,80	0,5
245,90	6,3	290,00	0,0	329,50	0,1	352,15	0,6
246,60	0,1	290,40	0,1	329,70	6,6	352,55	0,6
247,00	0,7	291,10	0,2	330,00	0,0	352,85	0,7
247,60	0,4	292,00	0,0	331,00	0,0	353,10	1,0
248,00	0,7	293,00	0,0	332,00	0,0	353,50	1,3
248,70	0,6	294,00	0,0	333,00	0,0	353,80	2,2
249,10	0,0	294,70	10,0	333,75	1,6	354,10	0,8
249,60	0,0	295,00	0,0	333,85	0,2	354,50	3,2
250,00	0,0	295,25	6,0	334,25	13,0	354,65	3,6
251,00	0,0	295,50	1,3	334,50	7,1	354,90	4,0
252,00	0,0	296,00	0,1	334,80	7,4	355,25	17,0
253,00	0,0	297,00	0,1	334,90	0,2	355,55	43,0
254,00	0,0	298,00	0,1	335,40	1,6	355,65	34,0
255,00	0,0	299,00	0,1	335,80	0,3	356,05	54,0
256,00	0,0	299,90	0,1	336,30	0,0	356,35	0,9
256,50	0,8	300,20	2,4	337,00	0,2	356,65	0,1
256,80	1,8	300,40	0,1	337,50	0,0	357,00	0,3
257,10	2,4	300,55	0,2	338,00	0,7	357,50	0,3
257,40	1,4	300,75	0,4	338,50	0,2	357,85	3,0
257,60	0,0	301,00	0,0	338,90	7,7	358,15	0,2
257,90	0,0	301,25	3,3	339,25	8,4	358,40	1,5
259,00	0,0	301,50	0,0	339,50	0,3	358,70	0,5
260,00	0,0	302,00	0,0	339,90	0,6	359,00	4,9
261,00	0,0	303,00	0,0	340,35	0,4	359,50	0,1
261,30	0,1	304,00	0,0	340,80	5,4	359,80	0,0
261,90	0,0	305,00	0,0	341,20	14,0	360,00	0,3
262,00	0,0	306,00	0,0	341,40	5,2	360,40	0,2
262,50	4,2	307,00	0,0	341,70	3,4	360,75	0,2
263,00	2,0	308,00	0,0	342,00	3,8	361,00	0,3
263,50	10,0	309,00	0,0	343,20	7,7	361,50	0,3
264,00	7,0	310,00	0,0	343,50	10,0	362,00	0,8
264,20	17,0	311,00	0,0	343,90	3,3	362,40	0,0
264,40	1,3	312,00	0,0	344,20	0,7	362,80	0,0
265,00	0,1	313,00	0,0	344,50	3,6	363,30	1,7
266,00	0,0	314,00	0,0	344,80	1,6	363,50	3,2
267,00	0,0	315,00	0,0	345,15	0,4	364,05	0,0
268,00	0,0	316,00	0,0	345,50	1,3	364,50	1,9
269,00	0,0	317,00	0,0	345,80	1,9	364,75	2,5
270,00	0,0	318,00	0,0	346,05	0,3	365,05	2,8
271,00	0,0	319,00	0,0	346,45	0,7	365,30	2,1
272,00	0,0	320,00	0,0	347,00	1,0	365,50	0,8
273,00	0,0	321,00	0,0	347,40	5,7	365,80	3,4
274,00	0,0	322,00	0,0	347,60	1,6	366,00	2,4
275,00	0,0	323,00	0,0	348,00	0,6	366,40	1,6
276,00	0,0	324,00	0,0	348,45	1,5	366,85	0,3
277,00	0,0	324,40	0,4	348,80	0,7	367,05	1,2
278,00	0,0	325,70	7,5	349,00	2,8	367,30	1,4
279,00	0,0	326,05	0,3	349,20	0,6	367,70	2,0
280,00	0,0	326,50	1,5	349,45	0,9	368,00	1,7
281,00	0,0	327,15	0,3	349,55	7,9	368,40	11,0
282,00	0,1	327,50	0,1	349,80	2,5	368,50	16,0
283,00	0,0	328,10	0,3	350,00	2,4	368,85	1,0
284,00	0,0	328,50	0,3	350,30	7,3	369,30	0,8
285,00	0,0	328,65	17,7	350,55	0,5	369,50	1,2

369,80	1,4	394,50	1,2	433,00	0,0
369,95	22,0	394,80	0,5	434,00	0,0
370,15	10,0	395,10	1,3	435,00	0,0
370,50	16,0	395,40	2,2	436,00	0,0
370,80	30,0	395,80	0,4	437,00	0,0
370,95	27,0	396,00	0,2	438,00	0,0
371,15	26,0	396,60	0,0	439,00	0,0
371,40	2,7	398,00	0,0	440,00	0,0
371,70	1,0	399,00	0,0	441,00	0,0
371,80	2,0	400,00	0,0	442,00	0,0
371,95	1,7	401,00	0,0	443,00	0,0
372,20	1,1	402,00	0,6	443,50	0,2
372,50	0,9	402,50	0,3	444,00	0,0
372,80	1,0	403,00	1,0	445,00	0,0
373,00	0,4	403,50	0,6	446,00	0,0
373,50	0,4	404,00	0,2	447,00	0,0
373,80	1,3	404,40	0,7	448,00	0,0
374,00	0,6	404,80	0,9	448,60	0,2
374,50	0,3	405,15	0,3	449,00	0,2
375,00	0,4	405,50	0,0	449,50	0,0
375,50	1,4	405,80	0,7	450,00	0,2
375,80	0,3	406,00	0,0	450,50	0,3
376,20	0,1	406,30	0,3	451,00	0,2
376,60	0,9	406,80	0,3	452,50	3,9
377,00	0,3	407,00	0,0	451,60	1,8
377,30	0,3	409,00	0,0	452,00	0,9
377,50	0,4	409,50	0,7	452,40	1,5
377,70	0,1	410,15	1,1	452,50	0,1
378,00	0,1	410,50	0,6	453,00	0,0
378,50	0,1	411,00	0,1	453,50	0,3
379,00	0,1	411,50	0,6	454,00	0,4
379,50	0,1	412,00	0,1	454,50	0,0
380,00	0,1	412,50	0,9	455,00	0,2
380,50	0,1	413,00	0,0	455,50	0,0
381,00	0,1	413,50	0,0	456,00	0,1
381,50	0,1	414,00	0,0	456,50	0,0
382,00	0,1	414,50	0,0	457,00	0,0
382,50	0,1	415,00	0,0	458,00	0,0
383,00	0,1	415,50	0,0		
383,50	0,1	416,00	0,0		
384,00	0,1	416,50	0,0		
384,50	0,1	417,00	0,0		
385,50	0,1	417,50	0,0		
386,00	0,1	418,00	0,0		
386,50	0,1	419,00	0,0		
387,00	0,1	420,00	0,0		
387,50	0,1	421,00	0,0		
388,00	0,0	422,00	0,0		
389,00	0,0	423,00	0,0		
390,00	0,0	424,00	0,0		
391,00	0,0	425,00	0,0		
392,00	0,0	426,00	0,0		
393,00	0,0	427,00	0,0		
393,30	0,0	428,00	0,0		
393,50	0,0	429,00	0,0		
393,80	0,3	430,00	0,0		
394,10	1,0	431,00	0,0		
394,40	0,4	432,00	0,0		

BH 2000 D

FOLLDAL VERK A/S
2661 HJERKINN

DIAMOND DRILL HOLE 2000 D

Location: Gåvåliseter, 532840 6904890 UTM grid, zone 32,
Top. map 1519 IV Snøhetta.
Azimuth: 394.5^{g}.
Inclination: - 70^{o}, measured deviation until 630 m.
Total length: 701.60 m.
Started: 16 sep. 1985.
Finnished: 07.nov. 1985.

DESCRIPTION:

0.00 - 5.25 : Overburden.

5.25 - 8.30 : Slightly calcareous amphibole bear. biotite - chlorite schist
(meta - mafic volcanic sediment with coarse mafic and felsic fragments and supp. with epiclastic sedimentary impurity, matrix support sediment; possible slightly distal facies or middle succession of subaquaeous debris flow/lahar)
grgn with abundant gn clusters, distinct fragmental structure, often chaotic, coarse rounded to subrounded stretched fragments of predominately basaltic composition (biotite bear. amphibolite) and sparce felsic clasts (amphibole - qtz - fspar rock) embedded in a schistose matrix with often distinct flaser texture composed of chlorite, biotite and qtz and subordinate carbonate, interlocked qtz and carbonate crystals as lenses and layers alternate with schlieren and laminae composed of fine - fibrous chlorite and containing fascicular bundles or trains of flakes of biotite, occasionally the phyllosilicates are accompanied by tiny prisms of amphibole.
Gradual footwall.

8.30 - 13.60 : Calcareous sericite bear. qtz - chlorite schist
(meta - mafic volcanic sediment with epiclastic sedimentary impurity)
greenishgr with abundant brown schlieren and laminae.

distinct flaser and lenticular structure, in places web - like facility, interlocking qtz and qtz and carbonate crystals as lenses and flasers alternate with schieren and laminae composed of fine - fibrous chlorite, fine crystalline sericite and biotite which tends to form scattered fascicular bundles but sometimes displays trains of flakes (laminae), carbonate locally occurs as idioblasts max. 0.3 cm in diameter.
Schistosity: 45°.
Gradual contact.

13.60 - 16.90 : <u>Slightly calcareous plagioclase - amphibole rock</u>
(meta - mafic crystal tuff)

Sample 2000D/1
15.05 m
Thinsection

lightgn, blastoporphyritic texture, spotted appearence, nearly equal distribution of slightly elongate augen of plagioclase (blasts) max. 0.4 cm across which locally are carbonatized and average 0.15 cm large spots of amphibole within a fine-crystalline and homogeneous matrix composed in decreasing order of plagioclase, amphibole, epidote and carbonate, there exists only a slight distinction between amphibole spots and matrix.
Gradual contact.

16.90 - 19.00 : <u>Slightly calcareous sericite - amphibole bear. biotite - chlorite schist</u>
(meta - mafic volcanic sediment supp. with epiclastic sedimentary impurity; possible distal facies or upper succession of subaquaeous debris flow / lahar)

Sample 2000D/2
from 17.70 m
Thinsection

lightgn with abundant brown schlieren, flaser and lenticular structure, interlocking qtz, fspar and carbonate crystals forming a fine - grained mosaic as schlieren and lenses and sometimes cm - thick layers in alternation with layers and schlieren composed of fine - fibrous chlorite which is accompanied by scattered bundles of biotite max. 1.0 cm in long dimension which are oriented parallel to the major plane of foliation but may sometimes be

oriented at random, amphibole occurs as scarce tiny needles and tends to join chlorite.
Schistosity: 70 - 75°, flattens to 65° within lower most part.
Gradual contact.

19.00 - 23.40 : Calcareous chlorite bear. qtz - fspar amphibole rock

(meta - mafic volcanic sediment with fine to medium size mafic fragments, matrix support sediment; possible distal facies or upper succession of subaquaeous debris flow / laher, or ash fall tuff), grgn, well developed fracmental structure within the upper part of the layer, elsewhere the distinction between fragments and matrix is less conspiceous and sometimes even is lost, matrix support sediment, stretched and flattened mostly subrounded elongate fine and medium sized fragments of fine - crystalline schistose amphibolite which often is vesicular thus carring abundant elongate plagioclase augen of max. 0.3 cm long dimension (scoria) are embedded in a sparce matrix which in the lowermost part is predominated by amphibole and chlorite and otherwise is composed of carbonate, qtz and fspar and subordinate chlorite and amphibole, the latter forms fascicular bundles max. 0.3 cm large which always are aligned along the foliation of the rock.
Schistosity: 70°, within lower most part 80 - 85°.
Gradual footwall.

23.40 - 31.80 : High calcareous biotite - chlorite schist

(meta - mafic volcanic sediment supp. with epiclastic sedimentary impurity)
deepgn with abundant brown schlieren and white spots, spotted appearence, flaser and lenticular structure with transition into laminated rock, interlocking qtz and qtz and carbonate crystals as tiny lenses and laminae in alternation with thick layers composed of fine - fibrous chlorite which is accom-

panied by fascicular bundles and rare imperfect spherulites max. 0.3 cm large of biotite, biotite further forms laminae or schlieren which are conformable with the foliation of the rock, carbonate displays scattered idioblasts max. 0.3 cm across . slightly calcareous biotite - chlorite schist similar 16.90 - 19.00 m occurs as dm-thick infolded sections.
Schistosity: 24.50 m 70°, from 25.00 to 31.80 m strongly folded rock, occurrence of foldhinges.
Gradual contact.

31.80 - 33.40 : Slightly calcareous biotite bear. qtz - chlorite - amphibole gneiss/schist
(meta - mafic volcanic sediment with fine to medium size mafic fragments, matrix support sediment;possible distal facies or upper succession of subaquaeous debris flow / lahar, or ash fall tuff)
Similar: 19.00 - 23.40 m, but with straininduced gneissic texture, folded.
Gradual contact.

33.40 - 35.50 : Calcareous biotite - chlorite schist
(meta - mafic volcanic sediment supp. with epiclastic sedimentary impurity, possible distal facies or upper succession of subaquaeous debris flow/lahar)
similar: 16.90 - 19.00 m, but strongly folded, occurrence of foldhings.
Gradual contact.

35.50 - 39.90 : Calcareous qtz - fspar - amphibole schist
(meta - mafic volcanic sediment with fine to medium size mafic fragments, matrix support sediment; possible distal facies or upper succession of subaquaeous debris flow/lahar, or ash fall tuff)
similar: 31.80 - 33.40 m, clusters of milky qtz at: 37.70 - 38.20 m and 39.20 - 39.50 m . Interlayers of slightly calcareous biotite - chlorite schist at: 37.20 - 37.70 m.
Gradual contact.

39.90 - 47.20 : Slightly calcareous biotite - chlorite schist
(meta - mafic volcanic sediment supp. with epiclastic sedimentary impurity; possible distal facies or upper succession subaquaeous debris flow/lahar),
similar: 16.90 - 19.00 m, but strongly folded and with occurrence of foldhinges, clusters of milky qtz at: 44.00 - 44.60 m, 44.90 - 45.00 m, 45.40 - 46.00 m, 47.50 - 48.00 m.
Sharp contact.

47.20 - 49.70 : Calcareous to high calcareous biotite - amphibole - chlorite schist
(meta - mafic volcanic sediment)
brownishgr, within lower section grgn, coarse - crystalline, strong compositional changes upsection, lower part with high chlorite and amphibole content and with rare round slightly elongated fine - grained fragments of amphibolite, the fragments are still distinctionable from matrix but tend to blend together to give a homogeneous amphibolite, matrix amphibole forms fascicular bundles or imperfect spherulites max. 0.5 cm large which poorly are directed, they originate a slight leopard texture, chlorite is fine-fibrous and joins the felsic compounds as being qtz, fspar and carbonate; the upper part contains abundant carbonate and biotite but strongly is decreased in chlorite and amphibole, the rock is homogeneous and shows a distinct porphyroblastic texture, biotite forms multi crystal pseudomorphs after amphibole as well as fascicular bundles and imperfect spherulites all being not oriented, biotite together with bundles of amphibole constitute an open framework the interstices of which being filled by interlocking carbonate crystals as elongate spots of average 0.2 cm size and accompanied by qtz and fspar.
Gradual footwall.

49.70 - 54.80 : Slightly calcareous biotite bear. chlorite - amphibole rock/schist

Sample 2000D/3
54.50 m
thinsection

(meta - mafic volcanic sediment with medium size mafic fragments, matrix support sediment; possible slightly distal or upper succession of subaquaeous debris flow / lahar),
gn to grgn with brown schlieren, well developed fragmental structure, stretched and flattened elongate clasts of basaltic composition reaching 50% of the total are surrounded by a schistose matrix with often distinct flaser and lenticular structure composed in decreasing order of chlorite, biotite , amphibole, qtz, fspar and carbonate, it is obvious that coarse and fine grained clasts are sedimentated simultaneously, slight grading characteristics may be present locally, the fragments are composed of fine crystalline amphibole which is poorly directed but displays a distinct nematoblastic texture within the edges of the clasts and rarely contain chlorite and/or carbonate, they often are vesiculated the ellipsoidal - stretched and flattened - augen max. 0.3 cm in long dimension being composed of plagioclase often with mortartexture, a fine grained mosaic of carbonate, qtz and fspar or a crystal aggregate of carbonate.
Gradual footwall.

54.80 - 65.90 : <u>Slightly calcareous amphibole - biotite - chlorite schist</u>

(meta - mafic volcanic sediment with fine and coarse mafic clasts and supp. with epiclastic sedimentary impurity ; matrix support sediment, possible distal facies or upper succession of subaquaeous debris flow / lahar)
gn with abundant giant brown rods and cluts, poorly developed fragmental structure, porphyroblastic texture, fine to coarse elongate fragments of fine - crystalline schistose amphibolite which often are vesiculated carrying max. 0.1 cm large augen of plagioclase are embedded in a phyllosilicate matrix composed of fine - fibrous chlorite which contains

abundant rods, fascicular bundles and nearly perfect spherulites of biotite, the crystal aggregates reach sizes between 0.15 and 1.0 cm, carbonate forms minute spots and joins qtz and fspar in tiny schlieren and lenses, the matrix in places is enriched in qtz and fspar thus similar 49.70 - 54.80 m; clusters of milky qtz sometimes accompanied by cm - thick interlayers of pure biotite occur between 56.90 - 58.30 m; sparse spots of cp within qtz - carbonate are present at 59.80 - 60.10 m.
Schistosity: 56.30 m 65°, 56.90 - 58.70 m disharmonic folded chaotic, 59.00 m 70°, 59.60 - 61.00 m disharmonic small scale folding, 61.30 m 30°, 62.00 m 35°, 63.80 m 60°, 64.60 m 45°, 64.70 - 65.35 m small scale isoclinal folding ⊄, 65.50 m 90°, 65.70 m 20°.
Gradual contact.

65.90 - 68.10 : Slightly calcareous biotite bear. chlorite - amphibole rock / schist

(meta - mafic volcanic sediment with medium size mafic fragments, matrix support sediment; possible slightly distal facies or upper to middle success ion of subaquaeous debris flow / lahar)
similar: 49.70 - 54.80 m, but strongly schistose, squeezing and stretching of fragments result in a distinct gneissic texture, locally small scale isoclinal folding,
schistosity: 66.70 m 50°, 67.70 m 60°, 68.00 m 45°.
Gradual contact.

68.10 - 75.35 : Slightly calcareous biotite - chlorite schist

Sample:2000D/4
73.45 m
thinsection

(meta - mafic volcanic sediment supp. with epiclastic sedimentary impurity; possible distal facies or upper succession of subaquaeous debris flow / lahar)
similar: 16.90 - 19.00 m, but with much clearer separation of phyllosilicates and felsic compounds, more distinct flaser and lenticular structure, biotite in general coarser crystalline and more often

cross the major foliation, from 74.40 m downsection occurrence of small fragments of amphibolite and sparse medium sized ellipsoidal fragments of felsic volcanic composed of qtz, fspar and little amphibole.
Schistosity: 68.70 m 50°, 69.70 m 70°, 70.70 m 85°, 70.80 - 71.10 m ¢, 71.20m, 90°, 71.55 - 71.80 m ¢, 72.00 m 45°, 72.60 m ¢, 72.70m 45°, 74.70m 65°.
Gradual contact.

75.35 - 79.20 : Slightly calcareous biotite - chlorite - amphibole schist / rock

(meta - mafic volcanic sediment with coarse mafic fragments, matrix support sediment;possible slightly distal or lower to middel succession of subaquaeous debris flow / lahar)
gn with abundant brown schlieren, poorly developed fragmental structure which results from little differences in colour of matrix and fragments, the rock has a sparse matrix - approx. 30% of the total - which is extremely poor in felsic compounds, it is characterized by a lamination composed of alternate layers of chlorite and schlieren or discontinuous layers of biotite, the fragments are large and cover maximum 5 cm of core, they are composed of fine - crystalline amphibole and nearly always carry elongate vesicules of plagioclase or epidote and plagioclase which may reach 0.3 cm in long dimension; clusters of milky qtz exist between 75.90 - 76.10 m.
Schistosity: 76.50 m 55°, 77.75 m 45°.
Gradual contact.

79.20 - 81.20 : Slightly calcareous amphibole - biotite - chlorite schist

(meta - mafic volcanic sediment with fine and medium size, mafic fragments, matrix support sediment; possible slightly distal facies or upper succession of subaquaeous debris flow / lahar)
similar: 75.35 - 79.20 m, but with smaller fragments approx. 10% of the total.

Schistosity : 80.40 m 60°.
Sharp contact.

81.20 - 84.20 : Epidote bear. qtz - fspar amphibolite

Sample:2000D/21
82.50 m
thinsection

(meta - mafic volcanic sediment with fine fragments of amphibolite)
grgn, massive, homogeneous, less distinct fragmental structure due to compositional similarities of matrix and fragments, medium - crystalline, subangular to subrounded fragments of cm - size composed of amphibole are widely scattered in a matrix composed of in decreasing order amphibole, qtz, fspar and epidote, amphibole forms needles, fascicular bundles or imperfect radiating aggregates of max. 0.2 cm size which homogeneously are distributed forming an open framework the interstices of which being filled by fine - grained granoblastic qtz and fspar and epidote.
Sharp contact.

84.20 - 88.20 : Slightly calcareous amphibole - biotite - chlorite schist

(meta - mafic volcanic sediment with fine and medium size mafic fragments, matrix support sediment; possible slightly distal facies or upper succession of subaquaeous debris flow / lahar)
similar: 79.20 - 81.30 m, but with 30% fragments of the total.
Schistosity: 86.20 m, 85°, 87.20 m, 85°.
Sharp contact, 85°.

88.20 - 90.45 : Slightly calcareous amphibole bear. biotite - chlorite schist

(meta - mafic volcanic sediment with sparse medium size fragments and supp. with epiclastic sedimentary impurity; possible distal facies or upper succession of subaquaeous debris flow / lahar)
similar: 16.90 - 19.00 m, but enriched in phyllosilicates, strainінduced lamination instead of flaser and lenticular texture, sparse fragments - 5% of

the total - composed of fine - fibrous amphibole which extremely are stretched; at lower - most section similar : 54.70 - 65.90 m.
Minor faults at : 90.40 - 90.45 m.
Schistosity: 88.20 m 85°, 89.20 m 75°, 90.20 m 85°.
Sharp contact, bedding fault line.

90.45 - 90.70 : Epidote - biotite - amphibole - chlorite schist
(meta - mafic volcanic sediment supp. with epiclastic sedimentary impurity; possible distal or upper succession of subaquaeous debris flow / lahar)
similar: 16.90 - 19.00 m, but disturbed with small scale folding and several foldinduced minor faults.
Sharp footwall.

90.70 - 9.18 : Chlorite - epidote - amphibole - plagioclase rock
(meta - mafic crystal tuff)
Sample:2000D/5
91.00 m
thinsection
gr with faint yellowish tint and tiny blackish spots, fine - crystalline, poorly developed porphyritic texture, equal distribution of tiny needles of amphibole which are poorly derected within a matrix composed of plagioclase, epidote and fine - fibrous chlorite, a sparse occurence are fascicular bundles of biotite max. 0.15 cm large which slightly are oriented, medium - grade dissemination of ilmenite the crystals being lesser 0.1 cm large and mostly show sutured boundaries.
Sharp contact.

91.18 - 91.25: Slightly calcareous amphibole bear. biotite - chlorite schist
(meta - mafic volcanic sediment supp. with epiclastic sedimentary impurity; possible distal facies or upper succession of subaquaeous debris flow/lahar)
grgn, laminated upper section, laternation of carbonate bear. qtz - fspar layers with bands and schlieren of chlorite which near the footwall contain tiny needles of amphibole being oriented at random, biotite is always conformable the compositional layering and forms schlieren which escorte the chlorite

layers, the lower part displays a homogeneous chlorite schist with sparse occurrence of tiny flakes and bundles or imperfect spherulites of biotite, milky qtz is present locally as tiny veins and small clusters.
Schistosity: 50°.
Sharp contact.

91.25 - 91.45 : Magnetite amphibolite
(meta - ironrich mafic volcanic)

chemical analysis 91.18-91.45m

bluishblack, medium crystalline, crude development of lamination, indistinct alternation of cm - thick layers composed of amphibole and subordinate mt with mm - thick qtz - magnetite bands (chert), amphibole forms 0.4 cm long needles strongly being parallel and forming the foliation, pyrite occurs as spots, stringers and net -work features its amount being lesser 1 Vol.-%.
Layering: 55°.
Gradual contact.

91.45 - 92.50 : Slightly calcareous epidote bear. biotite - chlorite schist
(meta - mafic volcanic sediment supp. with epiclastic sedimentary impurity; possible distal facies or upper succession of subaquaeous debris flow / lahar)
similar: 16.90 - 19.00 m, but with epidote joining the mosaic of qtz, fspar and carbonate.
Minor faults: 91.75 - 91.78 m, strong deformation and with milky qtz clusters between: 92.40-92.50m.
Schistosity: 45°.
Sharp disharmonic footwall.

92.50 - 94.62 : Amphibole - biotite - qtz - epidote - plagioclase rock
(meta - leucobasalt, spilite)

Sample:2000D/6 93.96m thinsection

gr with faint yellowish tint, obundant gn needles and brown rods and veins, heterogeneous in structure and composition, often chaotic within the

upper part crude development of layering as a result of rhythmic changes in the mode of qtz and amphibole, predominately with porphyritic texture, scattered amphibole needles max. 0.3 cm long and randomly oriented within a matrix composed of interlocking plagioclase and epidote, biotite forms fascicular bundles, bow - tie aggregates and cluters of mm and sometimes cm - size which variably are distributed, frequent occurrence of discontinuous laminae of biotite which seem to follow no regulation, garnet sporadically is present forming tiny idioblasts, spots of pyrite are a local exception.
Layering: 92.90 m 45°, 93.00 - 93.50 m ///.
Sharp footwall.

94.62 - 94.75 : Qtz - biotite - chlorite - amphibole schist
(meta - mafic volcanic sediment with fine to medium size mafic fragments, matrix support sediment; possible distal facies or upper succession of subaquaeous debris flow / lahar)
similar: 19.00 - 23.40 m.
Schisosity: 45°.

94.75 - 94.91 : Biotite bear. qtz - fspar - amphibole - epidote rock
(meta - mafic volcanic tuff)

chemical analysis 94.75-94.91m

gr with distinct yellowish tint, heterogeneous in composition and texture, mainly fine grained granoblastic qtz - fspar - epidote rock which contains schlieren or fascicular bundles of biotite forming the foliation and sparse amphibole needles max. 1.0 cm long which tend to be oriented, near the footwall 2 cm thick interlayer composed of coarse ellipsoidal amphibole and fibrous chlorite which contains 10% of pyrite filling the interstices of amphibole crystals.
Layering : 45°.
Sharp contact.

94.91 - 95.92 : Pyrite - epidote - amphibole - biotite - magnetite - qtz gneiss

chemical analysis
94.91-95.98m

(oxide - facies banded iron formation)
darkgr to bluishblack, extremely fine grained, granoblastic but often with porphyroblastic texture, laminated, close alternation of mm - thick layers composed of qtz, qtz - magnetite, epidote - amphibole - magnetite, qtz - magnetite - amphibole and magnetite - biotite - qtz, sparse cm - thick interlayers rich in pyrite which tends to forms trains of granules up to 0.5 cm thick within a qtz matrix, amphibole displays porphyroblasts max. 0.7 cm in long dimension, the needles being oriented at random and often prolongate in adjoining layers, it supposely is locally accompanied by prisms of cummingtonite, biotite forms tiny fascicular bundles or schlieren which follow the lamination. Layering: 45°.

96.42 - 96.58 m: amphibole bear. biotite - qtz - epidote schist

(meta - mafic tuff, spitite)
similar: 92.50 - 94.62 m, but enriched in biotite forming bow - tie aggregates and fascicular bundles which tend to be parallel forming the foliation. Knife sharp contact.

95.92 - 100.82: Magnetite bear. plagioclase - epidote -amphibole schist

(meta - intermittent basalt flow)
gn with interstices being yellowish, abundant black spots, medium crystalline, strong foliation which locally results in a compositional lamination, amphibole forms fascicular bundles max. 0.7 cm large which closely are packed and alternate with schlieren of granoblastic plagioclase and epidote, magnetite supp. accompanied by ilmenite makes up 2 to 3% by volume of the rock by variable distribution, it forms xenomorphic crystal aggregates being minor 1 mm which have sutured boundaries, locally mt gets remobilized and fills or joins small faults.
Minor faults: 97.05m, 97.15 m, 97.40 m, 98.40 m, 98.60 - 98.70 m.

DDH 2000 D

Schistosity: 96.80 m 45°, 98.10 m 30°, 99.00 m 65°.

99.09 - 99.15m: magnetite bear. quartzite

(meta - chert)

chemical analysis 99.09-99.30m

gr with faint bluish tint, dense, extremely fine grained, ghost - like lamination by trains of granules of mt.

Sharp boundaries.

99.15 - 99.30 m: amphibole - qtz - fspar rock/schist

(felsic tuff)

gngr, fine crystalline, granoblastic qtz - fspar mosaic with scattered fasicular bundles of amphibole forming the foliation, mt displays a low - grade dissemination, the tiny spots sometimes have idiomorphic outlines, pyrite makes up 1 to 2 % of the total and mostly forms coarse grains.

Gradual footwall.

100.40 - 100.50m: partly biotitization of amphibole results in a medium to coarse crystalline qtz - fspar - amohibole - biotite rock which contains a low - grade dissemination of py (3 Vol.-%).

A chemical analysis 100.40-100.50m

100.50 - 100.60 m: epidote - amphibole - qtz gneiss

(chertly meta - tuff)

gn with bluishgr and slightly reddish brown and yellowish bands, strong variation in structure, composition and texture, banded, alternation of mm-thick magnetite - qtz layers with cm - thick bands composed of amphibole or epidote and amphibole, the latter occurs with a distinct porphyroblastic texture caused by the growth of amphibole which forms max. 0.4 cm large prisms randomly being oriented in a fine grained matrix of qtz and epidote, the other layers are even grained and have either a nematoblastic or granoblastic texture.

Gradual contact.

100.82 - 100.93: Amphibole quartzite

(meta - sulphide bear. chert)

chemical analysis 100.82-100.93m

gr with gn and browngn stripes, dense, fine grained, quartzite is irregularily interlayered by schlieren or layers of fine - fibrous amphibole carrying a

medium - grade pyrite mineralization mainly as trians of granules, hanging wall and footwall of the section show biotitization and chloritization in a coarse crystalline biotite - chlorite schist. Sharp boundaries.

AA

100.93 - 104.65: Qtz - biotite - epidote - plagioclase - amphibolite
(meta - basalt flow)
lightgn, coarse crystalline, partly with distinct leopard texture, crystal aggregates composed of either amphibole or biotite and amphibole as bundles or imperfect spherulites of cm - size are scattered within a lightgn matrix composed in decreasing order of plagioclase, epidote and amphibole the compounds being significontly finer grained than the phases which form the crystal aggregates.
Sharp tectonic contact at footwall.

Sample:2000D/7
101.65 m
thinsection

104.65 - 104.85: Fault or shearzone
milky qtz with laminae of slikensided biotite and chlorite.

104.85 - 106.20: Qtz - plagioclase amphibolite
(meta - mafic volcanic sediment with fine fragments of amphibolite)
similar: 81.20 - 84.20 m.
105.10 - 105.20 m: calcareous amphibole bear. epidote - biotite - qtz - fspar rock/schist
(meta - felsic to intermediate volcanic, supp. tuff)
gr with brown rods and cluts, crudely schistose, lepidoblastic texture with poorly developed porphyritic texture, closely packed fascicular bundles or imperfect spherulites of biotite forming the foliation surrounded by a matrix of qtz, fspar and epidote, amphibole displays slightly porphyritic crystals which are sparse, the needles always not oriented, carbonate forms 0.2 cm large subidiomorphic porphyroblasts which equally are distributed, spots of cp are a local exception.

Schistosity: 45°.
Sharp boundaries.

106.20 - 106.45: Plagioclase amphibolite
(meta - basalt flow)
similar: 107.12 - 110.80 m, but medium crystalline.

106.45 - 107.12: Biotite - qtz - plagioclase rock
(meta - felsic volcanic)
gr, extremely fine grained with poorly developed porphyritic texture, granoblastic qtz - fspar mosaic with scattered tiny flakes of biotite which locally have the tendency to form bundles, the biotite crystals or crystal aggregates always are parallel and cause a poor foliation of the rock, pyrite occurs as rare subidiomorphic blasts max. 0.2 cm across.
Sharp slightly sheared contact.

107.12 - 110.80: Biotite bear. epidote - qtz - plagioclase -amphibolite
(meta - basalt flow)
grgn, coarse crystalline, massive but with lowermost part being schistose, here also enriched in biotite, crudely developed leopard - texture, distinct lineation of mafic mineral compounds, coarse crystal aggregates of amphibole or biotite and amphibole as imperfect spherulites but also fascicular bundles surrounded by a matrix composed of qtz, plagioclase and epidote.
Schistosity: 110.70 m 80°.
Sharp contact.

110.80 - 112.05: Qtz - epidote - biotite schist
(meta - volcanic sediment, tuff)
grbrown with faint yellowish tint, slight compositional banding which follows no regulation, lepidoblastic texture, interlocking qtz and epidote crystals as stripes, schlieren and lenses in alternation with bundles, cluts and bands of biotite, the latter often being disformable with the foliation of the rock, bio-

tite in places further creates net - work like features.
Sharp distorted contact.

112.05 - 113.25: Epidote - garnet - sericite - biotite - fspar - qtz schist / gneiss

(meta cherty felsic tuff with epiclastic sedimentary impurity)
(comparable with: 232.60 - 233.00 m BH 635 G and 156.45 - 165.35 m BH 768 G)
gr, often with faint yellowish tint, abundant brown and black rods and spots, poorly developed flaser and lenticular structure sometimes even mm - or cm - banded, porphyritic texture, interlocking qtz crystals as schlieren, lenses and laminae in alternation with bands and schlieren composed of qtz, fspar, biotite-sericite and epidote, the minerals are fine crystalline with the exception of biotite which forms fascicular bundles, bow - tie aggregates and imperfect spherulites of max. 0.15 cm size, the crystal aggregates being disformable with or parallel to the compositional layering, garnet as submegascopic crystals equally is distributed but has a tendency to be enriched within the phyllosilicate rich bands, magnetite displays a low - grade dissemination as often idiomorphic crystals within the lower halfpart of the section, it is nearly absent from the upper part, pyrite forms sparse single crystals.
Layering : 85^{o} - 90^{o}.
Gradual contact.

Sample: 2000D/8
112.80m
thinsection

Magnetite tuff marker

113.25 - 113.90: Garnet - sericite - biotite - chlorite - magnetite - qtz rock / gneiss

(meta - cherty tuff supp. with epiclastic sedimentary impurity)
(comparable with: 232.60 - 233.00 m BH 635G and 156.45 - 165.35 m BH 768G)
gr to grgn with abundant black and reddishbrown spots, crude development of compositional banding, alternation of laminated sections composed of lay-

Magnetite tuff marker

Sample:2000D/9
113.45m
thinsection

ers of magnetite - quartzite which often carry sulphides, mt bear. amphibolite, quartzite and biotite - chlorite schist with cm and dm- thick massive units composed in decreasing order of qtz, magnetite, chlorite, biotite, sericite and garnet, the latter intercalations are characterized by a distinct porphyroblastic texture which is caused by the frequent occurrence of idioblasts of mt max. 0.3 cm across, garnet max. 0.1 cm in diameter and sericite max. 0.4 cm large and biotite which forms huge bundles of locally 1.0 cm size, the porphyroblasts are scattered in a finer crystalline matrix of qtz, chlorite and epidote.
Layering: 85°.
Sharp contact.

113.90 - 114.25: Amphibole bear. qtz - biotite - epidote rock
(meta - mafic tuff, spilite)
brown, yellow, heterogeneous, compositional cm - banding as irregular alternation of layers composed of qtz - amphibole - epidote, biotite and biotite - epidote or amphibole - epidote, amphibole tends to form randomly oriented idioblasts the prisms max. 0.7 cm long forming an open framework of touching and sometimes crosscutting crystals, the interstices are filled by fine grained epidote and qtz, biotite is present as imperfect spherulites which may coalesce forming discrete bands.
Banding: 85°.
Sharp contact.

114.25 - 114.85: Biotite - epidote - qtz amphibolite
(meta - mafic volcanic, supp. tuff)
gn with faint yellowish tint and several brown schlieren or cluts, medium-crystalline, homogeneous crudely schistose, closely packed fascicular bundles of amphibolite surrounded by fine grained granoblastic epidote and qtz, biotite forms bundles and imperfect spherulites of less 0.15 cm size which

are variably distributed, they sometimes are grouped around minor faults forming disformable biotite bands.
Sharp contact.

114.85 - 115.65: Epidote - biotite - amphibole - qtz gneiss (banded amphibolite)
(meta - cherty mafic tuff)
alternate gn and gr with often distinct yellowish tint cm - banding composed of alternate qtz, qtz - amphibole and amphibole - qtz - epidote bands, porphyroblastic texture due to amphibole which forms needles of 0.3 cm long dimension mainly being aligned along the compositional banding.
Banding : 70°.
Gradual contact.

115.65 - 117.30: Calcareous chlorite bear. qtz - plagioclase - epidote - amphibole schist
(meta - weakly altered mafic volcanic tuff)
grgn with faint yellowish tint, crude development of compositional banding, medium - crystalline, in places with porphyroblastic texture, idiomorphic crystals of amphibole max. 0.4 cm long tend to be oriented but sometimes are not directed forming an open framework of touching crystals the interstices of which being filled by fine - grained interlocking crystals of qtz, fspar and epidote, carbonate displays idioblasts max.0.4 cm across which like to join each other forming cm - thick bands or lenses rich in carbonate crystals.
Gradual contact.

117.30 - 119.80: High calcareous epidote - chlorite bear. qtz - plagioclase - biotite schist / rock
(meta - tuff)
grbrown with abundant gr spots, massive as well as schistose in places chaotically folded, porphyritic texture, biotite forms bundles of max. 0.25 cm long dimension which sporadically are accompanied by chlor-

Sample:2000D/10
117.95 m
thinsection

ite, the crystal aggregates are surrounded by a mosaic of qtz and fspar which contain locally epidote, carbonate displays multi - crystal porphyroblasts on average 0.25 cm across - max. 0.4 cm large - which nearly are equally distributed; clusters of milky qtz occur at: 118.35 - 118.50 m and 118.60 m.
Folding: 117.30 m strongly folded, 118.50 - 119.30 m strong disharmonic and isoclinal folding with infolded 115.65 - 117.70 m rock.
Gradual contact.

119.80 - 126.10 : <u>Biotite - qtz - plagioclase - epidote amphibole gneiss</u>

(meta - intermittent basalt flows with spilite intersections, may be hyaloclastite)
alternate grgn, gr, brown and lightyellow, non-rhythmic mm- nad cm- compositionale banding with often superimposed flaser - structure or lamination, mostly gradual contacts but also nebulous boundaries between layers, alternation of cm- thick bands of fine - crystalline epidote bear. plag.-amphibolite with nematoblastic texture, seams composed of qtz, epidote and biotite, schlieren and laminae of biotite - epidote or qtz - plagioclase - epidote and schlieren or bands composed of epidote, amphibole, plagioclase and biotite, the compounds are fine - to medium- crystalline with biotite always being slightly coarser, the latter tends to form bundles of 0.15 cm size but sometimes displays imperfect spherulites, the crystal aggregates often being deformed and parallel to the compositional banding, garnets occur within sparse crystals of 0.1 to 0.4 cm size.

Sample:2000D/11
122.35 m
thinsection

Layering: 119.95 m 80°, 120.30 m 90°, 120.75 - 120.85 m faultzone, 120.95 m 80°, 121.60 m 80°, 122.30 m 80°, 123.30 m 85°, 124.15 m 80°, 124.25 - 124.65 m isoclinal folding, 125.30 m 85°.
Gradual contact.

DDH 2000 D

126.10 - 128.90: Amphibole - epidote - biotite - qtz - fspar rock/ gneiss
(meta - mafic tuffs and flows)
rocks similar 115.65 - 117.20 m, 117.30 - 119.80 m and 119.80 - 126.10 m in close alternation as a result of folding, rocks strongly folded and often sheared and locally brecciated.

128.90 - 129.90: Plagioclase - biotite - epidote rock
(meta - leucobasalt spilite)
Sample:2000D/12 129.40m thinsection
chemical analysis 128.90-130.30m
brown with abundant yellowishgr needles, medium- to coarse- crystalline, blastoporphyritic texture (trachytic), abundant needles of saussuritizited plagioclase average 0.7 cm in long dimension are scattered in a matrix composed of biotite, epidote plagioclase and qtz, the prisms show a poorly developed linear preferred orientation, sulphides as py and po are present sporadically forming small discrete crystals.
Slight lineation:65°.
Sharp contact as bedding fault line.

129.90 -130.30: Biotite - garnet - amphibole - epidote - qtz - fspar rock
(meta - keratophyr or rhyolite)
gr with light yellowish tint, homogeneous, porphyritic texture, prisms of amphibole, max. 0.4 cm long and not oriented as well as tiny fascicular bundles and bow - tie shaped aggregates of biotite are scattered in abundant matrix of fine - grained granoblastic fspar, epidote and qtz, pyrite amounts to 1 Vol.-% of the rock and forms xenomorphic crystals.
Knife sharp footwall.

130.30 - 174.90: Schistose amphibolite
Sample:2000D/13 section: 130.00-174.00 m.
(meta-basalt flow with zones of amygdaloidal basalt;comparable with variolitic basalt at Tverrfjellet and section 59.90 - 77.70 m of BH 635G)
gn, fine - grained nematoblastic texture, homogeneous with sparse cm - thick conformable and disfor-

mable interlayers rich in biotite, chlorite and epidote (meta - nontronite, saponite), occasionally mm - thick bands of milky qtz and qtz fracture fillings, clusters of milky qtz especially between 142.30 - 143.00 m, several interlayers with vesiculated basalt abundant - stretched and flatteneа augen on average 0.3 cm in long dimension composed of plagioclase and epidote - at: 143.20 - 143.40 m, 144.20 - 144.22 m, 144.72 - 144.74 m, 144.93 - 145.00 m, 147.25 - 147.35 m, 148.25 - 148.30 m, 150.85 - 151.35 m, 151.73 - 152.04 m, 155.43 - 155.80 m, 157.30 - 157.65 m, 160.80 - 161.05 m, 162.05 - 162.15 m, 163.20 - 163.95 m.

Sample : 2000D/13
amyg - amf.
thinsection

Foliation a. banding: 134.70 m 60°, 139.30 m 45°, 143.00 m 45°, 147.20 m 45°, 150.40 m 50°, 152.30 m 90°, 157.45 m 45°, 159.30 m 55°, 160.70 m 45°, 162.40 m 45°, 163.20 m 45°, 165.90 m 45°, 168.00 m 50°.

Folded contact.

166.45 - 167.30 : <u>slightly calcareous - biotite - epidote - amphibole - fspar - qtz - chlorite</u> gneiss (banded amphibolite)
(meta - mafic tuff)
alternate gn and gr, cm - banding with sharp layering contact , bands composed of epidote and chlorite which often contain schlieren and laminae of biotite or randomly oriented porphyroblasts of amphibole on average 0.4 cm in long dimension alternate with lenses and bands of fine - grained granoblastic qtz, fspar and carbonate.
Layering: 60° to 70°.
Sharp contacts with surrounding amphibolite.

174.90 - 176.70: <u>Calcareous qtz - biotite - chlorite schist</u>
(meta - mafic volcanic sediment, supp. with epiclastic sedimentary impurity; possible distal facies or upper succession of subaqaeous debris flow / lahar)
brownish gn with white spots, flaser structure, close alternation of interlocked qtz crystals as lenses

with schlieren or layers composed of fine - fibrous chlorite and fascicular bundles of biotite forming the foliation, abundant idioblasts of carbonate max. 0.4 cm across which locally are deformed. Schistosity: 45°, uppermost part with small scale isoclinal and disharmonic folding.
Gradual contact.

176.70 - 178.30: Schistose amphibolite
(meta - mafic volcanic sediment with coarse mafic and felsic fragments, matrix support sediment; possible subaquaeous debris flow / lahar or hyaloclastite)
similar: 208.00 - 217.10 m.
Schistosity: 45°.
Gradual contact.

178.30 - 188.15: Slightly calcareous qtz - amphibole - biotite - chlorite schist
(meta - mafic volcanic sediment with medium size mafic fragments and supp. with epiclastic sedimentary impurity, matrix support sediment; possible distal facies or upper succession of subaquaeous debris flow / lahar.
Similar: 49.70 - 54.80 m, 5 to 10% by volumen fragments.
Sharp footwall.

188.15 - 189.30: Calcareous epidote bear. qtz - fspar - biotite - amphibole gneiss
(meta - mafic tuff, similar banded amphibolite)
grgn with light coloured bands and lenses, laminated, porphyroblastic texture, interlocking qtz - fspar crystal aggregates with or without epidote and carbonate as lenses and layers in alternation with schlieren and laminae of biotite and occasional trains of granules of amphibole, amphibole mainly forms idioblasts max. 0.7 cm long which tend to be not oriented thus forming an open framework of touching or crossing crystals, the inter-

stices are filled by granoblastic qtz, fspar, epidote and/or carbonate.
Layering, foliation: 45° - 50°.
Gradual footwall.

189.30 - 192.25: Slightly calcareous chlorite bear. epidote - biotite - amphibole gneiss
(intermittent basalt flows with spilite intersections or mafic tuff)
gn with white and brown stripes and schlieren, locally being yellowish gn, distinct cm - banding with superimposed lamination and local transition into laminated rock, in places the banding is irregular having similarities with a "blastopsephitic texture" (fragment basalt), cm - thick layers of fine - fibrous schistose amphibolite which again is laminated by interlocked elongate qtz and carbonate or schlieren of biotite alternate with granoblastic qtz - carbonate bands lesser 1 cm thick and laminae or schlieren of biotite; the uppermost portion (189.30 - 189.70) shows a distinct mm - as well as cm - banding composed of alternate qtz - carbonate, amphibole and qtz - epidote layers which always have sharp contacts, pyrite occurs as single crystals max. 0.3 cm across, ilmenite forms a low - grade dissemination of minute crystals between: 189.45 - 189.47 m and 190.50 - 190.75 m.
Lamination: 60°.
Sharp footwall.

192.25 - 193.10: Biotite bear. amphibole schist
(meta - basalt flow)
gn, fine crystalline, nematoblastic texture, cross-cutting veins of qtz locally being accompanied by accessory carbonate, biotite is most abundant within the lower portion where it forms imperfect sperulites max. 0.3 cm large while it elsewhere occurs as widely scattered tiny bundles which strongly are aligned along the major plane of foliation.
Gradual footwall.

DDH 2000 D

193.10 - 195.55: Calcareous qtz - fspar - biotite - chlorite - amphibole schist

(meta - mafic volcanic sediment, tuff)
brownishgn, medium - crystalline, porphyroblastic texture, slight compositional and textural changes, biotite mainly is concentrated within the lower portion while chlorite is enriched within the upper part of the section, amphibole increase in size upsection from max. 0.4 cm at lower levels to max. 1.0 cm within the upper portion the needles constitute an open framework of sometimes crosscutting prisms what is most distinct in the upper parts, the interstices of the framework are filled by fine-fibrous crystal aggregates of chlorite, fine-grained granoblastic qtz which locally are accompanied by crystals of epidote and bundles or imperfect spherulites of biotite, carbonate either exists as fine crystals joining qtz or forms scattered idioblasts max. 0.2 cm across.
Comp. banding: 70°.
Gradual footwall.

195.55 - 199.95: Slightly calcareous chlorite - qtz - fspar amphibolite

(meta - mafic volcanic sediment with fine mafic and some coarse felsic fragments, matrix support sediment; possible distal facies or upper succession of subaquaeous debris flow / lahar or may be lapilli tuff)
gn, in places grgn to even greenishgr, massive with crude development of mineral preferred orientation, mainly chlorite - qtz - fspar amphibolite but locally gradually passing into calcareous amphibole - qtz - fspar rock with ghost - like gneissic texture, always little distinction between fragments and matrix due to compositional and textural similarities of both, cm - large rounded elongate clasts of fine - fibrous amphibole and sparse clasts of amphibole - qtz - fspar rock (rhyolite) embedded

in abundant matrix composed in decreasing order of amphibole, chlorite, qtz, fspar and carbonate, amphibole tends to form imperfect spherulites but too fascicular bundles which may be stretched forming a slight foliation, its habit locally cause a slight leopard texture, carbonate when present forms scattered idioblasts max. 0.2 cm across; the lowermost portion (195.55 - 195.85 m) is marked by a distinct cm - banding which is the result of sedimentation of large felsic fragments - amphibole - qtz - fspar rock of fine - grained granoblastic texture with amphibole forming imperfect spherulites and fascicular bundles max. 1.2 cm in long dimension and needles always being poorly directed - which are embedded in a matrix of the kind described above.
Minor faults: 196.15m, 197.30 m, 197.70 m, 198.10 - 198.40 m, 198.70 m, 199.00 m, 199.20 m, 199.35 m, 199.40 m.
Lamination: 85°.
Sharp footwall marked by clusters of milky qtz.

199.95 - 201.75: <u>Epidote bear. biotite - amphibole gneiss</u>
(intermittent basalt flows with spilite intersections)
alternate gn and brown stripes, sometimes gr layers with faint yellowish tint, cm - banding with local transition into laminated rock, rhythmic alternation of bands of fine - crystalline schistose amphibolite with layers or laminae composed of either biotite or biotite and epidote or qtz and epidote, the latter have a lepidoblastic or porphyritic texture due to biotite which tends to form fascicular bundles or coarse crystal aggregates often showing a preferred orientation, the footwall portion contains several clusters of milky qtz thus it displays a chaotic texture .
Layering: 80°.
Sharp footwall.

DDH 2000 D

201.75 - 203.00: Slightly calcareous amphibole bear. biotite - qtz - fspar - epidote rock
(meta - felsic to intermediate tuff of high spilitization)
lightyellowishgn with gr streaks and lenses and brown rods, lumbs and clusters, chaotic texture seems to be stressinduced, locally crude development of mm - layering which is strongly deformed bands and clusters composed of qtz, fspar and epidote which occasionally are joined by fascicular bundles of biotite max. 0.3 cm large and not oriented alternate irregularely with clusters and streaks of biotite and laminae of qtz, amphibole is restricted as porphyroblasts to the stratigraphically lowermost and uppermost portions the needles and imperfect radiating aggregates are max. 0.2 cm large and oriented at random. Sharp footwall marked by clusters of qtz.

203.00 - 206.00: Slightly calcareous qtz - amphibole - biotite - chlorite schist / gneiss
(meta - mafic volcanic sediment)
grgn with abundant brown schlieren and rods and locally white spots, the lower portion shows a poorly defined cm - banding, otherwise exists a distinct mineral preferred orientation but some intersections are massive, medium to coarse crystalline, the lower portion displays a close association of idioblasts of amphibole max. 0.5 cm long and schlieren of fine - fibrous chlorite which alternate with lenses and laminae composed of fine - grained granoblastic qtz which often is accompanied by scattered idioblasts of carbonate being max. 0.2 cm in diameter, the stratigraphically upper parts show a lepidoblastic texture, scattered rodlike and bow - tie shaped crystal aggregates of fine - fibrous chlorite is in close association with fascicular bundles and schlieren of biotite, the phyllosilicates form a light framework with interstices being filled by fine - grained

granoblastic qtz and epidote, amphibole only locally occurs remaining at subordinate amounts, it displays max. 1.0 cm long prisms being equally distributed and not oriented, carbonate in places exists as 0.2 cm large idioblasts.
Schistosity: 75°.
Sharp footwall.

206.00 - 208.00: Slightly calcareous qtz - biotite - fspar - epidote rock

(meta - felsic to intermediate tuff of high spilitization)

Sample:2000D/14
207.50 m
thinsection

same as: 201.75 - 203.00 m, but with no amphibole.
Sharp contact to underlying rock.

208.00 - 217.10: Slightly calcareous chlorite - biotite - qtz - amphibole rock

(meta - mafic volcanic sediment with coarse fragments and supp. with epiclastic sedimentary impurity; possible slightly distal fasies of subaquaeous debris flow/lahar)

Sample:2000D/20
209.60 m
thinsection

grgn, chaotic texture, subrounded elongate medium - and coarse fragments of fine - crystalline schistose epidote - qtz rock, and amphibole - qtz - fspar rock (rhyolite) are scattered in sparse matrix composed of either qtz or qtz with epidote or fine fibrous amphibole or chlorite with biotite or sporadical of carbonate, within the phyllosilicate matrix biotite displays giant bundles, bow - tie shaped aggregates and imperfect spherulites which often are discordant to the major plane of foliation, both matrix and felsic fragments rarely contain spots of py.
Strongly sheared rock between: 212.40 - 212.60 m and 212.90 - 213.20 m, foliation indicated by preferred orientation of fragments at: 85°.
Sharp footwall marked by a cm - thick band of milky qtz.

217.10 - 224.95: High calcareous amphibole - qtz - biotite - chlorite - schist

Sample:2000D/15
221.80 m.

(meta - mafic volcanic sediment partly with fine

fragments and supp. with epiclastic sedimentary impurity, matrix support sediment; possible distal facies or upper succession of subaquaeous debris flow/ lahar)

Sample : 2000D/15
221.80 m
thinsection

similar: 16.90 - 19.00 m and 49.70 - 54.80 m, but with abundant rounded elongate felsic clasts composed in decreasing order of fspar, qtz, carbonate and accessory chlorite and biotite between: 221.65 - 222.20 m and 223.00 - 223.55 m, the fragments are embedded in a phyllosilicate matrix of fine - fibrouse chlorite which contains scattered schlieren and imperfect spherulites of biotite while carbonate occurs as idioblasts max. 0.15 cm across the crystals locally being stretched, carbonate mainly is concentrated between: 220.75 - 221.85 m and 224.05 - 224.95 m forming idioblasts max. 0.3 cm across, prisms of amphibole max. 0.7 cm long embedded without any orientation within phyllosilicate are restricted to sections: 222.25 - 222.40 m, 223.55 - 224.00 m.
Schistosity: 218.10 m 75°, 219.30 m 65°, 220.00 m 61°, 220.30 m 60°, 220.50 m ¢, 221.70 m 52°, 22.50 m 70°, 223.80 m 48°, 224.70 m 53°.
Gradual boundary with following rock.

224.95 - 230.20: <u>Slightly calcareous epidote - biotite bear. chlorite - qtz - fspar amphibole</u>

(meta - mafic volcanic sediment with fine and sparse medium size mafic as well as felsic fragments, matrix support sediment; possible distal facies or upper succession of subaquaeous debris flow / lahar or may be lapilli tuff)
similar: 195.55 - 199.95 m, but with no intercalations of calcareous amphibole - qtz - fspar rock, fine-grained fragments but locally medium-grained clasts of vesicular schistose amphibolite and epidote - amphibole - qtz - fspar rock (rhyolite).
Schistosity: 225.40 m 58°, 226.00 m 59°, 226.80 m 75°, 227.80 m 63°, 229.30 m 75°, 229.80 m 71° 230.10 m 64°.
Gradual footwall.

DDH 2000 D

230.20 - 231.75: Schistose amphibolite
(meta - basic flow)
gn, fine - grained, nematoblastic texture, some mm - thick bands of qtz, in places fascicular bundles of biotite which locally form discontinuous layers or tiny schlieren; interlayer of biotite - amphibole - chlorite schist (supp. debris flow; similar: 49.70 - 54.80 m) at: 231.26 - 231.36 m, schistosity: 230.70 m 88°, 230.70 m 60° by biotite, 231.60 m 85°.
Gradual footwall.

231.75 - 232.45: High calcareous amphibole bear. chlorite - biotite - epidote - qtz rock/gneiss
C
(meta tuff)
gr with yellowish and brownishgn or brown stripes, laminated with sometimes web -like texture, in places chaotically folded, laminae, schlieren and flasers of phyllosilicates (chlorite a. biotite) in alternation with cm - thick bands or sometimes lenses of epidote - quartzite which contain abundant carbonate, the felsic bands carry in places amphibole porphyroblasts which are oriented at random, a low - grade pyrite mineralization mainly as trains of granules is found between 232.05 - 232.26 m, otherwise pyrite is rare forming scattered subidiomorphic crystals.
chemical analysis 232.05-232.26m
Banding: 68°.
Sharp contact to following rock.

232.45 - 235.30: Slightly calcareous qtz - amphibole - biotite - chlorite schist
(meta - mafic volcanic sediment with fine fragments and supp. with epiclastic sedimentary impurity, matrix support sediment; possible more distal facies or middle succession of subaquaeous debris flow/lahar)
similar: 49.70 - 54.80 m, but here more flaser and lenticular texture, fragments of granoblastic epidote - qtz rock, slightly porphyroblastic amphibole bear. qtz-fspar rock and schistose amphibolite.
Schistosity: 85°, strongly stressed between: 234.45 - 234.53 m and 234.58 m 85°, 235.35 - 235.66 m 75°,

235.77 m 70°, 236.20 m 45°.

235.30 - 241.10: Calcareous biotite - qtz - epidote - amphibole rock / gneiss

C

(meta - mafic volcanic, reworked supp. hyaloclastite)

gn with white stripes and intersections being gr with faint yellowish tint, chaotic texture predominates locally with distinct compositional cm - banding, abundant subrounded flattened and stretched fragments of fine - fibrous schistose amphibolite which carries accessory biotite and idioblasts of carbonate 0.15 cm across and of non-homogeneous distribution and clasts of meta - keratophyr composed of epidote and qtz or epidote, amphibole and qtz, they are of granoblastic texture but are distinctly porphyroblastic by occurrence of amphibole which tends to form scattered not oriented idioblasts max. 0.4 cm long, the matrix is sparse to abundant and displays locally a coarse-crystalline biotite - amphibole schist but mainly is composed in variable frequency of biotite , amphibole, epidote, carbonate and qtz and shows a granoblastic or porphyroblastic texture.

Fault: 239.90 m 45°.

Schistosity, layering: 236.30 m 74°, 236.70 m 66°, 237.30 m 78°, 237.45 - 237.80 m ///, 237.90 m 74°, 238.50 m 67°.

Gradual footwall.

241.10 - 251.85: Calcareous epidote bear. amphibole - qtz - biotite - chlorite schist

(meta - mafic volcanic sediment with coarse fragments and supp. with epiclastic sedimentary impurity, matrix support sediment; possible slightly distal facies or lower succession of subaquaeous debris flow / lahar)

similar: 49.70 - 54.80 m, but with additional epidote joining qtz, fspar and carbonate, fragments of fine - fibrous schistose amphibolite which may

be vesiculated and calcareous amphibole - qtz - epidote rock (felsic volcanic) which displays a distinct granoblastic texture, carbonate occurs as scattered idioblasts on average 0.2 cm across, amphibole forms fascicular bundles of max. 0.4 cm long dimension which parallel the major foliation of the hostrock, scarce clasts composed of amphibole - epidote - qtz - plagioclase (felsic volcanic) with poorly defined porphyroblastic texture due to amphibole which forms scattered not oriented prisms being 0.15 cm long.
Schistosity: 241.80 m 90°, 242.30 m 85°, 243.10 m 85°, 244.60 m 76°, 245.10 m 75°, 245.35 - 245.65 m ¢ , 245.95 m Þ , 246.50 m 76°, 247.10 m 80°, 248.10 m 80°, 250.00 m 70°.
Gradual footwall.

251.85 - 258.10: Schistose amphibolite with interlayers of amphibole bear. qtz - biotite - chlorite - epidote rock (meta - mafic volcanic, reworked supp. hyaloclastite)
gn-white striping with intersections being gn with faint yellowish tint, dm - banding, fine crystalline schistose amphibolite containing abundant qtz and qtz - carbonate bands which mostly are conformable with the major plane of foliation is interstratified by conformable and disformable layers max. 200 cm thick composed of epidote, chlorite, biotite, qtz and amphibole (at: 251.85 - 253.90 m, 254.00 - 254.10 m, 254.50 - 254.70 m, 254.95 - 255.25 m, 255.60 - 256.35 m, 256.55 - 257.30 m), the relative proportions of the constituents vary strongly from layer to layer but also within each layer what is due to the chaotic conditions regarding structure and texture, amphibole tends to occur as idioblastc of max. 0.5 cm length being scattered within a mosaic of fine-grained granoblastic epidote and qtz, the crystals are not oriented, it sometimes forms radiating aggregates or discontinuous trains of granules, biotite often displays giant bundles max. 0.5 cm long

and 0.3 cm wide which form bands or clusters of irregular shape, pyrite occurs sporadically as 0.2 cm large spots.
Layering: 254.20 m 75°, 255.10 m 90°, 255.80 m 75°, 257.50 m 90°, 257.65 m 85°.
Sharp contact to following rock.

258.10 - 261.10: Amphibole - sericite bear. epidote - biotite - chlorite - qtz schist / gneiss

(meta - mafic volcanic sediment mixed by epiclastic sediment, some interlayers of meta - felsic tuff) gngr to grgn with sometimes distinct yellowish tint, flaser to lenticular structure with local transition into cm - banded rock, interlocking epidote and qtz crystals as schlieren lenses and bands in alternation with schlieren, lenses and laminae composed of fine - fibrous chlorite which is associated by biotite forming mm- thick bands or schlieren always being parallel the major foliation, amphibole occurs as scattered idioblasts, the needles on average 0.2 cm ling and not oriented, it in general is within phyllosilicates but is associated with qtz and epidote in the supposed felsic tuff layers, here too some pyrite exists as scattered elongate crystals on average 0.2 cm large, it is most frequent within 258.75 - 258.80 m remaining lesser 2 Vol.-%; a thin band of meta - basalt flow (epidote - biotite bear. fspar - qtz - amphibole schist) is found at 260.00 - 260.35 m, the rock being fine crystalline showing a distinct nematoblastic texture, a laminaetion caused by parallel streakes of biotite is poorly developed.
Schistosity, layering: 258.75 m 55°, 258.10 m 48°, 259.50 m 49°, 260.00 m 58°, 260.45 m 60°, 261.00 m 60°.
Sharp distorted contact to following rock.

261.10 - 264.10: Schistose amphibolite

(meta - mafic volcanic, reworked supp. hyaloclastite)

gn, fine crystalline, nematoblastic texture, abundant disconformable bands composed of coarse crystalline amphibole, biotite, epidote and qtz predominately of chaotic texture(same as: 251.85 - 253.90 m), sometimes clusters or trains of flakes of biotite, occasionally cm - large clusters of qtz with carbonate.
Faults and mylonitic zones: 261.70 m, 262.60 m, 262.75 - 262.90 m, 263.10 m, 263.25 - 263.50 m, 263.60 - 263.70 m.
Fault contact to following rock.

264.10 - 265.40: Slightly calcareous amphibole bear. biotite - chlorite schist
(meta - mafic volcanic sediment supp. with epiclastic sedimentary impurity; possible distal facies or upper succession of subaquaeous debris flow / lahar)
similar: 16.90 - 19.00 m, strongly deformed lower as well as upper portion, the middle zone shows a consistent schistosity of 63° to core - axis.
Sharp footwall.

265.40 - 266.80: Epidote bear. sericite - biotite - amphibole - qtz fspar rock / gneiss
(meta - arenite/qtz - pelite with mafic volcanic impurity)
gr with faint greenish tint and brown as well as gn needles, porphyritic texture in places porphyroblastic textural and compositional banding, nonrhythmic alternation of sericite - biotite - qtz rock (meta - qtz - pelite / arenite) and layers of amphibole - qtz - fspar rock or amphibole - sericite - qtz rock distinct separation of biotite and amphibole, the former display scattered or imperfect sperulites max. 0.15 cm large and randomly oriented, amphibole occurs as idioblasts, the needles on average 0.3 cm long and equally distributed while not oriented, a low - grade dissemination of idioblasts of pyrite lesser 1% of the mode exists between:

265.75 - 265.95 m.
Banding: 265.70 m 85°, 266.10 m 75°.
Sharp footwall.

266.80 - 269.50: Calcareous to high calcareous amphibole - biotite - chlorite schist
(meta - mafic volcanic sediment supp. with epiclastic sedimentary impurity; possible slightly distal facies or upper to middle succession of subaquaeous debris flow / lahar).
Similar: 49.70 - 54.80 m, but with scattered subidiomorphic carbonate crystals max. 0.15 cm across
Schistosity: 267.10 m 85°, 267.35 m 55°, 268.00 m 45°, 268.30 m 67°, 269.30 m 67°.
Gradual border to following rock.

Epiclastic sedimentary section

269.50 - 270.50: Chlorite bear. qtz - fspar rich biotite - sericite schist
(meta - pelite with felsic volcanic impurity)
gr with faint greenish tint and abundant brown schlieren and rods, porphyritic texture, crude development of compositional banding, often with distinct lenticular structure, interlocking qtz and qtz - fspar crystals as lenses and layers in alternation with bands composed of fine crystalline sericite and chlorite and distinctly coarser biotite, the latter forms fascicular bundles or imperfect spherulites of max. 0.2 cm size which tend to be not oriented but locally are flattened and stretched thus parallel and sometimes form laminae.
Lamination: 75° - 80°.
Gradual footwall.

270.50 - 272.50: Qtz - chlorite - biotite - sericite schist
(meta - paraconglomerate, supp. tilloide)
gr with often distinct gn tint and brown schlieren and rods blastopsephitic texture, locally cm -

banded, isolated stretched and flattened rounded fragments of fine - grained granoblastic quartzite more than 2 cm long dimension are embedded in abundant matrix composed of fine - crystalline sericite and chlorite and containing fascicular bundles or imperfect spherulites of biotite max. 0.3 cm large which are oriented at random but may also be stretched and parallel, intervalls with little or no fragments are similar: 269.50 - 270.50 m.
Schistosity and fragment orientation: 75° - 80°.
272.08 - 272.38 m: high calcareous chlorite bear. biotite - sericite schist / rock
(meta - pelite)
gr with greenish tint, crudely schistose, homogeneous, porphyroblastic texture, idioblasts of carbonate 0.1 cm across and bundles of biotite being poorly directed embedded in a matrix of fine crystalline chlorite and sericite, carbonate and biotite show highest concentration in the middel of the layer.
Sharp contacts to the surrounding.

272.50 - 278.30: Chlorite bear. qtz - fspar rich biotite-sericite schist
(meta - pelite with felsic volcanic impurity)
same as: 269.50 - 270.50 m but locally with coarser bundles of biotite - max. 0.3 cm large.
Minor faults at: 275.70 m, 275.78 m, faultzone at: 272.80 - 273.00 m.
Lamination: 75° - 80°.
Sharp footwall.
275.60 - 275.85: High calcareous biotite bear. sericite schist
(meta - pelite)
similar: 272.08 - 272.38 m but with minor biotite forming only tiny fascicular bundles which poorly are oriented.

278.30 - 279.50: Garnet bear. biotite - sericite schist
(meta - pelite)

darkgr, fine crystalline, poorly developed lenticular structure, widely spaced seams and lenses of carbonate in alternation with layers composed of fine-crystalline sericite forming the foliation, biotite occurs as scattered fascicular bundles max. 0.1 cm large which often are oriented, garnet forms scattered idioblasts average 0.3 cm across.
Minor faults: 278.70 m, 278.96 m, 279.10 - 279.20m, 279.35 - 279.45 m.
Schistosity: 85° - 90°.
Gradual footwall.

279.50 - 281.55: Slightly carbonaceous biotite bear. sericite - quartzite
(meta - arenite)
gr, fine-grained granoblastic, laminated, alternation of mm - thick laminae of sericite - biotite and seams of graphite containing minor sulphide with cm- thick layers of phyllosilicate-poor quartzite, the rock looks strongly foliated with frequent occurrence of bedding fault lines.
Fault - zone: 290.20 - 290.50 m.
Schistosity: 75° - 85°.
Bedding fault line as lying contact.

281.55 - 283.75: Garnet - biotite - sericite schist
(meta - pelite)
gr with brown and reddish brown spots, porphyritic to porphyroblastic texture, poorly developed lamination and lenticular to flaser structure, interlocked qtz crystals accompanied by scattered tiny flakes of biotite as lenses or layers / laminae in alternation with bands and schlieren of fine-crystalline sericite which contains abundant scattered fascicular bundles of biotite max. 0.1 cm large and mostly being not oriented, they sometimes may be concentrated forming laminae or cm - thick intercalations, garnet (almandine) displays scattered idioblasts average 0.2 cm across which are not equally distributed.

Some tiny faults: 281.80 - 281.95 m, 282.20 m.
Schistosity: 85° - 90°.
Gradual footwall.

283.70 - 284.40: Slightly carbonaceous garnet - biotite bear. sericite quartzite
same as: 279.50 - 281.55 m.
Partly slightly mylonized: 283.85 - 283.90 m.
Layering: 85° - 90°.

284.40 - 284.60: Garnet - biotite - sericite schist
(meta - pelite)
same as: 281.55 - 283.75 m, but with more qtz and lesser biotite.

284.60 - 286.65: Calcareous amphibole bear. garnet - qtz - fspar - biotite - sericite schist
(meta - pelite with interbeds of felsic volcanic) gr with greenish tint and abundant brown schlieren and rods, dm - layering as nonrythmic alternation of meta - pelite bands and layers of meta - felsic (keratophyr) volcanic, always gradual contacts, the pelite sections are similar 281.55 - 283.75 m but have biotite bundles being 0.2 cm long, garnet is equally distributed being average 0.1 cm across, carbonate forms scattered subidioblastic crystals or displays crystal aggregates as lenses and clusters of irregular shape, the keratophyric layers are crudely mm- to cm-banded and show a distinct porphyroblastic texture caused by amphibole which forms randomly oriented prisms max. 0.4 cm long and garnet as scattered idioblasts average 0.4 cm across which in places form huge crystal aggregates, biotite is present as fascicular bundles.
Layering:85°.
Gradual footwall.

286.65 - 299.30 : Garnet-biotite - sericite schist
(meta - pelite)
similar: 281.55 - 283.75 m but biotite only being

oriented at random and max. 0.3 cm in size, varying qtz - amount thus sometimes reaching qtz - mica schist.
Minor faults at: 271.71 m, 287.75 m, 290.66 m, 290.80 m, 290.93 m, 291.40 m, 291.83 m, 292.40 - 292.45 m, 292.87 m, 295.04 m, 295.10 - 295.25 m.
Gradually passing into hanging rock.

299.30 - 301.40: Slightly carbonaceous garnet - biotite bear. sericite quartzite
similar: 279.50 - 281.55 m.
Lamination at 75° - 80° , in places tiny bedding fault lines.
Gradual footwall.

301.40 - 304.50: Slightly carbonaceous qtz - biotite - sericite schist
(meta - pelite)
gr with several darkgr or even black bands and laminae, porphyritic texture, distinctly banded and laminated, nonrythmic alternation of cm - but often dm - thick layers of metapelite similar 286.55 - 299.30 m and laminae and bands - max. 4 cm thick - of carbonaceous meta - pelite which is very poor in biotite, the contacts between the layers are sharp but locally may be gradual, a local phenomenon are network - like features of carbonaceous meta - pelite within meta - pelite.
Minor faults often with slickensided graphite:301.80 m, 302.00 m, 302.50 m, 302.60 m, 302.80 m, 303.45 m.
Lamination:80° - 85°.
Gradual footwall.

304.50 - 309.50: Slightly carbonaceous sericite - biotite - quartzite
(meta - qtz - pelite/arenite with intercalations containing graphite)
gr with abundant darkgr laminae and nearly black bands, porphyritic texture, laminated, cm - thick layers composed of fine crystalline qtz and sericite which are accompanied by scattered fascicular

bundles max. 0.1 cm large of biotite which are oriented at random alternate with laminae of graphite phyllite being closely isoclinally folded, bands of graphite with max. 6 cm thickness which show a biotite lamination are sporadically intercalated, they occur mainly with sharp contacts.
Local occurrence of bedding fault lines.
Lamination at 80°, between 307.00-308.80m)at 60°.
Gradual footwall.

309.50 - 311.95: Fspar - sericite bear. garnet - biotite - qtz schist
(meta - arenite supp. with hydrothermal silica and felsic volcanic impurity)
gr with brown rods and reddish brown streaks, porphyritic texture, ghost - like mm - banding composed of alternate fine grained granoblastic qtz layers or lenses and bands or lenses of fine crystalline sericite - qtz which carry abundant fascicular bundles of biotite often being not oriented, garnet being of tiny occurrence forms closely packed trains of granules (laminae) , scattered tiny grains of po are always present, several cm- to dm- thick interlayers of biotite - qtz - fspar rock with indistinct gneissic texture, biotite forms here fascicular bundles or imperfect spherulites of max. 0.2 cm size which are oriented at random.
Minor faults: 309.85 m.
Milky qtz band: 311.26 - 311.60 m.
Lamination: 85°.

311.95 - 325.85: Biotite - sericite schist
(meta - pelite)
same as: 281.55 - 283.75 m, within 324.30 - 325.50 m strongly schistose with biotite being flattened and stretched and aligned along the major plane of foliation, from 325.50 m downsection decreased in phyllosilicates and increased in qtz and with abundant fspar and epidote (keratophyric), low - grade dissemination of idiomorphic pyrite.
Schistosity: 75° to 80°.
Gradual footwall.

Sample:2000D/16
312.30 m
thinsection

DDH 2000 D

325.85 - 333.30: C — High calcareous epidote - amphibole - qtz - fspar rock / ngeiss

(banded amphibolite)

grgn, crude development of layering but with poorly defined mineral orientation, porphyroblastic texture, amphibole and carbonate form scattered porphyroblasts within a fine - grained matrix composed of epidote, qtz and fspar, the amphibole prisms on average are 0.5 cm long and form an open framework of not crosscutting or touching crystals they sometimes are parallel forming a slight foliation, carbonate displays idioblasts on average 0.4 cm across, py sporadically occurs as 0.2 cm large idiomorphic crystals.

Layering and schistosity: 326.15 m 70°, 326.90 m 67°, 327.90 m 65°, 328.80 m 64°, 329.50 59°, 330.80 m 59°, 331.60 m 61°, 332.80 m 65°, from 332.60 several small faults gradually passing into mylonite (tectonic breccia).

333.30 - 335.10: Tectonic breccia

335.10 - 424.15: Slightly calcareous - biotite - amphibole - chlorite schist

(meta - mafic volcanic sediment with medium size and coarse mafic and sparse felsic fragments, matrix support sediment; possible slightly distal or lower to middel succession of subaqaeous debris flow / lahar or agglomeratic basalt) (comparable with sample SNØ - 26)

Sample:2000D/17 421.50 m thinsection

similar: 49.70 - 54.80 m, concentration of coarse clasts thus rock similar 75.35 - 79.20m at: 346.65 - 352.60 m, sections with only fine clasts at: 344.40 - 344.90 m, 345.60 - 346.70 m, 357.60 - 358.50 m, 382.40 - 395.20 m, 399.55 - 401.00 m, 407.20 - 411.25 m, 416.55 - 417.70 m, 419.60 - 421.10 m, 422.00 - 423.30 m; schistosity and fragment lineation: 337.00 m 70°, 340.00 m 60° frag., 341.00 m 63° frag., 342.70 m 64° frag., 344.50 m 59°, 346.50 m 62°, 349.50 m 62° frag., 351.30 m

61° frag., 352.60 m 64° frag., 353.50 m 58°, 355.50 m 58° frag,, 357.40 m 66°, 357.85 m 58°, 359.30 m 80°, 359.75 m 65°, 360.00 m 53°, 360.55 m 77°, 361.05 - 361.55 m ⌒,361.75 m 17°, 361.95 - 362.30 m ⌒,362.40 m 30°, 362.40 - 362.85 ¢ ,363.00 m 45°, 363.05 - 363.75 m ⌒,363.80 m 40°, 364.00 - 363.35 m ⌒,364.50 m 30°, 364.90 - 265.95 m ⌒,365.95 - 367.40 m ⌒,367.40 m 45°, 367.40 - 367.80 m ¢ , 367.80 - 368.75 m ⌒,368.80 m 45°, 369.20 m 65°, 369.40 - 370.30 m ⌒,370.50 m 30°, 370.80 45°, 371.20 m 45°, 371.30 - 371.70 m ⌒, 371.80 m 80°, 371.85 - 372.10 m ¢ , 372.30 - 372.70 m ⌒,372.70 - 391.60 m ⌒,391.90 - 394.20 m strongly schistose 50°, 397.50 m 75°, 407.50 m 67°, 408.00 m 57°, 409.50 m 45°, 410.50 m 30°, 411.50 m 50°, 418.70 m 55°, 420.20 m 50°, 420.50 m 55°; mylonitic rock 335.45 - 335.73 m; faults: 338.17 m, 338.66 - 338.73 m, 339.23 m, 339.28 - 339.44 m, 340.90 m, 339.23 m, 339.28 - 339.44 m, 340.90 m, 341.70 m, 343.97 - 344.16 m, 350.35 m, 350.44 m, 349.75 - 349.81 m, 352.43 - 352.49 m, 358.00 - 358.16 m, 358.70 - 359.88 m, 365.32 - 365.48 m, 367.91 - 367.97 m, 368.86 m, 368.95 m, 371.48 - 371.75 m, 380.20 m, 381.10 m, 381.70 - 381.79 m, 382.15 m, 382.48 m, 384.18 m, 384.70 - 385.20 m, 390.60 m, 391.45 - 391.56 m, 397.95 - 398.00 m, 399.95 - 400.03 m, 400.45 m, 401.53 m.

Strongly folded and deformed 360.70-391.90m

403.45 - 407.20 m: Biotite - chlorite - epidote qtz - fspar amphibole schist / gneiss

(intermittent basalt flows ,leucobasalt)

(comparable with sample SNØ-04)

lightgreen,medium - grained, crude development of cm - layering mainly as a result of modal changes of biotite, nematoblastic texture, average 0.4 cm large prisms of amphibole with preferred orientation forming the foliation are embedded in a fine - grained matrix composed of epidote, qtz and fspar, biotite displays fascicular bundles or bow - tie crystal aggregates which parallel the amphibole needles, py as tiny spots is present throughout.

Schistosity and layering: 403.60 m 71°, 403.70 m 55°, 403.85 - 404.50 m ¢, 404.80 m 56°, 407.20 m 67°.
Sharp hanging wall and gardual footwall.
411.25 - 416.55 m: biotite - chlorite - epidote bearing qtz - fspar amphibolite
(intermittent basalt flows ,leucobasalt) (similar SNØ-04)
see: 403.45 - 407.20 m, but more distinctly cm - banded, the contacts between individual layers being sharp, alternation of bands of schistose qtz - fspar amphibolite and amphibole bearing qtz - fspar biotite - chlorite schist with distinct lepidoblastic texture, sporadical interlayers of amphibole qtz - fspar rock (keratophyr).
Layering: 412.70 m 63°, 413.50 m 45°, 414.30 m 46°, 415.30 m 55°, 416.10 m 42°.
Sharp hanging wall.
Gradual footwall.

424.15 - 434.90 :Amphibole schist
(meta - basalt flow)
gn, extremely fine to fine-grained, homogeneous, rare lenses and leaves of qtz and qtz - carbonate or carbonate, variolitic amphibolite with 0.5 cm large flattened and streched fspar eyes at: 431.00-431.20 m, 431.60 - 431.70 m, 432.05 - 432.10 m, scattered xenomorphic and hypimorphic - both often with sutured boundaries - and sporadically idiomorphic crystals of ilmenite max. 0.2 cm in diameter between: 427.80 - 431.00 m, 431.30 - 431.50 m, 431.80 - 433.20 m, tiny spots of py at: 433.80 - 434.80 m. Strongly tectonized rock between: 424.15-427.80 m, 430.40 - 430.80 m, 431.90 - 433.80 m.
Schistosity and lineation of fspar-eyes and il-crystals: 428.20 m 62°, 428.30 m 58°, 431.10 m 54°, 431.70 m 67°, 434.50 m 62°.
Gradual footwall.

DDH 2000 D

434.90 - 435.60: High calcareous amphibole - qtz - sericite - chlorite schist (banded amphibolite)
grgn, medium - grained, crude development of layering, lenticular structure occurs where porphyroblasts of carbonate have been flattened and stretched, nematoblastic texture but porphyroblastic texture within stratigraphically lower portion, amphibole as idioblasts the needles on average 0.3 cm long and either parallel or not oriented is embedded in a matrix composed of fine - fibrous phyllosilicates and fine - grained qtz and carbonate, the latter displays scattered idioblasts forming a spotted texture of the rock within the lower portion of the layer, rare cm - thick interlayers of exhalative qtz.
Mineral orientation, layering: 435.10 m 88°, 435.50 m 85°.
Sharp lying contact.

435.60 - 435.70: Amphibole schist
(meta - basic flow)
gn, extremely fine - grained, homogeneous with some nodules of qtz.

435.70 - 442.10: Plagioclase amphibolite
(meta - basic flow)
grgn, medium - grained within lower portion being coarse grained, crude development of leopard texture, amphibole tends to form bundles or imperfect spherulites which caused a slight foliation, the crystal aggregates are embedded within a fine-grained mosaic of qtz - fspar and epidote the latter being more frequent within the coarse grained portion.
Gradual contact with following amphibolite.

442.10 - 445.15: Amphibole schist
(meta - basalt flow)
gn, fine - grained, homogeneous with rare nodules of qtz of irregular shape, low - grade sulphide mineralization as scattered xenomorphic pyrite which

sometimes is accompanied by bigger spots of po between: 442.50 - 442.90 m.
Strongly stressed and partly mylonized between: 443.20 - 443.50 m.
Gradual footwall.

445.15 - 460.00: Plagioclase amphibolite
(meta - basic flow)
see: 435.70 - 442.10 m, here medium - grained in places gradually changing to coarse - grained, occasionally qtz and/ or nodules of milky qtz, intersections of schistose amphibolite being extremely fine - grained at: 448.45 - 449.30 m.
Gradual contact with following altered amphibolite.

460.00 - 462.25: Calcareous qtz - fspar - amphibole - chlorite (chlorite - amphibole) schist/rock

A/C

(meta - altered basaltic volcanic, flow) (similarities with altered basalts at hanging wall of Tverrfjell ore)
gn, medium - grained, in places crudely developmed lamination, gradual in crease in the amount of amphibole upsection, the mode of chlorite changes inversely with that of amphibole, chlorite, however, is most abundant between: 460.80 - 461.20 m, amphibole forms idioblasts, the prisms on average 0.4 cm long and generally lack orientation but sometimes are slightly parallel, the crystals ly in a groundmass composed of interleaved fine - fibrous chlorite and interlocked fine - grained qtz, fspar and carbonate, pyrite is found in minor amounts and displays xenomorphic to hypidiomorphic crystals, sometimes nodules or veins of milky qtz, foliation: 461.10 m 45°, layering at: 461.60 m 72°, contact at 462.25 m 53°.

chem. analysis 460.20-462.25m

Knife - sharp contact marked by a band of milky qtz.

462.25 - 462.70: High calcareous amphibole bearing chlorite schist/ rock

AA/C

(meta - highly altered basaltic volcanic)

(similar sample 4/14 BH 4 Tverrfjell mine) lightgrgn, hanging portion massive with distinct spotted appearence, the fine - fibrous chlorite groundmass sporadically contains tiny spherulites of amphibole and carries abundant scattered crystals of carbonate which mostly are hypidiomorphic and are on average 0.1 cm across, pyrite forms a low - grade dissemination while ilmenite occurs as frequent tiny spots, it is accompanied by minor mt, this section gradually passes into amphibole bear. chlorite or amphibole - chlorite schist which carries little carbonate, no py and minor spots of ilmenite, amphibole forms max.0.5 cm large needles which always are aligned along the major plane of foliation.
Schistosity: 462.70 m, 48°.
Sharp contact as bedding fault line.

462.70 - 466.00: Calcareous amphibole bear. chlorite - biotite - sericite schist

C (meta - pelitic sediment with basic volcanic impurity; supposely with hydroth. alternation) lightgn, with in places giant white spots, strongly schistose with in places crenulation cleavage, crude lamination, locally being strongly deformed by small-scale disharmonic or isoclinal folding interleaved biotite as streaks and discontinuous bands closely alternate with layers composed of fibrous chlorite , carbonate appears as giant hypidiomorphic and idiomorphic crystals being equally distributed between:462.90 - 464.00 m, 464.90 - 465.00 m, 465.40 - 465.55 m, 465.80 - 466.00 m, amphibole only sporadically is present forming average 0.5 cm large needles which are oriented at random.
Schistosity: 463.00 m 51°, 463.40 m 20°, 462.70 - 462.85 m ⩙, 464.00 - 464.70 m, ⩙ 465.00 m 48°, 465.40 m 52°, 465.50 m 20°, small faults: 463.25 m, 464.30 m, 464.70 - 464.75 m, 465.00 - 465.30 m.

466.00 - 466.20: <u>High calcareous chlorite bear. qtz - fspar - amphibole gneiss/rock</u>

C

(meta - basic volcanic tuff)
lightgn, the lowermost section being white/gn striped upper portion massive and homogeneous, even - grained but with scattered idioblasts or crystal aggregates of carbonate which are max. 0.2 cm in diameter, the stratigraphically lower section crudely is laminated, the layering being due to the tendency of carbonate to form trains of granules which closely alternate with stripes or bands of qtz-fspar - amphibole, the latter is present as idioblasts of 0.1 to 0.2 cm length which form a slight foliation, <u>pyrite</u> is most abundant but remains to subordinate amount near the footwall, its mode gradually decreases upsection.

sample:2000D/18
466.10 m
thinsection

Lamination : 466.15 m 58°.
Gradual footwall.

466.20 - 466.60: <u>Slightly calcareous amphibole - sulphide - qtz - fspar gneiss</u>

chemical analysis 466.15-466.60m.

(meta - keratophyr with sulphide layers)
gr, cm - banding composed of alternate sulphide pore keratophyr layers and bands of high - grade sulphide (<u>py, po</u>) rich in quartz,granoblastic texture throughout, amphibole forms small idioblasts max. 0.2 cm long which tend to be parallel forming a slight foliation, carbonate appears within 0.1 cm large hypidimorphic crystals which are equally distributed but sometimes form trains of granules.
Layering: 466.20 m 66°, 466.55 m 85°.
Sharp footwall as bedding fault line.

466.60 - 466.72: <u>High calcareous amphibole schist</u>

(meta - basalt tuff / flow)

C

gn with scarce white stripes, medium - crystalline, nematoblastic texture, laminated by discontinuous flasers and lenses of carbonate, irregular carbonate veining is due to intense fracturing

(tectonization).
lamination: 62°,
several small faults with little or no dislocation.
Sharp lying contact marked by a cm - band of qtz - carbonate.

466.70 - 466.75: Slightly calcareous amphibole - biotite - chlorite schist

AA

(meta - altered basaltic volcanic)
gn with brownish spots, medium - grained, lepidoblastic to nematoblastic texture, scarce streched spots of carbonate.
Schistosity: 60°.
Bedding fault line as footwall contact.

466.75 - 466.85: Calcareous sericite - qtz - fspar - amphibole gneiss

(meta - cherty mafic tuff)
lightgn, partly with white or slightly yellowish stripes and bands, fine - grained, crudely developed mm- and cm - layering with always gradual contacts, bands of sericite - amphibole, amphibole bear. epidote qtz - fspar and qtz - carbonate in rhythmic alternation, rare mm - large spots of py and po, low impregnation of mt.
Layering: 64°.
Discordant fault contact.

466.85 - 467.30: Calcareous chlorite bear. biotite - sericite schist

(meta pelite)
lightgn with brownish flasers and stripes, strongly sheared rock characterized by disharmonic folding, laminae, flasers and irregular formed aggregates of biotite, alternate with layers of fine - fibrous chlorite - sericite, xenomorphic mainly round crystals of carbonate max. 0.1 cm across are equally distributed but sporadically form trains of granules. Nebulous border to underlying rock.

DDH 2000 D

467.30 - 467.70: High calcareous amphibole schist
(meta - basalt tuff / flow)
same as: 466.60 - 466.72 m, but with nodules of milky qtz.
Lamination: 80°.
Gradual footwall.

467.70 - 467.80: High calcareous biotite - sericite schist
(meta - pelite or tuffaceous meta - pelite)
lightgn with brownish flasers and white spots, crudely developed flaser structure, slightly porphyric biotite is strongly aligned along the major foliation of the rock which is formed by fibrous sericite, carbonate displays round crystals max. 0.1 cm across which are equally distributed but in places form discontinuous layers.
Schistosity: 78°.
Sharp lying contact.

467.80 - 468.10: Garnet - amphibole - fspar - qtz gneiss
(meta - chert, silicate facies banded iron formation)
lightgn with redbrown tint, banded rock composed of cm - thick layers of amphibole - garnet - qtz, garnet - qtz - fspar - amphibole and amphibole - qtz - fspar and minor bands of quartzite and laminae of garnet, the contacts of the layers tend to be gradual but locally they may be knife-sharp, the rock is fine - grained and shows a distinct foliation formed by idioblasts of amphibole the needles on average 0.2 cm long which parallel the layering of the rock, amphibole instead may be oriented at random within qtz - fspar dominated bands (quite keratophyric looking), pyrite forms minute spots and is present throughout but grades lesser 1Vol-%, ilmenite forms a low - grade dissemination within the hanging portion, a slight mt mineralization is indicated form suszeptibility measurements.
Layering 74°.
Sharp footwall.

DDH 2000 D

468.10 - 469.15: Slightly calcareous amphibole schist
(meta - basalt flow)
gn, fine - grained, discontinuous laminae as well as tiny spots of carbonate, locally cm -thick bands or nodules of irregular shape of qtz and carbonate, slightly stressed rock cut by several small faults.
Schistosity: 74°.
Sharp footwall.

469.15 - 470.15: Slightly calcareous amphibole - sericite bear. biotite - qtz schist
(meta - felsic tuffite locally with mafic volcanic impurity)
browngr with intersections being browngn, medium - crystalline, lenticular to flaser structure locally being merged by shearing or disharmonic folding, nodules of qtz are surrounded by flasers of fascicular bundles of biotite, amphibole sporadically is present forming subidioblastic porphyroblasts of max. 0.4 cm long dimension which are oriented at ramdom, pyrite rarely occurs but displays a low-grade dissemination together with po between: 469.65 - 469.70 m.
Schistosity or layering : 66°.
Gradual footwall.

470.15 - 470.95: Calcareous biotite bear. amphibole schist
(meta - basalt flow)
gn with white and brown stringers and spots, fine - crystalline, crudely laminated by mm - thick discontinuous layers of carbonate and stripes of biotite which always is accompanied by some chlorite, pronounced orientation of amphibole which partly may be less conspiceous, minute xenomorphic spots of carbonate are concentrated within the central part of the sequence, pyrite forms frequent spots, flasers and lenses.
Schistosity and lamination: 80°.
Gradual footwall.

470.95 - 471.27: Calcareous qtz - biotite schist
(meta - felsic tuff)
grbrown, lenticular - to flaser structure, elongate, qtz -carbonate aggregates alternate with discontinuous layers of parallel biotite flakes, sporadically some idioblasts of carbonate being 0.2 cm across, rock is strongly mylonized between: 471.05 - 471.15 m.
Schistosity: 85°.
Sharp footwall.

471.27 - 471.50: Slightly calcareous biotite bear. amphibole schist
(meta - basalt flow)
same as: 470.15 - 470.95 m.
Layering: 85°,
Nebulous contact to underlying rock.

471.50 - 471.62: Amphibole - qtz - fspar - biotite rock/schist
(meta - felsic to intermediate tuff)
grbrowm, medium - grained, gently foliated, lepidoblastic texture, interlocking qtz - fspar of irregular shape in close alternation with slightly oriented flakes of biotite and prisms of amphibole, the latter gradually increases in mode downsection.
Indistinct contact to underlying rock.

471.62 - 471.73: Amphibole - fspar - qtz gneiss
(meta - cherty mafic tuff)
gr with gn stripes, cm - banded, alternation of fine - grained granoblastic qtz or qtz - fspar layers with bands or trains of granules of medium to coarse amphibole, the ellipsoidal or prismatic porphyroblasts being oriented at random, they surround either qtz or fspar - qtz and sulphide, po makes up 5 to 7 Vol.-% of the rock, it predominately is bound to amphibole but too forms fuzzy layers within felsic bands.
Layering: 62°.
Sharp footwall.

DDH 2000 D

471.73 - 472.75 :Garnet bear. biotite - epidote - fspar - qtz rock
(meta - keratophyr)
darkgr with brownish stringes, fine - grained, granoblastic texture, slightly schistose due to dimensional preferred orientation of biotite, the tiny biotite flakes may be equally distributed but in places form discontinuous layers or network-like features, the latter supposely a result of a late deformation, rare idioblasts of garnets max. 0.15 across are restricted to the stratigraphically upper parts of the layer, mt forms a low- to medium - grade dissemination, the crystals being submegascopic.
Schistosity: 74° - 78°.
Gradual footwall.

chemical analysis 471.73-472.90m.

472.75 - 474.65:Epidote - amphibole - qtz - fspar gneiss
(meta - keratophyr)
gr with huge green prisms and stellates, nonrhythmic cm- to dm- layering composed of fine - grained granoblastic qtz - fspar bands which contain not oriented slightly porphyritic prisms of amphibole and layers of epidote - amphibole - qtz - fspar rock characterized by porphyroblasts of amphibole which are oriented at random and constitute in places radiating aggregates, the amphibole crystals predominately are elliptical in outline and reach maximum 1.5 cm lengths, epidote mostly is concentrated within areas affected by stress, subordinate pyrite forming spots of irregular shape and discontinuous laminae is found between: 472.95-473.05 m and 474.02 - 474.15 m, mt displays a medium - grade locally dissemination, the crystals being submegascopic.
Banding: 472.95 m 52°, 473.50 m 66°, 474.20 m 82°.
Minor faults: 473.96 m, 474.00 m, 474.12 m, 475.46 - 475.50 m, 475.56 m.
Gradual footwall.

chemical analysis 472.90-474.17m.

474.65 - 482.59: Amphibole schist
(meta - basalt flow)
gn, fine - grained, predominately with nemato-blastic texture, often with irregular qtz - vei-ning, qtz is accompanied by crystal- aggregates of biotite within stratigraphically lower parts, tiny spots of ilmenite occur between: 474.65 - 478.20 m and 480.10 - 481.80 m, pyrite forms rare xenomorphic spots; dm insections of high epidote - qtz - plagioclase - amphibole schist with amphibole being medium - grained at: 474.88-475.00 m, 475.45 - 476.15 m, 476.87 - 476.90 m, 480.90 - 481.20 m, 481.40 - 481.50 m, 481.80 - 481.90 m and 482.15 - 482.30 m.
Sharp contact at footwall.

482.59 - 483.20: Magnetite - quartzite
(meta - chert, oxide facies iron formation)
gr with slight bluish tint, dense, finest low - grade dissemination of mt, crude development of layering due to streaks and schlieren or trains of granules of po.
Lamination: 68°.
Sharp footwall.

483.20 - 483.38: Amphibole - epidote - qtz - fspar gneiss
(banded amphibolite, meta - mafic tuff)
gn to yellowishgn, layered, close alternation of fine - grained granoblastic epidote - qtz - fspar layers and bands of porphyric amphibole, the crystals being oriented at random and locally form radiation aggregates, pyrite makes up 2Vol-% of the rock and mainly is concentrated within the lower portion of the section, it forms elongated crystals or crystal aggregates and often fills the interstices of the amphibole blasts.
Layering: 67°.
Sharp footwall.

DDH 2000 D

483.38 - 485.05: Biotite - chlorite - bear. qtz - fspar amphibolite
(meta - basalt flow)
grgn, medium - grained, distinct foliation of mafic compounds parallel to axial plane, crude development of leopard texture, homogeneous, closely packed ellipsoidal crystal aggregates composed of fibrous amphibole or amphibole and chlorite surrounded by fine - grained granoblastic qtz and fspar, biotite is restricted to a interlayer with weak to strong rock alternation which extends from 483.75 to 484.45 m, the highest alternation with biotite - schist and amphibole - chlorite schist both containing subordinate py is centered around 484.20 - 484.40 m. Layering, foliation: 75°.

chemical analysis 483.85-484.45m.

AA

485.05 - 494.40: Chlorite - qtz - plagioclase - amphibolite
(meta - basalt flow with local alteration)
grgn, locally brownish coloured, medium - but sometimes coarse - grained, often with distinct leopard texture which is most conspicuous parallel to the lineation, closely spaced crystal aggregates composed of either amphibole or amphibole and chlorite surrounded by fine - grained granoblastic qtz - fspar which locally contains abundant epidote, dm - thick intersections of weakly sometimes strongly altered rock situated at: 485.40 - 485.55 m, 485.90 - 486.75 m, 493.00 - 494.40 m, the sections have gradual contacts with the surrounding, the most characteristic mineral is biotite which forms multicrystal pseudomorphs (fascicular bundles or bowtie crystal shapes) after amphibole and chlorite thus the original texture of the rock is continuous despite areas where biotite forms closely spaced parallel streaks the orientation being stressinduced.
Sharp footwall contact.

A and AA

494.40 - 507.90: Chlorite bear. qtz - fspar amphibolite
(meta - basalt flows, intermittent flows)

same as: 483.38 - 485.05 m, but locally similar
485. 05 - 494.40 m, here often with subordinate
or higher amount of biotite, within 504.00-505.35m
and 506.70 - 507.90 m strong biotitization
which decreases upsection, scattered mm - large
idioblasts of garnet are characteristic for the
stratigraphically upper zone with biotitization,
pyrite forms a low - grade dissemination at:
495.54 and at 499.50 m, slightly higher pyrite
content is found within 502.54 - 503.35 m ; a
layer, characterized by cm - large nodules of dense
quartz surrounded by chloritic amphibole schist
which contains abundant idioblasts of pyrite; dm -
thick interlayers of qtz - fspar - biotite schist
(meta - felsic tuff) which may locally contain
minute spots of garnet, oriented acicular amphi-
bole or fine - fibrous chlorite are found at:
494.55 - 494.90 m, 495.05 - 495.55 m, 501.45 -
501.85 m, 505.35 - 505.70 m, the grainsize of the
mafic crystal phase ranges from fine to coarse,
the fabric may be massive or schistose (layer at:
495.55 - 495.90 m is strongly disharmonic folded),
the stratigraphically lowest section is dis -
tinctly cm - banded, qtz and fspar form mm - large
round and/or ellipsoidal crystal aggregates which
alternate with fascicular or imperfect spherulitic
biotite, mm - large idioblasts of mt which makes up
2Vol-% of the rock are restricted to the layer at
495.05 - 495.55 m, this layer contains too a fin-
est low - grade dissemination of py.
Layering: 505.60 m 75°.

chemical analysis 494.52-495.67m and 502.54-503.35m

503.35 - 503.45 m: magnetite - quartzite
(meta - chert, oxide facies iron formation)
same as: 482.59 - 483.20 m but without po.

507.90 - 508.20: Garnet bear. biotite - chlorite - amphibole schist
(meta - basalt flow)
gr with brown and reddish brown streaks, fine -

grained, strongly disharmonic folded, fine - fibrous amphibole is interlaminated by trains of granules of tiny crystals of garnet which are accompanied by streaks and cluts of fibrous biotite and chlorite.
Gradually passing into underlying rock.

508.20 - 508.60: Garnet - biotite - qtz - fspar rock
(meta - felsic tuff)
same as: 495.55 - 495.90 m,
brownishgr, fine - grained with slightly porphyric biotite which has a tendency towards parallelism , crude development of compositional banding, in places some acicular amphibole the amount gradually decreasing towards upsection, rare tiny spots of pyrite and locally ilmenite.
Foliation a. layering: 38°.
Gradual footwall.

chemical analysis 507.95-508.85m.

508.60 - 508.85: Garnet - chlorite - amphibole schist
(alatered meta - basalt flow)
gr, porphyroblastic texture, porphyric amphibole needles on average 0.3 cm long slightly being oriented embedded in a matrix of fine - fibrous chlorite, garnet forms 0.1 cm large idioblasts which equally are distributed but sporadically form trains of granules, occasionally mm - thick interlayers rich in qtz and fspar which rarely carry some pyrite.
Lamination: 48°.
Knife - sharp disconformable footwall.

A

508.85 - 509.40: Quartzite, altered amphibolite and sulphide mineralization
(bounded meta - chert or migrated - nodule, vein - quartz)
chaotic structure, irregular alternation of white dense quartzite and garnet - chlorite - amphibolite or coarse - grained biotite - chlorite schist, always knife - sharp contacts between quartzite and

chemical analysis 508.85-509.40m.

partly A and AA

mafic layers, po forms clusters which contain little pyrite and sporadically streaks of cy, the sulphide content does not exceed 10 Vol-%. Sharp footwall contact, 45°.

509.40 - 509.65: Biotite - amphibolite

A

(meta - basalt flow, weakly altered)
same as: altered sections within 485.05 - 494.40 m, near footwall gradually passing into schistose amphibolite which is extremely fine-grained and show a nematoblastic texture, here tiny hypidiomorphic spots of ilmenite equally being distributed.
Knife-sharp footwall.

509.65 - 509.80: Magnetite - quartzite

(meta - chert, oxide facies iron formation)
same as: 482.59 - 483.20 m but without po mineralization.
Knife-sharp footwall.

509.80 - 510.80: Garnet bear. magnetite - amphibole schist

(meta - mafic tuff/flow)
gn, medium - crystalline, imperfect banding composed of cm- thick layers of garnet - magnetite - amphibole schist, and streaks of fine - grained granoblastic magnetite, trains of granules of garnet and mm- thick bands or flasers of sulphide which normally carry abundant qtz, amphibolite layers have nematoblastic texture, the garnet forms slightly porphyric idiomorphic crystals which equally are distributed, the sulphide (py)-content of the section amounts to 2 Vol.-%.
Gradual footwall.

chemical analysis 509.80-510.80m.

510.80 - 511.70: Biotite bear. qtz - fspar amphibolite

(meta - basalt flow)
lightgn, medium - grained, slightly foliated, indistinct leopard texture, fascicular to bow - tie shaped crystal aggregates of amphibole and biotite in close alternation with mm- large irregular for-

med crystal aggregates of qtz and fspar, rare spots of py.
Gradual footwall.

511.70 - 522.25: Schistose amphibolite
(meta intermittent basalt flows)
gn locally grgn, mostly fine - grained with nematoblastic texture but locally medium - grained with tendency towards leopard texture, biotite as fascicular bundles occurs from 515.10 upsection, it may either be equally distributed or is enriched within mm- sometimes cm- thick layers which carry abundant qtz and occursionally chlorite, scattered xenomorphic crystals of ilmenite - max. 0.1 cm across are found between 512.80 - 513.15 and 512.00-512.38 m, high amount of epidote is found with 511.80 - 511.97 m, here acicular amphibole - needles on average 0.2 cm long - form an open framework of touching and crosscutting crystals within a fine - grained mosaic of epidote and supp. qtz.
Gradual footwall contact.

AA

511.70 - 511.80 m: biotite chlorite schist
(meta - highly altered mafic volcanic)
browngn, porphyroblastic texture, max. 0.3 cm large bow - tie shaped and imperfect spherulitic crystal aggregates of biotite surrounded by interleaved, fine - fibrous chlorite which seems to be oriented, a medium - grade dissemination of py occurs at 511.77 m.

chemical analysis 512.38-512.57m.

512.38 - 512.57 m: Garnet bear. magnetite - amphibole schist
(meta - mafic tuff/flow)
same as: 509.80 - 510.80 m, even richer in mt.

515.10 - 515.66 m: amphibole bear. qtz - fspar - biotite schist
(meta-felsic tuff) same as: felsic tuff within 494.40-507.90 m, here massive without garnet but scattered hyidioto idioblasts of fspar max. 0.2 cm across, amphibole and subordinate chlorite are concentrated within the lower portion of the layer gradually.

decreasing upsection.
Sharp hanging wall, gradual footwall.
516.30 - 517.00 m: epidote bear. qtz - fspar - biotite schist
(meta - felsic tuff)
same as: 471.50 - 471.62 m but with no amphibole, crude lamination due to tendency of biotite to form streaks and lenses which are closely packed and alternate with fine - grained granoblastic interlocked qtz - fspar which sporadically are associated by epidote.
Lamination: 66° being inplaces strongly deformed, folded.
Sharp hanging wall and footwall.
518.35 - 518.53 m: amphibole qtz - fspar rock
(meta - keratophyr)
gr - milky - with gn needles massive porphyroblastic texture, scattered prisms of amphibole max. 0.2 cm long embedded in a matrix of fine - grained granoblastic qtz and fspar, amphibole needles show a faint orientation, rare spots of py.
Indistinct contacts to surrounding amphibolite.

522.25 - 523.70: Amphibole - biotite - sericite schist
(tuffaceous meta - pelite)
gr with faint greenish tint, crude develpoment of flaser and lenticular structure, porphyroblastic texture, biotite forms fascicular bundles or incomplete spherulites max. 0.3 cm large which are scattered through a matrix of fine - fibrous sericite forming the foliation, average 0.4 cm long needles of amphibole randomly oriented are equally distributed, amphibole gradually increases in mode upsection.
Gradual footwall.

523.70 - 558.70: Biotite - sericite schist
(meta - pelite)
gr with faint greenish tint, homogeneous schist alternates with sections being banded and sections

which are characterized by flaser or lenticular structure, the banded areas show a cm - layering composed of bands of fine - fibrous sericite poor in biotite, layers of qtz - biotite - sericite schist and qtz dominated bands with tiny streaks of biotite and sericite which cause a superimposed imperfect lamination, the layering contacts are always sharp but sporadically seem to be gradual upwards, porphyroblastic texture throughout, scattered biotite forming fascicular bundles, bow - type crystal aggregates and incomplete spherulites being max. 0.2 cm large, the biotite cluts are in most of the cases not oriented (cross - mica) they are in places interlocking thus constituting discontinuous layers or streaks which tend to be aligned along one or another plane of foliation, biotite equally is distributed it sometimes however may increase to such an amount to form a sericite - biotite interlayer, carbonate mainly laks but is found as scattered hypidio - and idioblasts max. 0.2 cm across between 527.55 - 528.30 m, 531.70 - 532.05 m and 557.15 - 557.35 m, a scarcity is the occurrence of porphyroblasts of amphibole the needles being max. 0.5 cm long and not oriented.

537.55 - 539.35: <u>biotite - sericite - amphibole - qtz rock</u>

(meta -greywacke or coarse - grained sandstone) darkgr with faint greenish tint, medium - grained, massive, scattered cm - large elongate qtz - clasts with indistinct borders to the surrounding embedded in a matrix of fine - grained qtz and sericite and slightly porphyric amphibole - needles max. 0.15 cm long - and/or biotite which forms fascicular bundles or bow - tie aggregates, both mafic crystal phases are not oriented, amphibole and biotite seem to exclude themselves.

sample:2000D/19
19a 538.00m
19b 537.67m

Strongly tectonized between 538.75 - 539.35 m.
Gradual hanging wall and tectonic footwall contact.

556.70 - 558.70 m: <u>biotite - sericite schist</u>

(meta - pelite or psephite with abundant matrix)
(paraconglomerate ?)
gr with faint greenish tint and deepbrown streaks and layers, laminated, some intersections with lenticular structure (blastopsephitic texture ?), here cm - large nodules of elliptical shape composed of either carbonate or qtz - carbonate surrounded by fine - fibrous sericite which contains crystal aggregates of biotite with sparce orientation; within 557.90 - 558.17 m carbonate - biotite-chlorite schist (AA - type schist) layer contains a low - grade dissemination and minor lumbs of po the latter being closely connected to streaks of po.

chemical analysis 557.90-558.17m.

558.70 - 560.03: Biotite bear. amphibole sericite - fspar - qtz schist

(meta - qtz - pelite with volcanic impurity)
gngr, crudely developed flaser to lenticular stucture which becomes more distinct within the stratigraphical lower portion of the layer, here alternation of felsic compounds as layers, lenses and streaks with bands and flasers of phyllosilicates carring abundant porphyroblasts of amphibole on average 0.4 cm long which are oriented at random, the hanging portion looks quite massive and homogeneous with amphibole prisms being more abundant and equally distributed.
Gradual hanging wall with at least sudden appearence of amphibole, 72°, knife-sharp footwall, 62° supp. bedding fault line.

560.03 - 574.10: Plag. amphibolite

(meta - basalt flow)
lightgn, medium - grained with stratigraphically lowermost portion being slightly increased in grain-size, crude development of mineral orientation - lineation of prismatic amphibole, slight compositional changes upsection:decrease in felsic compounds increase in amphibole, lowermost portion

568.10 - 574.10 m with poorly defined leopard texture and with abundant oval nodules (mandels) of qtz or plagioclase which on average are 0.4 cm in size.
Intersections being strongly sheared: 560.10 - 560.75 m and 564.70 - 564.75 m.
Sharp footwall, 45°.

574.10 - 574.36: Sulphide - quartzite
(meta - exhalite (volcanochemite))
gr with lustre of sulphide, web - like sulphide mineralization (50 Vol-%) composed of py which gradually decreases upsection and po and fine - grained granoblastic qtz which fills the open spaces of the web.
Sharp footwall.

chemical analysis 574.10-574.36m.

574.36 - 574.66: Biotite bear. amphibole - fspar - qtz rock
(meta - keratophyr)
lightgr, porphyroblastic texture, decrease in amphibole upsection, porphyric needles of amphibole max. 0.5 cm long and randomly oriented in a fine - grained granoblastic qtz - fspar matrix which carries abundant tiny fascicular bundles of biotite, rare crosscutting trains of coarse crystalline biotite which is accompanied by fibrous chlorite and locally by carbonate, scarse spots of py and po.
Gradual footwall.

574.66 - 575.30: Biotite - chlorite bear. plag. amphibolite
(interfingering of meta - basalt and altered tuff)
grgn with browngn streaks, nonrhythmic alternation of medium - grained plag. amphibolite with imperfect leopard texture with stripes and layers or crosscutting veins composed of coarse crystalline biotite fine - fibrous chlorite and - only locally - idioblasts of carbonate and minor spots of sulphide (po, py).
Sharp footwall, 60°.

partly AA

DDH 2000 D

575.30 - 683.18: Schistose amphibolite
(meta - basalt flow)
gr, extremely fine - grained with intersections being fine - grained, homogeneous with scarce mm-thick bands or discontinuous layers of carbonate which sometimes crosscut the major plane of foliation, sporadically cm- thick interlayers of biotite - carbonate which contain elongate spots or trains of granules of py, scattered interlocked elongate plagioclase crystals as lenses of max. 0.2 cm long dimension (vug fillings) between: 620.60 - 626.00 m, finest dissemination of ilmenite - 3 Vol-% - between: 675.50 - 677.30 m; several streaks and giant spots of py, the sulphide grading 1 to 2% by volume of the rock, between: 682.90 - 683.18 m; carbonate banding: 577.00m 66°, 579.90 m 79°, 582.90 m 45°, 578.00 m 60°.
629.80 - 630.60 m: slighlty calcareous biotite bear. amphibole - chlorite - sericite - qtz - plag. gneiss
(banded amphibolite, meta - mafic tuff)
lightgn, cm - banding composed of alternate layers of biotite - chlorite - sericite schist, slightly calcareous amphibole-qtz - fspar rock and amphibole-chlorite - sericite schist, the continuous banding inplaces is interrupted by intercalations of schistose amphibolite which are max. 10 cm thick and have sharp contacts with surrounding rock, the cm - banded sections display a porphyroblastic texture caused by randomly oriented idioblasts of amphibole being max. 0.4 cm long which are locally replaced by biotite.
Sharp contact.
655.05 - 655.45 m: qtz - fspar - chlorite - amphibole gneiss
(banded amphibolite, meta - mafic tuff)
gn, crude development of layering due to slight compositional changes, distinct porphyroblastic texture which is caused by the tendency of amphibole to form coarse ellipsoidal prisms which dis-

play an open framework of touching crystals the interstices being filled by fine - fibrous chlorite and fine - grained granoblastic qtz.
Sharp contact.

683.18 - 684.17: Amphibole - qtz - fspar rock
(meta - keratophyr, flow)
gr with distinct reddish tint, homogeneous with crude develpoment of gneissic texture, slightly schistose, interlocking elongate qtz- fspar or fspar crystals as layers or lenses in alternation with slightly porphyric acicular amphibole forming the foliation, py mainly is concentrated within the lowermost portion forming streaks and elongate giant spots, it here amounts to 1 Vol-%.
Foliation: 75°.
Small faults at: 684.05 m, 683.88 m, 683.84 m.
Sharp hanging wall with 82° to core axis, bedding fault line as footwall contact.

chemical analysis 682.90-684.17m.

684.17 - 689.90: Calcareous amphibole schist
(intermittent basalt flows with mafic tuff interlayers)
gn, fine - grained, nematoblastic texture, homogeneous, carbonate forms mm- layers or trains of granules normally conformable with the major plane of foliation within the stratigraphical upper part, it occurs as spotted carbonate - scattered idioblasts on average 0.4 cm across - within the footwall section, here it is strongly enriched, py is found as tiny spots throughout its amount being lesser 1 %, interlayers of mafic tuff at: 685.05-685.15 m, 686.30 - 686.35 m, 688.18 - 688.48 m, 689.40 - 689.90 m.

A

Calcareous to high calcareous chlorite bear. qtz - plag. amphibole gneiss/rock
gn to lightgn with abundant white spots, medium - grained, crude development of compositional banding, idioblasts of carbonate max. 0.4 cm across being equally distributed but sometimes forming trains

of granules or layers, low - grade dissemination of py forming xeno - to hypidiomorphic crystals or bigger elongated crystal aggregates.
Mainly sharp contacts with surrounding basalt, sometimes slight gradations - contact to lying sericite schist - or bedding fault lines.

689.90 - 701.60: Biotite - sericite schist
(meta - pelite)
gr with faint greenish tint, crudely laminated, streaks and flasers and discontinuous laminae of biotite in alternation with fine - crystalline qtz - sericite, biotite sporadically forms fascicular bundles or immature spherulites both being not oriented, the uppermost portion is strongly disharmonic folded with in places lenticular structure and contains abundant qtz - nodules by strongly foliated sericite and biotite, intersections with high amount in scattered idioblasts of carbonate max. 0.4 cm across between : 693.70-694.80 m.
Schistosity : 693.00 m 72°, 695.50 m 50°, 696.50 m 72°, 701.40 m 80°.

701.60 end of DDH.

DDH 2000 D

Occurrence of sulphide

	59.80	60.10 m	:	sparse spots of cp
	91.25	91.45 m	:	spots, stringers,net - work features of py, 1 Vol.-%.
*	94.87	94.89 m	:	big crystals of py joining amphibole crysts, 10 Vol.-%.
	99.15	99.30 m	:	coarse grains of py, 1 to 2 Vol.-%
	100.40	100.50 m	:	scattered grains of py, 3 Vol.-%
	100.82	100.93 m	:	some schlieren of py
	105.10	105.20 m	:	sparse spots of cp
	106.45	107.12 m	:	sparse crystals of py
	112.05	113.25 m	:	sparse crystals of py
	128.90	129.90 m	:	sparse discrete crystals of py and po
	129.90	130.30 m	:	spotted py, 1 Vol.-%
	189.30	192.25 m	:	single crystals of py
	231.75	232.45 m	:	sparse crystals of py 232.05 - 232.26m: trains of granules of py, 2 Vol.-%
	251.85	258.10 m	:	sparse spots of py
	265.75	265.95 m	:	idioblasts of py, < 1 Vol.-%
	325.50	325.85 m	:	low - grade dissemination of py, < 1 Vol.-%
	325.85	333.30 m	:	sparse spots of py
	403.45	407.20 m	:	spots of py, < 1 Vol.-%
	433.80	434.80 m	:	sparse tiny spots of py
	442.50	442.90 m	:	scattered py and po, 1 Vol.-%
	460.00	462.25 m	:	spots of py
	462.25	462.75 m	:	low - grade dissemination of py, 2 Vol.-%
*	466.20	466.60 m	:	several stripes of nearly massive py and po
	466.75	466.85 m	:	sparse spots of py and po
	467.80	468.10 m	:	minute spots of py, < 1 Vol.-%.
	469.15	470.15 m	:	sparse spots of py and po
	470.15	470.95 m	:	frequent spots, flasers and lenses of py, 1 to 2 Vol.-%.
*	471.62	471.73 m	:	big crystals of po surrounded by amphibole, 5 - 7 Vol.-%
	472.75	474.65 m	:	sparse spots of py
	474.65	482.59 m	:	sparse spots of py
	482.59	483.20 m	:	streaks, schlieren and trains of granules of po, 1 Vol.-%
	483.20	483.38 m	:	crystals of py, 2 Vol.-%
	484.20	484.40 m	:	sparse crystals of py
	495.54 m		:	crystals of py
	499.50 m		:	crystals of py
	502.54	503.35 m	:	dissemination of py, 5 Vol.-%
	508.20	508.60 m	:	sparse spots of py
*	508.85	509.40 m	:	clusters of po,little py and sparse schlieren of cp, 10 Vol.-%
*	509.80	510.80 m	:	schlieren and streaks of py, 2 Vol.-%
*	511.77 m		:	dissemination of py, 5 Vol.-%
	512.38	512.57 m	:	schlieren and streaks of py, 2 Vol.-%
	518.35	518.53 m	:	sparse crystals of py
	557.90	558.17 m	:	lumbs and spots of po, streaks of cp, < 1 Vol.-%
*	574.10	574.36 m	:	web-like py mineralization with po, 50 Vol.-%
	574.36	574.66 m	:	sparse crystals of py and po
	682.90	683.18 m	:	streaks and giant spots of py, 1 to 2 Vol.-%
	683.18	684.17 m	:	streaks and elongate spots of py, < 1 Vol.-%
	684.17	689.90 m	:	tiny spots of py, < 1 Vol.-%
	685.05	685.15 m	:	dissemination of py, < 1 Vol.-%

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686.30 - 686.35 m : dissemination of py, < 1 Vol.-%
688.18 - 688.48 m : dissemination of py, < 1 Vol.-%
689.40 - 689.90 m : dissemination of py, < 1 Vol.-%

* stands for high concentration of sulphides

DDH 2000 D

Occurrence of oxides

90.70	91.18	m	: spotted ilmenite, 5 Vol.-%
91.25	91.45	m	: magnetite chert
94.90	95.92	m	: magnetite chert
95.92	100.82	m	: spotted mt, 2 Vol.-%, supp. some ilmenite 99.09 - 99.15 m: magnetite chert
112.60	113.25	m	: low - grade dissemination of mt
113.25	113.90	m	: idioblasts of mt, 10 - 15 Vol.-%
189.30	189.47	m	: low - grade dissemination of ilmenite
190.50	190.75	m	: low - grade dissemination of ilmenite
427.80	431.00	m	: spotted ilmenite, 5 Vol.-%
431.30	431.50	m	: spotted ilmenite, 5 Vol.-%
431.80	433.20	m	: spotted ilmenite, 5 Vol.-%
462.25	462.75	m	: abundant ilmenite, 8 Vol.-%, some mt
466.75	466.85	m	: low - grade dissemination of mt
467.80	468.10	m	: low - grade dissemination of ilmenite, some mt
471.73	472.75	m	: dissemination of mt
472.75	474.65	m	: dissemination of mt
474.65	478.20	m	: dissemination of ilmenite
480.10	481.80	m	: dissemination of ilmenite
482.59	483.20	m	: magnetite chert
495.05	495.55	m	: idioblasts of mt, 2 Vol.-%
503.35	503.45	m	: magnetite chert
508.20	508.60	m	: sparse crystals of ilmenite
509.65		m	: crystals of ilmenite
509.65	509.80	m	: magnetite chert
509.80	510.80	m	: mt - rich amphibolite
512.38	512.57	m	: mt - rich amphibolite
675.50	677.30	m	: dissemination of ilmenite, 3 Vol.-%

DDH 2000 D

Sediments with carbon content

279.50 - 281.55 m, 283.70 - 284.40 m, 299.30 - 301.40 m,
301.40 - 304.50 m, 304.50 - 309.50 m, 325.50 - 325.85 m.

DDH 2000 D

Samples for chemical analysis

	%Cu	%Zn	%S
91.18 - 91.45 m :	0.03,	0.03,	—
94.75 - 94.91 m :	0.02,	0.02,	1.85
94.91 - 95.98 m :	0.04,	0.02,	0.19
99.09 - 99.30 m :	0.02,	0.03,	0.04
100.40 - 100.50 m :	0.03,	0.03,	—
100.82 - 100.93 m :	0.04,	0.02,	2.73
128.90 - 130.30 m :	0.04,	0.02,	—
460.20 - 462.25 m :	0.03,	0.03,	—
466.15 - 466.60 m :	0.09,	0.02,	15.5
469.57 - 469.75 m :	0.06,	0.02,	0.47
471.62 - 471.73 m :	0.06,	0.02,	4.84
471.73 - 472.90 m :	0.03,	0.03,	—
472.90 - 474.17 m :	0.03,	0.03,	—
483.20 - 483.38 m :	0.10,	0.02,	2.09
483.85 - 484.45 m :	0.04,	0.02,	0.58
494.52 - 495.67 m :	0.02,	0.02,	—
502.54 - 503.35 m :	0.14,	0.18,	2.97
507.95 - 508.85 m :	0.03,	0.03,	—
508.85 - 509.40 m :	0.14,	0.01,	8.80
509.80 - 510.80 m :	0.06,	0.03,	0.92
511.70 - 511.80 m :	0.05,	0.03,	0.10
512.38 - 512.57 m :	0.03,	0.01,	—
557.90 - 558.17 m :	0.05,	0.03,	0.25
574.10 - 574.36 m :	0.04,	0.01,	29.7
682.90 - 684.17 m :	0.03,	0.02,	—
684.17 - 685.17 m :	0.03,	0.02,	—
686.30 - 687.30 m :	0.03,	0.02,	—
687.30 - 688.30 m :	0.03,	0.02,	—
688.30 - 689.30 m :	0.02,	0.02,	—
689.30 - 689.40 m :	0.06,	0.02,	—

DDH 2000 D

Suzeptibility measurements DDH 2000 D (sciutrex SM - 5)

Results

Suzeptibility:

15.50	0.0	68.50	0.0	103.50	0.0	140.50	0.0
16.50	0.1	69.50	0.1	104.50	0.0	141.50	0.0
17.50	0.1	70.50	0.0	105.50	0.0	142.50	0.0
18.50	0.0	71.50	-0.1	106.50	0.0	143.50	0.0
19.50	0.1	72.50	0.0	107.50	0.0	144.50	0.1
20.50	0.0	73.50	0.0	108.50	0.0	145.50	0.1
21.50	0.0	74.50	0.0	109.50	0.0	146.50	0.1
22.50	0.0	75.50	0.0	110.50	0.1	147.50	0.1
23.50	0.0	76.50	0.0	111.50	0.0	148.50	0.1
24.50	0.0	77.50	0.0	112.30	0.1	149.50	0.1
25.50	0.0	78.50	0.0	112.50	3.9	150.50	0.1
26.50	0.0	79.50	0.0	112.60	4.2	151.50	0.1
27.50	0.1	80.50	0.0	112.80	1.2	152.50	0.0
28.50	0.1	81.50	0.1	113.00	3.1	153.50	0.0
29.50	0.0	82.50	0.0	113.10	4.0	154.50	0.0
30.50	0.0	83.50	0.0	113.25	4.5	155.50	0.0
31.50	0.0	84.50	0.0	113.35	6.5	156.50	0.0
32.50	0.0	85.50	0.0	113.40	22.0	157.50	0.1
33.50	0.1	86.50	0.0	113.50	1.9	158.50	0.0
34.50	0.0	87.50	-0.1	113.60	0.0	159.50	0.0
35.50	0.0	88.50	0.0	113.80	0.0	160.50	0.0
36.50	0.0	89.50	0.0	113.90	0.3	161.50	0.1
37.50	0.1	90.50	0.1	114.00	0.3	162.50	0.1
38.50	0.1	91.00	0.0	114.20	0.1	163.50	0.0
39.50	0.1	91.20	0.1	114.35	0.0	164.50	0.0
40.50	0.0	91.30	29.0	114.50	0.1	165.50	0.0
41.50	0.0	91.40	21.0	115.30	0.1	166.50	0.1
42.50	0.0	91.50	0.1	115.50	0.2	167.50	0.1
43.50	0.0	92.30	0.1	116.50	0.2	168.50	0.1
44.50	0.0	92.70	0.1	117.50	0.1	169.50	0.0
45.50	0.1	93.00	0.1	118.50	0.2	170.50	0.1
46.50	0.0	93.50	0.0	119.50	0.4	171.50	0.1
47.50	0.0	93.70	0.1	119.90	0.3	172.50	0.1
48.50	0.1	94.50	0.1	120.50	0.4	173.50	0.1
49.50	0.0	94.60	0.0	121.50	0.3	174.50	0.1
50.50	0.0	94.85	0.0	122.50	0.1	175.50	0.1
51.50	0.0	94.95	47.0	123.50	0.1	176.50	0.1
52.50	0.1	95.10	36.0	124.50	0.1	177.50	0.0
53.50	0.1	95.30	48.0	125.50	0.1	178.50	0.0
54.50	0.1	95.50	0.2	126.50	0.1	179.50	0.0
55.50	0.0	95.60	53.0	127.50	0.1	180.50	0.0
56.50	0.1	95.70	39.0	128.50	0.0	181.50	0.2
57.50	0.0	95.80	55.0	129.50	0.0	182.50	0.2
58.50	0.0	96.00	0.5	130.50	0.0	183.50	0.1
59.50	0.0	96.50	0.1	131.50	0.0	184.50	0.1
60.50	0.1	97.50	4.3	132.50	0.0	185.50	0.0
61.50	0.1	98.50	0.7	133.50	0.0	186.50	0.1
62.50	0.1	99.15	2.3	134.50	0.1	187.50	0.1
63.50	0.0	99.30	2.1	135.50	0.0	188.50	0.1
64.50	0.1	99.50	6.8	136.50	0.1	189.50	0.1
65.50	0.0	99.70	2.5	137.50	0.0	190.50	0.0
66.50	0.0	100.50	3.0	138.50	0.1	191.50	0.0
67.50	0.0	101.50	0.0	139.50	0.0	192.50	0.1

DDH 2000 D

193.50	0.0	250.50	0.1	304.50	0.1	361.50	0.1
194.50	0.0	251.50	0.0	305.50	0.0	362.50	0.0
195.50	0.0	252.50	0.1	306.50	0.1	363.50	0.0
196.50	0.0	253.50	0.0	307.50	0.0	364.50	0.0
197.50	0.1	254.50	0.0	308.50	-0.1	365.50	0.0
198.50	0.2	255.50	0.1	309.50	0.1	366.50	0.0
199.50	0.1	256.50	0.1	310.50	0.1	367.50	0.0
200.50	0.0	257.50	0.0	311.50	0.1	368.50	0.0
201.50	0.0	258.50	0.0	312.50	0.1	369.50	0.0
202.50	0.0	258.78	0.3	313.50	0.0	370.50	0.0
203.50	0.1	259.50	0.0	314.50	0.0	371.50	0.0
204.50	0.0	260.50	0.0	315.50	0.1	372.50	0.0
205.50	0.0	261.50	0.0	316.50	0.1	373.50	0.1
206.50	0.2	262.50	0.0	317.50	0.1	374.50	0.1
207.50	0.6	263.50	0.0	318.50	0.0	375.50	0.1
208.20	0.1	264.50	0.0	319.50	0.1	376.50	0.0
208.50	0.0	265.50	0.0	320.50	0.1	377.50	0.0
209.50	0.0	265.85	0.0	321.50	0.1	378.50	0.0
210.50	0.0	266.50	0.0	322.50	0.2	379.50	0.1
211.50	0.2	267.50	0.0	323.50	0.1	380.50	0.1
212.50	0.1	268.50	0.0	324.50	0.1	381.50	0.1
213.50	0.1	269.50	0.1	325.50	0.1	382.50	-0.1
214.50	0.0	270.50	0.2	326.00	0.0	383.50	0.0
215.50	0.1	271.50	0.1	326.50	0.3	384.50	-0.1
216.50	0.1	272.50	0.1	327.50	0.0	385.50	0.0
217.50	0.1	273.50	0.0	328.50	0.1	386.50	0.0
218.50	0.0	274.50	0.0	329.50	0.1	387.50	0.0
219.50	0.0	275.50	0.0	330.50	0.2	388.50	0.0
220.50	0.1	276.50	0.1	331.50	0.0	389.50	-0.1
221.50	0.0	277.50	0.1	332.50	0.6	390.50	0.0
222.50	0.1	278.50	0.0	333.20	0.1	391.50	-0.1
223.50	0.0	279.50	0.0	333.50	0.2	392.50	0.0
224.50	0.0	280.50	0.1	334.50	0.0	393.50	0.0
225.50	0.1	281.50	0.1	335.50	0.1	394.50	0.1
226.50	0.0	282.50	0.1	336.50	0.2	395.50	0.0
227.50	0.1	283.50	0.0	337.50	0.4	396.50	0.0
228.50	0.0	284.50	0.0	338.50	0.2	397.50	0.0
229.50	0.1	284.90	0.1	339.50	0.0	398.50	0.0
230.50	0.1	285.30	0.1	340.50	0.0	399.50	0.0
231.50	0.2	285.50	0.0	341.50	0.0	400.50	0.0
232.10	1.1	286.30	0.0	342.50	0.0	401.50	0.0
232.50	0.0	286.50	0.0	343.50	0.1	402.50	0.0
233.50	0.1	287.50	0.0	344.50	0.1	403.50	0.0
234.50	0.4	288.50	0.0	345.50	0.1	404.50	0.0
235.50	0.3	289.50	0.0	346.50	0.1	405.50	0.0
236.50	0.2	290.50	0.0	347.50	0.1	406.50	-0.1
237.50	0.2	291.50	0.0	348.50	0.1	407.50	0.0
238.50	0.1	292.50	0.1	349.50	0.1	408.50	0.0
239.50	0.1	293.50	0.1	350.50	0.0	409.50	0.0
240.50	0.0	294.50	0.0	351.50	0.0	410.50	0.0
241.50	0.0	295.50	0.1	352.50	0.1	411.50	0.0
242.50	0.0	296.50	0.0	353.50	0.1	412.50	0.1
243.50	0.0	297.50	0.0	354.50	0.0	413.50	0.1
244.50	0.0	298.50	0.0	355.50	0.0	414.50	0.0
245.50	0.0	299.50	0.0	356.50	0.1	415.50	0.0
246.50	0.1	300.50	0.1	357.50	0.1	416.50	0.0
247.50	0.1	301.50	0.1	358.50	0.1	417.50	0.0
248.50	0.1	302.50	0.1	359.50	0.1	418.50	0.0
249.50	0.0	303.50	0.2	360.50	0.1	419.50	0.0

DDH 2000 D

420.50	0.0	465.80	0.2	481.60	0.1	509.50	0.0
421.50	0.0	466.00	0.0	482.15	0.3	509.60	0.0
422.50	0.0	466.20	1.9	482.30	0.1	509.75	2.6
423.50	0.0	466.50	0.3	482.45	0.1	509.90	1.4
424.50	0.0	466.55	0.7	482.60	10.0	510.05	52.0
425.50	0.0	466.70	0.1	482.70	6.0	510.15	24.0
426.50	0.0	466.80	0.5	482.90	4.7	510.25	29.0
427.50	0.0	467.20	0.1	483.00	6.0	510.40	23.0
428.50	0.1	467.50	0.0	483.15	6.3	510.50	33.0
429.50	0.0	467.70	0.0	483.25	0.4	510.60	11.0
430.50	0.0	467.95	0.7	483.35	6.0	510.75	0.1
431.50	0.0	468.10	0.3	483.50	0.1	511.50	0.0
432.50	0.0	468.20	0.0	483.90	0.0	511.75	0.0
433.50	0.0	468.50	0.0	484.10	0.3	511.90	0.0
434.50	0.0	469.40	0.0	484.25	0.8	512.20	0.0
435.50	0.0	469.60	0.0	484.35	1.2	512.40	38.0
436.50	0.0	469.70	0.6	484.55	0.0	512.50	1.7
437.50	0.0	469.90	0.0	485.50	0.0	513.50	0.1
438.50	0.0	470.50	0.0	486.50	0.1	514.50	0.0
439.50	0.0	470.80	0.0	487.50	0.0	515.50	0.0
440.50	0.0	471.20	0.0	488.50	0.0	516.20	0.1
441.50	0.1	471.45	0.0	489.50	0.0	517.00	0.1
442.50	0.0	471.55	0.0	490.50	0.0	517.50	0.1
443.50	0.1	471.70	2.4	491.50	0.1	518.50	0.1
444.50	0.0	471.80	2.4	492.50	0.1	519.50	0.0
445.50	0.0	471.90	1.7	493.50	0.1	520.50	0.0
446.50	0.0	472.00	1.3	494.25	0.1	521.50	0.1
447.50	0.0	472.10	1.8	494.50	0.4	522.40	0.1
448.50	0.0	472.20	3.0	494.70	1.1	523.50	0.0
449.50	0.0	472.35	0.8	494.85	0.9	524.50	0.0
450.50	0.0	472.50	1.0	495.00	0.1	525.50	0.1
451.50	0.0	472.60	2.3	495.10	1.6	526.50	0.1
452.50	0.0	472.70	2.1	495.30	1.8	527.50	0.0
453.50	0.0	472.80	3.1	495.50	0.1	528.50	0.0
454.50	0.0	472.90	1.7	495.80	0.1	529.50	0.0
455.50	0.0	473.00	3.8	496.50	0.0	530.50	0.1
456.50	0.0	473.10	1.0	497.40	0.0	531.50	0.0
457.50	0.0	473.25	1.6	498.50	0.0	532.50	0.1
458.50	0.0	473.40	4.0	499.50	0.1	533.50	0.0
459.50	0.0	473.50	6.9	500.50	0.1	534.50	0.0
461.00	0.0	473.60	2.7	501.50	0.1	535.50	0.1
461.50	0.1	473.70	6.0	502.00	0.1	536.50	0.1
461.70	0.1	473.80	7.8	502.50	0.0	537.50	0.1
461.80	0.1	473.90	4.6	502.80	0.9	538.50	0.0
461.90	0.2	474.00	3.1	502.90	1.4	539.50	0.1
462.00	0.1	474.10	9.2	503.10	1.9	540.50	0.1
462.10	0.4	474.20	0.1	503.20	0.8	541.50	0.0
462.20	0.4	474.40	0.3	503.30	1.0	542.50	0.0
462.30	0.5	474.60	0.2	503.45	0.0	543.50	0.0
462.45	0.1	474.70	2.4	504.50	0.1	544.50	0.0
462.50	0.3	475.20	0.0	505.50	0.3	545.50	0.0
462.60	0.1	475.50	0.1	506.50	0.1	546.50	0.0
462.80	0.3	476.00	1.4	507.00	0.0	547.50	0.1
463.00	0.4	476.50	0.1	507.50	0.0	548.50	0.0
463.40	0.4	477.50	0.1	508.50	0.4	549.50	0.1
463.80	0.1	478.50	0.2	508.70	12.0	550.50	0.1
464.50	0.0	479.50	0.0	508.95	1.6	551.50	0.1
465.00	0.0	480.50	0.1	509.10	1.4	552.50	0.1
465.60	0.3	481.50	0.1	509.30	4.3	553.50	0.1

DDH 2000 D

554.50	0.1	607.50	0.1	666.50	0.1
555.50	0.1	608.50	0.1	667.50	0.2
556.50	0.1	609.50	0.1	668.50	0.0
557.50	0.1	610.50	0.1	669.50	0.1
558.00	0.1	611.50	0.1	670.50	0.1
558.50	0.0	612.50	0.1	671.50	0.1
559.50	0.0	613.50	0.1	672.50	0.1
560.50	0.0	614.50	0.2	673.50	0.0
561.50	0.0	615.50	0.1	674.50	0.0
562.50	0.1	616.50	0.1	675.50	0.0
563.50	0.0	617.50	0.1	676.50	0.0
564.50	0.0	618.50	0.1	677.50	0.1
565.50	0.0	619.50	0.1	678.50	0.0
566.50	0.0	620.50	0.1	679.50	0.0
567.50	0.0	621.50	0.1	679.50	0.0
568.50	0.0	622.50	0.1	680.50	0.0
569.50	0.2	623.50	0.1	681.50	0.0
570.50	0.1	624.50	0.1	682.00	0.0
571.50	0.2	625.50	0.1	682.50	0.0
572.50	0.1	626.50	0.1	683.20	0.1
573.50	0.2	627.50	0.1	683.50	0.1
573.80	0.2	628.50	0.1	684.00	0.2
574.15	2.2	629.50	0.2	684.50	0.0
574.30	0.1	630.50	0.1	685.50	0.0
574.40	0.0	631.50	0.1	686.30	0.0
574.50	0.0	632.50	0.1	686.50	0.0
574.80	0.5	633.50	0.0	687.50	0.0
575.50	0.1	634.50	0.1	688.20	0.1
576.50	0.1	635.50	0.1	688.50	0.1
577.50	0.0	636.50	0.1	689.50	0.1
578.50	0.1	637.50	0.1	689.80	0.8
579.50	0.1	638.50	0.1	690.10	0.1
580.50	0.1	639.50	0.1	690.50	0.1
581.50	0.0	640.50	0.1	691.50	0.1
582.50	0.1	641.50	0.1	692.50	0.2
583.50	0.0	642.50	0.0	693.50	0.5
584.50	0.0	643.50	0.1	694.50	0.1
585.50	0.0	644.50	0.0	695.50	0.2
586.50	0.0	645.50	0.1	696.50	0.4
587.50	0.0	646.50	0.0	697.50	0.3
588.50	0.0	647.50	0.2	698.50	0.1
589.50	0.1	648.50	0.1	699.50	0.6
590.50	0.0	649.50	0.1	700.50	0.2
591.50	0.0	650.50	0.1	701.50	0.2
592.50	0.1	651.50	0.1		
593.50	0.1	652.50	0.0		
594.50	0.0	653.50	0.1		
595.50	0.0	654.50	0.0		
596.50	0.0	655.50	0.0		
597.50	0.1	656.50	0.0		
598.50	0.1	657.50	0.1		
599.50	0.0	658.50	0.1		
600.50	0.1	659.50	0.2		
601.50	0.1	660.50	0.2		
602.50	0.0	661.50	0.2		
603.50	0.1	662.50	0.2		
604.50	0.0	663.50	0.1		
605.50	0.0	664.50	0.0		
606.50	0.0	665.50	0.0		

FOLLDAL VERK A/S

avd. Tverrfjellet

MOTSTANDSMÅLING BH 2000 D GÅVÅLISETER
utført den 3/9-1986

DYP (m)	ρ_a [Ωm]	DYP (m)	ρ_a [Ωm]	DYP (m)	ρ_a [Ωm]
1	1862	117	9640	233	16637
3	1861	119	8230	235	18749
5	1859	121	9462	237	17391
7	1076	123	8017	239	14375
9	8871	125	10539	241	13672
11	8796	127	12503	243	11611
13	8997	129	10304	245	13496
15	11008	131	12201	247	13483
17	8633	133	12742	249	16022
19	12641	135	11171	251	14803
21	10744	137	12855	253	15494
23	8884	139	12252	255	12629
25	12365	141	9462	257	12415
27	15557	143	8834	259	17479
29	15104	145	8922	261	15481
31	14275	147	8218	263	15406
33	14162	149	8796	265	15494
35	9902	151	10279	267	14891
37	8934	153	10103	269	15406
39	10103	155	8959	271	17504
41	10178	157	8620	273	4109
43	13395	159	9738	275	329
45	12805	161	8997	277	240
47	8984	163	9148	279	2238
49	8080	165	9638	281	4775
51	6873	167	9914	283	5152
53	6094	169	12629	285	6295
55	8117	171	12327	287	6471
57	7728	173	10731	289	6182
59	8218	175	14451	291	5466
61	8909	177	14752	293	3782
63	7615	179	13094	295	437
65	5969	181	11674	297	241
67	5039	183	13496	299	189
69	6748	185	14614	301	200
71	5114	187	17733	303	1022
73	6094	189	11020	305	2789
75	7514	191	13295	307	5529
77	7464	193	15720	309	5453
79	9098	195	19653	311	5428
81	9939	197	13219	313	7012
83	10354	199	12478	315	4649
85	10693	201	18196	317	4536
87	7225	203	17002	319	6383
89	5843	205	15619	321	6459
91	2978	207	14262	323	8394
93	2131	209	14250	325	10053
95	7439	211	14489	327	11171
97	6258	213	14589	329	10995
99	8155	215	9738	331	12867
101	9047	217	10844	333	11498
103	7527	219	21174	335	9939
105	7476	221	14250	337	9726
107	10304	223	10015	339	9110
109	2777	225	11447	341	8457
111	2613	227	12893	343	6258
113	10794	229	12893	345	6861
115	11447	231	15280	347	7439

FOLLDAL VERK A/S

avd. Tverrfjellet

DYP (m)	ρ_a [Ωm]	DYP (m)	ρ_a [Ωm]	DYP (m)	ρ_a [Ωm]
349	8029	467	2990	585	1872
351	8444	469	2814	587	2400
353	7791	471	4461	589	3933
355	7414	473	4951	591	5039
357	8545	475	3179	593	4574
359	9324	477	1539	595	5504
361	8846	479	2383	597	4624
363	9135	481	3656	599	4674
365	7941	483	6157	601	5164
367	9550	485	6559	603	5868
369	8406	487	3342	605	7715
371	9426	489	3757	607	9236
373	8306	491	4058	609	15795
375	7627	493	3619	611	12729
377	7376	495	1206	613	3769
379	7187	497	1306	615	2927
381	6924	499	5089	617	4071
383	7351	501	917	619	5818
385	7263	503	753	621	6157
387	6082	505	3091	623	6449
389	6384	507	3141	625	7288
391	6848	509	2689	627	6459
393	6823	511	4259	629	4322
395	6220	513	3870	631	6911
397	6031	515	3242	633	6170
399	5742	517	5906	635	4988
401	5654	519	7690	637	7326
403	6270	521	7828	639	7828
405	4863	523	8356	641	8193
407	4121	525	8256	643	8218
409	4322	527	7552	645	7866
411	3996	529	8344	647	7866
413	3543	531	9211	649	7853
415	3493	533	8394	651	8055
417	3468	535	10907	653	7879
419	3644	537	10103	655	7690
421	3933	539	8482	657	7062
423	4046	541	7652	659	7112
425	4699	543	7263	661	6785
427	4838	545	7927	663	6584
429	4574	547	6270	665	6622
431	5328	549	7338	667	5265
433	4976	551	5453	669	3681
435	5013	553	1583	671	4549
437	2496	555	967	673	3870
439	5252	557	1709	675	4410
441	4699	559	4184	677	3405
443	4951	561	4184	679	5529
445	6031	563	4498	681	5277
447	6107	565	2312	683	5843
449	5566	567	331	685	5529
451	6144	569	192	687	5353
453	6056	571	854	689	3393
455	2839	573	1796	691	
457	3317	575	3053		
459	1007	577	2136		
461	897	579	2588		
463	1991	581	2362		
465	1686	583	2023		

Hjortkjær
litologiske Prof.

DIAMOND DRILL HOLE 2001 D

Location: Gåvåliseter 533545 690880 UTM grid, zone 32,
Top.map 1519 IV Snøhetta.
Altitude: 1000 m.
Azimuth: 400°
Inclination: - 70°, measured deviation until 440 m
(SINTEF-rapport, STF 36 F 87039).
Total length: 799,00 m
Started: 22.02.1987
Finnished: 20.03.1987

Description:

0,00 - 8,50 overburden

Subaquaeous mass flow deposit: 8.50 - 70,80 m

8,50 - 9,60 calcareous biotite - chlorite schist
(metamor. mafic volcanogenic sediment with tiny mafic clasts)
palegn, abundant brown patches, homogeneous but locally laminated which is due to tectonic differentiation, equal distribution of biotite crystal aggregates which form irregular patches or max. 0,3 cm large clusters within a fine-crystalline matrix predominated of chlorite, widely scattered fragments of amphibolite max. 0,3 cm in diameter. Foliation: 8,75 m 39°, 9,00 m 0°, 9,47 m 38°.
Gradational boundary.

9,60 - 17,60 calcareous biotite-amphibole-chlorite schist
(metamor.mafic volcanogenic sediment with medium size mafic clasts)
gn to palegn, some bn spots, often strongly foliated, well developed fragmental structure, streched and flattered elongate clasts of basaltic composition, reaching between 30 to 50 % of the total, set in a fine crystalline matrix mainly consisting of chlorite and carbonate which are accompanied by minor 0,15 cm large spots or flakes of biotite, the fragments are composed of fine crystalline amfibole, the needles poorly being directed within clasts of minor deformation, the majority of the fragments display a blasto - amygdaloidal texture due to scattered augen of plagioclase being max. 0,2 cm in long

dimension. Foliation: 10.20 m 41°, 10,65 m ⊄, 10,90 m 35°, 11,50 m 44°, 12,40 m 38°, 13,40 m 38°, 14,60 m 40°, 16,20 m 38°, 17,20 m 38°.
Gradually passing into following rock.

17,60 - 20,00 <u>slightly calcareous biotite-sericite-chlorite-amphibole schist/rock</u>
(metamor.mafic volcanogenic sediment with tiny mafic fragments)
Palegn, homogeneous, crudely developed mineral orientation, fine crystalline, biotite forms in places large crystal aggregates being scattered within a chlorite - amphibole matrix, crudely developed fragmental structure which is caused by the equal composition of both the matrix and mafic clasts, medium large, amphibolite phenoclasts with a blasto-amygdaloidal texture are embedded occasionally.
Schistosity: 18,20 m 0°, 19,10 m 9°, 19,80 m 14°.
Gradual contact.

20,00 - 26,00 <u>slightly calcareous biotite - chlorite - amphibole schist</u>
(metamor. mafic volcanogenic sediment with fine to coarse mafic fragments)
gn to palegn with some brown spots and stringers, in general minor deformed, often chaotic structureless deposit, distinct fragmental structure, fine to coarse rounded to subangular stretched fragments of basaltic composition (plagioclase amphibolite, amphiboleschist) embedded in a matrix composed in decreasing order of chlorite, biotite and carbonate, the basaltic fragments in most cases show a distinct blastoamygdaloidal texture due to augen of plagioclase scattered within a fine crystalline amphibole matrix, some clasts do not have any fspar-augen while outhers have only a few tiny fspar spots.
Schistosity: 20,70 m 9°, 21,70 m 9°, 22,32 m border of large clast 40°, 23,11 m border of large clast 41°, 23,84 m border of large clast 56°, 24,40 m 56°, 25,58 m 47°.
20,29 - 20,47: Gradually passing into following module of remobilized qtz which is accompanied by some carbonate and chlorite.

26,00 - 31,00 <u>calcareous biotite - amphibole - chlorite schist</u>
(metamor.mafic volcanogenic sediment with fine to medium size mafic fragments)
similar: 9,60 - 17,60 m

Schistosity: 26,15 m 20°, 26,90 m 7°, 27,30 m 13°,27,80 m 22°, 28,85 m 14°, 29,28 m ∢ , 29,80 m 9°,30,20 m 18°, 30.80 m 27°.
Gradually passing into following rock.

31.00 - 38,00 <u>calcareous biotite - amphibole - chlorite schist</u>
(metamor.mafic volcanogenic sediment with predominately medium to coarse mafic fragments)
similar: 20,00 - 26,00 m
Schistosity: 31,30 m border of large clast 23°, 32,30 m border of large clast 52,33,10 m 45°, 33,85 m 38°,34,78 m border of large clast 38°, 35,00 m border of large clast 38°, 36,90 m 50°, 37,50 m border of large clast 68°
Gradually passing into following rock.
37,10 - 37,31 m: remobilized qtz accompanied by carbonate and stringers and clusters of chlorite.

38,00 - 40,60 <u>calcareous biotite - chlorite - amphibole schist</u>
(metamor. mafic volcanogenic sediment with fine and medium size mafic fragments)
similar: 9,60 - 17,60 m
Schistosity: 38,22 m 61°, 39,40 m 61°, 40,40 m 56°.
Gradually passing into following rock.

40,60 - 41,65 <u>slightly calcareous amphibole bear. biotite - chlorite schist</u>
(metamor. mafic volcanogenic sediment with some tiny mafic fragments)
lightgn with abundant brown schlieren and clusters, lenticular structure, slightly schistose, fine fibrous chlorite as mm-thick schlieren and lenses in alternation with lenses of granoblastic carbonate and lense-like crystal aggregates of biotite which follow the main orientation within the rock, sporadically tiny amphibolite fragments which are slightly elongated parallel to the major foliation of the rock, decreasing amount in carbonate which occurs down drillhole leds to an amphibole - chlorite schist which is characterized by scattered fascicular bundles and imperfect spherulites of biotite.
Gradually passing into following rock
41,48 -41,62: nodule of remobilized qtz.

41,65 - 47,40 <u>slightly calcareous biotite - amphibole - chlorite schist/gneiss</u>
(metamor. mafic volcanogenic sediment with fine but also medium size mafic fragments)

lightgn with brown spots and clusters, strongly schistose, sometimes stressinduced gneissic texture, locally chaotically folded and/or tectonized, fragmental structure gets less distinct within zones being highly sheared and tectonized, areas with gneiss texture show a rhytmic alternation of amphibolite, qtz-carbonate and biotite-chlorite, lesser deformed rock is characterized by a lenticular structure, lenses made by fine - crystalline amphibole - supposely mafic volcanic fragments - are embedded in a matrix composed in decreasing order of chlorite, biotite and carbonate, with biotite forming fascicular bundles or imperfect spherulites of widely scattered appearence.
Schistosity: 41,90 m 41°, 42,50 m 45°, 43,50 m 50°, 44,10 m $, 44,90 m 40°, 45,30 m ¢, 45,60 m 49°.
Tectonic zones: 45,18 - 45,22 m, 45,80 - 46,16 m, 46,84 -47,40 m.
Nodules of qtz: 42,75 - 42,79 m, 43,05 - 43,10 m, 43,45 m, 43.56 - 43,64 m, 47,03 - 47,35 m.
Tectonic contact to following rock.

47,40 - 49,63 <u>biotite-bear. fspar - amphibole - chlorite rock</u>
(metamor. mafic volcanogenic sediment)
gn to palegn, massive, fine crystalline, equal distribution of tiny needles of amphibole which are not oriented, fine-fibrous chlorite and fspar, biotite forms scattered flakes of minor 0,1 cm size.
Milky qtz: 48,44 - 48,94 m.
Sharp contact.

49,63 - 58,75 <u>calcareous biotite - amphibole - chlorite schist</u>
(metamor. mafic volcanogenic sediment with fine to coarse mafic fragments)
gn to palegn with abundant brown spots and schlieren, schistose but often only little foliated, chaotic assemblage of subangular to rounded little deformed fragments of basaltic composition set in a matrix composed of chlorite, biotite and carbonate, with biotite forming bundles, imperfect spherulites and stringers of max. 0,5 cm size which are nearly homogeneously destributed, the basaltic fragments are in majority vesiculated, the vesicules being filled by carbonate or a mixture of plagioclase and epidote, it is obvious that fine and coarse fragments have been sedimented simultaneously, the coarse

clasts being widely scattered.
Module of milky qtz: 58,24 - 58,38 m.
Schistosity: 51,60 m 50°, 52,70 m border of large clast 72°, 53,95 m 41°, 55,45 m 56°.
Sheared contact, 29°.

58,75 - 61,00 <u>slightly calcareous epidote-bear. qtz - fspar-rich biotite - amphibole - chlorite rock</u>
(metamor. mafic volcanogenic sediment with fine and less abundant medium size mafic fragments)
lightgn to grgn, homogeneous distribution of fine and some medium size fragments of basaltic composition within a matrix composed in decreasing order of chlorite, biotite and felsic minerals, biotite shows a spotted appearence with spherulites and bundles being homogeneously distributed, the basaltic fragments are composed of fine fibrous amphibole, they vary in roundness from angular to subrounded.
Contact with following rock via milky qtz.

61,00 - 68,60 <u>slightly calcareous amphibole-bear. biotite chlorite schist</u>
(metamor. mafic volcanogenic sediment with sporadic occurrence of mafic fragments)
lightgn to gn, homogeneous but sometimes slightly banded which supp. originates from tectonic differentiation, major foliation is indicated by crystal aggregates of biotite which are scattered within a fine-crystalline chlorite matrix, mafic fragments are from fine to coarse, they are composed of fine-fibrous amphibole, the borders of the clasts are hardly to define which is caused by the little differences in colour and texture of fragment and matrix.

Noduls of milky qtz: 61,05 - 61,15 m, 62,77 - 62,92 m, 63,26 - 63,34 m.
Tectonized rock: 66,13 - 66,20 m, 66,40 - 66,56 m.
Schistosity: 61,40 m 20°, 62,48 m 0°, 62,73 m 31°, 63,45 m 31°, 63,80 m 13°, 65,60 m 45°, 66,65 m 52°, 67,58 m 40°, 68,20 m 34°
Sharp contact.

68,60 - 70,80: <u>calcareous to high calcareous biotite-amphibole-chlorite schist</u>
(metamor.mafic volcanogenic sediment with fine and some medium size mafic fragments)

similar: 58,75 - 61,00 m, increasing chlorite content and decreasing in the amount of qtz and fspar down drillhole.
Schistosity: 70,65 m 38
Sharp contact, 73°.

Basaltic lava flows with minor interlayers of chemical precipitates: 70,80 - 146,49 m.

70,80 - 70,87: Chlorite-bear. epidote-amphibole schist
(meta - basalt flow)
gn to pale yellowishgn, crudely laminated, indistinct alternation of laminae and lenses of epidote and mm-thick bands of amphibole, epidote-content decreases down drillhole. Scattered flakes and spots of il within the central part of the layer.

Knife-sharp contact which is slightly deformed.

70,87 - 70,98: biotite - chlorite bear. epidote-rich quartzite
(meta-chert)
gr, sporadically of pale yellow colour, dense, extremely fine crystalline, irregular occurrence of epidote, phyllosilicates form clusters and discontinuous layers within the lower part of the section. Sparse crystals of py.

Knife sharp contact.

70,98 - 72,47: schistose ampbiloite
(meta-basalt flow)
darkgn, fine crystalline, nematoblastic texture, in places bands composed of coarse crystalline biotite and epidote. High-grade dissemination of il throughout. Nodules of milky qtz: 71,93 - 72,00 m, 72,10 - 72,12 m, 72,20 - 72,28 m.

Schistosity: 59°
Tectonic contact.

72,47 - 132,00: epidote-bear. plagioclase - chlorite-rich amphibolite
(meta-basalt flow, leopard amphibolite)
gn, either massive or schistose, homogeneous only in areas with strong foliation with schlieren texture, tiny needles of amphibole and fine-crystalline chlorite form lense-like crystal aggrgates of 0,1 to 0,3 cm size which are surrounded by little matrix composed of plagioclase and epidote, the

leopard texture is totally merged within areas with strong foliation, amphibole and chlorite compose here flat lenses and schlieren which alternate with tiny stripes or mm-thick discontinuous bands of felsic minerals. Il occurs between 88,00 - 88,30 m, 110,20 - 110,65 m, 124,85 - 126,67 m, 130,35 - 130,72 m, 130,95 - 131,30 m as max. 0,3 cm large spots with sutured boundaries.

Nodules of qtz: 72,58 - 72,64 m, 72,70 - 72,76 m, 72,84 - 72,85 m, 72.98 - 73,00 m, 87,59 - 87,76 m, 95,39 - 95,45 m, 102,70 - 102,83 m, 107,95 - 108,25 m, 108,74 - 109,30 m clusters of milky qtz and epidote within strongly foliated leopard textured amphibolite, 109,60 - 109,80 m, 109,98 - 110,19 m, milky qtz nodules within mylonite, 113,11 - 113,28 m clusters of milky qtz with epidote and mylonitic rock, 116,07 - 116,20 m, 120,41 - 120,69 m, 120,89 - 121,14 m.

Strongly foliated leopard amphibolite: 72,47 - 80,00 m, 80,20 - 82,00 m, 103,30 - 103,50 m, 104,50 - 107,73 m, 117,00 - 123,00 m, 124,90 - 125,90 m.

Shear zones: 72,47 - 73,00 m. 104,50 - 122,00 m strongly foliated leopard amphibolite which shows clusters and bands of both coarse crystalline biotite and epidote, transgoes into fine crystalline schistose amphibolite interfingered by tiny veins of epidote and qtz, biotite occurs within clusters at several locations, abundant nodules and clusters of milky qtz with epidote and stringers of chlorite, between 109,98 - 110,19 m black mylonite with milky qtz.

Several infolded sections of mafic to felsic volcanics:
110,65 - 110,74; amphibole-qtz-fspar rock (metamor. felsic volcanite)(occurrence within fold hinge)
gr with gn needles, homogeneous, porphyroblastic texture, max. 0,2 cm long amphibole needles are scattered within a matrix of fine grained granoblastic qtz and fspar. Low-grade dissemination of po.

113,01 - 113,12: epidote-bear.qtz-fspar-amphibole schist (metamor. intermediate volcanite)
greenishgr with slight yellowish tint, crudely developed layering, needles of amphibole max. 0,2 cm in length are oriented at random within a fine crystalline matrix

composed of qtz and fspar which locally are accompanied by epidote. Low-grade dissemination og py and some crystals of po. Submacroskopic crystals og mt.

113,12 - 114,00: schistose amphibolite (metabasalt flow)
darkgn, medium - crystalline, homogeneous, closely packed parallel needles of amphibole which constitute a distinct crenulation, between 113,80 - 113,95 m several bands of qtz - fspar - amphibole schist
similar 113,01 - 113,21 m but without mt. Banding 50°.

126,95 - 126,98: qtz - fspar - amphibole rock (metamor. mafic volcanite)
grgn, inhomogeneous, acicular crystals of amphibole max. 0,3 cm in long dimension are scattered within a matrix of qtz and fspar. Low-grade dissemination of po, the crystals or crystal aggregates forming 0,15 cm large spots.

chem-analysis
126,95-127,00 m

Irregular contacts with surrounding leopard amphibolite.

127,55 - 128,40: fine crystalline schistose amphibolite with several occurrences of amphibole - qtz - fspar rock (felsic to intermediate volcanic rock). Medium-grade dissemination of po (ca. 10 Vol-%). Scattered spots of il throughout.

chem.-analysis
127,53-127,75 m
127,75-128,32 m

129,90 - 130,35: qtz - fspar - amphibole schist (metamor. intermediate to basic volcanite)
gngr, irregular distribution of needles of amphibole max. 0,3 cm in long dimension within a fine crystalline matrix of qtz and fspar and subordinate epidote. Po forms lenses, spots, schlieren and bands of discontinuous thickness, the sulphide amounts to 10 Vol-%. High concentration of microcrystalline mt.

chem.analysis
129,88-130,00 m

Strongly folded contacts with surrounding leopard amphibolite.

Schistosity: 73,50 m 27°, 74,50 m 27°, 75,50 m 36°, 76,50 m 50°, 77,50 m 43°, 78,60 m 48°, 79,85 m 57°, 80,30 m 56°, 81,40 m 56°, 84,40 m 49°, 89,90 m 54°, 93,80 m 59°, 98,50 m 59°, 101,70 m 47°, 103,40 m 47°, 106,30 m 47°, 107,55 m 33°, 108,90 m 41°, 110,70 m ¢, 112,40 m 41°,

115,30 m 0°, 118,20 m 47°, 118,62 m 47°, 119,50 m 50°, 120,80 m 47°, 121,50 m 31°, 122,85 m 42°, 128,55 m 48°.

Sharp, slightly sheared contact with following rock.

132,00 - 146,49 <u>epidote - qtz - fspar - amphibolite</u>
(meta-basalt flow)
lightgn with faint yellowish tint, amphibole forms bundle-like crystal aggregates which in places reach imperfect spehrulites, within slightly foliated rock the amphibole crystal aggregates show a linear preferred orientation, they are surrounded by a fine crystalline matrix composed of fspar, qtz and epidote, some irregular veins of biotite - often with coarse flaky occurrence - are found throughout; with increasing foliation the rock shows first parallel aligned amphibole crystal aggregates, biotite is found here at several locations, constructing lenses of nearly 2 cm long dimension which follow the major foliation of the rock; with further deformation the rock transgoes into a schistose- amphibolite with or without biotite crystal aggregates.
Nodules of milky qtz: 135,48 - 135,60 m, 140,59 - 140,70 m.
Strongly foliated amphibolite: 135,00 - 137,60 m, 142,15 - 144,80 m

Tectonized zones: 137,60 - 142,15 m mainly fine crystalline biotite-bear. schistose amphibolite which shows abundant minor faults and locally a tectonic brecciated structure, 144,80 - 146,90 m fine crystalline amphibolite which partly is tectonized and cut by several minor faults.
Schistosity: 132,80 m 57°, 134,70 m 57° 135,80 m 63°, 136,80 m 63°, 137,65 m 54°, 139,22 m 45° (geological contact) 142,30 m 74°, 142,95 m 58°, 143,70 m 59°, 144,70 m 53°.
Fault lines: 137,70 m 40°, 38°, 48°, 138,60 m 34°, 139,80 m 23°, 140,25 m 20°, 141,53 m 39°, 18°, 141,80 m 21°, 144,73 m 50° ,144,80 m 35°, 35°, 144,93 m 33°, 145,03 m 36°, 145,05 m 43°, 146,07 m 43°, 146,25 m 43°.

Knife sharp tectonical contact, 46°.

139,22 - 139,36 m: <u>biotite - chlorite bear. qtz - fspar rock</u> (felsic volcanite, qtz-keratophyr)
gr with reddish staining, massive homo

gr with reddish staining, massive homogeneous, fine-grained granublastic texture, biotite and chlorite form scattered flakes of max. 0,05 cm.
Knife sharp slightly sheared contacts with surrounding amphibolite.

Mafic to felsic volcanogenic sediments, basaltic lava and chemical precipitates: 146,49 - 179,90 m.

146,49 - 147,58 epidote-bear. qtz-rich magnetite amphibolite
(metamor. ironrich mafic volcanite with exhalative qtz and mt) (correlation with magnetite amphibolite from 91,25 - 91,45 m of Bh. 2000 D)
blueish greenish black, fine crystalline, crude development of lamination which often is disturbed by small-scale folding, mm-thick layers of amphibole in alternation with tiny lenses and schlieren or laminae of qtz and magnetite. Plagioclase amphibolite similar to that from 132,00 - 146,49 m occurs between 146,52 - 146,65 m, the contacts with the surrounding magnetite amphibolite represent minor faultlines.
Minor faults: 146,52 m 57 °, 146,59 m 45 °, 146,71 m 29 °.
Lamination: 146,51 m 86 °, 146,73 m 63 °, 146,90 m 50 °, 147,05 m 65 °.
Sharp upper wall and discontinuous, strongly folded lower contact.

147,58 - 148,46 qtz - fspar - rich amphibole - biotite rock
(metamor. altered mafic volcanite)
gr brown with slight greenish tint, indistinct lineation of platy and acicular minerals, variation in the amount of amphibole and biotite, amphibole is concentrated near the borders of the section while biotite occurs with highest amounts in the middel of the layer, homogeneous distribution of max. 0,2 cm large needles of amphibole and crystal aggregates of biotite within a fine crystalline matrix composed of qtz and fspar.
Spots of il between 148,26 - 148,46 m.
Diffuse contact with following rock.

A
biotitization

148,46 - 148,55 qtz - bear. magnetite - amphibolite
(metamor. ironrich mafic volcanite with exhalative qtz and mt)
similar: 146,49 - 147,58 m but more intensivly folded and with spots of py espesially concentrated within the upper part of the layer.
Diffuse contact with following rock.

148,55 - 149,42

qtz - fspar - rich biotite - amphibole schist
(meta-basalt flow)
gn with abundant brown schlieren, homogeneous, schlieren texture, fine-crystalline amphibole and granoblastic qtz-fspar are interlayered by schlieren and flat, parallel lenses of biotite.
Schistosity: 148,70 m 60 °, 149,20 m 55 °, 149,40 m 81 °.
Bedding fault line as lower contact.

149,42 - 149,50
chem.-analysis

amphibole-bear. pyrite-rich quartzite
(metamor.exhalative sulphide)
gn and with metallic lustre, schlieren, discontinuous bands and lenses of pyrite in close alternation with fine crystalline quartz, sparse needles of amphibole which are parallell aligned with the major foliation of the rock (55°).
Knife sharp contact, 61 °.

149,50 - 153,53

epidote-bear. qtz - fspar - amphibolite
(meta-basalt flow)
similar: 132,00 - 146,49 m, between 149,50 - 149,80 m similar 147,58 - 148,46 m, amount in biotite decreases downwards along drillhole while amphibole simuloneously increases.
Minor faults: 150,44 m 22 °, 150,84 m 63 °, 151,05 m 37 °, 151,20 m 47 °, 151,30 m 32 °, 151,56 m 32 °, 152,95 m 40 °, 153,20 m 47 °.
Schistosity: 151,42 m 54 °.
Gradual contact with following rock.

153,53 - 153,90

epidote-rich qtz - fspar - amphibole - chlorite gneiss
(metamor. mafic tuff)
lightgn with faint yellowish tint, dm-banded, porphyroblasts of amphibole max. 1,5 cm in long dimension are scattered in both a fine crystalline chloritic matrix and a fine crystalline, granoblastic matrix composed of qtz, fspar and epidote, amphibole is altered to biotite in the upper part of the section, biotite occurs here as nearly spherulitic crystal aggregates which are equally distributed within a groundmass of fine fibrous chlorite.
Banding: 51°.
Gradual contact.

AA
Biotitization
Chloritization

153,90 - 155,21

plagioclase-rich amphibolite
(meta-basalt flow)
gn, medium to coarse crystalline, tiny amphibole needles form bundle-like crystal aggregates which nearly show no preferred orientation, the amphibole aggregates are

surrounded by a fine crystalline qtz and plagioclase mosaic.
Clusters of carbonate between 154,38 - 154,49 m.
Gradual contact.

155,21 - 155,35 amphibole qtz-fspar rock (metamor. felsic volcanite) surrounded by chlorite - amphibole schist with porphyroblastic texture. Felsic volcanite contains little py.
Contact with following amphibolite via 19 cm of milky qtz.

155,35 - 170,50 plagioclase-rich amphibolite
(meta-basalt flow)
similar: 153,90 - 155,21 m but locally with distinct leopard texture. Widely scattered poikiloblasts of il with sutured boundaries between: 158,45 - 159,70 m, mt as submacroskopic finely dispersed crystals between 159,70 - 160,00 m and at several locations between 164,50 and 169,50 m, occasionally spots of py and po, clusters of py within a cm-thick plagioclase-rich layer at 158,41 m.
Foliation: 157,70 m 68 , 164,51 m 73 .
Gradually passing into following rock.
169,10 - 169,33: magnetite - amphibole schist (metamor. basalt flow with exhalative mt)
darkgn, medium - crystalline, homogeneous, high-grade dissemination of tiny mt-crystals, within the upper part of the layer some lense shaped crystal aggregates of pyrite.

Folded section until 210.25 m with several repetitions of distinct rock.

170,50 - 171,15 schistose amphibolite (meta-basalt flow) with 2 cm thick interlayer of qtz-magnetite-amphibole gneiss (exhalative qtz and mt in alternation with basaltic volcanites).
gn, fine crystalline, rich in scattered hypiodioblasts of il.
Lamination: 63°.
Sharp sheared contact.

171,15 - 171,39 quartzite
(metamor. chemical precipitate)
gr, dense, fine crystalline, foliation is indicated by widely scattered acicular crystals of amphibole which are parallel aligned. lenses and schlieren of py and minor py occur within a 2 cm thick interlayer rich in chlorite and amphibole and at the lying contact.
Foliation: 63°.
Knife sharp contact, 63°.

171,39 - 171,78 — <u>chlorite - amphibole schist</u>
(meta-basalt flow)
lightgn, homogeneous, acicular crystals and bundle-like crystal aggregates of amphibole max. 0,2 cm in size are scattered within a fine crystalline matrix mainly composed of chlorite, slowly incoming biotite towards increasing depth of drill hole.
Foliation: 44°.
Gradually passing into following rock.

171,78 - 172,90 — <u>high calcareous sericite-bear. amphibole - biotite - chlorite schist</u>
(metamor. mafic volcanite, supp. tuff, altered by hydrothermal liquids)
C/A
Carbonatization
Biotitization
gngr, medium to coarse crystalline, inhomogeneous, acicular crystals of amphibole max. 0,2 cm in long dimension and platy crystal aggregates of biotite max. 0,3 cm large are oriented at random lying in a fine crystalline matrix composed of chlorite, qtz and fspar, huge hypidiomorphic porphyroblasts of carbonate throughout.
Schistosity: 44°.
Sharp contact: 67°.

172,90 - 173,50 — <u>amphibolite</u>
(meta-basalt flow)
gn, extremely fine grained, more or less homogeneous, widely scattered elongated augen of plagioclase of mainly 1 cm length are supposed to be amygdules.
Sharp contact: 77°.

173,50 - 174,15 — <u>amphibole-bear. biotite - qtz - fspar - epidote rock</u>
(metamor. intermediate volcanite, supp. tuff)
gr with yellowish staining, abundant brown flakes, massive with slight indication for compositional cm-banding, fascicular bundles and imperfect spherulites of amphibole and biotite which in places have joined to 0,5 cm large clusters are dispersed within a fine grained granublastic matrix of epidote, qtz and fspar. Poikiloblasts of <u>il</u> decreasing in size from 0,15 to 0,05 cm down section are found throughout.
Irregular boundary with following amphibolite.

174,15 - 174,73 — <u>schistose amphibolite</u>
(meta-basalt flow)
gn, fine crystalline, homogeneous, several tiny faults and slightly mylonitic espesially within the lower part of the section.
Diffuse boundary with following rock.

174,73 - 175,40 amphibole-bear. biotite - qtz - fspar - epidote rock
(metamor. intermediate volcanite, supp. tuff)
same as: 173,50 - 174,15 m, repetition by folding, several fold hinges.
Diffuse boundary with following rock.

175,40 - 179,90 amphibolite, schistose amphibolite
(meta-basalt flow)
same as: 172,90 - 173,50 m, repetition by folding, within several areas huge irregular shaped aggregates of carbonate, sometimes biotite veining, several minor faults: 176,20 u-shaped, 176,66 m 21°, 177,70 m 32°, 178,00 m 31°, 178,55 m u-shaped, 179,40 - 179,70 m u-shaped supp. indicating a hinge of av fold. Low-grade dissemination of py with carbonate-rich rock occurring as slices at one side of the drill core between 179,52 - 179,73 m.
Gradual contact.

Basaltic lova flows: 179,90 - 260,60 m.

179,90 - 210,25 amphibolite, schistose amphibolite
(meta-basalt flow)
gn, fine crystalline, in places medium grained and with tendency towards leopard texture, (181,73 - 182,30 m, 184,55 -186,10 m, 189,90 - 191,13 m, 194,00 - 194,62 m, 195,48 - 196,05 m, 196,90 - 200,90 m, 201,22 - 201,53 m) locally augen of plagioclase, sometimes spotted xenoblasts of carbonate (182,64 - 182,90 m) at several locations qtz - carbonate veining or clusters of qtz with epidote and carbonate (182,40 - 182,63 m, 186,63 - 188,58 m, 189,20 - 189,52 m, 192,20 - 192,83 m, 193,32 - 193,81 m, 201,60 - 210,25 m; clusters of milky qtz between: (207,12 - 207,22 m, 208,32 - 209,30 m, 209,94 - 209,22 m); several minor faults (180,30 - 180,40 m, 181,21 56°, 181,55 m, 188,64 m 36°, 189,08 m 7°, 189,30 m 25°, 192,25 - 192,58 m partly tectonized rock 20°, 192,75 m 46°); sections with strong deformation (186,00 - 189,45 m several hinges of folds, 201,15 - 204,44 m, 204,85 - 205,50 m, 206,50 - 210,25 m sometimes fold-hinges). Occurence of py within carbonate-rich plag.-amphibolite similar that at 179,52 - 179,73 m (repetition) at: 187,64 - 187,77 m, 187,84 - 188,00 m, some crystals of py within amphibolite at: 193,72 m and 196,36 m.
Sharp tectonic controlled boundary.

183,82 - 184,44 m and 201,00 - 201,15 m: amphibole-bear. biotite - qtz - fspar - epidote rock (metamor. intermediate volcanite, supp. tuff) same as: 173,50 - 174,15 m and 174,73 - 175,40 m, repetition by folding. Diffuse boundaries with surrounding amphibolite.

188,63 - 188,77: high calcareous amphibole-bear. chlorite - biotite schist
C/A
Carbonatization
Biotitization
(metamor. mafic volcanite, supp. tuff altered by hydrothermal liquids)
repetition from 171,78 - 172,90 m. Tectonic contacts on both sides of the layer.
205,94 - 206,52: amphibole-bear. qtz - sericite - biotite - chlorite schist (metamor. tuffaceous epiclastic sediment with exhalative qtz).
gngr, homogeneous with slight distinction of compositional layering, flaky biotite as tiny porphyroblasts either homogeneously distributed or enriched within discontinuous bands or stringers, chlorite, sericite and qtz form the fine crystalline groundmass, qtz is sometimes enriched in isolated bands of cm-thickness which alternate with schlieren of biotite, amphibole as acicular crystals of max. 0,15 cm length occur within the border zones of the layer where biotite is much lesser frequent than in the center of the section.
Banding a. schistosity: 50 °.
Diffuse contacts with surrounding amphibolite.
207,82 - 208,13: amphibole-bear. biotite - chlorite phyllite (metamor. tuffaceous epiclastic sediment with exhalative qtz)
repetition of rock from 205,94 - 206,52 m.
Diffuse contacts with surrounding amphibolites.

201,25 - 210,80 calcareous chlorite - biotite - epidote gneiss
(meta-tuff)
different coloured, brown, white, pale yellow, greenishgr. Distinct compositional banding and schlieren texture, cm-alternation of bands and schlieren made by carbonate, chlorite and biotite, epidote and biotite and biotite and carbonate, fine crystalline epidote and chlorite, biotite forms platy crystals or crystalaggregates which are on average 0,05 cm large, carbonate appeares sometimes as round globular spots of minor 0,1 cm size.
Compositional banding: 76 °.

Sharp contacts (76°) on both sides of the layer.

210,80 - 260,60 schistose amphibolite
(meta-basalt flow)
gn, fine crystalline, often irregularily interfingered by mm - to cm - thick carbonate veins, at several locations clusters or schlieren and bands composed of chlorite, biotite and carbonate, occurrences of augen of plagioclase (amygdul basalt) at: 212,22 - 212,34 m, 212,54 - 212,58 m, 217,65 - 217,80 m, 218,42 m, 218,55 - 218,57 m, 219,50 - 219,56 m on one side of the drill core, 220,49 m, 220,71 m, 220,79 m, 221,19 m, 221,32 m, 223,24 m, 223,36 m, 224,34 - 224,38 m, 224,79 m, 224,81 m, 233,22 m within hinge of a tiny fold, 223,40 - 233,43 m on one side of the drill core, 241,95 - 242,00 m, 245,32 - 245,34 m, 246,40 m, 246,44 - 246,46 m, 246,53 - 246,62 m, 248,02 - 248,11 m, 254,76 - 254,78 m. In general folded with often developed foldhinges. Spots of po at: 252,85 - 253,00 m, 253,50 - 253,75 m.

Clusters of milky qtz which sometimes are accompanied by epidote and aggregates of marbel: 231,50 - 232,10 m (q), 235,36 - 235,56 m (q), 235,75 - 236,47 m (m), 236,94 - 237,20 m (m), 237,55 - 237,61 m (m), 237,81 - 238,14 m (m), 247,62 m (q), 247,75 m (q), 248,82 m (q), 255,65 m (q), 255,82 - 256,00 m (q).

Schistosity: 212,32 m 81° stretched amygdules, 218,42 m 77° elongated plag. augen, 226,50 - 226,75 m , 227,55 m , 230,50 m , 230,80 - 231,00 m , 233,22 m , 233,40 -233,43 m , 241,97 m 81° elongated plag.augen, 247,58 - 247,86 m , 253,50 m 74° slight compositional layering, 253,70 m 78° , slight compositional layering.
Sharp contact with following tuffaceous section.

260,29 - 260,39: high calcareous amphibole bear. biotite - qtz - fspar - epidote gneis
(supp. metamor. sudaquaeous lahar) gr with distinct yellowish staining and abundant brown spots, schlieren texture, crudely developed compositional banding, fine crystalline epidote with fascicular bundles of biotite as schlieren and bands in alternation with qtz - carbonate bands and lenses. Sharp diffuse boundaries with surrounding amphibolite.

Mafic volcanogenic sediments and minor interlayers of subaquaeous mass flow deposits: 260.60 - 319,10 m.

260,60 - 274,52 <u>calcareous to high calcareous biotite - qtz - fspar - epidote - amphibole schist</u>
(metamor. mafic volcanogenic sediment with fine and some medium size mafix and felsic fragments; subaquaeous mass flow/lahar)
browngr with faint yellowish tint, often with schlieren texture, distinct fragmental structure, stretched and flattered subangular to rounded fragments of amphibolite often with augen of plagioclase (amygdul basalt) and amphibole epidote - qtz - fspar rock are embedded in abundant matrix composed of biotite, epidote, carbonate, qtz and fspar, biotite forms up to 0,3 cm large bundles and imperfect spherulites while the other minerals are fine crystalline. Small-scale disharmonic folding within the first 2 m from the contact with overlying amphibolite, afterwards foliation remains constant at 72° - 77°.
Gradually passing into following rock.

274,52 - 280,82 <u>calcareous to high calcareous epidote - biotite - chlorite - qtz - fspar - amphibole gneiss</u>
(banded amhibolite)
(metamor. mafic volcanogenic sediment either pyroclastic or epiclastic)
of different colour: gn, brown, gr with yellowish staining, distinct cm-banding caused by compositional and textural differences, sometimes schlieren texture, alternation of bands composed of either amphibole and chlorite or biotite and chlorite with lenses and layers mainly consisting of qtz, fspar, epidote and carbonate which are fine-crystalline granoblastic, these layers also carry porphyroblasts of amphibole and sometimes bundles of biotite, amphibole is the most pronounced mineral as it forms acicular crystals on average 0,25 cm long and oriented at random, they often form a framework of not crosscutting but touching crystals.
Clusters of milky qtz accompanied by carbonate: 274,42 - 274,52 m, 275,16 - 275,28 m.
Banding: 275,80 m 79°, 277,15 m 79°, 278,50 m 90°,279,60 m 54°, 280,05 m 54°, 280,55 m 65°.
Sharp conformable contact with following rock.

280,82 - 285,00 — <u>calcareous biotite-bear. amphibole-chlorite gneiss</u> (banded amphibolite)
(metamor.mafic volcanogenic sediment either pyroclastic or epiclastic)
gn with gr stripes and spots, well developed compositional layering, cm-alternation of bands composed of amphibole and chlorite and layers made by carbonate, fspar, qtz and epidote, some stringers and lenses of biotite, amphibole forms either porphyroblasts of max. 0,5 cm length which are oriented at random or it occurs with imperfect spherulites, carbonate often forms idioblasts on average 0,25 cm big which are homogeneously distributed.
Banding: 280,95 m 81 °, 281,50 m 81 °, 282,00 m 74 °, 282,60 m 0 °, 283,00 m 23 °, 283,80 58 °, 284,75 m 61 °.
Gradual contact.

285,00 - 288,60 — <u>amphibole - qtz - fspar - biotite - epidote schist</u>
(metamor. mafic tuff)
grgn with yellowish staining, schlieren texture which sometimes transgoes into a compositional layering, close alternation of lenses, bands and schlieren composed of either biotite and amphibole with bands and lenses made by epidote, qtz and fspar, sometimes lenses of fine- crystalline qtz.
Strongly tectonized rock with mylonitization and close spacing of small faults between: 287,35 - 288,60 m.
Schistosity: 285,15 m 52 °, 285,60 m 52 °, 286,15 m 67 °, 286,70 m 50 °.

288,60 - 293,00 — <u>slightly calcareous biotite - amphibole - chlorite schist</u>
(metamor. mafic volcanogenic sediment)
similar: 280,82 - 285,00 m but with less distinct compositional banding and higher concentration of biotite. Strongly tectonized with mylonitic fabric and abundant small faults between: 288,60 - 289,75 m. Elsewhere several minor faults: 290,30 m 42 °, 290,78 m 50 °, 291,52 m 52 °, 292,00 m 53 °, 292,54 m 50 °, 292,69 m 50 °.
Schistosity/banding: 289,90 m 90 °, 290,60 m 86 °, 291,80 m 68 °.

293,00 - 299,95 — <u>slightly calcareous biotite-bear. qtz - fspar - amphibole - chlorite schist</u>
(metamor. mafic volcanogenic sediment)
gn, fine crystalline, schlieren texture in places slight compositional banding, porphyroblasts of amphibole the acicular

crystals on average 0,2 cm long and oriented at random and stretched crystal aggregates of biotite set in a fine crystalline matrix composed of chlorite, qtz and fspar.
Strongly tectonized, grading from mylonite to strongly sheared rock, between: 294,20 - 297,50 m. Elsewhere some minor faults: 293,67 m 68°.
Gradually passing into following rock.

299,95 - 304,65 biotite - bear. qtz - fspar - epidote - amphibole - chlorite gneiss
(metamor. mafic volcanogenic sediment, in places banded amphibolite)
grgn with faint yellowish tint, fine crystalline with porphyritic amphibole and spotted crystal aggregates of biotite, schlieren texture but sometimes well developed compositional banding, alternation of schlieren and bands composed of either chlorite and amphibole or biotite, chlorite and amphibole with layers and lenses made by epidote, qtz and fspar which also contain some amphibole and biotite, in places occurrence of conformable interlayered biotite schlieren.
Schistosity/compositional layering: 77 - 90
Sharp contact.

304,65 - 319,10 schistose amphibolite
(meta-basalt flow)
gn, fine and medium crystalline. Tiny spots of il between: 307,95 - 308,35 m. Low-grade dissemination of po from 305,16 m until 305,32 m. Sparse crystals of py at 306,55 m.
Small scale folded.
Sharp contact.

Subaquaeous mass flow deposit: 319,10 - 430,95 m.

319,10 - 320,75 biotite-bear. epidote - qtz - fspar amphibolite
(metamor. mafic volcanogenic sediment with fine and medium size mafic fragments)
gn, distinct fragmental structure, poorly sorted, slightly deformed subangular to rounded amphibolite fragments of different size surrounded by little matrix mainly composed of epidote, qtz and fspar which are accompanied in places by patches of biotite, amphibolite fragments often carry augen of plagioclase which formerly have been vesicules.
Gradually passing intor following rock.

320,75 - 324,43 — <u>calcareous epidote - qtz - fspar - biotite - amphibole rock/schist</u>
(metamor. mafic volcanogenic sediment with fine mafic fragments)
grgn with abundant brown schlieren distinct fragmental structure, sometimes little or no fragments, poorly sorted, slightly stretched mafic fragments on average 1,0 cm in size are closely packed and embedded in a matrix mainly composed of epidote, qtz and fspar, biotite occurs as spotted crystal aggregates which either form fascicular bundles or schlieren.
Schistosity: 324,35 m 50°.
Knife sharp boundary, 72°.

324,43 - 340,40 — <u>slightly calcareous biotite - qtz - fspar - amphibole rock</u>
(metamor. mafic volcanogenic sediment with medium to coarse mafic fragments)
similar: 319,10 - 320,75 m
Schistosity: 325,16 m 52°, 329,30 m 69°, 331,80 m 60°, 334,80 m 81°, 338,65 m 73°.
Gradational boundary.

340,40 - 341,85 — <u>slightly calcareous biotite - amphibole - chlorite schist</u>
(metamor. mafic volcanogenic sediment with fine mafic fragments)
gn, random occurrence of slightly stretched amphibolite fragments within a chloritic groundmass containing porphyritic biotite which is equally distributed.
Gradually passing into following rock.

341,85 - 345,42 — <u>slightly calcareous biotite - chlorite - qtz - fspar - epidote - amphibole rock</u>
(metamor. mafic volcanogenic sediment with fine and medium size mafic fragments)
similar: 319,10 - 320,75 m.
Gradational contact.

sample 2001/1
342,20 - 342,47 m

345,42 - 348,70 — <u>slightly calcareous qtz - fspar-rich chlorite - biotite - amphibole schist</u>
(metamor.mafic volcanogenic sediment with fine mafic fragments)
gn, fine to medium crystalline with spotted crystal aggregates of biotite on average 0,15 cm large, little distinction between lense-shaped amphibolite fragments which are of random occurrence and matrix mainly beeing composed of amphibole.
Sharp contact.

348,70 - 350,00 schistose amphibolite with interlayers of high calcareous biotite - chlorite - amphibole schist
(metamor. mafic volcanogenic sediment with supp. coarse mafic fragments)
Knife sharp contacts between dm-thick sections composed of fine crystalline amphibolite and schistose interlayers carrying some minor amphibole fragments.
Sharp border with following rock.

350,00 - 360,16 slightly calcareous epidote - qtz - fspar-rich biotite - chlorite amphibole schist/rock
(metamor. mafic volcanogenic sediment with fine but sometimes also medium size mafic and felsic fragments)
gn, either massive or schistose, less distinct fragmental structure due to compositional similarities between matrix and fragments, subangular to rounded fragments of cm-size but sometimes larger composed of amphibole and sparse felsic clasts made by qtz and fspar are inhomogeneously distributed within a fine crystalline matrix composed of in decreasing order: amphibole, chlorite, biotite, epidote, fspar and qtz, biotite is the only mineral which tends to form crystal aggregates of max. 0,5 cm size which stand for a slight foliation of the rock.
Clusters of milky qtz: 353,65 - 354,30 m, 357,35 - 357,46 m.
Schistosity: 351,45 m 77 °, 355,15 m 54 °.

360,16 - 371,42 slightly calcareous epidote - qtz - fspar-rich chlorite - biotite amphibolite
(metamor. mafic volcanogenic sediment with medium to coarse mafic fragments)
similar: 319,10 - 320,75 m.
Nodules of milky qtz: 365,82 - 366,20 m, 370,20 - 370,35 m, 371,00 - 371,35 m.
Gradually passing into following rock.

371,42 - 377,82 slightly calcareous epidote - qtz - fspar - chlorite - biotite - amphibole rock/schist
(metamor. mafic volcanogenic sediment with fine but also medium size mafic and felsic fragments)
similar: 350,00 - 360,16 m
Sharp contact 86 °.

377,82 - 380,00 slightly calcareous biotite-bear. epidote - qtz - fspar - amphibole rock
(metamor. mafic volcanogenic sediment with medium to coarse mafic fragments)
similar: 319,10 - 320,75 m
Sharp contact.

380,00 - 381,50 slightly calcareous chlorite - biotite - epidote - qtz - fspar - amphibole rock
(metamor. mafic volcanogenic sediment with fine mafic and felsic fragments)
similar: 350,00 - 360,16 m but without biotite crystal aggregates.
Gradually passing into following rock.

381,50 - 399,10 slightly calcareous biotite-bear. epidote - qtz - fspar - amphibole rock
(metamor. mafic volcanogenic sediment with medium and coarse mafic fragments)
similar: 319,10 - 320,75 m
Clusters of milky qtz: 389,00 - 389,17 m.
Lineation of fragments: 387,70 m 86 °, 388,80 m 20 °, 389,35 m 62 °, 396,45 m 81 °, 398,40 m 86 °.

399,10 - 401,05 slightly calcareous amphibole - biotite - chlorite schist
(metamor. mafic volcanogenic sediment with sparse mafic fragments)
gn with brown flakes and spots, homogeneous and with crudely developed schlieren texture, fine crystalline, biotite however forms average 0,2 cm large flakes or bundles which by no preferred orientation are widely scattered, locally elongate clasts of fine crystalline amphibolite max. 2 cm in long dimension.
Schistosity: 399,75 m 69 °.
Sharp contact.

401,05 - 401,52 slightly calcareous chlorite - biotite-bear. qtz - fspar - amphibole rock
(metamor. mafic volcanogenic sediment with medium size mafic fragments)
similar: 319,10 - 320,75 m
Sharp contact.

401,52 - 403,22 calcareous chlorite-bear. biotite - qtz - fspar amphibole rock
(metamor. mafic volcanogenic sediment with fine mafic fragments)
grgn locally with abundant brown flakes, variation in composition, upper part poor in biotite and rich in amphibole while lower section contains much biotite. High content in mm-large amphibolite fragments which are embedded in a fine crystalline matrix composed of qtz, fspar, carbonate and chlorite, biotite is also a matrix mineral but forms scattered porphyroblasts on average 0,15 cm large.
Sharp contact.

403,22 - 417,70 slightly calcareous chlorite - biotite-bear. qtz - fspar - amphibole rock
(metamor. mafic volcanogenic sediment with medium to coarse mafic and some fine felsic fragments)
similar: 319,10 - 320,75 m
Schistosity: 410,25 m 79° border of large clast, 417,42 71° border of large clast.
Sharp contact.

417,70 - 419,48 biotite-bear. qtz - fspar-rich amphibolite
(metamor. mafic volcanogenic sediment with fine mafic and felsic fragments)
gn, homogeneous, slightly prophyritic amphibole needles are surrounded by fine crystalline granoblastic qtz and fspar, round globular fragments of amphibolite on average 0,1 cm large are widely scattered, occasionally round globular clasts of qtz-fspar rock which contains randomly oriented needles of amphibole.
Strongly schistose lower contact, 23° .

419,48 - 420,50 biotite - amphibole - chlorite schist
(metamor. mafic volcanogenic sediment with medium size mafic fragments)
gn with brown stripes and lenses, crude development of lenticular texture, strongly schistose, elongate fragments of amygdul basalt surrounded by a fine fibrous matrix composed mainly of chlorite, biotite is concentrated within discontinuous bands and stringers or lenses which are parallel to the major foliation of the rock.
Schistosity: 420,30 m 38° .

420,50 - 427,14 amphibolite
(meta-basalt flow, strongly tectonized and locally brecciated)
gn, fine crystalline, abundant tiny veins of qtz and carbonate, often closely interfingered by tiny faults, strongly brecciated and with carbonate clusters and veins between: 423,80 - 424,64 m.
Strongly sheared contact, 38° .

427,14 - 429,45 slightly calcareous biotite-bear. amphibole-chlorite schist
(metamor.mafic volcanogenic sediment with fine and medium mafic fragments)
gn, strongly schistose, the upper half part as chaotic structurless deposit, elsewhere fine crystalline with chlorite forming the schistose matrix for rarely occurring amphibolite fragments which by medium size contain augen of plagioclase.

Schistosity: 427,50 m 43 °, 428,30 m 47 °.
Sharp contact.

429,45 - 430,95 chlorite - biotite-bear. qtz - fspar-rich amphibolite
(metamor. mafic volcanogenic sediment with medium and coarse mafic fragments)
gn, grgn, inhomogeneous, strongly foliated amphibolite fragments embedded in a fine crystalline matrix composed of qtz, fspar and some biotite and chlorite, local occurrence of schlieren and lenses of biotite - sericite schist which belong to the following section.
Schistosity: 429,62 m 56 °,
Gradual contact.

Epiclastic sedimentary deposits: 430,95 - 446,20 m.

430,95 - 433,85 chlorite-bear. sericite - biotite-rich quartzite
(metamor. qtz-arenite)
gr with abundant brown schlieren and rods, lightgn laminae, fine crystalline with biotite forming 0,15 cm large porphyroblasts which may locally be concentrated within schlieren and discontinuous bands, cm-thick bands of fine crystalline granoblastic qtz which show scattered rods of biotite alternate with mm-thick layers or discontinuous bands made by chlorite and sericite, the layering is strongly deformed within the upper part of the section.
Layering: 431,35 m 43 °, 431,80 m ∠, 432,55 m 43 °, 433,32 m 41 °.
Sharp contact.

433,85 - 435,30 epidote-rich amphibole - biotite - sericite - qtz - schist/gneiss
(metamor. qtz-pelite with volcanic impurity)
gngr, browngr, locally with faint yellowish tint, fine crystalline with biotite forming scattered max. 0,2 cm large porphyroblasts and amphibole occurring as 0,3 cm long acicular crystals of any orientation, homogeneous but also with distinct compositional banding which sometimes grades into a lenticular structure which results from folding.
Strongly folded with occurrence of fold hinge.
Sharp contact.

435,30 - 436,82 chlorite bear. sericite - biotite quartzite
(metamor. qtz - arenite)
similar: 430,95 - 433,85 m.
Layering: 435,60 m 86 °, 436,05 m 53 °, 436,60 m 49 °.
Gradually passing into following rock.

436,82 - 437,66 biotite - sericite - qtz - fspar rock
(metamor. conglomeratic mudstone, fluxo-turbidite)
gr with abundant brown rods, blastopsephitic texture, isolated stretched and flattered rounded fragments composed of fine grained granoblastic qtz and fspar (qtz - keratophyr) and with scattered porphyroblasts of biotite are embedded in a schistose matrix containing sericite, qtz and biotite.
Elongation of fragments: 52 °.
Sharp contact.

437,66 - 438,20 biotite - sericite - qtz rock
(metamor. qtz - pelite)
gr with abundant brown rods, fine crystalline but with 0,15 cm large scattered biotite flakes, slight variation in the content of quartz and sericite.
Sharp contact, 81 °.

438,20 - 446,20 biotite - sericite schist
(meta-pelite)
gr with slight greenish tint, abundant brown spots, porphyroblastic texture due to biotite which forms average 0,15 cm large flakes being equally distributed, fine crystalline sericite forms the schistose groundmass.
Schistosity: 439,45 m 62 °, 442,30 m 57 °, 445,40 m 70 °.
Sharp contact.

Subaquaeous mass flow deposit: 446,20 - 583,42 m.

446,20 - 449,80 calcareous qtz - fspar-rich biotite - chlorite schist
(metamor. mafic volcanogenic sediment with sparse felsic and mafic fragments)
gn to grgn, abundant big brown spots, upper part with distinct compositional banding which supp. is caused by deformation, elsewhere with lenticular but also chaotic structurless texture, fine crystalline with biotite forming scattered porphyroblasts, sometimes clusters of more than 1,0 cm size, sporadic occurrence of rounded felsic and even more scarce mafic fragments which have slightly being stretched, clasts get more

abundant towards the lower part of the section.
Schistosity: 446,35 m 68 °.

449,80 - 583,42

<u>slightly calcareous biotite - amphibole - chlorite schist</u>
(metamor.mafic volcanogenic sediment with fine to coarse mafic and locally felsic fragments)
gn, lightgn, abundant brown schlieren lenses and rods, distinct fragmental structure, slightly elongated fragments of different grade of roundness composed of fine crystalline amphibole and often containing augen of plagioclase embedded in a matrix made of chlorite, biotite, qtz, fspar, epidote and carbonate, the content of the matrix varies between 15 and 70 %.
449,80 - 465,30: Mainly medium size mafic fragments, some felsic clasts.
465,30 - 466,70: coarse amphibolite clasts.
466,70 - 469,50: fine but sometimes medium size fragments.
469,50 - 474,00: mainly medium size mafic fragments but also some coarse clasts.
474,00 - 474,90: similar 466,70 - 469,50 m.
474,90 - 480,00: mainly medium size mafic fragments and some coarse clasts, sometimes felsic fragments, clusters of milky qtz with carbonate between 478,22 - 478,48 m and 479,24 - 479,34 m.
480,00 - 488,00: domination in coarse mafic clasts enclosed in little matrix. Several clusters of milky qtz: 483,88 - 484,05 m, 484,66 - 484,80 m, 484,95 - 485,10 m, 485,50 - 485,80 m, 486,17 m.
488,00 - 489,95: mostly medium size mafic fragments.
489,95 - 492,48 fine and sometimes medium size mafic fragments.
492,48 - 492,63: coarse mafic fragments with little matrix.
492,63 - 499,60: fine and sometimes medium size mafic fragments in abundant matrix. Strong foliated section. Cluster of milky qtz: 493,87 - 494,10 m,
499,60 - 503,55: fine and medium size mafic fragments.
503,55 - 506,37: fine but also some medium size mafic fragments.
506,37 - 530,27: mainly medium size but also coarse mafic fragments.
530,27 - 537,25: fine but sometimes medium size mafic fragments.
537,25 - 537,82: coarse mafic fragments enclosed in little matrix

sample 2001/2
477,56 - 477,90 m

537,82 - 546,80: fine and medium size mafic fragments
546,80 - 552,40: amphibole-bear. biotite - chlorite schist with sparse mafic fragments.
552,40 - 557,33: fine and medium size mafic fragments embedded in abundant matrix.
557,33 - 562,71: amphibole-bear. biotite - chlorite schist
562,71 - 566,45: fine and medium size mafic and sometimes felsic fragments, strongly foliated.
566,45 - 569.35: similar 557,33 - 562,71 m.
569,35 - 572,00: fine but also medium size and sporadically coarse mafic fragments.
572,00 - 577,77: biotite-bear. qtz - fspar-rich amphibolite
similar: 417,70 - 419,48 m
Clusters of milky qtz at: 572,25 m, 572,38 m, 572,50 m, 572,63 m, 573,45 m.
577,77 - 582,30: fine mafic and felsic fragments
582,30 - 583,42: widely scattered medium size mafic fragments.
Schistosity: 456,50 m 70°, 459,30 m 66°, 464,20 m 66°,467,90 m 64°, 469,90 m 65°, 470,70 m 56°, 471,56 m 61°, border of big clast, 472,76 m 61°, 475,45 m 85°, 476,20 m 81°, 478,00 m 49°, 478,85 m 56°, 482,11 m 63° 483,11 m 68°, 484,55 m 54°, 487,80 m 50°, border of larger clast, 490,50 m 60°, 492,48 m 60°, border of big clast, 494,50 m 60°, 496,44 m 49°, mylonitization with clusters of milky qtz: 498,70 - 499,60 m, 499,60 - 501,00 m 0°, 501,50 m 29°, 504,60 m 63°, 506,45 m 72°, 511,00 m 58°, 512,60 m 59°, 518,10 m 73°, 523,70 m 63°, 533,50 m 76°, 537,25 m 60°border of big clast, 546,00 - 546,30 m , 553,40 m 74°, 563,55 m 34°, 563,80 m , 564,40 m 63°, 568,45 m 52°, 571,50 m 69°.
Sharp contact with underlying amphibolite.

Basaltic lava flows with minor chemical precipitates: 583,42 - 685,36 m.

583,42 - 620,60 schistose amphibolite
(meta-basalt flow)
gn, fine crystalline but locally also medium crystalline, irregular bands and clusters of coarse crystalline biotite which is accompanied by fine grained granoblastic qtz and locally by py (585,86 - 586,00 m).
Scattered poikiloblasts of il on average 0,15 cm across at: 584,72 - 586,71 m, 587,64 - 589,72 m, 590,00 - 613,50 m, 614,53 - 615,70 m, 615,80 - 619,90 m.

Strongly folded.
Nebulous contact.
613,50 - 613,57: schistose amphibolite
(meta-basalt flow)
chemical analysis
gn, fine crystalline, several elongated spots of py, sulphide amounts to 2 % by volume of the rock.
613,57 - 614,00 m: mt-bear. quartzite
(meta-chert)
gr, faint bluish tint within upper portion, massive, extremely fine grained, homogeneous distribution of submicroscopic mt-crystals. Knife sharp upper border, 65 . Diffuse lower contact.
615,70 - 615,80: mt-bear. quartzite
(meta-chert)
gr, with faint bluish tint, massive, extremely fine grained, low-grade dissemination of tiny mt crystals. Sharp, slightly sheared upper wall and nebulous lower contact.
618,21 - 618,30: schistose amphibolite
(meta-basalt flow)
similar: 613,50 - 613,57 m

620,60 - 643,63 amphibolite, schistose amphibolite
(meta-basalt flow)
gn, medium crystalline, in places crudely developed leopard texture, massive but also schistose, distinct lineation of lenselike amphibole crystal aggregates on average 0,1 cm in long dimension, the crystal aggregates are embedded in a matrix composed of qtz and fspar. Dissemination of tiny crystals of il and mt. Minor fault lines and tectonic zones (fault zones): 621,87 m 37°, 622,40 m 50°, 622,48 m 54°, 622,60 m 37°, 622,65 m 29°, 622,85 m 50°, 623,10 m 58°, 623,14 m 15°, 623,28 m 52°, 623,50 m 55°, 623,81 m 14°, 623,90 m 50°, 624,45 m 41°, 624,56 m 26°, 624,76 m 50°, 624,92 m 50°, 625,12 m 57°, 625,24 m 49°, 625,35 m 35°, 625,60 - 626,37 m 51 tectionic breccia with several tiny faults, 627,90 - 628,40 m 35 - 39 tectonic breccia with numerous minor faults, 628,05 m 37°, 628,10 m 39°, 628,22 m 45°, 628,50 m 45° 629,56 m 35°, 629,66 m 52°, 635,35 - 635,80 m faultzone with clusters of milky qtz several minor faults (38°, 24°, 44°), 636,78 - 637,32 m fault zone with clusters of milky qtz and several minor faults (44°, 19°, 17°), 637,37 m 49°, 637,90 m 44°, 638,18 m 44°, 639,05 m 28°, 639,42 - 639,51 m faultzone with milky qtz veining 86°, 639,90 m 47°, 640,58 m 39°, 640,68 m 68°, 640,75 m 40°, 641,12 m 49° several parallel minor fault, 641,30 m 45°, 642,60 m 25°, 642,68 m 50°.

Gradually passing into following amphibolite.

643,63 - 646,80 — schistose amphibolite
(meta-basalt flow)
gn, homogeneous, medium grained, distinct nematoblastic texture, amphibole forms acicular crystals on average 0,1 cm long which are concentrated within bundle-like crystal aggregates surrounded by qtz and fspar. Low-grade dissemination of po and some larger spots of py
Clusters of milky qtz: 646,00 - 646,42 m, amphibolite carries abundant epidote near to this zone.
Sharp deformed contact with following rock.

chmeical analysis
643,52 - 644,00 m
644,00 - 645,00 m
645,00 - 646,14 m
646,14 - 646,80 m

646,80 - 647,21 — amphibolite, mt-amphibolite, epidote-amphibole - qtz - fspar rock, amphibole - qtz - fspar rock
(meta-tuff)
gn, yellowishgr, gr, cm - to dm - layering with gradational boundaries between single bands, fine crystalline with amphibole forming scattered lense-shaped porphyroblasts max. 1,0 cm in long dimension. Discontinuous bands, lenses and tiny scattered crystals of py (upper portion) and py/po (lower portion), the amount of sulphides remains below 3 % by volume of the rock. Highgrade mt-mineralization between 646,95 - 646,98 m.
Layering: 646,83 m 51°, 646,90 m 64°, 647,15 m 58°, 647,21 m 60°.
Knife sharp lower contact.

647,21 - 649,56 — chlorite - amphibole schist
(meta-basalt flow)
gn to lightgn, homogeneous, medium crystalline, acicular crystals of amphibole which in most of the cases are oriented at random are scattered within a fine fibrous matrix dominated by chlorite.
Sharp contact with following rock.

649,65 - 658,76 — chlorite-bear. qtz - fspar-rich amphibolite
(meta-basalt flow)
lightgn, homogeneous but changes in grain size of amphibole, acicular crystals of amphibole form bundles of up to 0,5 cm in long dimension which form a framework of touching but not crosscutting crystals in one direction while they are parallel aligned in the other. The open spaces of the framework are filled by fine grained granublastic qtz and fspar. Minor faults at: 657,43 m 47°, 657,49 m 47°, 657,53 m 34°, 657,62 m 14°, 657,70 m 54°.

Gradually passing into following rock.

658,76 - 660,05 — chlorite - qtz - fspar-rich biotite - amphibole schist
(slightly altered meta-basalt flow)
A Biotitization
grgn with brown lenses and flakes, homogeneous distribution of acicular crystals of amphibole and flaky biotite within a fine crystalline groundmass composed of chlorite, qtz and fspar.
Knife sharp boundary.

660,05 - 660,18 — schistose amphibolite
(meta-basalt flow)
gr, extremely fine crystalline, nematoblastic texture.
Sharp contact.

660,18 - 660,35 — amphibole - qtz - fspar gneiss
(meta-tuff with abundant exhalative qtz)
gr with faint yellowish and greenish tint, crude development of cm-banding, within the upper halfpart of the layer mainly amphibole - qtz - feldspar rock with crudely developed layering, lower portion is dominated by fine - crystalline quartzite which is rich in py forming tiny isolated crystals which are concentrated within mm-thick bands and schlieren.
Layering: 52 °, 68 °.
Sharp contact.

660,35 - 661,00 — amphibole - qtz - fspar - epidote rock/gneiss
(meta-tuff of high spilitization)
gr with distinct yellowish staining, abundant green needles, distinct compositional layering which is due to the inhomogeneous distribution of amphibole, fine crystalline with porphyroblastic amphibole forming average 0,2 cm long needles. Sparse crystals of py. Strongly deformed upper contact and diffuse lower boundary.

661,10 - 663,93 — schistose amphibolite
(meta-basalt flow)
gn, fine crystalline, nematoblastic texture, schlieren texture or distinct banding within upper portion where epidote is highly enriched, elsewhere small amount in biotite which constitutes mm-thick discontinuous bands or spots being parallel aligned with the major foliation of the rock.
Schistosity/layering: 661,38 m 70 °, 661,90 m 16 °, 663,28 m 72 °.
Sharp sheared contact.

663,93 - 664,52 A

<u>biotite - amphibole - qtz - fspar schist</u>
(altered mafic volcanic, repetition by folding from 669,13 - 671,44 m)
gngr with brownish tint, porphyroblastic texture due to amphibole and biotite which form average 0,2 cm large crystals often with preferred orientation, fine grained qtz - fspar filling the interstices between the coloured minerals.
Schistosity: 43°.
Sharp tectonic contact.

664,52 - 669,13

<u>amphibolite</u>
(meta-basalt flow)
gn, medium crystalline, homogeneous amphibole tends to form lense-shaped crystal aggregates which are surrounded by fine-crystalline qtz and fspar. Closely spaced tiny faults and sometimes clusters of milky qtz from upper contact until 665,32 m and between 668,80 - 669,00 m
Tectonic contact.

669,13 - 671,44 A

<u>biotite - amphibole - qtz - fspar schist</u>
(metamor. mafic volcanogenic sediment)
similar: 663,93 - 664,52 m, biotite and amphibole with up to 1,0 cm in size near the upper as well as the lower contact of the layer.
Schistosity: 669,30 m 33°, 669,75 m 40°, 670,50 m 44°, 671,35 m 44°.
Gradually passing into following rock.

671,44 - 677,18

<u>schistose amphibolite</u>
(meta-basalt flow)
gn, fine crystalline, nematoblastic texture, sometimes clusters of biotite.
Sharp contact, fault line.

677,18 - 677,51

<u>biotite - amphibole -qtz - fspar schist</u>
(metamor. altered mafic volcanogenic sediment)
repetition by folding, same as: 669,13 - 671,44 m, strongly folded.
Schistosity: 56°.
Fault contact on both sides of the layer.

677,51 - 685,36

<u>schistose amphibolite</u>
(meta-basalt flow)
gn, fine crystalline, nematoblastic texture, homogeneous, strong small scale folding near upper boundary, strongly foliated and partly textonized within 678,24 - 678,52 m, here also cluster of milky qtz.
Sharp contact by fault.

Pelitic sediment: 685,36 - 688,05 m

685,36 - 688,05 — biotite - sericite schist
(meta-pelite)
gr with slight greenish tint, abundant brown flakes and some schlieren, scattered porphyroblasts of biotite on average 0,1 cm large and with random orientation are embedded in a fine crystalline groundmass composed of sericite and qtz, biotite crystals sometimes are concentrated within spots or schlieren.
Schistosity: 687,60 m 73 °.
Strongly folded lower contact.

Basalt flow deposits with minor interlayers of chemical precipitates: 688,05 - 799,00 m.

688,05 - 693,50 — schistose amphibolite
(metam-basalt flow)
gn, fine and medium crystalline lense-like aggregates of amphibole surrounded by fine grained granoblastic qtz and fspar.
Strongly folded from upper contact until 688,70 m and between 693,32 - 693,50 m.
Several tiny faults: 689,63 m 71°, 689,92 m 54°, 690,25 - 690,35 m 56°, 690,56 50°, 691,20 m 50°, 691,70 m 50°.
Contact with following amphibolite via 28 cm of milky qtz.

693,50 - 696,20 — schistose po-rich amphibolite
(meta-basalt flow)
gn, fine to medium crystalline, nematoblastic texture, spots and stringers and scattered tiny crystals of po from 693,33 m until lower contact, sulphide amounts on average to 5 % by volume of the rock.
Sharp lower contact.

chemical analysis
693,31 - 694,00 m
694,00 - 695,00 m
695,00 - 696,00 m

696,20 - 697.82 — po-rich amphibolite
(meta-tuff)
gn, medium to coarse crystalline, distinct porphyroblastic texture, acicular and lense-like crystals of amphibole between 0,15 and 1,2 cm in long dimension form a framework of touching sometimes crossing crystals, po, py and qtz either fill the open spaces of the framework or form mm-thick bands containing little amphibole and qtz, po is the dominated sulphide with py occurring only locally, the sulphides amount on average to 10 % by volume of the rock.
Sharp lower contact with clusters of milky qtz.

697,82 - 698,25 — schistose amphibolite
(meta-basalt flow)
gn, strongly foliated, some schlieren of chlorite.
Clusters of milky qtz between: 697,82 - 698,00 m.
Knife sharp contact, 52°.

698,25 - 698,51 — amphibole-bear. quartzite
(meta-chert)
gr with faint bluisk tint, homogeneous fine grained granoblastic qtz with porphyritic amphibole occurring as minor 0,1 cm large needles. Low-grade po mineralization within 2 cm from lower contact.
Knife sharp contact, 52°.

698,51 - 705,10 — schistose amphibolite
(meta-basalt flow)
gn, fine and medium crystalline, sometimes extremely strong foliated. Gradually passing into following amphibolite.

705,10 - 718,00 — schistose amphibolite
(meta-basalt flow)
gn, fine crystalline only locally medium crystalline, nematoblastic texture, homogeneous, augen of plagioclase between: 705,20 - 705,30 m and at several other locations but where they are widely spaced.
Sulphide mineralizations at several places:
706,55: nearly massive po as 2 cm thick band within amphibolite, po forms a low-grade dissemination within amphibolite close to the mineralization.
715,92 - 716,20 m: massive po with some acicular crystals of amphibole and qtz as fine crystalline groundmass.
Lower contact, 50 .
716,20 - 718,00: low-grade dissemination of po at several locations.

chemical analysis 716,20 - 717,00 m
chemical analysis 717,00 - 718,00 m
chemical analysis 715,92 - 716,20 m

718,00 - 799,00 — schistose amphibolite
(meta-basalt flow)
gn, fine to medium crystalline, often homogeneous, with some mm to cm-thick interlayers of qtz - biotite - amphibole or qtz-amphibole-chlorite rock. Poikiloblasts of il at several locations: 729,40 - 733,20 m, 738,50 - 740,20 m, 750,65 - 750,85 m, 797,40 m.
Clusters of qtz and carbonate: 739,20 m, 739,70 m, 770,40 - 770.70 m,775,40 - 776,61 m, 786,88 - 787,10 m, 787,40 - 787,90 m, 789,30 - 789,42 m.

Schistosity: 718,60 m 51°, 719,50 m 48°, 722,40 m 57°, 729,58 m 46°, 738,20 m 45°, 746,20 m 50°, 750,68 m 59°, 750,76 m 59°, 756,80 m 61°, 763,30 m 56°, 773,50 m 60°, 775,40 - 776,61 m ~~?~~, 773,50 m 60°, 778,50 m 57°, 783,10 m 60°.

763,25 - 763,36: epidote-bear. qtz - fspar amphibole gneiss (banded amphibolite)

799,00 m end of DDH.

by
Frank D. Priesemann
May 1987

DDH 2001 D

Angles for foliation and dip
(corrected by inclination of DDH)

m	Layering/foliation to core axis (degrees)	Inclination DDH (degrees)	Foliation dip (degrees)
8,75	39	22	73
9,00	0	22	68
9,47	38	22	74
10,20	41	22	71
10,65	¢	22	
10,90	35	22	77
11,50	44	22	68
12,40	38	22	74
13,40	38	22	74
14,60	40	22	72
16,20	38	23	75
17,20	38	23	75
18,20	0	23	67
19,10	9	23	76
19,80	14	23	81
20,70	9	23	76
21,70	9	23	76
22,32	40	23	73
23,11	41	23	72
23,85	56	23	67
24,40	56	23	67
25,58	47	24	77
26,15	20	24	86
26,90	7	24	73
27,30	13	24	79
27,80	22	24	88
28,85	14	24	80
29,28	¢	24	
29,80	9	24	75
30,20	18	24	84
30,80	27	24	87
31,30	30	24	74
32,30	52	24	62
33,10	45	24	79
33,85	38	24	76
34,78	38	24	76
35,00	38	25	77
36,90	50	25	65
37,50	68	25	47
38,22	61	25	54
39,40	61	25	54
40,40	56	25	59
41,90	41	25	74
42,50	45	25	70

m	Layering/foliation to core axis (degrees)	Inclination DDH (degrees)	Foliation dip (degrees)
43,50	50	25	65
44,10	$	25	
44,90	40	25	75
45,30	℄	26	
45,60	49	26	67
51,60	50	26	66
52,70	72	26	44
53,95	41	26	75
55,45	56	27	61
61,40	20	27	83
62,48	0	27	63
62,73	31	27	86
63,45	31	27	86
63,80	13	27	76
65,60	45	29	74
66,65	52	29	67
67,58	40	29	79
68,20	34	29	85
70,65	38	29	81
70,80	73	29	44
71,50	59	29	60
73,50	27	29	88
74,50	27	29	88
75,50	36	30	74
76,50	50	30	70
77,50	43	30	77
78,60	48	30	72
79,85	57	30	63
80,30	56	30	64
81,40	56	30	64
84,40	49	30	71
89,90	54	31	67
93,80	59	31	62/1
98,50	59	32	63/1
101,70	47	32	75
103,40	47	32	75
106,30	47	34	87
107,55	33	34	89
108,90	41	34	83
110,70	℄	34	
112,40	41	34	83
113,50	50	34	74
115,30	0	36	54
118,20	47	36	79
118,62	47	36	79
119,50	50	36	76
120,80	47	36	79
121,50	31	36	85
122,85	42	36	82
128,55	48	38	80
132,80	57	38	71/5
134,70	57	38	71/5
135,80	63	39	66/12

m	Layering/foliation to core axis (degrees)	Inclination DDH (degrees)	Foliation dip (degrees)
136,80	63	39	66/12
137,65	54	39	75/3
139,82	45	39	84
142,80	74	39	55/23
142,95	58	39	71/7
143,90	59	39	70/8
144,70	53	39	76/2
146,51	86	40	46/36
146,73	63	40	67/13
146,90	50	40	80/0
147,05	65	40	75/5
148,70	60	40	70/10
149,20	55	40	75/5
149,40	81	40	49/31
149,50	61	40	69/11
151,42	51	40	79/1
153,70	51	40	79/1
171,00	63	42	69/15
171,25	63	42	69/15
171,40	63	42	69/15
171,60	44	42	88/1
172,50	44	42	88/1
172,90	67	42	67/19
173,50	77	42	55/29
206,10	50	43	83/3
210,50	76	43	57/29
210,80	76	43	57/29
212,32	81	43	52/34
218,42	77	43	56/30
226,50-233,43	[illegible]		
241,97	81	46	55/37
247,70	[illegible]		
253,50	74	47	63/31
253,70	78	47	59/35
265,00	75	48	63/33
270,00	75	48	63/33
274,00	75	48	63/33
275,80	79	49	60/38
277,15	79	49	60/38
278,50	90	49	49/49
279,60	54	49	85/13
280,05	54	49	85/13
280,55	65	49	74/24
280,95	81	49	58/40
281,50	81	49	58/40
282,00	74	49	65/33
282,60	0	49	
283,00	23	49	
283,80	58	49	81/17
284,75	61	49	78/20
285,15	52	50	88/12
285,60	52	50	88/12

m	Layering foliation to core axis (degrees)	Inclination DDH (degrees)	Foliation dip (degrees)
286,15	67	50	73/27
286,70	70	50	70/30
289,90	90	50	50/50
290,60	86	50	54/46
291,80	68	50	72/28
300,00	83	50	57/43
302,00	83	50	57/43
304,00	83	50	57/43
324,35	50	52	88/12
324,43	72	52	70/34
325,16	52	52	90/14
329,30	69	52	73/31
331,80	60	52	82/22
334,80	81	52	61/43
338,65	73	52	69/35
351,45	77	52	65/39
355,15	54	53	89/17
377,82	86	55	59/51
387,70	86	55	59/51
388,80	20	55	55/75
389,35	62	55	83/27
396,45	81	56	65/47
398,40	86	56	60/52
399,75	69	56	77/35
410,25	79	57	68/46
417,42	71	57	76/38
420,30	38	57	71/5
427,50	43	58	75/11
428,30	47	58	79/15
429,62	56	58	88/24
430,35	59	58	89/27
431,35	43	58	75/11
431,80	[illegible]	58	
432,55	43	58	75/11
433,32	41	58	73/9
435,60	86	58	62/54
436,05	53	58	85/21
436,60	49	58	81/17
437,00	52	58	84/20
438,20	81	58	67/49
439,45	62	58	86/30
442,30	57	58	89/25
445,40	70	58	78/38
446,20	70	58	78/38
446,35	68	58	80/36
456,50	70	59	79/38
459,30	66	59	83/35
464,20	66	59	83/35
467,90	64	60	86/34
469,90	65	60	85/35
470,70	56	60	86/26
471,56	61	60	89/31
472,76	61	60	89/31

m	Layering foliation to core axis (degrees)	Inclination DDH (degrees)	Foliation dip (degrees)
475,45	85	60	65/55
476,20	81	60	69/51
478,00	49	60	79/19
478,85	56	60	86/26
482,11	63	60	87/33
483,11	68	60	82/38
484,55	54	60	84/24
487,80	50	61	79/21
490,50	60	61	89/31
492,48	60	61	89/31
494,50	60	61	89/31
496,44	49	61	78/26
614,00	65	65	90/42
646,83	51	67	74/28
646,90	64	67	87/41
647,15	58	67	81/35
647,21	60	67	83/37
660,20	60	67	83/37
661,38	70	67	87/47
661,90	16	67	51/39
663,28	72	67	85/49
664,25	43	67	66/20
669,30	33	67	56/10
669,75	40	67	73/17
670,50	44	67	77/21
671,35	44	67	77/21
677,30	56	68	82/34
687,60	73	68	85/51
698,25	52	68	74/30
698,51	52	68	74/30
716,20	50	69	71/29
718,20	51	69	72/30
719,50	48	69	69/27
722,40	57	69	78/36
729,58	46	69	67/25
738,20	45	69	66/24
746,20	50	69	71/29
750,68	59	69	80/38
750,76	59	69	80/38
756,80	61	70	81/41
763,30	56	70	76/36
773,50	60	70	80/40
775,40-776,81	?	70	
773,50	60	70	80/40
778,50	57	70	77/37
783,10	60	70	80/40

DDH 2001 D

Occurrences of sulphide

(m)

70,87 - 70,98	: sparse crystals of py
110,65 - 110,74	: low-grade diss. of po
113,01 - 113,12	: low-grade diss. of po and py
126,95 - 126,98	: low-grade diss. of po
127,55 - 128,40	: medium-grade diss. of po, 10 Vol-%
129,90 - 130,35	: lenses, spots, schlieren of po, 10 Vol-%
148,46 - 148,55	: some spots of py
158,41	: clusters of py
169,10 - 169,20	: sparse crystals of py
179,52 - 179,73	: low-grade diss. of py
187,64 - 187,77	: spotted py
187,84 - 188,00	: spotted py
193,72	: some spots of py
196,36	: some spots of py
305,16 - 305,32	: low-grade diss. of po
306,55	: sparse crystals of py
585,86 - 586,00	: spots of py
613,50 - 613,57	: elongated spots of py, 2 Vol-%
643,63 - 646,80	: low-grade diss. of po, some spots of py
646,80 - 647,21	: scattered crystals of py and po
693,33 - 696,20	: spots, stringers, tiny crystals of po, 5 Vol-%
696,20 - 697,82	: medium grade diss.,schlieren of po and py 10 Vol-%
698,48 - 698,52	: low grade diss of po
706,55 - 706,57	: massive po
715,92 - 716,20	: massive po
716,20 - 718,00	: low grade of po

DDH 2001 D

Occurrences of meta-chert

(m)

70,87 - 70,98	: sparse crystals of py
149,42 - 149,50	: high-grade conc. of py
171,15 - 171,39	: little sulphide min.
613,57 - 614,00	: finely dispersed mt
615,70 - 615,80	: finely dispersed mt
698,25 - 698,51	: low-grade po mineralization

DDH 2001 D

Occurrences of magnetite and/or ilmenite.

(m)	
70,83	: spot of il
70,98 - 72,47	: high-grade diss. of il
88,00 - 88,30	: spotted il
110,20 - 110,65	: spotted il
113,01 - 113,12	: submakroskopic crystals of mt
124,85 - 126,67	: spotted il
127,55 - 128,40	: scattered spots of il
129,90 - 130,35	: high conc. of microcryst. mt
130,35 - 130,72	: spotted il
130,95 - 131,30	: spotted il
146,49 - 147,58	: high-grade conc. of mt
148,26 - 148,46	: spots of il
148,46 - 148,55	: high-grade conc. of mt
158,45 - 159,70	: widely scattered spots of il
159,70 - 160,00	: finely dispersed mt
164,50	: finely dispersed mt
169,10 - 169,33	: high-grade diss. of mt
169,50	: finely dispersed mt
170,50 - 171,50	: scattered il
173,50 - 174,15	: scattered il
307,95 - 308,35	: tiny spots of il
584,72 - 586,71	: scattered il
587,64 - 589,72	: scattered il
590,00 - 613,50	: scattered il
613,57 - 614,00	: finely dispersed mt
614,53 - 615,70	: scattered il
615,70 - 615,80	: finely dispersed mt
615,80 - 619,90	: scattered il
620,60 - 643,63	: diss. of mt and il
646,95 - 646,98	: high-grade conc. of mt
729,40 - 733,20	: poikiloblasts of il
738,50 - 740,20	: poikiloblasts of il
750,65 - 750,85	: poikiloblasts of il
797,40	: poikiloblasts of il

DDH 2001 D

Chemical analysis of sulphide mineralizations

(m)	% Cu	% Zn	% S
126,95 - 127,00	0,14	0,03	5,54
127,53 - 127,75	0,26	0,01	9,42
127,75 - 128,52	0,08	0,02	2,36
129,88 - 130,00	0,10	0,01	8,69
149,42 - 149,50	0,02	0,01	19,5
613,50 - 613,57	0,07	0,02	2,52
643,52 - 644,00	0,01	0,03	-
644,00 - 645,00	-	0,03	-
645,00 - 646,00	-	0,03	-
646,00 - 646,14	-	0,02	-
646,14 - 646,80	-	0,03	-
646,80 - 647,20	0,04	0,02	2,87
693,31 - 694,00	0,02	0,03	2,39
694,00 - 695,00	0,01	0,04	3,40
695,00 - 696,00	-	0,03	0,21
696,00 - 697,00	-	0,03	3,63
697,00 - 697,82	0,02	0,03	5,93
706,54 - 706,66	0,03	0,02	11,2
715,92 - 716,20	0,01	0,01	28,6
716,20 - 717,00	-	0,03	0,53
717,00 - 718,00	-	0,03	0,69

Susceptibility of DDH 2001 D (sintrex SM-5)

Results in 10^{-3} cgs

40,00	0,0	84,00	0,1	123,00	0,0
41,00	0,1	85,00	0,1	124,00	0,1
42,00	0,1	86,00	0,0	125,00	0,1
43,00	0,1	87,00	0,0	126,00	0,1
44,00	0,1	88,00	0,0	126,50	0,1
45,00	0,1	89,00	0,0	126,90	0,4
46,00	0,0	91,00	0,0	127,50	0,1
47,00	0,1	92,00	0,0	127,70	0,1
48,00	0,1	93,00	0,0	127,90	0,6
49,00	0,1	94,00	0,0	128,20	0,5
50,00	0,1	95,00	0,1	128,40	0,2
51,00	0,0	96,00	0,0	128,80	0,1
52,00	0,0	97,00	0,1	129,50	0,0
53,00	0,0	98,00	0,1	129,95	6,8
54,00	0,0	99,00	0,0	130,05	88,4
55,00	0,1	100,00	0,0	130,30	11,4
56,00	0,0	101,00	0,0	130,50	0,0
57,00	0,0	102,00	0,0	131,00	0,1
58,00	0,0	103,00	0,0	132,00	0,0
59,00	0,0	104,00	0,0	133,00	0,0
60,00	0,0	105,00	0,0	134,00	0,0
61,00	0,0	106,00	0,0	135,00	0,0
62,00	0,0	107,00	0,0	136,00	0,0
63,00	0,0	108,00	0,0	137,00	0,0
64,00	0,0	109,00	0,0	138,00	0,0
65,00	0,0	110,00	0,1	139,00	0,0
66,00	0,0	110,50	0,2	140,00	0,1
67,00	0,0	110,70	1,0	141,00	0,1
68,00	0,0	110,90	0,1	142,00	0,1
69,00	0,0	111,50	0,1	143,00	0,1
70,00	0,1	111,90	0,1	144,00	0,1
70,90	0,1	112,00	0,1	145,00	0,1
71,00	0,1	112,50	0,0	146,00	0,2
71,50	0,1	112,90	0,0	146,53	14,0
71,90	0,4	113,05	23,4	146,73	7,3
72,10	0,3	113,20	0,0	146,80	47,0
72,35	0,0	113,40	0,0	146,95	35,0
72,50	0,0	113,80	0,0	147,05	55,0
73,00	0,0	113,95	1,9	147,20	25,0
74,00	0,1	114,00	0,1	147,30	47,0
75,00	0,2	114,50	0,0	147,50	29,0
76,00	0,1	114,90	0,1	147,65	0,0
77,00	0,0	115,50	0,1	148,00	0,0
78,00	0,1	116,00	0,0	148,40	0,2
79,00	0,1	117,00	0,0	148,50	31,0
80,00	0,0	118,00	0,1	148,90	0,0
81,00	0,0	119,00	0,1	149,10	0,0
82,00	0,0	120,00	0,0	149,35	0,0
83,00	0,1	121,00	0,0	149,45	0,2

150,00	0,1	185,00	0,1	241,00	0,0
151,00	0,0	186,00	0,1	242,00	0,0
152,00	0,0	187,00	0,1	243,00	0,0
153,00	0,0	188,00	0,1	244,00	0,0
154,00	0,0	189,00	0,1	245,00	0,0
155,00	0,0	190,00	0,0	246,00	0,0
155,30	0,2	191,00	0,0	247,00	0,0
156,00	0,0	192,00	0,0	248,00	0,0
157,00	0,0	193,00	0,0	249,00	0,0
158,00	0,0	194,00	0,0	250,00	0,0
159,00	0,0	195,00	0,0	251,00	0,0
159,30	0,2	196,00	0,0	252,00	0,0
159,60	0,2	197,00	0,0	253,00	0,0
159,90	0,4	198,00	0,0	254,00	0,0
160,00	0,1	199,00	0,0	255,00	0,0
160,50	0,3	200,00	0,0	256,00	0,0
161,00	0,1	201,00	0,0	257,00	0,0
161,50	0,2	202,00	0,1	258,00	0,0
162,00	0,1	203,00	0,1	259,00	0,0
162,50	0,2	204,00	0,0	260,00	0,0
163,00	0,2	205,00	0,0	260,80	0,1
163,50	0,3	206,00	0,0	261,00	0,1
164,00	0,1	207,00	0,0	262,00	0,1
164,50	1,3	208,00	0,0	263,00	0,0
165,00	0,6	209,00	0,0	264,00	0,0
165,50	3,2	210,00	0,0	265,00	0,0
166,00	2,9	211,00	0,0	266,00	0,0
166,50	1,5	212,00	0,0	267,00	0,1
167,00	1,8	213,00	0,0	268,00	0,1
167,50	0,9	214,00	0,0	269,00	0,1
168,00	0,1	215,00	0,0	270,00	0,0
168,50	0,2	216,00	0,0	271,00	0,1
169,00	2,0	217,00	0,0	272,00	0,0
169,30	38,5	218,00	0,0	273,00	0,1
169,50	1,1	219,00	0,0	274,00	0,1
169,75	0,3	220,00	0,0	274,50	0,0
170,00	0,1	221,00	0,0	275,00	0,0
170,50	0,4	222,00	0,0	276,00	0,0
170.70	0,6	223,00	0,0	277,00	0,1
170,90	1,0	224,00	0,0	278,00	0,0
171,00	19,5	225,00	0,0	279,00	0,0
171,25	0,4	226,00	0,0	280,00	0,0
171,55	0,2	227,00	0,0	281,00	0,0
172,00	0,0	228,00	0,0	282,00	0,0
173,00	0,1	229,00	0,0	283,00	0,0
174,00	0,1	230,00	0,0	284,00	0,0
175,00	0,1	231,00	0,0	285,00	0,1
176,00	0,0	232,00	0,0	285,50	0,0
177,00	0,1	233,00	0,0	286,00	0,0
178,00	0,0	234,00	0,0	286,70	0,4
179,00	0,1	235,00	0,0	287,10	0,1
180,00	0,0	236,00	0,0	288,20	1,3
181,00	0,0	237,00	0,0	288,65	0,4
182,00	0,1	238,00	0,0	289,05	0,6
183,00	0,1	239,00	0,0	289,50	0,5
184,00	0,2	240,00	0,0	289,95	0,3

290,00	0,1	624,00	6,2	650,00	0,2
290,50	0,4	624,30	3,9	651,00	0,1
291,00	0,3	624,75	2,4	652,00	0,0
291,50	0,5	625,00	1,5	653,00	0,0
292,00	0,0	625,50	0,2	654,00	0,1
292,50	0,1	626,15	0,3	655,00	0,0
293,00	0,2	626,60	0,3	656,00	0,1
293,50	0,1	627,10	0,4	657,00	0,0
294,00	0,1	627,60	0,7	658,00	0,0
294,50	0,2	628,10	1,0	659,00	0,0
295,00	0,2	628,65	0,5	660,00	0,4
295,50	0,3	629,10	0,2	660,30	0,2
296,00	0,5	629,60	0,0	660,50	0,5
296,50	0,3	629,90	0,6	660,70	1,5
297,00	0,1	630,00	0,5	660,90	2,4
297,50	0,2	630,60	0,2	661,05	0,4
298,00	0,2	631,00	0,2	661,50	0,0
298,50	0,0	631,50	0,6	662,00	0,0
299,00	0,3	632,00	0,5	663,00	0,0
299,50	0,2	632,50	0,7	664,00	0,0
300,00	0,0	633,00	0,7	665,00	0,0
301,00	0,0	633,50	0,6	666,00	0,1
302,00	0,0	634,00	0,5	667,00	0,0
303,00	0,0	634,50	0,3	668,00	0,0
304,00	0,0	635,00	0,7	669,00	0,0
305,00	0,0	635,50	2,1	669,25	0,2
305,20	0,2	636,00	0,2	670,00	0,0
306,00	0,0	636,50	0,9	671,00	0,0
until		637,00	1,4	672,00	0,0
613,00	0,0	637,50	0,4	673,00	0,0
613,50	7,1	638,00	0,6	674,00	0,0
613,60	6,1	638,50	1,5	675,00	0,0
613,70	2,1	639,00	2,0	677,00	0,0
613,80	3,4	639,50	1,1	678,00	0,0
613,95	7,0	640,00	0,1	679,00	0,0
614,10	1,5	640,50	0,4	680,00	0,0
614,50	0,3	641,00	0,6	681,00	0,0
615,00	0,0	641,50	0,1	682,00	0,0
615,50	0,0	642,00	0,0	683,00	0,0
615,72	0,9	642,50	0,0	684,00	0,0
616,00	0,1	643,00	0,0	685,00	0,0
617,00	0,2	643,50	0,1	686,00	0,0
618,00	0,3	643,85	0,1	687,00	0,0
618,21	2,5	644,25	0,5	688,00	0,0
618,70	0,5	644,50	0,8	689,00	0,0
618,95	1,2	644,80	0,9	690,00	0,0
619,30	0,7	645,10	0,6	691,00	0,1
619,60	0,4	645,40	0,6	692,00	0,0
619,95	0,1	645,80	0,6	692,95	0,2
620,00	0,0	646,50	0,7	693,05	0,3
621,50	0,0	646,75	0,3	693,30	0,0
621,90	0,9	646,95	39,0	693,50	2,9
622,20	0,5	647,10	3,7	693,70	4,5
622,50	0,5	647,40	0,1	693,90	0,5
622,95	0,6	648,00	0,1	694,15	0,6
623,50	1,2	649,00	0,1	694,45	1,8

694,80	0,3
695,05	0,6
695,40	0,1
695,90	0,2
696,05	24,6
696,35	1,6
696,52	2,5
696,80	29,6
696,95	15,6
697,05	50,6
697,20	2,3
697,30	0,8
697,50	0,7
697,70	0,5
698,05	0,2
698,30	0,2
698,43	0,5
698,80	0,4
699,10	0,6
699,50	0,7
699,80	0,1
700,00	0,0
701,00	0,0
702,00	0,0
703,00	0,0
704,00	0,0
705,00	0,0
705,95	0,2
706,05	0,4
706,35	0,3
706,55	4,0
706,90	0,1
707,00	0,0
708,00	0,0
709,00	0,0
710,00	0,0
711,00	0,0
712,00	0,0
713,00	0,0
714,00	0,0
715,00	0,0
715,80	0,0
715,95	0,2
716,05	0,1
717,00	0,0
718,00	0,0
719,00	0,0
until	
799,00	0,0

SVÅNI (E6) PROFILE

(north of GRØNBAKKEN)

southern part

starting point: 531200 6906300 UTM grid, zone 32

Top. map. 1519 1V SNØHETTA

Okt. 1984 / June 1985

By: Dr. F.D. Priesemann

0.00 - 2.00 : Amphibole schist
(meta - basalt, flow)
gn, fine - to medium-grained with minor intercalations being coarse - grained, granoblastic - to nematoblastic - texture, crude development of layering due to changes in either amphibole or plagioclase content, coarse - grained layers with leopard - texture similar 0.00 - 3.50 m (north).
Sharp hanging wall.
Dip 43° SW at 2.00 m.

2.00 - 2.20 : Magnetite - quartzite
(oxide facies iron formation)
darkgr with slightly bluish tint, dense quartz with high-grade dissemination of magnetite which sometimes constitues an indistict layering.
Sharp hanging wall.

2.20 - 4.70 : Calcareous plagioclase amphibolite
(meta - basalt, flow)
grgn, medium - grained, crude development of leopard - texture due to scattered prisms of amphibole mainly of 0.5 cm length which are randomly oriented, idiomorphic crystals of carbonate being equally distributed.
Gradual hanging wall.

C

4.70 - 30.10 : Amphibole schist
(meta - basalt, flow, crudely developed pillow - structure)
gn, mainly medium - grained, sometimes thin interlayers of plagioclase amphibolite, rare bands or flasers of carbonate, within hanging portion some stringers of biotite often accompanied by carbonate, rare spots of py, somewhat higher pyrite amount (1 Vol.-%) within 19.50 - 20.00 m, medium - grade dissemination of mt within 17.00 - 17.02 m.
Gradual hanging wall.
Dip 39° SW at 12.50 m, dip 30° SW at 14.00 m.

Sample:SNØ-19
Thinsection
whole rock
analysis

30.10 - 39.00 : Biotite bearing epidote - plagioclase - qtz - chlorite-amphibolite

(meta - basalt, flow, weakly altered)

grgn, coarse - grained, leopard texture, lenticular chlorite - amphibole multi - crystal - aggregates of average 1.2 cm length and 0.2 cm width surrounded by a matrix of epidote-amphibole - plagioclase - qtz.

Sharp hanging wall.

Dip 47° SW at 33.50 m.

39.00 - 45.30 : Slightly calcareous amphibole schist

(meta - basalt, flow, crudely developed pillowstructure)

gn, medium - grained with sections more coarse - grained, m- alternation of amphibole schist and plagioclase-amphibole schist mainly with gradual borders between, sometimes carbonate veining, crosscutting features of qtz - carbonate - epidote of cm - thickness rarely developed.

Sharp hanging wall.

Dip 40° SW at 43.60 m.

45.30 - 55.50 : Slightly calcareous biotite bearing epidote - plagioclase - qtz - chlorite amphibolite

Sample:SNØ-20
Thinsection
whole rock
analysis

(meta - basalt, flow)

same as: 30.10 - 39.00 m (south), contact to hanging mica - schist with low - grade dissemination of po and py.

Sharp hanging wall.

Dip 45° SW at 48.70 m.

55.50 - 57.15 : Sericite bearing fspar - biotite - qtz rock / schist

True thickness
50 cm
Sample SNØ-01
SN 531225
6906243
Thinsection

(meta - pelite)

browngn, fine - grained, lepidoblastic texture, scattered crystals of slightly porphyric biotite which show a preferred orientation, discontinuous laminae of fine - crystalline magnetite sporadically present, interlayers of dense quartzite (oxide facies iron formation) which carries tiny flakes of biotite and subordinate magnetite, latter mainly is concentrated at the contacts to mica schist, very rare spots of py and / or po.

Sharp hanging wall.
Dip 45° SW at 55.50 m.

57.15 - 59.70 : Slightly calcareous biotite bearing epidote - plagioclase - qtz - chlorite amphibolite

Sample:SNØ-21
Thinsection
whole rock
analysis
A

(meta - basalt, flow)
same as: 30.10 - 39.00 m (south), at hanging wall slightly increased in biotite, some spots of py.
Sharp hanging wall.

59.70 - 59.85 : Sericite - biotite bearing pyrite - qtz rock

True thickness
10 cm
Sample:SNØ-02
SN 531225
6906240 chem.
analysis

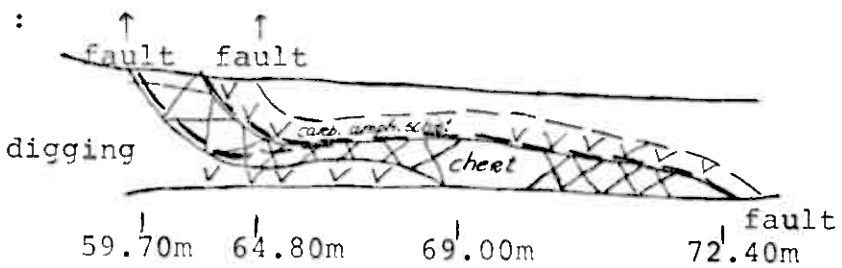
(metamorphosed sulphide facies exhalite)
medium - grained, granoblastic texture, high - grade dissemination of pyrite, mainly idiomorphic crystals of 0.1 cm size, phyllosilicates show a preferred orientation and cause a slight schistosity.
Sharp hanging wall.

59.85 - 63.90 : Amphibole bearing magnetite quartzite

True thickness
2.40 m

(oxide facies iron formation)
darkgr with slightly bluish tint, fine - grained, dense mt - quartzite develops a crude cm - to dm - layering which is caused by modal changes of magnetite, tiny bands of amphibole - rich mt - quartzite are interlaminated with amphibole forming coarse needles which always are parallel the compositional banding.
Sharp hanging wall.
Dip 42° SW at 61.40 m.

64.80 - 73.30 :



73.30 - 76.60 : Sericite bearing amphibole - qtz fspar rock
(meta - basic andesite)
greenishgr, porphyroblastic texture, slightly porphyric amphibole needles of max. 0.4 cm length randomly oriented.
Gradual hanging wall.
Dip 27° W at 74.90 m.

Sample:SNØ-22
Thinsection
whole rock
analysis

76.60 - 91.00 : Amphibole schist
(meta - basalt, flow, distinct pillow - structure)
gn, fine - towards medium - grained, slight changes in the mode of plagioclase, sometimes irregular carbonate accompanied by biotite.
Sharp hanging wall.
126/45° SW at 89.30 m.

Sample:SNØ-23
Thinsection
whole rock
analysis

91.00 - 91.15 : Amphibole bearing magnetite - quartzite
(oxide facies iron formation)
bluish/black, extremely fine - grained, dense mt - quartzite interlamianted by amphibole - rich mt - quartzite and flasers of milky - white qtz which in places forms web - like features supposely as a result of deformation.
Sharp hanging wall.
Dip 47° SW at 91.00 m.

True thickness
10 cm
Sample:SNØ-03
SN 531175
6906195 Thin-
and polished
section

91.15 - 93.00 : Epidote bearing biotite - amphibole - qtz - plagioclase rock / gneiss
(meta - basic andesite)
whitegr, crude lamination due to slightly porphyric amphibole and biotite which mainly are aligned with the major plane of foliation and tend to form discrete layers of mm- thickness or trains of granules, amphibole prisms are on average 0.3 cm long and form thin needles, biotite sporadically displays crystals aggregates (cluts) which crosscut the lamination.
Sharp hanging wall.

Sample:SNØ-24
Thinsection
whole rock
analysis

93.00 - 101.60: Carbonate bearing plagioclase - amphibole schist
(meta - basalt, flow)
gn, medium - grained, nematoblastic texture, rare spots of carbonate equally distributed, sometimes carbonate veining. Sharp hanging wall.

Sample:SNØ-25
Thinsection
whole rock
analysis

101.60 - 102.70 : <u>High calcareous biotite - sericite - amphibole - qtz - plagioclase schist</u>

(meta - basic tuff or tuffite)

grgn, mainly coarse - grained, porphyroblastic texture, crudely mm- to cm- layered due to modal changes from Fe - Mg silicate domination to quite felsic composition, mainly gradual changes, biotite often forms crystal aggregates which may be aligned with the compositional banding, amphibole characteristically develops porphyroblasts of max. 1 cm length which are oriented at random, spotted carbonate but also mm - bands, lenses and stringers.

C

Sharp hanging wall.

102.70 - 107.00 : <u>Biotite bearing - qtz - plagioclase - amphibole schist</u>

(meta - basalt, supp. lapilli tuff)

grgn to greenishgr, medium - grained, spotted appearence, scattered lenticular particles of qtz - plagioclase and plagioclase on average 0.3 cm in diameter, small amount of lense - shaped clasts of amphibolite with nematoblastic texture grading 0.5 to 2.2 cm in length and 0.2 to 0.4 cm in width, lapilli strongly deformed and flattened always being parallel to the major plane of foliation, matrix is composed of plagioclase and amphibole, latter forms 0.4 cm long discrete needles which are oriented at random as well as crystal aggregates of cm - size which often crosscut the schistosity, the hanging portion of the layer is characterized by the random occurrence of extremely sheered and flattened fragments of amphibole bear. qtz - plagioclase which grade from 3 x 0.4 cm to 13 x 1.5 cm in size, the clasts are embedded in a matrix of equal composition which here shows a distinct lepidoblastic texture.

Sharp hanging wall.

107.00 - 108.50 : <u>Amphibole schist</u>

(meta - basalt, flow)

gn, fine - to medium - grained, distinct nematoblastic texture.

Sharp hanging wall.

Dip 53° SW at 107.00 m.

108.50 - 135.00 : Biotite bearing plagioclase - amphibole rock / gneiss
(meta - basaltic pyroclastic rock or basic volcanic debris flow)

Sample:SNØ-26
Thinsection
whole rock analysis

grgn, grainy appearence, scattered highly deformed and streched fragments of basaltic composition grading 5.5 x 1.0 cm to 0.5 x 0.2 cm in size, abundant subrounded to slightly deformed fragments of vesicular basalt (scoria?) (pores being filled by plagioclase) which may reach sizes of 20 x 7 cm, fragments are embedded in a matrix very similar to that of lapilli tuff of 102.70 - 107.00 m. Hanging wall bedding fault line.

135.00 - 144.00 : Amphibole - qtz - fspar rock / gneiss
(meta - leucobasalt, tuff, may be intermittent flows, beds of basaltic pyroclastic rock or basic volcanie debris flow) (leucobasalt same as: TVN IV 37)

Sample:SNØ-04
SN531220 690178
Thinsection
whole rock analyses

gngr, medium - grained with intersections being fine - grained, some layers of coarse - grained appearence, predominatly with lepidoblastic texture, cm- to dm- layering with superimposed mm- to cm- lamination, banding is caused by textural and compositional changes which take place slowly but may too happen in advance and variations in grainsize, amphibole forms slightly porphyric needles of max. 0.4 cm length, they may be oriented at random but normally are subparallel to the banding of the rock, fine - grained beds often show a distinct rusty staining which points to a slight sulphide mineralization, rare interlayers of basaltic lapilli tuff (same as: 102.70 - 107.00 m) which always have sharp contacts to the surrounding leucobasalt, section starts with a fragment horizon of 40 cm thickness which is characterized, by scattered, highly deformed and streched qtz and qtz - fspar clasts of 10 x 1.5 cm size being embedded in a matrix of amphibole - qtz - plagioclase with the same characteristics as being found in the following banded rock.
Sharp hanging wall, strongly deformed schist (see below) 160/35° SW at 135.00 m, dip 46° SW at 140.00 m.

144.00 - 144.10 : Qtz - chlorite - biotite bearing sericite schist
(strongly deformed meta - pelite) (similar sericite bearing qtz - fspar - chlorite - biotite schist of NIVÅ IV Tverrfjell - mine)
gr to browngr, wavy - lenticular structure due to tendency of qtz to form lense - shaped crystal - aggregates wavy sericitic surfaces being slickensided.
Sharp wavy hanging contact.

144.10 - 145.60 : Calcareous chlorite bearing amphibole - biotite - sericite schist
(tuffaceous meta - pelite)
gr, porphyroblastic texture, porphyroblasts of amphibole and biotite are scattered through a fine - crystalline matrix of qtz and sericite, amphibole has a tendency to form lense - shaped crystal - aggregates which are on average 0.5 cm in diameter and are oriented at random, spotted carbonate, crystals show idiomorphic outlines.
Gradual hanging wall.

C

145.60 - 147.60 : Biotite - amphibole - chlorite - qtz - fspar rock/gneiss
(meta tuffite)
gr, porphyroblastic - to lepidoblastic texture, crude lamination caused by the tendency of biotite and amphibole to form discontinuous trains of granules, porphyroblasts of amphibole mainly parallel to the major plane of foliation but sometimes oriented at random, prisms on average 1.0 cm long often standing alone but sometimes closely joined by coarse crystals or crystal-aggregates of biotite.
Gradual hanging wall.

Sample: SNØ-05
SN 531220 690176
Thinsection
whole rock
analysis

147.60 - 150.10 : Calcareous chlorite bearing amphibole - biotite - sericite schist
(tuffaceous meta - pelite)
same as: 144.10 - 145.60 m (south)
Gradual hanging wall.
148/42° SW at 150.00 m.

150.10 - 150.40 : Quartz - sericite schist
(meta - pelite)
gr, fine - grained, wavy - lenticular structure, micaceous streaks surround lense - shaped nodules of qtz.
Gradual hanging wall.
Dip 43° SW at 151.30 m.

150.40 - 152.30 : High calcareous biotite - sericite schist
(meta - pelite)
C
gr, porphyroblastic texture, scattered porphyroblasts of biotite randomly oriented cause spotted appearence of the rock, carbonate as idiomorphic crystals equally distributed, rare veinlets of qtz accompanied by carbonate.
Sharp hanging wall.
Dip 52° SW at 152.30 m.

152.30 - 152.42 : Micaceous quartzite
(meta - arenite)
gr, fine - grained, scattered streaks of sericite surrounded by equigramular qtz, rare flakes of parallel biotite which in places develop a crude cm - layering.
Sharp hanging wall.

152.42 - 155.10 : Biotite - sericite schist
(meta - pelite)
gr, porphyroblastic texture, in parts laminated, scattered porphyroblasts of biotite in places crystal aggregates always being oriented at random, cause spotted appearence of the rock.
Gradual hanging wall.

Sample:SNØ-32
Thinsection
whole rock
analysis

155.10 - 155.90 : Quartz - sericite schist
(meta - pelite)
same as: 150.10 - 150.40 m (south)
Sharp hanging wall.
Dip 51° SW at 155.90 m.

155.90 - 156.25 : <u>High calcareous biotite - sericite schist</u>
(meta - pelite)
C same as: 150.40 - 152.30 m (south)
Gradual hanging wall.

156.25 - 156.40 : <u>Biotite - fspar - qtz rock</u>
(supp. meta - qtz - keratophyr)
gr, with in places greenish or brownish tint, porphyroblastic texture, crude lamination due to parallel micaceous streaks composed of porphyric crystals of biotite, subordinate pyrite forming tiny crystals being equally distributed.
Sharp hanging wall.
Dip 50° SW at 156.30 m.

156.40 - 157.10 : <u>Slightly calcareous biotite - sericite schist</u>
(meta - pelite)
gr, fine - grained, crude development of lamination due to parallel streaks of slightly porphyric biotite.
Sharp hanging wall which in places containes sheared meta - pelite which is very similar the sericite schist from 144.00 - 144.10 m (south).

157.10 - 160.10 : <u>High calcareous epidote - biotite - chlorite bearing amphibole - plagioclase - quartz gneiss</u> (banded amphibolite)
(meta - basic tuff or tuffite with cherty interlayers)
gr, greenishgr, gn, porphyroblastic and lepidoblastic texture, distinctly mm - to cm - layered, caused by compositional and textural changes which mainly happen in advance, alternate qtz - plag. - chlorite - amphibole, amphibole - plag. - qtz, epidote - plag. - qtz, biotite and carbonate bands or lamina, distinct porphyroblasts of amphibole max. 3.0 cm in length throughout, prisms are oriented at random but sometimes parallel the layering of the rock, carbonate rarely forms slightly porphyric idiomorphic crystals which equally are distributed, within hanging portion the mode of amphibole gets so abundant as to form plag. amphibole schist which leds to overlying amphibole schist.

Sample: SNØ-33
Thinsection
whole rock
analysis
(taken near footwall)

Gradual hanging wall.
157/50° SW at 157.10 m, dip 49° SW at 159.00 m.

160.10 - 171.00 : Amphibole schist
(meta - basalt, flow)
gn, fine - grained, nematoblastic texture.
Sharp hanging wall.

171.00 - 179.60 : Slightly calcareous biotite bearing epidote - qtz - plagioclase - amphibole schist
(meta - basalt, flow may be pyroclastite)
slightly grgn, medium - grained, nebuous structure, laminated but often with flaser structure, nematoblastic texture, epidote - qtz - plagioclase as well as biotite carbonate form streaks and sporadically cm - thick layers which in places constitute an open framework filled by amphibole schist, amphibole normally gets distinctly coarser grained at the borders to epidote - qtz - plagioclase the prisms often prolonging for several mm into the felsic material.
Sharp hanging wall.
Dip 43° SW at 175.00 m.

Epidote
Partly C

179.60 - 181.00 : Biotite - sericite quartzite
(meta - arenite)
whitegr, laminated, alternate phyllosilicate layers and nearly pure qtz bands, strongly foliated.
Sharp hanging wall.
Dip 52° SW at 179.60 m.

181.00 - 187.00 : Slightly calcareous biotite - sericite schist
(meta - pelite)
gr, slight flaser - structure due to accretion of qtz into mm- to cm- large lenses and flasers, scattered porphyroblasts of biotite oriented at random cause spotted appearence of the rock, subordinate amount of garnets being 0.2 cm in diameter within footwall portion.

187.00 - 203.00 : No outcrop

203.00 - 207.50 : Garnet - biotite bearing sericite - amphibole - fspar qtz gneiss

(meta - qtz - keratophyr)

gr, porphyroblastic texture, cm- to dm- layering with superimposed mm- to cm- lamination, banding is caused mainly by textural changes due to the crystallization status of amphibole but too results from compositional changes and futher is due to variations in the degree of foliation, amphibole is the most prominant mineral and occurs as idioblasts being tabular and prismatic that may reach 3 cm lengths, the crystals are oriented at random and form and open framework of touching and crosscutting needles, they sometimes are concentrated in distinct layers to form trains of granules, only sometimes the prisms get oriented parallel to the layering of the rock, biotite mainly forms individual laminae which are discontinuous, it sporadically accompanies amphibole as single crystals, qtz and plagioclase and sericite form a fine - grained equi - granular mosaic, they in places form discrete layers which look as being of clastic sedimentary origin, the meta - qtz-keratophyr gradually passes into calcareous epidote - biotite bearing amphibole - fspar qtz gneiss which is similar to the banded amphibolite at hanging wall. Gradual hanging wall.

Sample:SNØ-34
Thinsection
whole rock
analysis

207.50 - 209.00 : High calcareous amphibole bearing biotite - chlorite - fspar - qtz gneiss

(metamorphosed tuff or tuffite sequence, alternate felsic and basic to intermediate tuff or tuffite layers)

(comparable with sample TVN IV 11, 11 a, 11 b, 13, 13 b, 14, 14 b which immediatley underly ore zone IV)

gr, darkgr, gnbrown, slightly yellowish, idstinctly cm - layered with occasional mm - lamination being superimposed, compositional and thus textural banding, alternate high calcareous biotite - chlorite, calcarous chlorite - biotite - fspar - qtz and phyllosilicate - carbonate bearing fspar - qtz layers which mainly have sharp contacts, some streaks of carbonate, biotite and chlor-

Partly A/C

Sample:SNØ-07
SN 531200 6906135
Thinsection

ite form slightly porphyric flakes which always are parallel to the banding of the rock, carbonate occurs as scattered idioblasts which in places form trains of granules, carbonate has a clear tendency to accompany the phyllosilicates, tiny spots of sulphide are present throughout.
Gradual hanging wall.

209.00 - 230.00 : Calcareous to high calcareous epidote - biotite - chlorite - plagioclase - amphibole - qtz gneiss (banded amphibolite)

C

(meta - basic tuff or tuffite with cherty layers) whitegr to gn or grgn, medium - to coarse-grained, granoblastic - to porphyroblastic or lepidoblastic texture, cm- to dm layering, alternate carbonate, amphibole, plag. - qtz - amphibole, chlorite - amphibole, biotite, amphibole bear. plagioclase - qtz and qtz (chert) bands, amphibole is the most prominant mineral as it forms porphyroblasts grading from 0.4 cm to 3.0 cm in length, the prisms are oriented at random but sometimes parallel the layering, spherolites are found being continuous with the compositional banding, biotite is slighty porphyric and randomly is oriented and tends to from trains of granules, carbonate is found as idiomorphic crystals within all types of layers but forms too discrete bands or lenses which sometimes are discordant to the layering, near hanging contact the banded amphibolite often gets interlayered by dm - thick bands of plagioclase - amphibole schist (intermittent basalt flows), a discontinuous low - grade py mineralization of 50 cm thickness is situated close to the lying amphibole schist, the pyrite dissemination occurs within a biotite - fspar - quartz gneiss (cherty meta - keratophyr) which shows a distinct lamination caused by a rhythmic repetition of mm - thick layers of biotite which often are discontinuous, biotite forms besides that porphyroblasts which randomly are oriented. Sharp hanging wall, develops inplaces a bedding fault line.

Sample:SNØ-35
Thinsection
whole rock
analysis

137/48° SW at 211.00 m, 133/51° SW at 228.00 m.

230.00 - 278.00 : Amphibole schist to plagioclase - amphibole schist
(meta - basalt, flow, crude development of pillow structure)
gn to grgn, fine - grained with sections being more medium - grained, here mainly plag. - amphibole schist, often crosscut by veinlets of epidote and carbonate, some dm - interlayers of calcareous epidote - amphibole - chlorite - biotite schist, gn, brown, gr, cm-layered, alternate fine - grained amphibole bands and layers composed of carbonate - chlorite - amphibole and biotite which always are medium crystalline; sporadically interlayered sections of biotite - amphibole schist, gn, fine - fibrous amphibole, discontinuously banded by mm - layers of coarse - crystalline biotite which sometimes are composed to a web - like feature; near hanging contact meta - basalt gradually changes into amphibole - plagioclase - qtz schist/rock leucobasalt, flow, grgn, medium - grained, porphyroblastic texture, slightly porphyric amphibole prisms max. 0.4 cm long are randomly oriented.

Sample: SNØ-27
Thinsection
whole rock
analysis

Sample: SNØ-28
Thinsection
whole rock
analysis

257.00 - 257.20: magnetite banded quartzite (meta - chert), fine - grained, cm - layers of qtz in alternation with mm - bands or streaks of mt.
Sharp hanging wall, slightly tectonic.
131/44° SW at 230.00 m, 174/40° SW at 238.00 m, 159/55° SW at 275.00 m.

278.00 - 282.00 : Biotite - sericite schist
(meta - pelite)
gr, porphyric biotite as cross - mica cause spotted appearence of the rock, some cm - thick discontinuous layers of sericite - quartzite intercalated.
Gradual hanging wall.
160/59° SW at 278.00 m.

282.00 - 290.00 : Slightly calcareous chlorite bearing biotite - sericite-epidote - qtz - fspar - amphibole schist / gneiss
(meta - basalt, flow may be pyroclastite)
similar: 171.00 - 179.60 m (south), epidote too forms discrete bands, flasers and lenses which often cross-

High epidote

cut schistosity.
Gradual hanging wall.

290.00 - 334.00 : Calcareous to high calcareous epidote - biotite - chlorite - plagioclase - amphibole - qtz gneiss
(banded amphibolite)
(meta - basic tuff or tuffite with cherty interlayers)
same as: 209.00 - 230.00 m (south), between 331.50 - 333.50 m several interlayers of epidote - amphibole - quartzite (cherty tuff), layered rock with alternate qtz, epidote - qtz and amphibole or amphibole - qtz bands.
Sharp hanging wall, strongly foliated, supp. bedding fault line.
$174/32^{o}$ SW at 291.00 m, $157/34^{o}$ SW at 232.00 m.

C
High epidote
Sample:SNØ-36
Thinsection
whole rock
analysis
(middel portion)

334.00 - 339.00 : Schistose amphibolite to plagioclase-amphibole schist
(meta amygdaloid basalt)
gn, nematoblastic texture, cm - large deformed and streched plagioclase crystals which equally are distributed.
Sharp hanging wall.
$156/38^{o}$ SW at 334.00 m.

339.00 - 340.60 : Calcareous epidote - plagioclase - qtz - amphibole schist
(meta - basalt, supp. pyroclastite, stressed (?))
gn to grgn, medium - grained, crude development of layering, latter possibly due to stress, alternate carbonate, epidote - amphibole and epidote - amphibole - plagioclase - qtz bands which often are discontinuous, amphibole forms prisms on average 0.7 cm long which mainly are aligned with the layering / foliation.
Sharp hanging wall.

High epidote

340.60 - 343.00 : Plagioclase amphibolite
(meta - basalt, flow)
grgn, medium - grained, porphyroblastic - texture, prismatic amphibole on average 0.5 cm long always randomly oriented.

Sample:SNØ-29
Thinsection
whole rock
analysis

343.00 - 377.00 : No outcrop

377.00 - 379.00 : Amphibole schist
(meta - basalt, flow)
gn, fine - grained, nematoblastic texture, some mm-flasers or laminae of carbonate which always are conformable with the schistosity, abundant irregular disconformable bands and lamina of biotite - chlorite or epidote - plagioclase - amphibole which always carry prismatic amphibole on average 0.4 cm long.
140/48° SW at 378.00 m.

379.00 - 387.50 : No outcrop

378.50 - 400.20 : Amphibole schist
(meta - basalt, flow, partly may be pyroclastite)

Sample:SNØ-30
Thinsection
whole rock
analysis

Spoadically
high epidote

gn, fine - grained, nematoblastic texture, some flasers or laminae of epidote and/or carbonate often conformable but sometimes crosscutting schistosity, sporadically embedded crystal aggregates of biotite which often are accompanied by epidote, sometimes cm - or even dm - thick sections which are distinctly layered, banding consists of alternate epidote or epidote - amphibole, biotite and carbonaceous plagioclase - qtz - amphibole layers, banded sections always are medium - grained and show a porphyroblastic texture with amphibole - prisms being randomly oriented.
158/43° SW at 395.50 m.

400.20 - 402.00 : Epidote - plagioclase - amphibole - qtz gneiss (banded amphibolite)
(meta - basic tuff or tuffite)

High epidote

grgn, gr, lightgn, medium - grained, porphyroblastic texture, cm - layered, alternate amphibole, epidote - plagioclase - amphibole - qtz and carbonate bear. epidote - amphibole bands, typical porphyric amphibole which randomly is oriented.

402.00 - 407.00 : No outcrop.

407.00 - 421.00 : Amphibole schist
(meta - basalt, flow)
same as: 387.50 - 400.20 m (south),
151/45° SW at 408.00 m, 128/53° SW at 417.00 m,
130/54° SW at 420.00 m.

421.00 - 436.00 : No outcrop

436.00 - 452.00 : Slightly calcareous amphibole schist
(meta - basalt, flow)
same as: 387.50 - 400.20 m, spotted carbonate within some sections.
145/51° SW at 438.00 m.

471.00 - 473.00 : Calcareous epidote - biotite - chlorite - plagioclase - amphibole - qtz gneiss (banded amphibolite)
C (meta - basic tuff or tuffite with cherty interlayers)
same as: 209.00 - 230.00 m.
129/42° SW at 453.00 m.

473.00 m end of profile

SVÅNI (E6) PROFILE

(north of GRØNBAKKEN)

southern part

starting point: 531200 6906300 UTM grid, zone 32

Top. map. 1519 lV SNØHETTA

Okt. 1984 / June 1985

By: Dr. F.D. Priesemann

0.00 - 2.00 : Amphibole schist

(meta - basalt, flow)

gn, fine - to medium-grained with minor intercalations being coarse - grained, granoblastic - to nematoblastic - texture, crude development of layering due to changes in either amphibole or plagioclase content, coarse - grained layers with leopard - texture similar 0.00 - 3.50 m (north).

Sharp hanging wall.

Dip 43° SW at 2.00 m.

2.00 - 2.20 : Magnetite - quartzite

(oxide facies iron formation)

darkgr with slightly bluish tint, dense quartz with high-grade dissemination of magnetite which sometimes constitues an indistict layering.

Sharp hanging wall.

2.20 - 4.70 : Calcareous plagioclase amphibolite

(meta - basalt, flow)

grgn, medium - grained, crude development of leopard - texture due to scattered prisms of amphibole mainly of 0.5 cm length which are randomly oriented, idiomorphic crystals of carbonate being equally distributed.

C

Gradual hanging wall.

4.70 - 30.10 : Amphibole schist

(meta - basalt, flow, crudely developed pillow - structure)

gn, mainly medium - grained, sometimes thin interlayers of plagioclase amphibolite, rare bands or flasers of carbonate, within hanging portion some stringers of biotite often accompanied by carbonate, rare spots of py, somewhat higher pyrite amount (1 Vol.-%) within 19.50 - 20.00 m, medium - grade dissemination of mt within 17.00 - 17.02 m.

Sample:SNØ-19
Thinsection
whole rock
analysis

Gradual hanging wall.

Dip 39° SW at 12.50 m, dip 30° SW at 14.00 m.

30.10 - 39.00 : Biotite bearing epidote - plagioclase - qtz - chlorite-amphibolite

(meta - basalt, flow, weakly altered)

grgn, coarse - grained, leopard texture, lenticular chlorite - amphibole multi - crystal - aggregates of average 1.2 cm length and 0.2 cm width surrounded by a matrix of epidote-amphibole - plagioclase - qtz.

Sharp hanging wall.

Dip 47° SW at 33.50 m.

39.00 - 45.30 : Slightly calcareous amphibole schist

(meta - basalt, flow, crudely developed pillowstructure)

gn, medium - grained with sections more coarse - grained, m- alternation of amphibole schist and plagioclase-amphibole schist mainly with gradual borders between, sometimes carbonate veining, crosscutting features of qtz - carbonate - epidote of cm - thickness rarely developed.

Sharp hanging wall.

Dip 40° SW at 43.60 m.

45.30 - 55.50 : Slightly calcareous biotite bearing epidote - plagio - clase - qtz - chlorite amphibolite

Sample:SNØ-20
Thinsection
whole rock
analysis

(meta - basalt, flow)

same as: 30.10 - 39.00 m (south), contact to hanging mica - schist with low - grade dissemination of po and py.

Sharp hanging wall.

Dip 45° SW at 48.70 m.

55.50 - 57.15 : Sericite bearing fspar - biotite - qtz rock / schist

True thickness
50 cm
Sample SNØ-01
SN 531225
6906243
Thinsection

(meta - pelite)

browngn, fine - grained, lepidoblastic texture, scattered crystals of slightly porphyric biotite which show a preferred orientation, discontinuous laminae of fine - crystalline magnetite sporadically present, interlayers of dense quartzite (oxide facies iron formation) which carries tiny flakes of biotite and subordinate magnetite, latter mainly is concentrated at the contacts to mica schist, very rare spots of py and / or po.

Sharp hanging wall.
Dip 45° SW at 55.50 m.

57.15 - 59.70 : Slightly calcareous biotite bearing epidote - plagioclase - qtz - chlorite amphibolite

Sample:SNØ-21
Thinsection
whole rock
analysis
A

(meta - basalt, flow)
same as: 30.10 - 39.00 m (south), at hanging wall slightly increased in biotite, some spots of py.
Sharp hanging wall.

59.70 - 59.85 : Sericite - biotite bearing pyrite - qtz rock

True thickness
10 cm
Sample:SNØ-02
SN 531225
6906240 chem.
analysis

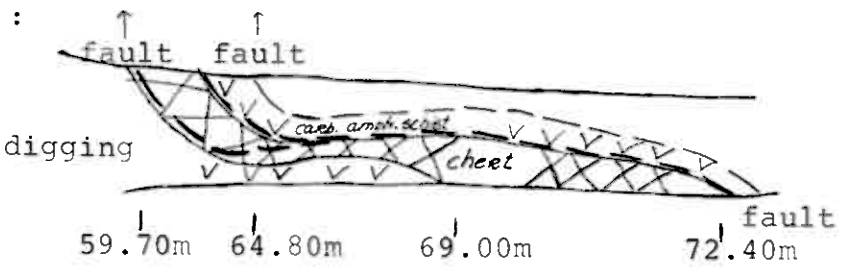
(metamorphosed sulphide facies exhalite)
medium - grained, granoblastic texture, high - grade dissemination of pyrite, mainly idiomorphic crystals of 0.1 cm size, phyllosilicates show a preferred orientation and cause a slight schistosity.
Sharp hanging wall.

59.85 - 63.90 : Amphibole bearing magnetite quartzite

True thickness
2.40 m

(oxide facies iron formation)
darkgr with slightly bluish tint, fine - grained, dense mt - quartzite develops a crude cm - to dm - layering which is caused by modal changes of magnetite, tiny bands of amphibole - rich mt - quartzite are interlaminated with amphibole forming coarse needles which always are parallel the compositional banding.
Sharp hanging wall.
Dip 42° SW at 61.40 m.

64.80 - 73.30 :



73.30 - 76.60 : Sericite bearing amphibole - qtz fspar rock

Sample:SNØ-22
Thinsection
whole rock
analysis

(meta - basic andesite)
greenishgr, porphyroblastic texture, slightly porphyric amphibole needles of max. 0.4 cm length randomly oriented.
Gradual hanging wall.
Dip 27° W at 74.90 m.

76.60 - 91.00 : Amphibole schist

Sample:SNØ-23
Thinsection
whole rock
analysis

(meta - basalt, flow, distinct pillow - structure)
gn, fine - towards medium - grained, slight changes in the mode of plagioclase, sometimes irregular carbonate accompanied by biotite.
Sharp hanging wall.
126/45° SW at 89.30 m.

91.00 - 91.15 : Amphibole bearing magnetite - quartzite

True thickness
10 cm
Sample:SNØ-03
SN 531175
6906195 Thin- and polished
section

(oxide facies iron formation)
bluish/black, extremely fine - grained, dense mt - quartzite interlamianted by amphibole - rich mt - quartzite and flasers of milky - white qtz which in places forms web - like features supposely as a result of deformation.
Sharp hanging wall.
Dip 47° SW at 91.00 m.

91.15 - 93.00 : Epidote bearing biotite - amphibole - qtz - plagioclase rock / gneiss

Sample:SNØ-24
Thinsection
whole rock
analysis

(meta - basic andesite)
whitegr, crude lamination due to slightly porphyric amphibole and biotite which mainly are aligned with the major plane of foliation and tend to form discrete layers of mm- thickness or trains of granules, amphibole prisms are on average 0.3 cm long and form thin needles, biotite sporadically displays crystals aggregates (cluts) which crosscut the lamination.
Sharp hanging wall.

93.00 - 101.60: Carbonate bearing plagioclase - amphibole schist

Sample:SNØ-25
Thinsection
whole rock
analysis

(meta - basalt, flow)
gn, medium - grained, nematoblastic texture, rare spots of carbonate equally distributed, sometimes carbonate veining. Sharp hanging wall.

101.60 - 102.70 : <u>High calcareous biotite - sericite - amphibole - qtz - plagioclase schist</u>

(meta - basic tuff or tuffite)

grgn, mainly coarse - grained, porphyroblastic texture, crudely mm- to cm- layered due to modal changes from Fe - Mg silicate domination to quite felsic composition, mainly gradual changes, biotite often forms crystal aggregates which may be aligned with the compositional banding, amphibole characteristically develops porphyroblasts of max. 1 cm length which are oriented at random, spotted carbonate but also mm - bands, lenses and stringers.

C

Sharp hanging wall.

102.70 - 107.00 : <u>Biotite bearing - qtz - plagioclase - amphibole schist</u>

(meta - basalt, supp. lapilli tuff)

grgn to greenishgr, medium - grained, spotted appearence, scattered lenticular particles of qtz - plagioclase and plagioclase on average 0.3 cm in diameter, small amount of lense - shaped clasts of amphibolite with nematoblastic texture grading 0.5 to 2.2 cm in length and 0.2 to 0.4 cm in width, lapilli strongly deformed and flattened always being parallel to the major plane of foliation, matrix is composed of plagioclase and amphibole, latter forms 0.4 cm long discrete needles which are oriented at random as well as crystal aggregates of cm - size which often crosscut the schistosity, the hanging portion of the layer is characterized by the random occurrence of extremely sheered and flattened fragments of amphibole bear. qtz - plagioclase which grade from 3 x 0.4 cm to 13 x 1.5 cm in size, the clasts are embedded in a matrix of equal composition which here shows a distinct lepidoblastic texture.

Sharp hanging wall.

107.00 - 108.50 : <u>Amphibole schist</u>

(meta - basalt, flow)

gn, fine - to medium - grained, distinct nematoblastic texture.

Sharp hanging wall.

Dip 53° SW at 107.00 m.

108.50 - 135.00 : Biotite bearing plagioclase - amphibole rock / gneiss
(meta - basaltic pyroclastic rock or basic volcanic debris flow)

Sample:SNØ-26
Thinsection
whole rock analysis

grgn, grainy appearence, scattered highly deformed and streched fragments of basaltic composition grading 5.5 x 1.0 cm to 0.5 x 0.2 cm in size, abundant subrounded to slightly deformed fragments of vesicular basalt (scoria?) (pores being filled by plagioclase) which may reach sizes of 20 x 7 cm, fragments are embedded in a matrix very similar to that of lapilli tuff of 102.70 - 107.00 m. Hanging wall bedding fault line.

135.00 - 144.00 : Amphibole - qtz - fspar rock / gneiss
(meta - leucobasalt, tuff, may be intermittent flows, beds of basaltic pyroclastic rock or basic volcanie debris flow) (leucobasalt same as: TVN IV 37)

Sample:SNØ-04
SN531220 690178
Thinsection
whole rock analyses

gngr, medium - grained with intersections being fine - grained, some layers of coarse - grained appearence, predominatly with lepidoblastic texture, cm- to dm- layering with superimposed mm- to cm- lamination, banding is caused by textural and compositional changes which take place slowly but may too happen in advance and variations in grainsize, amphibole forms slightly porphyric needles of max. 0.4 cm length, they may be oriented at random but normally are subparallel to the banding of the rock, fine - grained beds often show a distinct rusty staining which points to a slight sulphide mineralization, rare interlayers of basaltic lapilli tuff (same as: 102.70 - 107.00 m) which always have sharp contacts to the surrounding leucobasalt, section starts with a fragment horizon of 40 cm thickness which is characterized, by scattered, highly deformed and streched qtz and qtz - fspar clasts of 10 x 1.5 cm size being embedded in a matrix of amphibole - qtz - plagioclase with the same characteristics as being found in the following banded rock.
Sharp hanging wall, strongly deformed schist (see below) 160/35° SW at 135.00 m, dip 46° SW at 140.00 m.

144.00 - 144.10 : Qtz - chlorite - biotite bearing sericite schist
(strongly deformed meta - pelite) (similar sericite bearing qtz - fspar - chlorite - biotite schist of NIVÅ IV Tverrfjell - mine)
gr to browngr, wavy - lenticular structure due to tendency of qtz to form lense - shaped crystal - aggregates wavy sericitic surfaces being slickensided.
Sharp wavy hanging contact.

144.10 - 145.60 : Calcareous chlorite bearing amphibole - biotite - sericite schist
(tuffaceous meta - pelite)
gr, porphyroblastic texture, porphyroblasts of amphibole and biotite are scattered through a fine - crystalline matrix of qtz and sericite, amphibole has a tendency to form lense - shaped crystal - aggregates which are on average 0.5 cm in diameter and are oriented at random, spotted carbonate, crystals show idiomorphic outlines.
Gradual hanging wall.

C

145.60 - 147.60 : Biotite - amphibole - chlorite - qtz - fspar rock/gneiss
(meta tuffite)
gr, porphyroblastic - to lepidoblastic texture, crude lamination caused by the tendency of biotite and amphibole to form discontinuous trains of granules, porphyroblasts of amphibole mainly parallel to the major plane of foliation but sometimes oriented at random, prisms on average 1.0 cm long often standing alone but sometimes closely joined by coarse crystals or crystal-aggregates of biotite.
Gradual hanging wall.

Sample: SNØ-05
SN 531220 690176
Thinsection
whole rock
analysis

147.60 - 150.10 : Calcareous chlorite bearing amphibole - biotite - sericite schist
(tuffaceous meta - pelite)
same as: 144.10 - 145.60 m (south)
Gradual hanging wall.
148/42° SW at 150.00 m.

150.10 - 150.40 : Quartz - sericite schist
(meta - pelite)
gr, fine - grained, wavy - lenticular structure, micaceous streaks surround lense - shaped nodules of qtz.
Gradual hanging wall.
Dip 43° SW at 151.30 m.

150.40 - 152.30 : High calcareous biotite - sericite schist
(meta - pelite)
C
gr, porphyroblastic texture, scattered porphyroblasts of biotite randomly oriented cause spotted appearence of the rock, carbonate as idiomorphic crystals equally distributed, rare veinlets of qtz accompanied by carbonate.
Sharp hanging wall.
Dip 52° SW at 152.30 m.

152.30 - 152.42 : Micaceous quartzite
(meta - arenite)
gr, fine - grained, scattered streaks of sericite surrounded by equigramular qtz, rare flakes of parallel biotite which in places develop a crude cm - layering.
Sharp hanging wall.

152.42 - 155.10 : Biotite - sericite schist
(meta - pelite)
gr, porphyroblastic texture, in parts laminated,
Sample: SNØ-32
Thinsection
whole rock
analysis
scattered porphyroblasts of biotite in places crystal aggregates always being oriented at random, cause spotted appearence of the rock.
Gradual hanging wall.

155.10 - 155.90 : Quartz - sericite schist
(meta - pelite)
same as: 150.10 - 150.40 m (south)
Sharp hanging wall.
Dip 51° SW at 155.90 m.

155.90 - 156.25 : High calcareous biotite - sericite schist
(meta - pelite)
C same as: 150.40 - 152.30 m (south)
Gradual hanging wall.

156.25 - 156.40 : Biotite - fspar - qtz rock
(supp. meta - qtz - keratophyr)
gr, with in places greenish or brownish tint, porphyroblastic texture, crude lamination due to parallel micaceous streaks composed of porphyric crystals of biotite, subordinate pyrite forming tiny crystals being equally distributed.
Sharp hanging wall.
Dip 50° SW at 156.30 m.

156.40 - 157.10 : Slightly calcareous biotite - sericite schist
(meta - pelite)
gr, fine - grained, crude development of lamination due to parallel streaks of slightly porphyric biotite.
Sharp hanging wall which in places containes sheared meta - pelite which is very similar the sericite schist from 144.00 - 144.10 m (south).

157.10 - 160.10 : High calcareous epidote - biotite - chlorite bearing amphibole - plagioclase - quartz gneiss (banded amphibolite)
(meta - basic tuff or tuffite with cherty interlayers)
gr, greenishgr, gn, porphyroblastic and lepidoblastic texture, distinctly mm - to cm - layered, caused by compositional and textural changes which mainly happen in advance, alternate qtz - plag. - chlorite - amphibole, amphibole - plag. - qtz, epidote - plag. - qtz, biotite and carbonate bands or lamina, distinct porphyroblasts of amphibole max. 3.0 cm in length throughout, prisms are oriented at random but sometimes parallel the layering of the rock, carbonate rarely forms slightly porphyric idiomorphic crystals which equally are distributed, within hanging portion the mode of amphibole gets so abundant as to form plag. amphibole schist which leds to overlying amphibole schist.

Sample: SNØ-33
Thinsection
whole rock
analysis
(taken near footwall)

Gradual hanging wall.
157/50° SW at 157.10 m, dip 49° SW at 159.00 m.

160.10 - 171.00 : Amphibole schist
(meta - basalt, flow)
gn, fine - grained, nematoblastic texture.
Sharp hanging wall.

171.00 - 179.60 : Slightly calcareous biotite bearing epidote - qtz - plagioclase - amphibole schist
(meta - basalt, flow may be pyroclastite)
slightly grgn, medium - grained, nebuous structure, laminated but often with flaser structure, nematoblastic texture, epidote - qtz - plagioclase as well as biotite carbonate form streaks and sporadically cm - thick layers which in places constitute an open framework filled by amphibole schist, amphibole normally gets distinctly coarser grained at the borders to epidote - qtz - plagioclase the prisms often prolonging for several mm into the felsic material.
Sharp hanging wall.
Dip 43° SW at 175.00 m.

Epidote
Partly C

179.60 - 181.00 : Biotite - sericite quartzite
(meta - arenite)
whitegr, laminated, alternate phyllosilicate layers and nearly pure qtz bands, strongly foliated.
Sharp hanging wall.
Dip 52° SW at 179.60 m.

181.00 - 187.00 : Slightly calcareous biotite - sericite schist
(meta - pelite)
gr, slight flaser - structure due to accretion of qtz into mm- to cm- large lenses and flasers, scattered porphyroblasts of biotite oriented at random cause spotted appearence of the rock, subordinate amount of garnets being 0.2 cm in diameter within footwall portion.

187.00 - 203.00 : No outcrop

203.00 - 207.50 : Garnet - biotite bearing sericite - amphibole - fspar qtz gneiss

(meta - qtz - keratophyr)

Sample:SNØ-34
Thinsection
whole rock
analysis

gr, porphyroblastic texture, cm- to dm- layering with superimposed mm- to cm- lamination, banding is caused mainly by textural changes due to the crystallization status of amphibole but too results from compositional changes and futher is due to variations in the degree of foliation, amphibole is the most prominant mineral and occurs as idioblasts being tabular and prismatic that may reach 3 cm lengths, the crystals are oriented at random and form and open framework of touching and crosscutting needles, they sometimes are concentrated in distinct layers to form trains of granules, only sometimes the prisms get oriented parallel to the layering of the rock, biotite mainly forms individual laminae which are discontinuous, it sporadically accompanies amphibole as single crystals, qtz and plagioclase and sericite form a fine - grained equi - granular mosaic, they in places form discrete layers which look as being of clastic sedimentary origin, the meta - qtz-keratophyr gradually passes into calcareous epidote - biotite bearing amphibole - fspar qtz gneiss which is similar to the banded amphibolite at hanging wall. Gradual hanging wall.

207.50 - 209.00 : High calcareous amphibole bearing biotite - chlorite - fspar - qtz gneiss

Partly A/C

(metamorphosed tuff or tuffite sequence, alternate felsic and basic to intermediate tuff or tuffite layers)
(comparable with sample TVN IV 11, 11 a, 11 b, 13, 13 b, 14, 14 b which immediatley underly ore zone IV)

Sample:SNØ-07
SN 531200 6906135
Thinsection

gr, darkgr, gnbrown, slightly yellowish, idstinctly cm - layered with occasional mm - lamination being superimposed, compositional and thus textural banding, alternate high calcareous biotite - chlorite, calcarous chlorite - biotite - fspar - qtz and phyllosilicate - carbonate bearing fspar - qtz layers which mainly have sharp contacts, some streaks of carbonate, biotite and chlor-

ite form slightly porphyric flakes which always are parallel to the banding of the rock, carbonate occurs as scattered idioblasts which in places form trains of granules, carbonate has a clear tendency to accompany the phyllosilicates, tiny spots of sulphide are present throughout.
Gradual hanging wall.

209.00 - 230.00 : <u>Calcareous to high calcareous epidote - biotite - chlorite - plagioclase - amphibole - qtz gneiss</u> (banded amphibolite)

C

(meta - basic tuff or tuffite with cherty layers) whitegr to gn or grgn, medium - to coarse-grained, granoblastic - to porphyroblastic or lepidoblastic texture, cm- to dm layering, alternate carbonate, amphibole, plag. - qtz - amphibole, chlorite - amphibole, biotite, amphibole bear. plagioclase - qtz and qtz (chert) bands, amphibole is the most prominant mineral as it forms porphyroblasts grading from 0.4 cm to 3.0 cm in length, the prisms are oriented at random but sometimes parallel the layering, spherolites are found being continuous with the compositional banding, biotite is slighty porphyric and randomly is oriented and tends to from trains of granules, carbonate is found as idiomorphic crystals within all types of layers but forms too discrete bands or lenses which sometimes are discordant to the layering, near hanging contact the banded amphibolite often gets interlayered by dm - thick bands of plagioclase - amphibole schist (intermittent basalt flows), a discontinuous low - grade <u>py</u> mineralization of 50 cm thickness is situated close to the lying amphibole schist, the pyrite dissemination occurs within a <u>biotite - fspar - quartz gneiss</u> (cherty meta - keratophyr) which shows a distinct lamination caused by a rhythmic repetition of mm - thick layers of biotite which often are discontinuous, biotite forms besides that porphyroblasts which randomly are oriented. Sharp hanging wall, develops inplaces a bedding fault line.

Sample:SNØ-35
Thinsection
whole rock
analysis

137/48° SW at 211.00 m, 133/51° SW at 228.00 m.

230.00 - 278.00 : Amphibole schist to plagioclase - amphibole schist
(meta - basalt, flow, crude development of pillow structure)
gn to grgn, fine - grained with sections being more medium - grained, here mainly plag. - amphibole schist, often crosscut by veinlets of epidote and carbonate, some dm - interlayers of calcareous epidote - amphibole - chlorite - biotite schist, gn, brown, gr, cm-layered, alternate fine - grained amphibole bands and layers composed of carbonate - chlorite - amphibole and biotite which always are medium crystalline; sporadically interlayered sections of biotite - amphibole schist, gn, fine - fibrous amphibole, discontinuously banded by mm - layers of coarse - crystalline biotite which sometimes are composed to a web - like feature; near hanging contact meta - basalt gradually changes into amphibole - plagioclase - qtz schist/rock leucobasalt, flow, grgn, medium - grained, porphyroblastic texture, slightly porphyric amphibole prisms max. 0.4 cm long are randomly oriented.
257.00 - 257.20: magnetite banded quartzite (meta - chert), fine - grained, cm - layers of qtz in alternation with mm - bands or streaks of mt.
Sharp hanging wall, slightly tectonic.
131/44° SW at 230.00 m, 174/40° SW at 238.00 m, 159/55° SW at 275.00 m.

Sample: SNØ-27
Thinsection
whole rock analysis

Sample: SNØ-28
Thinsection
whole rock analysis

278.00 - 282.00 : Biotite - sericite schist
(meta - pelite)
gr, porphyric biotite as cross - mica cause spotted appearence of the rock, some cm - thick discontinuous layers of sericite - quartzite intercalated.
Gradual hanging wall.
160/59° SW at 278.00 m.

282.00 - 290.00 : Slightly calcareous chlorite bearing biotite - sericite-epidote - qtz - fspar - amphibole schist / gneiss
(meta - basalt, flow may be pyroclastite)
similar: 171.00 - 179.60 m (south), epidote too forms discrete bands, flasers and lenses which often cross-

High epidote

cut schistosity.
Gradual hanging wall.

290.00 - 334.00 : Calcareous to high calcareous epidote - biotite - chlorite - plagioclase - amphibole - qtz gneiss
(banded amphibolite)
(meta - basic tuff or tuffite with cherty interlayers)
same as: 209.00 - 230.00 m (south), between 331.50 - 333.50 m several interlayers of epidote - amphibole - quartzite (cherty tuff), layered rock with alternate qtz, epidote - qtz and amphibole or amphibole - qtz bands.
Sharp hanging wall, strongly foliated, supp. bedding fault line.
174/32° SW at 291.00 m, 157/34° SW at 232.00 m.

C
High epidote
Sample:SNØ-36
Thinsection
whole rock
analysis
(middel portion)

334.00 - 339.00 : Schistose amphibolite to plagioclase-amphibole schist
(meta amygdaloid basalt)
gn, nematoblastic texture, cm - large deformed and streched plagioclase crystals which equally are distributed.
Sharp hanging wall.
156/38° SW at 334.00 m.

339.00 - 340.60 : Calcareous epidote - plagioclase - qtz - amphibole schist
(meta - basalt, supp. pyroclastite, stressed (?))
gn to grgn, medium - grained, crude development of layering, latter possibly due to stress, alternate carbonate, epidote - amphibole and epidote - amphibole - plagioclase - qtz bands which often are discontinuous, amphibole forms prisms on average 0.7 cm long which mainly are aligned with the layering / foliation.
Sharp hanging wall.

High epidote

340.60 - 343.00 : Plagioclase amphibolite
(meta - basalt, flow)
grgn, medium - grained, porphyroblastic - texture, prismatic amphibole on average 0.5 cm long always randomly oriented.

Sample:SNØ-29
Thinsection
whole rock
analysis

343.00 - 377.00 : No outcrop

377.00 - 379.00 : Amphibole schist
(meta - basalt, flow)
gn, fine - grained, nematoblastic texture, some mm-flasers or laminae of carbonate which always are conformable with the schistosity, abundant irregular disconformable bands and lamina of biotite - chlorite or epidote - plagioclase - amphibole which always carry prismatic amphibole on average 0.4 cm long.
140/48° SW at 378.00 m.

379.00 - 387.50 : No outcrop

378.50 - 400.20 : Amphibole schist
(meta - basalt, flow, partly may be pyroclastite)

Sample:SNØ-30
Thinsection
whole rock
analysis

Spoadically
high epidote

gn, fine - grained, nematoblastic texture, some flasers or laminae of epidote and/or carbonate often conformable but sometimes crosscutting schistosity, sporadically embedded crystal aggregates of biotite which often are accompanied by epidote, sometimes cm - or even dm - thick sections which are distinctly layered, banding consists of alternate epidote or epidote - amphibole, biotite and carbonaceous plagioclase - qtz - amphibole layers, banded sections always are medium - grained and show a porphyroblastic texture with amphibole - prisms being randomly oriented.
158/43° SW at 395.50 m.

400.20 - 402.00 : Epidote - plagioclase - amphibole - qtz gneiss (banded amphibolite)
(meta - basic tuff or tuffite)

High epidote

grgn, gr, lightgn, medium - grained, porphyroblastic texture, cm - layered, alternate amphibole, epidote - plagioclase - amphibole - qtz and carbonate bear. epidote - amphibole bands, typical porphyric amphibole which randomly is oriented.

402.00 - 407.00 : No outcrop.

407.00 - 421.00 : Amphibole schist
(meta - basalt, flow)
same as: 387.50 - 400.20 m (south),
151/45° SW at 408.00 m, 128/53° SW at 417.00 m,
130/54° SW at 420.00 m.

421.00 - 436.00 : No outcrop

436.00 - 452.00 : Slightly calcareous amphibole schist
(meta - basalt, flow)
same as: 387.50 - 400.20 m, spotted carbonate within some sections.
145/51° SW at 438.00 m.

471.00 - 473.00 : Calcareous epidote - biotite - chlorite - plagioclase - amphibole - qtz gneiss (banded amphibolite)
(meta - basic tuff or tuffite with cherty interlayers)
same as: 209.00 - 230.00 m.
129/42° SW at 453.00 m.

C

473.00 m end of profile

SVÅNI (E6) PROFILE

(north of Grønbakken)

northern part

starting point: 531200 6906300 UTM grid, zone 32

Top. map. 1519 1V SNØHETTA

June 1985

By: Dr. F.D. Priesemann

0.00 - 3.50 : Calcareous biotite bearing epidote - plagioclase - qtz - chlorite - amphibole rock
(meta - basalt, flow, weakly altered)
grgn, coarse-grained, leopard-texture, fan-shaped biotite - chlorite - amphibole crystal aggregates of max. 1.0 cm lengths and 0.3 cm widths are scattered within a matrix of calcareous chlorite bearing epidote - amphibole - fspar - qtz of decussate texture which contains slightly porphyric amphibole of minor 0.2 cm length which always is strongly aligned with a slight foliation.
Sharp hanging wall.

A/C
Sample: SNØ-18
Thinsection
whole rock
analysis

3.50 - 3.70 : Mt - bearing epidote - amphibole quartzite
(oxide-silicate facies iron-formation)
gr with slightly bluish tint, extremely fine-grained, mm- as well as cm- layering, alternate magnetite - qtz, epidote - amphibole and magnetite - amphibole - qtz bands and flasers, amphibole always being slightly porphyric (average 0.4 cm lengths) is strongly aligned with the compositional banding.
Shape hanging wall.

3.50 - 12.15 : Plagioclase amphibole schist
(meta - basalt, flow)
gn to grgn, medium-grained, dm- or m- thick intersections of calcareous epidote - plagioclase - qtz - chlorite amphibolite (same as: 0.00 - 3.50 m) which shows gradual borders to the surrounding plag. amphibole schist.
Sharp hanging wall.

12.15 - 13.15 : Biotite - amphibole bearing quartzite
(partly silicate facies iron formation)
bright, dense qtz with slight bluish tint, extremely fine-grained, interlaminated or sometimes boudined by mm - thick bands of biotite - amphibole, mica-flakes and prisms of amphibole are strongly aligned with the compositional banding, qtz - layers sporadically carry idiomorphic pyrite.
Sharp hanging wall.

13.15 - 17.50 : Biotite bearing and biotite - rich plagioclase - qtz - amphibole rock

Sample: SNØ-17
Thinsection
whole rock
analysis

(meta - basalt, flow)
grgn, medium-grained, lepidoblastic texture, prisms of amphibole on average 0.3 cm long always being aligned with a slight foliation of the rock, biotite forms multi-crystal porphyroblasts being equally distributed and showing a preferred orientation parallel to the crudely developed foliation, footwall is without any biotite and shows a stockwork of trondhjemite.
Gradual hanging wall.

17.50 - 18.00 : Biotite bearing amphibole - sericite - qtz schist

(meta - tuffite, may be tuffaceous meta - pelite)
darkgr, nematoblastic texture, scattered prisms of amphibole on average 0.3 cm long are strongly aligned with the major plane of foliation, fine-fibrous sericite.
Sharp hanging wall, bedding fault line.

18.00 - 18.50 : Epidote - chlorite - biotite - sericite - plagioclase - amphibole - qtz gneiss

(metamorphosed cherty tuff or tuffite with interlayers of basaltic composition)
gr, gngr, lightgn, medium- to coarse- grained, porphyroblastic to lepidoblastic texture, mm- to cm - banded, alternate bright qtz, epidote - amphibole, amphibole, chlorite - biotite - sericite - amphibole and qtz - amphibole layers, porphyroblasts of biotite and amphibole both randomly oriented, amphibole prisms max. 1.5 cm long sometimes forming speroliteswhich are parallel to the compositional banding, fine-fibrous chlorite and extremely fine grained and dense qtz.
Sharp hanging wall.

18.50 - 27.00 : Amphibole bearing biotite - sericite schist

(meta - pelite)
gr, fine-grained, porphyroblasts of biotite and amphibole, latter forms thin needles of max. 1.5 cm length

being randomly oriented, biotite equally distributed and not oriented cause spotted appearence of the rock.

27.00 - 40.00 : Fragment horizon
high calcareous amphibole bearing epidote - biotite - chlorite schist
(meta paraconglomerate supp. meta - tilloide)

C

yellowishgn, predominately with chaotic structure, stratified, containing beds of paraconglomerate grading from sandy mudstone to pebbly mudstone which alternate with dm- to mm- thick discontinuous layers of qtz-rich biotite - sericite schist which may contain clasts, rounded highly deformed and streched fragments of calcareous epidote - amphibole - biotite - chlorite - qtz rock (supp. basic volcanic debris), carbonate, amphibole bearing qtz - fspar gneiss (qtz - keratophyr) and quartzo - feldspatic rock/gneiss (supp. granitic debris) embedded in a matrix of high calcareous chlorite - biotite schist and in places phyllosilicate - rich carbonate, chlorite mainly being fine-crystalline while biotite forms multi - crystal porphyroblasts which randomly are oriented, carbonate occurs as scattered idiomorphic crystals within the mica schist while it forms layers or irregular shaped aggregates within the mica-rich carbonate matrix, fragments grade from 1.0 to 10 cm in length with widths ranging between 0.3 cm and 3.0 cm (average size 5 x 1.5 cm).
Sharp hanging wall.
146/36° SW at 30.00 m.

40.00 - 51.00 : Slightly calcareous sericite - plagioclase - biotite - qtz schist/gneiss
(meta - arenite/-pelite)
gr to browngr, porhyroblastic texture, crudely layered, porphyroblasts of biotite mainly of ellipsoidal shape and randomly oriented but partly parallel the major plane of foliation cause spotted appearence of the rock, some cm - thick discontinuous interlayers of sericite - biotite - qtz schist which is distinctly fine-grained as host rock and shows strongly aligned mica-flakes,

lenses and flasers of sericite bearing quartzite (sandy mudstone or meta - greywacke) occur near the footwall of the succession, rock has a distinct grainy appearence giving evidence of being a metamorphosed coarse - grained greywacke (comparable with greywacke - layers from meta - tilliode from railroad profile: 161.85 - 163.75 m (south), 165.65 - 166.05 m (south) and locations at Tverrfjellet.
Sharp hanging wall.
142/34° SW at 48.00 m, fracturing 198/66 E.

51.00 - 52.00 : Biotite - sericite schist
(meta - pelite)
gr, porphyroblastic texture, scattered porphyroblasts of biotite preferably cross major foliation cause spotted appearence of the rock.
Sharp hanging wall.

52.00 - 56.00 : Fragment horizon
mica - schist
(meta - paraconglomerate supp. meta - tilloide)
grgn, nodular - structure, stratified, containing layers of sandy mudstone and pebbly mudstone which alternate in a nonrhythmic manner with contacts always being gradatitional, rounded highly deformed and flattened clasts of qtz - fspar rock and carbonaceous qtz - fspar rock (supp. qtz - keratophyr) as well as milky qtz and chlorite - sericite - qtz - fspar rock (basic volcanic debris) of average 2 cm length and 0.7 cm thickness (max. 20 x 3.5 cm) are scattered within a matrix of calcareous sericite - chlorite - biotite schist which in places carries some needles of amphibole; biotite and chlorite form porphyroblasts which scarcely are aligned with the plane of foliation.
Gradual hanging wall.
134/40° SW at 54.00 m, fracturing 2/72° E.

56.00 - 73.00 : Amphibole - garnet bearing biotite - sericite schist
(meta - pelite)
gr, porphyroblastic texture, scattered porphyroblasts of biotite (cross - mica) cause spotted appearence of

the rock, amphibole as huge needles of max. 4 cm length forming spherolites which lie within the plane of foliation, they partly are so abundant as to from garbenschist, garnet forms tiny idiomorphic crystals which truely are equally distributed.

73.00 - 119.00 : Slightly calcareous and calcareous garnet - biotite - sericite schist

(meta - pelite)

Sample: SNØ-16
Thinsection
whole rock
analysis
Partly C

gr, porphyric - texture, crudely laminated in places, porphyroblasts of biotite (cross - mica) equally distributed cause spotted appearence of the rock, strong variation in the mode of carbonate mainly changing gradually from subordinate amount to possibly 10 to 15 Vol. - %, mainly scattered idiomorphic crystals only sporadically forming discontinuous layers, occasional occurrence of lense - shaped (clasts ?) calcareous garnet bearing quartzite which contains some tiny spots of idiomorphic py.
Sharp hanging wall.
120/30° SW at 94.00 m, 88/27° S at 112.00 m, 92/24° S at 98.00 m, 104/32° S at 103.00 m.

119.00 - 129.00 : Fragment horizon

mica - schist and calcareous mica - schist

(meta - paraconglomerate supp. meta - tilloide)

(partly very similar to meta - tilloides from Hjerkinnhø and Tverrfjellet)

Sample: SNØ-15
chem. analysis
of carbonate

Partly C

stratified, containing beds of tilloide which are interlayered by discontinuous bands of carbonate, calcareous biotite - sericite schist (meta - pelite) and high calcareous amphibole - qtz - fspar gneiss (mixed volcanic - sedimentary rock) ; meta - tilloide: gr to gngr, all stages between sandy mudstone and pebbly mudstone, no sorting but sometimes a crude stratification, rounded greatly deformed and flattered fragments of carbonate and quartzo - feldspatic gneiss / rock of 50 cm length and 0.1 to 5 cm thickness (average 6 x 1 cm) are scattered through a matrix consisting predominately of biotite - amphibole (porphyroblasts randomly oriented) and

qtz, with high amount of carbonate clasts the content of carbonate (idiomorphic crystals) and chlorite within the matrix increases while amphibole often is absent; meta - pelite: gr, spotted appearence due to scattered porphyroblasts of biotite which randomly are oriented wavy - lenticular structure; mixed volcanic - sedimentary layers: gngr, distinct compositional banding of alternate bands of carbonate and high calcareous amphibole - qtz - fspar rock as well as calcareous amphibolite, amphibole - qtz - fspar rock is characterized by idiomorphic crystals of carbonate which are equally distributed and prisms of amphibole of average 0.4 cm length being randomly oriented, amphibolite layers show fine - crystalline amphibole which always parallels the compositional banding.

129.00 - 169.00 : <u>Slightly calcareous biotite - sericite schist</u>

(meta - pelite)

gr to greenishgr, porphyroblastic - texture, porphyric biotite as cross - mica cause spotted appearence of the rock, sporadically some coarse (max. 2.0 cm long) needles of amphibole which often are parallel to the slaty cleavage of the rock, cm - thick discontinuous interlayer with subordinate sulphide occurs close to the border to fragment horizon.

Sharp hanging wall.

134/30° SW at 159.00 m.

169.00 - 173.00 : <u>Biotite - quartzite</u>

(meta - arenite) (same as: 83.40 - 87.54 m BH 10 and at southslope of Tverrfjellet)

gr, with brown spots, fine - grained granoblastic qtz with porphyric biotite crystals being equally distributed, latter predominately are parallel the main foliation but also crosscutt it.

Sharp hanging wall.

124/33° SW.

173.00 - 238.00 : <u>Amphibole schist</u>

Sample: SNØ-13 and SNØ-14

(meta - basalt, flow)

gn, medium - grained, some intersections being coarse-

370.00 - 375.00 : Garnet bearing biotite - sericite schist
(meta - pelite)
gr, porphyroblastic - texture, porphyric biotite as cross - mica equally distributed, cause spotted appearence of the rock occasionally lense - shaped accretions of sulphide (pyrite).
Sharp hanging wall.

375.00 - 376.00 : Biotite - amphibole bearing quartzite
(meta - arenite)
whitegr, well - layered, cm - thick often discontinuous qtz - bands interlaminated by mm - layers dominated by phyllosilicates (biotite some sericite) carrying sometimes huge needles (max. 1.5 cm) of amphibole which always are sub - parallel the compositional banding.
Sharp hanging wall.
121/44° SW.

0 - 1 m
(true thickness)

376.00 - 376.70 : Amphibole - qtz - fspar gneiss
(meta - qtz - keratophyr)
grwhite, within places rusty staining, fine - grained with porphyroblasts of amphibole (max. 2.0 cm long) being randomly oriented, crudely cm - layered, rare spots of sulphide (pyrite), meta - qtz - keratophyr locally is accompanied by magnetite - quartzite (oxide facies iron formation); footwall occasionally consists of : amphibolite, plag. - amphibolite, garnet bearing sericite - biotite - amphibole - fspar - qtz gneiss

0 - 50 m
(true thickness)

0 - 35 m
(true thickness)

0 - 35 m
(true thickness)

(meta - basalt, tuff / flow)
gn to grgn, medium - grained in places even coarse grained, very variable lithology within a few meters of strike grading from amphibolite to banded amphibolite with cm - layering composed of alternate sericite-biotite - qtz - amphibole and amphibole - qtz bands.
127/48° SW.

376.70 - Garnet bearing chlorite - sericite schist
(meta - pelite)
greenishgr, porphyroblastic texture, porphyric biotite

Thinsection
whole rock
analysis

grained, amphibole - needles subparallel to the plane of schistosity, coarse - grained rock varieties often with distinct leopard - texture which is due to fan - shaped crystal aggregates of amphibole being of cm - size which are surrounded by plagioclase, qtz and epidote (see SNØ-13).
Sharp hanging wall.

238.00 - 248.00 :

Sample: SNØ-12
Thinsection
whole rock
analysis

Sericite - amphibole - plagioclase - qtz - rock/schist
(meta - basalt, flow)
lightgr, fine - grained with slightly porphyric amphibole prisms of max. 0.3 cm length often being parallel to the plane of foliation, crude development of layering due to modal changes of amphibole and plagioclase or qtz.

248.00 - 250.50 :

Fragment horizon
amphibole schist
(meta - basic lapilli tuff or volcanic debris flow)
gn, poorly sorted, rounded to subrounded greatly deformed and flattened fragmentes of fine - grained amphibolite, mainly medium - crystalline plagioclase - amphibolite and amphibole qtz - plagioclase rock embedded in a matrix variable in composition but mostly being basaltic consisting of carbonate, amphibole, plagioclase and minor sericite, amphibole is the most prominant mineral forming prisms of average 1.0 cm length which are randomly oriented.

250.50 - 370.00 :

sample: SNØ-11
Thinsection
whole rock
analysis

Amphibole schist, plagioclase amphibolite
(meta - basalt, flow)
gn, medium - grained with minor intersection being fine - grained, often with distinct leopard - texture, some interlayers of agglomeratic basalt or basaltic lapilli tuff, sometimes sericite - amphibole - plagioclase - qtz rock / schist (leuco basalt, flow) (similar : 238.00 - 248.00 m), near footwall contact towards mica - schist abundant high - calcareous epidote - sericite - biotite - fspar - amphibole - qtz gneiss (banded amphibolite, supp. basaltic tuff)
123/43° SW at 251.00 m, 120/42° SW at 365.00 m.

as cross - mica being equally distributed, biotite cause spotted appearence of the rock, in places interlayers of high calcareous amphibole - chlorite - sericite schist characterized by randomly oriented needles of amphibole (average 1.0 cm long) which partly are replaced by biotite and scattered idiomorphic crystals of carbonate.
108/37° S at 386.00 m.

SVÅNI (E6) PROFILE

(north of Grønbakken)

northern part

starting point: 531200 6906300 UTM grid, zone 32

Top. map. 1519 1V SNØHETTA

June 1985

By: Dr. F.D. Priesemann

0.00 - 3.50 : Calcareous biotite bearing epidote - plagioclase - qtz - chlorite - amphibole rock

(meta - basalt, flow, weakly altered)

A/C

Sample: SNØ-18
Thinsection
whole rock
analysis

grgn, coarse-grained, leopard-texture, fan-shaped biotite - chlorite - amphibole crystal aggregates of max. 1.0 cm lengths and 0.3 cm widths are scattered within a matrix of calcareous chlorite bearing epidote - amphibole - fspar - qtz of decussate texture which contains slightly porphyric amphibole of minor 0.2 cm length which always is strongly aligned with a slight foliation.
Sharp hanging wall.

3.50 - 3.70 : Mt - bearing epidote - amphibole quartzite

(oxide-silicate facies iron-formation)

gr with slightly bluish tint, extremely fine-grained, mm- as well as cm- layering, alternate magnetite - qtz, epidote - amphibole and magnetite - amphibole - qtz bands and flasers, amphibole always being slightly porphyric (average 0.4 cm lengths) is strongly aligned with the compositional banding.
Shape hanging wall.

3.50 - 12.15 : Plagioclase amphibole schist

(meta - basalt, flow)

gn to grgn, medium-grained, dm- or m- thick intersections of calcareous epidote - plagioclase - qtz - chlorite amphibolite (same as: 0.00 - 3.50 m) which shows gradual borders to the surrounding plag. amphibole schist.
Sharp hanging wall.

12.15 - 13.15 : Biotite - amphibole bearing quartzite

(partly silicate facies iron formation)

bright, dense qtz with slight bluish tint, extremely fine-grained, interlaminated or sometimes boudined by mm - thick bands of biotite - amphibole, mica-flakes and prisms of amphibole are strongly aligned with the compositional banding, qtz - layers sporadically carry idiomorphic pyrite.
Sharp hanging wall.

13.15 - 17.50 : Biotite bearing and biotite - rich plagioclase - qtz - amphibole rock

Sample: SNØ-17
Thinsection
whole rock
analysis

(meta - basalt, flow)
grgn, medium-grained, lepidoblastic texture, prisms of amphibole on average 0.3 cm long always being aligned with a slight foliation of the rock, biotite forms multi-crystal porphyroblasts being equally distributed and showing a preferred orientation parallel to the crudely developed foliation, footwall is without any biotite and shows a stockwork of trondhjemite.
Gradual hanging wall.

17.50 - 18.00 : Biotite bearing amphibole - sericite - qtz schist

(meta - tuffite, may be tuffaceous meta - pelite)
darkgr, nematoblastic texture, scattered prisms of amphibole on average 0.3 cm long are strongly aligned with the major plane of foliation, fine-fibrous sericite.
Sharp hanging wall, bedding fault line.

18.00 - 18.50 : Epidote - chlorite - biotite - sericite - plagioclase - amphibole - qtz gneiss

(metamorphosed cherty tuff or tuffite with interlayers of basaltic composition)
gr, gngr, lightgn, medium- to coarse- grained, porphyroblastic to lepidoblastic texture, mm- to cm - banded, alternate bright qtz, epidote - amphibole, amphibole, chlorite - biotite - sericite - amphibole and qtz - amphibole layers, porphyroblasts of biotite and amphibole both randomly oriented, amphibole prisms max. 1.5 cm long sometimes forming sperolites which are parallel to the compositional banding, fine-fibrous chlorite and extremely fine grained and dense qtz.
Sharp hanging wall.

18.50 - 27.00 : Amphibole bearing biotite - sericite schist

(meta - pelite)
gr, fine-grained, porphyroblasts of biotite and amphibole, latter forms thin needles of max. 1.5 cm length

being randomly oriented, biotite equally distributed and not oriented cause spotted appearence of the rock.

27.00 - 40.00 : Fragment horizon
high calcareous amphibole bearing epidote - biotite - chlorite schist
(meta paraconglomerate supp. meta - tilloide)

C

yellowishgn, predominately with chaotic structure, stratified, containing beds of paraconglomerate grading from sandy mudstone to pebbly mudstone which alternate with dm- to mm- thick discontinuous layers of qtz-rich biotite - sericite schist which may contain clasts, rounded highly deformed and streched fragments of calcareous epidote - amphibole - biotite - chlorite - qtz rock (supp. basic volcanie debris), carbonate, amphibole bearing qtz - fspar gneiss (qtz - keratophyr) and quartzo - feldspatic rock/gneiss (supp. granitic debris) embedded in a matrix of high calcareous chlorite - biotite schist and in places phyllosilicate - rich carbonate, chlorite mainly being fine-crystalline while biotite forms multi - crystal porphyroblasts which randomly are oriented, carbonate occurs as scattered idiomorphic crystals within the mica schist while it forms layers or irregular shaped aggregates within the mica-rich carbonate matrix, fragments grade from 1.0 to 10 cm in length with widths ranging between 0.3 cm and 3.0 cm (average size 5 x 1.5 cm).
Sharp hanging wall.
146/36° SW at 30.00 m.

40.00 - 51.00 : Slightly calcareous sericite - plagioclase - biotite - qtz schist/gneiss
(meta - arenite/-pelite)
gr to browngr, porhyroblastic texture, crudely layered, porphyroblasts of biotite mainly of ellipsoidal shape and randomly oriented but partly parallel the major plane of foliation cause spotted appearence of the rock, some cm - thick discontinuous interlayers of sericite - biotite - qtz schist which is distinctly fine-grained as host rock and shows strongly aligned mica-flakes,

lenses and flasers of sericite bearing quartzite (sandy mudstone or meta - greywacke) occur near the footwall of the succession, rock has a distinct grainy appearence giving evidence of being a metamorphosed coarse - grained greywacke (comparable with greywacke - layers from meta - tilliode from railroad profile: 161.85 - 163.75 m (south), 165.65 - 166.05 m (south) and locations at Tverrfjellet.
Sharp hanging wall.
142/34° SW 48.00 m, fracturing 198/66 E.

51.00 - 52.00 : Biotite - sericite schist
(meta - pelite)
gr, porphyroblastic texture, scattered porphyroblasts of biotite preferably cross major foliation cause spotted appearence of the rock.
Sharp hanging wall.

52.00 - 56.00 : Fragment horizon
mica - schist
(meta - paraconglomerate supp. meta - tilloide)
grgn, nodular - structure, stratified, containing layers of sandy mudstone and pebbly mudstone which alternate in a nonrhythmic manner with contacts always being gradatitional, rounded highly deformed and flattened clasts of qtz - fspar rock and carbonaceous qtz - fspar rock (supp. qtz - keratophyr) as well as milky qtz and chlorite - sericite - qtz - fspar rock (basic volcanic debris) of average 2 cm length and 0.7 cm thickness (max. 20 x 3.5 cm) are scattered within a matrix of calcareous sericite - chlorite - biotite schist which in places carries some needles of amphibole; biotite and chlorite form porphyroblasts which scarcely are aligned with the plane of foliation.
Gradual hanging wall.
134/40° SW at 54.00 m, fracturing 2/72° E.

56.00 - 73.00 : Amphibole - garnet bearing biotite - sericite schist
(meta - pelite)
gr, porphyroblastic texture, scattered porphyroblasts of biotite (cross - mica) cause spotted appearence of

the rock, amphibole as huge needles of max. 4 cm length forming spherolites which lie within the plane of foliation, they partly are so abundant as to from garbenschist, garnet forms tiny idiomorphic crystals which truely are equally distributed.

73.00 - 119.00 : Slightly calcareous and calcareous garnet - biotite - sericite schist

(meta - pelite)

Sample: SNØ-16
Thinsection
whole rock
analysis
Partly C

gr, porphyric - texture, crudely laminated in places, porphyroblasts of biotite (cross - mica) equally distributed cause spotted appearence of the rock, strong variation in the mode of carbonate mainly changing gradually from subordinate amount to possibly 10 to 15 Vol. - %, mainly scattered idiomorphic crystals only sporadically forming discontinuous layers, occasional occurrence of lense - shaped (clasts ?) calcareous garnet bearing quartzite which contains some tiny spots of idiomorphic py.
Sharp hanging wall.
120/30° SW at 94.00 m, 88/27° S at 112.00 m, 92/24° S at 98.00 m, 104/32° S at 103.00 m.

119.00 - 129.00 : Fragment horizon

mica - schist and calcareous mica - schist

(meta - paraconglomerate supp. meta - tilloide)

(partly very similar to meta - tilloides from Hjerkinnhø and Tverrfjellet)

Sample: SNØ-15
chem. analysis
of carbonate

Partly C

stratified, containing beds of tilloide which are interlayered by discontinuous bands of carbonate, calcareous biotite - sericite schist (meta - pelite) and high calcareous amphibole - qtz - fspar gneiss (mixed volcanic - sedimentary rock) ; meta - tilloide: gr to gngr, all stages between sandy mudstone and pebbly mudstone, no sorting but sometimes a crude stratification, rounded greatly deformed and flattered fragments of carbonate and quartzo - feldspatic gneiss / rock of 50 cm length and 0.1 to 5 cm thickness (average 6 x 1 cm) are scattered through a matrix consisting predominately of biotite - amphibole (porphyroblasts randomly oriented) and

qtz, with high amount of carbonate clasts the content of carbonate (idiomorphic crystals) and chlorite within the matrix increases while amphibole often is absent; meta - pelite: gr, spotted appearence due to scattered porphyroblasts of biotite which randomly are oriented wavy - lenticular structure; mixed volcanic - sedimentary layers: gngr, distinct compositional banding of alternate bands of carbonate and high calcareous amphibole - qtz - fspar rock as well as calcareous amphibolite, amphibole - qtz - fspar rock is characterized by idiomorphic crystals of carbonate which are equally distributed and prisms of amphibole of average 0.4 cm length being randomly oriented, amphibolite layers show fine - crystalline amphibole which always parallels the compositional banding.

129.00 - 169.00 : Slightly calcareous biotite - sericite schist

(meta - pelite)

gr to greenishgr, porphyroblastic - texture, porphyric biotite as cross - mica cause spotted appearence of the rock, sporadically some coarse (max. 2.0 cm long) needles of amphibole which often are parallel to the slaty cleavage of the rock, cm - thick discontinuous interlayer with subordinate sulphide occurs close to the border to fragment horizon.

Sharp hanging wall.

134/30° SW at 159.00 m.

169.00 - 173.00 : Biotite - quartzite

(meta - arenite) (same as: 83.40 - 87.54 m BH 10 and at southslope of Tverrfjellet)

gr, with brown spots, fine - grained granoblastic qtz with porphyric biotite crystals being equally distributed, latter predominately are parallel the main foliation but also crosscutt it.

Sharp hanging wall.

124/33° SW.

173.00 - 238.00 : Amphibole schist

Sample:SNØ-13 and SNØ-14

(meta - basalt, flow)

gn, medium - grained, some intersections being coarse-

370.00 - 375.00 : Garnet bearing biotite - sericite schist
(meta - pelite)
gr, porphyroblastic - texture, porphyric biotite as cross - mica equally distributed, cause spotted appearence of the rock occasionally lense - shaped accretions of sulphide (pyrite).
Sharp hanging wall.

375.00 - 376.00 : Biotite - amphibole bearing quartzite
(meta - arenite)
whitegr, well - layered, cm - thick often discontinuous qtz - bands interlaminated by mm - layers dominated by phyllosilicates (biotite some sericite) carrying sometimes huge needles (max. 1.5 cm) of amphibole which always are sub - parallel the compositional banding.
Sharp hanging wall.
121/44° SW.

0 - 1 m
(true thickness)

376.00 - 376.70 : Amphibole - qtz - fspar gneiss
(meta - qtz - keratophyr)
grwhite, within places rusty staining, fine - grained with porphyroblasts of amphibole (max. 2.0 cm long) being randomly oriented, crudely cm - layered, rare spots of sulphide (pyrite), meta - qtz - keratophyr locally is accompanied by magnetite - quartzite (oxide facies iron formation); footwall occasionally consists of : amphibolite, plag. - amphibolite, garnet bearing sericite - biotite - amphibole - fspar - qtz gneiss

0 - 50 m
(true thickness)

0 - 35 m
(true thickness)

0 - 35 m
(true thickness)

(meta - basalt, tuff / flow)
gn to grgn, medium - grained in places even coarse grained, very variable lithology within a few meters of strike grading from amphibolite to banded amphibolite with cm - layering composed of alternate sericite-biotite - qtz - amphibole and amphibole - qtz bands.
127/48° SW.

376.70 - Garnet bearing chlorite - sericite schist
(meta - pelite)
greenishgr, porphyroblastic texture, porphyric biotite

Thinsection
whole rock
analysis

grained, amphibole - needles subparallel to the plane of schistosity, coarse - grained rock varieties often with distinct leopard - texture which is due to fan - shaped crystal aggregates of amphibole being of cm - size which are surrounded by plagioclase, qtz and epidote (see SNØ-13).
Sharp hanging wall.

238.00 - 248.00 :

Sample:SNØ-12
Thinsection
whole rock
analysis

Sericite - amphibole - plagioclase - qtz - rock/schist
(meta - basalt, flow)
lightgr, fine - grained with slightly porphyric amphibole prisms of max. 0.3 cm length often being parallel to the plane of foliation, crude development of layering due to modal changes of amphibole and plagioclase or qtz.

248.00 - 250.50 :

Fragment horizon
amphibole schist
(meta - basic lapilli tuff or volcanic debris flow)
gn, poorly sorted, rounded to subrounded greatly deformed and flattened fragmentes of fine - grained amphibolite, mainly medium - crystalline plagioclase - amphibolite and amphibole qtz - plagioclase rock embedded in a matrix variable in composition but mostly being basaltic consisting of carbonate, amphibole, plagioclase and minor sericite, amphibole is the most prominant mineral forming prisms of average 1.0 cm length which are randomly oriented.

250.50 - 370.00 :

Sample:SNØ-11
Thinsection
whole rock
analysis

Amphibole schist, plagioclase amphibolite
(meta - basalt, flow)
gn, medium - grained with minor intersection being fine - grained, often with distinct leopard - texture, some interlayers of agglomeratic basalt or basaltic lapilli tuff, sometimes sericite - amphibole - plagioclase - qtz rock / schist (leuco basalt, flow) (similar : 238.00 - 248.00 m), near footwall contact towards mica - schist abundant high - calcareous epidote - sericite - biotite - fspar - amphibole - qtz gneiss (banded amphibolite, supp. basaltic tuff)
123/43° SW at 251.00 m, 120/42° SW at 365.00 m.

as cross - mica being equally distributed, biotite cause spotted appearence of the rock, in places interlayers of high calcareous amphibole - chlorite - sericite schist characterized by randomly oriented needles of amphibole (average 1.0 cm long) which partly are replaced by biotite and scattered idiomorphic crystals of carbonate.
108/37° S at 386.00 m.

RAILROAD PROFILE

(Hjerkinn)

southern part

183.10 m southprolonging from point

527850 6899650 UTM grid, zone 32

Top map. 1519 III Hjerkinn

By: Dr. F.D. Priesemann

southwards
downsection

0.00 - 4.80 : Magnetite - biotite quartzite

(meta - chert, oxide and silicate facies iron formation)

alternate gr with bluish tint and browngr, mm- to cm-compositional banding with some interlayers being dm-thick, always sharp layering contacts, more or less rhythmic alternation of dense magnetite quartzite with biotite phyllite to biotite schist, sparse intercalations of magnetite poor quartzite, discontinuous band of pyrite - sericite bear. biotite - qtz rock at 1.40 - 1.42 m.

chemical analysis
HJE - 18

Dip : 0.00 75°N, 2.00 m 74°N, 4.80 m 80°N.

Sharp footwall.

4.80 - 5.48 : Qtz - plagioclase rich biotite - amphibole schist

(meta - basalt, flow)

gn, medium - grained, nematoblastic texture, biotite as tiny flakes and discontinuous layers always parallel the major plane of foliation, rare spots of hypidiomorphic py.

Dip : 5.48 m 70°N.

Sharp footwall.

5.48 - 6.07 : Magnetite quartzite

(meta - chert, oxide facies banded iron formation)

darkgr sporadically with distinct bluish tint, dense, laminated, close alternation of magnetite quartzite and mt - barren quartzite, rare mm- thick crosscutting veins of epidote.

Dip : 6.07 m 79°N.

Sharp footwall.

6.07 - 8.50 : Schistose amphibolite, amphibolite

(meta - basalt, flow)

gn, fine- to medium -grained, partly with nematoblastic texture, crudely layered by tiny bands of qtz - carbonate, pyrite is present occasionally, it slightly is enriched (2 Vol.-%) between 7.83 - 7.91 m.

Dip : 8.00 m 80°N.

southwards
downsection

8.50 - 15.17 : Amphibole bear. biotite - sericite - chlorite schist
(meta - mixed mafic volcanic and epiclastic sedimenttary layer)
gn to grgn, layered with flaser-structure caused by nodules of qtz and carbonate which equally are distributed amphibole forms slightly porphyric needles which are parallel to the planar fissility of the rock, minor bands of carbonate are present between 8.62 - 8.78 m and 9.76 - 10.52 m, a qtz - keratophyr interlayer with low - grade dissemination of pyrite occurs at 9.00 - 9.05 m, pyrite is somewhat enriched (2 Vol.-%) between 12.27 - 12.57 m.
Dip: 12.00 m 83° N.

15.17 - 15.24 : Magnetite quartzite
(meta - chert, oxide facies banded iron formation)
blackish with distinct bluish tint, extremely fine - grained, dense, laminated by medium - grained schistose amphibolite which in places shows idioblasts of carbonate, dust-like magnetite is found within chert as well as in amphibolite, latter carries occasionally some pyrite which forms discontinuous laminae.
Dip: 15.24 m 81° N.

15.24 - 16.76 : Schistose amphibolite
(meta - basalt, flow)
gn, medium - grained, nematoblastic texture, sometimes with crudely developed flaser - structure being due to scattered, tiny nodules of qtz or carbonate.
Dip: 16.86 m 83° N.
Sharp footwall contact.

16.76 - 16.81 : Magnetite - quartzite
(meta - chert, oxide facies banded iron formation)
same as: 15.17 - 15.24 m.

16.81 - 18.79 : Amphibolite
(meta - basalt, flow)
gn, fine - to medium - grained, sporadically with epidote veining, rare spots of py.
Dip: 17.10 m 85° N.

southwards
downsection

18.79 - 19.63 : Biotite - bear. amphibole sericite - chlorite schist
(meta - altered mafic volcanic tuff)
gn to grgn, porphyroblastic, crudely developed compositional layering, fine - crystalline sericite and chlorite as groundmass for randomly oriented porphyroblasts of amphibole max. 1.5 cm in length.

AA

19.63 - 19.65 : Amphibole - bear. qtz rock
(meta - hydrothermal silica with some iron sulphide)
gr to slightly greenishgr, fine - grained granoblastic with not oriented slightly porphyric needles of amphibole, low - grade dissemination (± 3 Vol.-%) of py.
Dip : 19.63 m 76° N.

chemical analysis
HJE - 17

19.65 - 19.71 : Schistose amphibolite
(meta - basalt, flow)
gn, fine - grained, nematoblastic texture.

19.71 - 19.88 : Pyrite - amphibole - qtz gneiss
(meta - hydrothermal silica with mafic volcanic interlayers)
gr to gngr, fine - grained granoblastic qtz - fspar layers which carry slightly porphyritic needles of amphibole being oriented at random alternate with laminae of fine - to medium - grained amphibolite; pyrite makes up on average 10 Vol.-% of the rock, it occurs within the qtz as well as the amphibolite layers and tends to be homogeneously distributed but sporadically forms thin layers.
Dip : 19.88 m 78° N.

chemical analysis
HJE - 17

19.88 - 20.05 : Schistose amphibolite
(meta - basalt, flow)
gn, fine - to medium - grained, nematoblastic texture, rare spots of pyrite.

20.05 - 21.28 : Calcareous qtz - rich biotite - bear. sericite - chlorite schist
(meta - mafic volcanic tuff)

southwards
downsection

gn to lightgn, fine - crystalline, compositional layering with stringers and lenses of carbonate.
Dip : 20.80 m 78° N.

21.28 - 21.44 : Qtz - rich schistose amphibolite
(meta - basalt, flow with interlayers of hydrohtermal silica)
chemical analysis HJE - 16b
same as : 22.62 - 22.37 m, band of massive pyrite.
Dip : 21.30 m 71° Næ

21.44 - 21.62 : Magnetite - quartzite
(meta - chert, oxide facies banded iron formation)
darkgr with bluish tint, extremely fine - grained, dense, mm - alternation of magnetite rich and magnetite poor quartzite bands.
Dip : 21.62 m 80° N.

21.62 - 22.37 : Chlorite - bear. qtz - rich schistose amphibolite
(meta - basalt, flow)
chemical analysis HJE - 16a
gn, fine - grained with intersections being medium - grained, homogeneous but sometimes distinctly layered, lenses and stringers of carbonate throughout; schlieren laminae and trains of granules of pyrite are restricted to an interface which extends from 21.79 - 22.05 m, the sulphide amounts to 10 % by volume of the rock.
Dip : 22.00 m 77° N.

22.37 - 22.43 : Magnetite - quartzite
(meta - chert, oxide and sulphide facies banded iron formation)
same as : 21.44 - 21.62 m, occasionally mm - thick bands of massive pyrite.
Dip : 22.40 m 77° N.

22.43 - 24.33 : Plagioclase amphibole schist
(meta - basalt, flow)
gn, medium - grained, nematoblastic texture; rare spots of pyrite.
Dip : 22.70 m 79° N.

24.33 - 24.83 : Biotite - bear. qtz - rich amphibole schist

southwards
downsection

(meta - basalt, flow)
gn, predominately fine - grained, laminated with in places flaser - structure which is due to the tendency of quartz and biotite to from nodules and flasers respectively, rare spots of pyrite.
Gradual contact to underlying rock.

24.83 - 25.33 : Calcareous sericite - chlorite schsit
(meta - Mg - Fe - rich sediment)
lightgn, lamination with superimposed flaser - structure, irregular alternation of laminae made by chlorite which sporadically is accompanied by porphyroblasts of amphibole and bands and discontinuous layers composed of carbonate.
Sharp contact.

25.33 - 25.35 : Amphibole - chlorite - pyrite - qtz gneiss
(meta - hydrothermal silica and sulphide in alternation with mafic volcanic interlayers) (similar : HJE - 11a)
alternating gn and white or colourless, cm - alternation of amphibole - chlorite schist and amphibole - bear. quartzite which in most of the cases shows a high - grade dissemination of pyrite, mostly sharp layering - contacts but sometimes gradations between bands of different composition. The banded layer may join into a 10 cm thick band of pyrite - qtz rock.
Sharp contact.

chemical analysis
HJE - 15a

chemical analysis
HJE - 15b

25.35 - 29.50 : Calcareous biotite - bear. sericite - chlorite schist
(meta - Mg - Fe - rich sediment)
similar : 24.83 - 25.33 m.

29.50 - 55.10 : Biotite - bear. sericite schist
(meta - pelite)
gr with slight greenish tint, often with flaser structure, locally passing into laminated rock, porphyroblastic texture, interlocking qtz crystals as layers or lenses in alternation with layers composed of fibrous, parallel sericite, biotite forms porphyro-

southwards downsection

blasts and fascicular aggregates which are oriented at random, it is equally distributed thus cause a spotted appearence of the rock, pyrite sometimes occurs forming max. 0.2 cm large xenomorphic crystals.
Dip : 53.00 m 85° N.
Gradual footwall.

55.10 - 58.52 : High calcareous biotite - bear. sericite schist
(meta - pelite)
same as : 29.50 - 55.10 m but with scattered idioblasts of carbonate on average 1 mm across, locally cross - cutting carbonate veins, the mode of carbonate varies strongly without exceeding 20% by volume of the rock.
Dip : 56.00 m 79° N, 58.00 m 84° N.
Gradual footwall.

58.52 - 60.70 : Slightly calcareous biotite - bear. sericite schist
(meta - pelite)
same as : 55.10 - 58.52 m but with lesser carbonate (< 1 Vol.-%).
Dip : 59.00 m 81° N.

60.70 - 61.70 : Calcareous biotite - sericite schist
(meta - pelite)
same as : 55.10 - 58.52 m but with lesser carbonate.
61.22 - 61.30 m : Biotite - sericite - qtz gneiss
(meta - exhalative qtz interlayered by pelitic sediment which shows volcanic impurity)
distinctly cm - banded, alternation of bands made by qtz and sulphide and layers predominated by phyllosilicates, pyrite forms a medium - grade dissemination within the qtz - bands while it is nearly totally absent from the phyllosilicate layers.

chemical analysis
HJE - 14a

61.70 - 61.88 : Slightly carbonaceous biotite - sericite bear. pyrite qtz rock
(meta - hydrothermal silica and sulphide)

southwards downsection

chemical analysis HJE - 14b

lightgr, medium - grained granoblastic quartz with medium - grade pyrite dissemination, sporadic occurrence of mm - thick schlieren or layers composed of phyllosilicates and carbonate, sometimes clusters of carbonate, the sulphide amounts on average to 15 % by volume of the rock.
Dip : 61.70 m 77° N.

61.88 - 63.08 : Slightly calcareous biotite-bear. sericite schist
(meta - pelite)
same as : 58.52 - 60.70 m.
62.56 - 62.62 m : Biotite bear. qtz - fspar rock
same as : 61.22 - 61.30 m.

63.08 - 63.43 : Slightly calcareous quartz - schist
(meta - quartz - sandstone with pelitic impurity)
lightgr with slightly greenish streaks, flaser - structure, interlocking elongate qtz crystals layers or lenses in alternation with streaks of fine - fibrous sericite, carbonate forms sparse layers of mm - to - cm thickness.
Dip : 63.00 m 88° N.
Gradual footwall.

63.43 - 76.20 : Calcareous sericite schist
(meta - pelite with marble layers)
same as : 29.50 - 55.10 m but only locally with cross - biotite, frequent mm - to cm - thick bands of carbonate.
Dip : 64.00 m 81° N.
Gradual footwall.

76.20 - 78.70 : Carbonate - biotite - bear. qtz - rich sericite schist
(meta - qtz - rich pelite)
same as : 29.50 - 55.10 m, carbonate always is bound to qtz thus rarely it forms discontinuous layers of mm - to - cm thickness.
Dip : 73.00 m 84° N.
Gradual footwall.

southwards
downsection

78.70 - 79.40 : Calcareous biotite - sericite schist
(meta - pelite with marble layers)
same as : 63.43 - 76.20 m but richer in biotite which tends to be oriented parallel to the major foliation/ lamination of the rock.
Gradual footwall.

79.40 - 87.80 : Slightly calcareous biotite - bear. sericite schist
(meta - pelite)
similar : 29.50 - 55.10 m but with rare cm-thick bands of carbonate which sometimes crosscut the major foliation. At 83.00 m thin interlayer of sericite - biotite schist which contains subordinate py as schlieren which are parallel aligned with the major foliation of the rock.
Dip : 80.00 m 84° N.

chemical analysis
HJE - 13

87.80 - 87.86 : Amphibole - bear. sericite schist
(meta - pelite with volcanic impurity)
gr with abundant darkgn needles, fine - fibrous sericite with scattered, not oriented idioblasts of amphibole, the needles from 0.1 to 1.0 cm in length.
Sharp contact.

87.86 - 88.02 : Amphibole - pyrrhotite - bear. quartzite
(meta - hydrothermal silica and iron - sulphide, supp. distal black smoker deposit)
schlieren and stringers and laminae of po and strongly oriented amphibole needles are inhomogeneously distributed within colourless quartz; po amounts to 7 % by volume of the rock.

chemical analysis
HJE - 12a

88.02 - 88.07 : Biotite - bear. sericite - amphibole schist
(meta - mafic volcanic with epiclastic sedimentary impurity)
grgn, medium - crystalline, strongly parallel oriented idiomorphic crystals of amphibole joined by fine - fibrous sericite and slightly coarser biotite which tends to be widely scattered; schlieren of po which

chemical analysis
HJE - 12a

southwards downsection

are parallel to the foliation of the rock, are homogeneously distributed the amount of sulphide is 1 to 2 % by volume of the rock.
Sharp contact.

88.07 - 88.67 : Amphibole - bear. qtz - biotite - sericite schist
(meta - tuffaceous sediment)
browngr, fine - crystalline, crude development of compositional lamination which is due to the tendency of biotite to collect within distinct layers or lenses, sericite is fine - crystalline while amphibole froms idioblasts which are parallel aligned with but also can be cross the major foliation of the rock, the acicular crystals reach lengths of 1.0 cm; low - grade dissemination of mt.
Gradual contact.

88.67 - 88.75 : Amphibole - bear. qtz - biotite - sericite schist
(meta - tuffaceous sediment with abundant hydrothermal silica)
browngr, with abundant white to colourless bands and lenses, lenticular structure which transgoes into a cm - banding, schlieren and alyers composed of phyllosilicates in nonrhythmic alternation with bands and lenses of quartz which contains tiny crystals of amphibole; schlieren, discontinuous laminae and flakes of po, the sulphide amounts to 3 % by volume of the rock.
Sharp contact.

chemical analysis HJE 12b

88.75 - 88.82 : Pyrrhotite - qtz rock
(meta - hydrothermal silica and sulphide, supp. distal black smoker deposit)
brownish, variable concentration of po within white to colourless qtz, often high - grade but sometimes as low - grade dissemination.
Sharp boundaries.

chemical analysis HJE - 12c

88.82 - 89.22 : Biotite - sericite schist
(meta - pelite)

southwards downsection

gr with abundant brown flakes, laminated or with lenticular structure, close alternation of mm-thick layers composed of fine - fibrous sericite and porphyroblasts of biotite which are on average 0.15 cm large and mostly parallel to the major foliation of the rock and mm - thick bands or lenses of qtz; several flakes and stringers of po.
Sharp boundaries.

89.22 - 89.28 : Pyrrhotite - qtz rock
(meta - hydrothermal silica and sulphide supp. from black smoker activity)
similar : HJE - 12 a.

chemical analysis HJE - 12d

89.28 - 89.58 : Biotite - sericite schist
(meta - pelite)
similar : 88.82 - 89.22 m.

89.58 - 89.66 : Pyrrhotite - qtz rock
(meta - hydrothermal silica and sulphide supp. from black smoker activity)
similar : HJE - 12 c.

89.66 - 90.61 : Calcareous amphibole - biotite - bear. sericite schist
(meta - pelite with minor volcanic impurity)
gr with sparse brown and gn flakes and needles, homogeneous, fine - crystalline sericite and qtz form the groundmass while amphibole and biotite occur as scattered porphyroblasts of mm - size which always are aligned with the major foliation of the rock, carbonate is concentrated within up to 1 cm - thick bands and lenses.
Sharp contact.

90.61 - 90.71 : Schistose amphibolite
(meta - basalt, flow)
gn, medium - crystalline, strong preferred orientation of needles of amphibole; subordinate po which occurs as schlieren or stringers being parallel aligned with the major foliation of the rock.

Sharp contact.

southwards
downsection

90.71 - 91.96 : Biotite - bear. pyrrhotite - rich quartzite
(meta - hydrothermal silica and sulphide supp. originated from black smoker activity)
translucent qtz with variable amount in po, the latter forms laminae, discontinuous layers, clusters and schlieren which seem to be of any direction, biotite is concentrated within schlieren and wavy laminae and locally forms a ribbon - shaped pattern; the sulphide amounts on average 10 % by volume of the rock.
Sharp footwall contact.

91.96 - 93.10 : Biotite - sericite schist
(meta - pelite)
similar : 88.82 - 89.22 m.
Gradually passing into biotite - sericite schist without po - mineralization.

93.10 - 93.85 : Calcareous biotite - sericite schist
(meta - pelite with marble layers)
same as : 78.70 - 79.40 m.

93.85 - 96.90 : Slightly calcareous biotite - sericite schist
(meta - pelite)
same as : 89.10 - 93.10 m.

96.90 - 98.00 : Calcareous biotite - sericite schist
(meta - pelite with marble layers)
same as : 78.70 - 79.40 m.

98.00 - 111.30 : Slightly calcareous biotite - bear. sericite schist
(meta - pelite)
same as : 79.40 - 87.80 m.
101.73 - 101.85 m : Laminae with low- grade po- mineralization , sulphide amounts to 1 Vol.-%.
104.90 - 105.15 m : Low- grade dissemination of po, 1 Vol.-%.

111.30 - 113.30 : Sericite - biotite rich quartzite

southwards
downsection

(meta - quartz - sandstone with pelitic impurity)
same as : 63.08 - 63.43 m but only laminated and without carbonate.
Dip : 111.30 m 88° N.

113.30 - 159.40 : Biotite - bear. qtz - rich sericite schist
(meta - siltstone)
same as : 29.50 - 55.10 m but with a distinct lamination, biotite crystal aggregates show a preferred orientation, a scarcity are small lenses of carbonate.
Dip : 133.00 m 86° N.

159.40 - 161.85 : Biotite - sericite bear. quartzite
(meta - qtz - sandstone with interbeds of meta - pelite and coarse - grained meta - sandstone)
gr, distinctly layered, thick bands of quartzite with pelite impurity alternate with laminae of biotite - sericite schist and coarse - grained micaceous quartzite, the latter is characterized by elongate clasts of qtz or qtz - fspar max. 1.0 cm in length which are embedded in a quartzy matrix with scattered flakes or crystal aggregates of biotite and lesser abundant of sericite, the contacts between the different layers tend to be sharp, crosscutting veins of carbonate of mm - sometimes cm - thickness are rarely developed.
Dip : 160.50 m 80° N.
Sharp footwall.

161.85 - 163.75 : Slightly carbonaceous biotite - sericite bear. quartzite
(meta - coarse grained sandstone/graywacke)
gr, blastopsammitic texture, foliated with linear preferred orientation of elongate clasts and mica flakes, gradual decrease in relict sedimentary grain - size upsection, the continuous gradation however locally is interupted by banded sections of alternate coarse - grained and medium - to fine - grained graywacke layers, furthermore micaceous streaks exist far down in the coarse - grained basis, the frbric of the rock is that of felsic elongate clasts of predominately blue qtz which are equally distributed within a quartzy

southwards
downsection

matrix with scattered flakes or streaks of biotite and sericite.
Dip : 161.85 m 82° N, 162.50 m 81° N, 163.00 m 80° N.
Gradual footwall.

163.75 - 164.65 : Fragment horizon
biotite - sericite - fspar qtz rock
(meta - paraconglomerate supp. meta - tilloide)
gr with light gr clasts, blastosephitic texture, poorly stratified, foliated with linear preferred orientation of elongate clasts and mica flakes, stretched and flattened subrounded to rounded fragments of vein - qtz - qtz - sandstone and supp. qtz - keratophyr with long dimensions being lesser than 15 cm are scattered in a graywacke matrix with blastopsammitic texture (same as : 161.85 - 163.75 m), the amount of coarse clasts more suddenly decreases within the hanging portion forming a poorly defined gradation upsection.
Dip : 163.75 m 79° N.
Sharp footwall.

164.65 - 165.65 : Qtz - rich biotite - sericite schist
(meta - pelite)
same as : 29.50 - 55.10 m but with biotite showing a preferred orientation.
Dip : 165.00 m 81° N.

165.65 - 166.05 : Calcareous biotite - sericite quartzite
(meta - coarse grained sandstone/graywacke)
same as : 161.85 - 163.75 m.
Dip : 166.00 m 82° N.

166.05 - 173.65 : Slightly calcareous biotite - sericite - rich quartzite
(meta - fine to medium grained qtz - sandstone interstratified by coarse graywacke layers)
gr, blastopelitic to blastopsammitic texture, distinct grain - size banding composed of alternate fine crystalline phyllosicate dominated layers and medium - grained biotite - sericite rich quartzite bands with poorly developed clastic texture, rare interlayers of coarse -

southwards
downsection

grained meta - sandstone/graywacke with distinct blastopsammitic texture (similar : 161.85 - 163.75 m), locally veinlets or idioblasts of carbonate.
Dip : 170.00 m 82° N.

173.65 - 174.50 : Fragment horizon
biotite - sericite - fspar - qtz rock
(meta - paraconglomerate supp. meta - tilloide)
same as : 163.75 - 164.65 m but with sharp hanging wall.

174.50 - 183.10 : Micaceous quartzite
(meta - qtz - sandstone)
gr, laminated with poorly developed lenticular or flaser structure, often strongly isoclinally folded, interlocking qtz - crystals as cm - thick layers and lenses in alternation with mm - thick bands of interleaved sericite which sometimes is accompanied by biotite and garnet.
Dip : 175.00 m 82° N.
Sharp footwall.

183.10 : Slightly calcareous biotite - sericite schist
(meta - pelite)
same as : 29.50 - 55.10 m.

No outcrops
end of profile

RAILROAD PROFILE

(Hjerkinn)

northern part

243.00 m northprolonging from point

527850 6899650 UTM grid, zone 32

Top. map. 1519 III Hjerkinn

By: Dr. F.D. Priesemann

northwards
upsection

0.00 - 9.20 : Amphibole bear. biotite - sericite schist
(meta - pelite with basic volcanic impurity)
gr with faint greenish tint, laminated, porphyroblastic texture, close alternation of qtz-dominated bands with phyllosicate layers, slightly porphyric amphibole and biotite, the latter forming fascicular bundles, being parallel to the major plane of foliation, the mode of amphibole decreases gradually upsection, rare spots of py.
Dip: 5.00 m 80° N.

9.20 - 11.80 : Calcareous biotite - sericite schist
(meta - pelite)
gr with faint greenish tint, laminated, close alternation of qtz-dominated bands with phyllosilicate layers, biotite forms slightly porphyric crystals which tend to be aligned along the major plane of foliation, tiny scattered idioblasts of carbonate, rare spots of py.

11.80 - 22.20 : Qtz-rich biotite bear. sericite schist
(meta - pelite)
same as: 29.50 - 55.10 m (southern part) but normally with parallel biotite, in places mm- or even cm- thick bands of carbonate, sporadically cm- thick veins or layers of remobilized milky qtz.
Dip: 12.00 m 80° N.

22.20 - 43.00 : Carbonate bear. qtz - biotite - sericite schist
(meta - pelite)
same as: 9.20 - 11.80 m but with higher qtz amount and minor carbonate.
Dip: 28.00 m 81° N, 36.00 m 83° N.

43.00 - 45.70 : Qtz rich biotite - sericite schist
(meta - pelite)
similar: 11.80 - 22.20 m.
Dip: 43.00 m 80° N.

northwards upsection

45.70 - 135.00 : Biotite sericite bear. quartzite
(meta - qtz - sandstone with pelitic impurity)
same as: 174.50 - 183.10 m (southern part) but no garnet, dissemination of idiomorphic crystals of mt on average 0.07 cm across between: 58.00 - 59.00 m, 62.00 - 68.00 m, 68.00 - 73.00 m, 102.00 - 109.00 m.
Dip: 58.00 m 86° N, 72.00 m 81° N, 82.00 m 83° N, 106.00 m 80° N, 120.00 m 88° N, 134.00 m 82° N.

bridge at 96m

135.00 - 135.80 : Qtz - biotite - sericite schist
(meta - pelite)
similar: 29.50 - 55.10 m (southern part) but qtz-enriched.

135.80 - 142.00 : Biotite - sericite rich quartzite
(meta - qtz - sandstone with pelitic impurity)
similar: 174.50 - 183.10 m (southern part) but no garnets, locally with interlayers of quartzphyllite.

142.00 - 146.00 : Qtz rich biotite - sericite schist
(meta - pelite)
similar: 29.50 - 55.10 m (southern part) but strongly isoclinally folded, varying qtz-amount sometimes increasing to from a micaceous quartzite, medium - grade dissemination of py (5 - 10 Vol.-%) mainly as idiomorphic crystals average 0.04 cm across.
Dip: 146.00 m 90°.

146.00 - 150.00 : Biotite - sericite rich quartzite
(meta - qtz - sandstone with pelitic impurity)
similar: 174.20 - 183.10 m (southern part) but no garnets.

150.00 - 151.50 : Biotite - magnetite - qtz rock
(meta - chert, silicate and oxide facies iron formation)
darkgr, fine - grained, crudely schistose, biotite forms tiny idiomorphic crystals which equally are distributed, high - grade dissemination of mt.
Dip: 150.50 m 78° S.

northwards
upsection

151.50 - 151.60 : Qtz rich biotite - sericite schist
(meta - pelite)
same as: 142.00 - 146.00 m.

151.60 - 160.00 : Qtz - biotite - sericite schist
(meta - pelite)
same as: 135.00 - 135.80 m.
Dip: 158.00 m 90°.

160.00 - 201.00 : No outcrop.

201.00 - 205.00 : Biotite - sericite schist
(meta - pelite)
same as: 29.50 - 55.10 m (southern part) but often with parallel biotite.
Dip: 201.00 m 90°.

205.00 - 240.50 : Biotite - sericite rich quartzite
(meta - qtz - sandstone with pelitic impurity)
same as: 135.80 - 142.00 m.
Dip: 205.00 m 88° S, 226.00 m 87° S, 235.00 m 87° S, 240.00 m 82° S.

240.50 - 243.00 : Qtz rich biotite - sericite schist
(meta - pelite)
same as: 135.00 - 135.80 m.
Dip: 242.00 m 81° S.

243.00 : No outcrop, end of profile.