



Bergvesenet

Postboks 3021, 7002 Trondheim

Rapportarkivet

Bergvesenet rapport nr BV 2261	Intern Journal nr	Internt arkiv nr	Rapport lokalisering	Gradering Fortrolig
Kommer fra „arkiv Sulitjelma Bergverk A/S	Ekstern rapport nr "522116001"	Oversendt fra	Fortrolig pga	Fortrolig fra dato:
Tittel Geologiske undersøkelser på malmhorisont ved Klaravann.				
Forfatter LANGE, D VASSHAUG, B.		Dato 1970	Bedrift Sulitjelma Gruber A/S	
Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad
Fagområde	Dokument type	Forekomster		
Råstofftype	Emneord			
Sammendrag Mineralisert sone øst - nordøst for Klaravann er kartlagt i ca. 700 m lengde, M = 1:1000. Fleire skjerp er beskrevet. Sulfidmineralisering (py og cpy) mellom serisitt-kloritt skifer og kloritt-skifer og mellom massiv kvartsitt og amfibolittskifer (laveste malmsone). En talk - lignende bergart er også skildret. Forslag til borprogram. Saltdal.				

DAGBOK

SOMMEREN

1969

Bjarne Vasshang

INNHOLD

SIDE 3-44 ~ Lokalitetsbeskrivelse.

SIDE 46-47 ~ Steinprøveliste.

Foto AE 14

Lok 1.

Lok 2

Foto AE 12.

Lok 3.

Lok 4.

Fellet syd for
Skaitigårdene.

Fra mandag 18.8.69.

~~Skaitigårdene~~ Metagabitter i mi-
sløjring lige nedenfor skaiti-
gårdene.

Prove 1

En lys glinsende skifer (muscovit
mest muskovit). Finkornet.

Før små stannolittkrystaller.

Prove 2

Graptitformende fyldt

N 22 V, 44 N

Kvartsrik muskovit-skifer med

Lok 5.

Lok 6.

Lok 7

Lok 8

Lok 9

en del diorblendesåler

Noe kloritisert.

Skiferen blir etter hvert noe
mer rik på biotit og dessuten
granatførende etter som en
kommer lenger i lagrekken.

Prøve 4.

N 60V, 38N

Middelstarkt amfibolittskifer.

Inneholder også en del kloritisert
muskovit

Prøve 6

Fyllitt som muligens kan
inneholde noe grafitt.

Fet grafittskifer

Kvarts serisitiskiferen ligger

Lok 10

inder grafitten som en tyk
horisont med samme mæktig-
hed ca 4-5 m.

Sonen er meget forvitret i
dagen slik at en ikke kan
se noe imprægnering

Sonen inneholder en god del
kvartsklyser som for det aller
meste er gjennomrustet.

Under serittskiferen ligger
en grønskifer. På premsen
melder disse en grønnstenes
sandig og meget porøs.

N40V, 35N

Inneholder en del kalk.

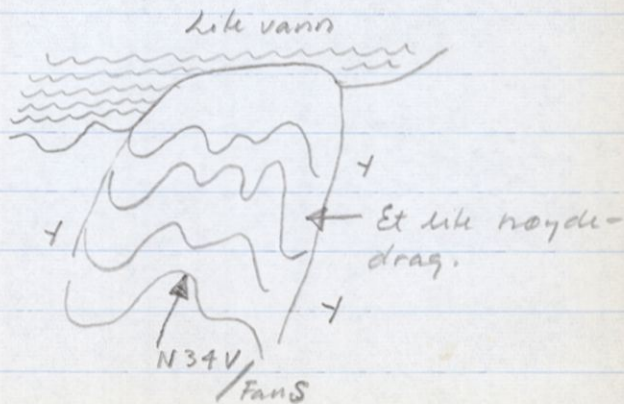
Prøve 10.

Lok 11.

Lok 12

Grøns skiferen er grovkornet
og er på den fjellplate uttøst
slik at det er fullt med hull
og groper. Dette skyldes et meget
stort kalkinnhold.

Prove II.



Lok 13.

Lok 14

Lok 15

Lok 16

Frikkantet glinsende fyllittisk pl. skift
 Denne blir på grensen mot
 en amfibolitt en del
 amfibolforande.

Prøve 13

En noe skifung mørk amfibolitt
 med plagioklaskrystaller avviket
 i band som ligger parallelt
 med skifningen.

Prøve 14

Linasjon målt i snufolder
 i amfibolitten

N 24V / 28N

Fyllitt med en del grafitt-
 innhold. Somen ligger
 under amfibolitten i bunn

Lok 17.

Lok 18.

av en fjellkratts som stupar
ned i ei grusslette
Noe rust på overflaten.

Like under grafittskiferen
kommer så en kvarts-
glimmerskifer. Meget lys
og middelkornet.

N40V, 46N

Prøve 17.

Lok 17 blir mer fylittisk
med mot en grafittfylitt-
soner på ca. 2m. (Lok 18)
Under denne fortsetter
en lys kvartsrik noe fylittisk
gl. skifer med kvartsboller

Lok 19

Lok 20

Foto $\Phi 13$

Lok 21.

Lok 22

Pett over høy hellhammer
ligger en amfiboliteskifer
ca 1 m tykk.

1. hellhammeren finner en
færre meter tykk grafitt-
formet fjell.

P.g.a. et meget intense re-
måte ruten på Skaitiakola
var.

Før klokket fytt

N 70 V, 44 N

Sirviteskiferen med grafitt-
skifer over og grønskifer
under.

Lok 23

Lok 24

Lok 25

Lok 26

Lok 27

Lok 28

Mektigheten er mellom 15-20 m

Serittsonen er her ca. 20 m

mektig N60V, 48N

N40V, 50N

Er her kommet ned i prøm-
skiferen i et lite bekkefar
nå finner nøyddrapet som
serittsammen følger.

Malt i serittskiferen

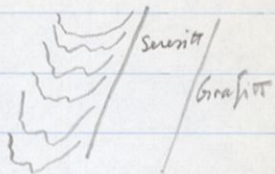
N50V, 48N

linasjan malt i småpolder
i grafittskiferen

N100 / 40N

Den underliggende grunn
stein er meget sterkt

tektonisert. Den er i intet



Lok 29.

Lok 30

Lok 31.

småfoldet og strøket ser
 på overflaten ut til å bølge
 av men i retning N-S.

Lineasjon i småfoldene som
 har kvartskonklusjoner i
 foldekammer. N20V / 26N

Lineasjon målt i småfoldene
 i grønnskiferen.

N18Ø / 40N

Målt i grønnskiferen like
 ved grensen til serisitt-
 skiferen. N104Ø, 48N

Det viser seg at også serisitten
 her er foldet etter samme
 mønster som grønnskiferen

Lok 32

Lok 33

Den har kvartskorner
i foldenommen. Hittil har
jeg ikke kunnet finde nogen
synlig mineralisering i
serenittsonen. Til gengæld
er zonen stærkt skifrig i
blotningerne og gennem
rustet de fleste steder.

Lineasjon målt i småfolder.

N22V / 28N

Lineasjon i småfolder i den
unduliggende grønnskeifer.

N26V / 28N

Strøket på grafitskiferen
forandrer sig pludselig.

En mindre del af den

Lok 34

Lok 35

Lok 36

blir foldet inn mot serisitt-
skiferen. Fra N26V, 98N
til N36Ø, 40N

På grensen mellom
grafittskiferen og serisitt-
skiferen N116Ø, 52N

Linearjan målt i små-
folder. N28Ø / 68N

Målt i småfolder 3m
lengre vest N / 48N

Begge målingene gjort
i serisittskiferen.

Målt i grafittskiferen
like over serisitten i
småfold.

N 78Ø / 46 N

Lok 37

Lok 38.

Lok 39.

Lok 40

Målt i den interne
lektoriserte grønnskeifer
under senitten.

Linasjon: N32V / 34N

Linasjon i grønnskeiferen
N 56V / 34N

En kommer på oversiden
av grafitten over i en
lys noe fet (kloritt, talk)
fylt med stede og fall
N116° , 50N

Den over grafittsonen
(grafittfunder fylt)
Mellom 39 og 40 er
muskparten overdekket

Lok #1

Foto AA-6 Lok 42.

Lok 13.

men det som kan sees synes
stort set a være fylt
Staurolittskifer. Fiskeknit
nærmest litt fyltisk, lys
glinsende overflade
der staurolitten er jævnt
fordelt og meget små
ligner Lok 2. men er
lavere i lag rækker.

Grov kalkholdig grønnsifer

Seresittskiferen vider seg her ut
til en mængde på 56m
fra a ha vært 2-3m
N 106°, 59N

Lok 44

Lok 45

Lok 46

Lok 47

Lok 48

N 138 V , 38 N

N 150 ϕ , 20 N

N 110 ϕ , 40 N

Klarit fyldt (frit) som var
længere med mod indeholder
var grafitt

N 104 ϕ , 54 N

N 160 ϕ , 72 N

Malt i den stærkt elektriseret
grafitshifer

Dette stødret er kun for et
mindre parti. Det antagende
har et mere ordinært stødret.

Lok 49.

Lok 50

Lok 51.

Lok 52

Lok 53

N20V, 40N

Malt i serittsamme

N68V, 52N

muktlut ca. 2,5m.

N44V, 50N

N142Ø, 42N malt i
grafitiferum.

Mellom 52 og 53 har samme
en muktlut på 10-15m.

Blotning der alle seritt-
samme synes. Den er øverst
mykt slifrig og lurt.
Under er den mer massiv.

Impregnasjon er særlig i
dagen.

Den massive delen er jevnt
impregneret.

Prøve.

Det lyktes å få ut et
skiverstykke såpass tørt at
det kunne legges ned som

Prøve.

Stusk og fall N60φ, 60N
limasjon i småfolder.

N 128φ. aksept. fall 68N
aksufall 60V.

Den ovenliggende grafitt-
skiver har 2 skiverglutoplan

Lok 54

N 136° , 70N og

N 120° , 78N

linnærjan i senåfolds.

N54V . Aksept. fra 60N

Et lite stykke øst for forrige
enaling

Mikrogluten øst fra lok 53
snart til ca 15m, nedre part
et par tykke band med
grafittskifer som ligger i
sammen.

N 106° , 54N målt en
en kvartarisk biotitt gl. skifer

Like under lok 54 og over

1 clean largest mat Øst:

graphitten ligger en same
med en fet (klorit, talc)
fyldt, skiftevis utseende
skifer.

Over sererittesonen same
men er ca. 20 m mæltig,
ligger i tur og orden:
Helt inn mot sereritten
ligger en tykk same
med meget finkornet, tett,
og massiv kvartsrik ^{gl. skifer}
glimmerskifer. Videre
følger en fet (klorit, talc)
fyldt skifer same underst
inneholder en del
graphitt. Så fortsetter en

i en middelskornet
biotit glimmerskifer.

Denne vedvarende i
fossen hvor en får et
godt smit øjeblik
amfibolitten. Viden følger
en meget fyldtisk gl. skifer.
som inneholder klorit, talk.
Endelig parti av denne
inneholder noe grafitt.
En kommer så inn
i en ny foss og har
først en renere fyldtisk
og like inn til fossen
ligger en sterkt bekløst
sert grafittskifer.

Lok 55

Lok 56

Lok 57

Foto A-A-6 Lok 58.

Lok 59

limasjon i folder.

N10V / 35N

N150Ø / 60N

N60Ø / 28N

Prose av en middeldkornet
massiv metaålsbro

En mer grafittformet
fynt.

En biotitopl. skifer som nederst
i skallet er middeldkornet
mens den lenger opp
blir mer finere kornet.

lok 60.

lok 61.

lok 62

over denne (59) ligger
en grovkornet amfibolit
(mitagablene?)

Prøve.

Videre følger over 60 en
grovere biotittskifer og øverst
en fyltittisk lignende
biotittskifer

En massiv kvartsrik
biotittskifer

Prøve.

Dermed i en fyltittisk
lignende glimmerskifer.

Foto A-A-8

hole 63

hole 64

hole 65

N 125 ϕ

akseplanets fan 62 N

aksefan 88 ϕ En noe grafittformende
fyllittN 110 ϕ , 62 Nliniaran i en lys.
glinsende gl. skifer.N 148 ϕ .

akseplanets fan 60 N

aksefan 16 ϕ

Prose av serinitiskiferen

hok 66

hok 67.

hok 68

med mineralisering

N 80° , 64N

En lys kvartsitt glinsende
skifer (muskovit?)

N 80° , 60N

Proven.

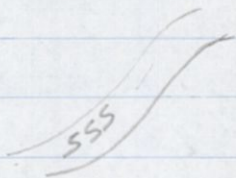
Finkornet kvartsittisk
glimmerskifer

N 78° , 43N

En sterk smafolding
i serien etter dette en
falsk skifrighet med
skifrighetsplan

N 50° , 40N

Loc 69



1 serienotskiften.

N 92°E, 74N

Fra siste elv til grusen
avtar sanden müligen
noe i mülighet fra
ca 20-25 til ca 10 m.

Ved grusen er sanden
2 deler med en fyllingsane
som deler den opp.

En rekke "minorfolder"
tyder på en antiklinal
mot øst.

hole 70

hole 17

hole 71

hole 72

hole 73

hole 74

Prøve av serpsittskiferen
med mineralisering
N 82°, 74N

Malt i en noe grafittforende
fylt N 78°, 66N

Prøve av en meget
massiv amfibolitt

En meget finkornet klartrisk
glimmerskifer

Malt i en meget finkornet
noe kloritisert glimmer-
skifer.
N , 74°

hole 75

hole 76

hole 77

hole 78

hole 79

hole 80

linnæan i småfold

N30V, 34N

En meget finhøret lys
fygittisk utseende glimmer
skifer

N82Ø, 26N

Prøve.

N80Ø, 60N

N110Ø, 50N

N84Ø, 44N

En lys kvartsrik glimmer-
skifer. En del små

hole 81

hole 82

hole 83

hole 84

inonke band antapelig
und storn biotitiumhold
enn resten.

N 108φ, 40N

N 90φ, 50N

Mitagablero

N 120φ, 86N

Mitagablero. Samusquelporis
en Bondinape, strøket i
de angivende bergarter
syntes å tilsa dette

Lok 85

Lok 86

like over Truddeimgården
i en ca 10 m høj fjell-
hammer i en liten
belek.

En lys biotit-skifer
lett besatt med små
granater.

N 146° , 54N

En grovkornet amfibolitt
(metagabbro). Den er
mye massiv

Over ligger en granat-
førende lett finkornet
biotit-glimmerskifer.

hole 87

hole 88

hole 89.

En lys granatglimmer-
skifer af samme
slag som 86. Den er
fin til middelskornet.

Prøve.

En lys gneisbergart. Den
er massiv og indeholder
biotit som er ansamlet
i en række aggregater.
Den er parallelt orienteret.

N 90° E, 52° N eller en
vis skifrigt i gneisen.

Loc 90

På grænsen mellem
den underliggende skifer
og gneisen er det en
meget homogen grafitskifer
Underst er grafitskiferen
skiferig i brudflaten
Overst er den mere massiv
Her synes det at være et
bra kvartsinnhold samtidig
som det er noe hornblende
til stedet
Noe impregnering av
sulfid mineraler synes at
være til stede.

Prøve.

hole 91.

hole 92

hole 93.

hole 94

En lys glinsende granat-
fornede og finkornet
skifer

N 104 ϕ , 12 N

En ganske finkornet granat-
glimmerskifer.

N 140 ϕ , 40 N

N 130 ϕ , 52 N

N 70 ϕ , 38 N

malt på skiferflaten i
stamolitøskiferen.

hole 95

hole 96

hole 97

hole 98

1 m uoe grafittførende
skifer

N120 ϕ , 40N

En meget tæt og finkornet
mørk bergart. Muligens en
biotitshifer eller en fin-
kornet amfibolite

N120 ϕ , 50N

N45 ϕ , 60N i en
kvartsrik stannolitfø-
rende skifer.

N80 ϕ , 40N

malt i en uoe grafittholdig

hon 99

hon 100

hon 101

Fyllit

En grovkornet biotitskifer
med meget indhold af
kvarts og granater.

Meget grovkornet amfibolite
(antageligt) i visen ned
fra Tredningjorden.

Over ligger en masse af
let biotitskifer.

N 138°, 360 mæt i
kalken.

Lok 102

Lok 103

Lok 104

Lok 105

En bank med grafittformet
fylt

Grafitformet skifer med
en noe kalkholdig glim-
mer skifer under og en
middelkornet biotitt skifer
over, og så denne inne-
holder litt kalk.

Kommen så videre
oppover i en litt
klorittisk muskovitt skifer
med noe biotitt.

Videre kommer en over
i en mer biotittrik

Lon 104

Lon 105

Lon 106

skifer som ikke er sa-
klonitisk.

Kvartit glimmerskifer
med store aggregater
av biotitt.

Prova.

Grafit-skifer

En grovkornet glimmer-
skifer med kvartsitt-
baller som gjør skifren
konglomeratisk av ut-
seende (på avstand)
på overflaten.

hon 107

hon 108.

hon 109.

Sunnstosonen har ved
væien en mæltighet på
 $c = 2\frac{1}{2}$ m.

N 30 ϕ , 14N

En noe kloritisk glim-
merskifer med store
biotitaggregater spredt
jevnt i skiferen

N 140 ϕ , 54N

En del kvartskonglomerat

En grovkornet amfibolitt

Oven ligger en grovkornet

Lon 110

kvartsbiotitskifer. med
litt kalk.

Under finner en det
samme som oven.

En noe grafittformet
fylt i hellammen

Under grafitten ligger
en lys klorittisk skifer
med en del biotit-
aggregater. En på over-
flaten nærmest ut som
en pytt.

Loc 111

Loc 112

Loc 113

Loc 114.

En grovkornt kvartsrik
glimmerskifer som
inneholder en del
grafitt

En lys grovkornt kvarts-
rik biotittskifer.
Denne fortsetter litt
mot syd og blir
ett lite lueret litt mer
finkornt.

N140 ϕ , 40N

1 kvartsbiotittskifer er det en

Low 115

utpreget falsk skifright
med skifrightplan

N 34V, 56N

linasjan i senafalden i
grafittskiferen.

N, 46N

Strøk og fann

N 100 Ø, 40N

Mellom 114 og 115 er det
velstende ritt glimmer-
skifer og noe mer pyrittisk
utseende skifer.

hole 116

hole 117

hole 118

En grovkornt amphibolit
(mugakbro) av samme
type og kornstørrelse
som de andre grov-
kornte amphibolitter

Lige under denne
amfibolitten ligger en
grafitførende fylite

Under grafitylitten
ligger så en lys glim-
merskifer som er
næ staurolitførende
På grænsen mod
grafitten er den næ

Loc 119

Loc 120

Loc 121

mer fyltisk

Oven grafittfyltten kommer
en kvartsbiotittskifer
med litt granat og
muligens noe stannolitt
N78Ø, 42N

N68Ø, 56N
nå i en granatførende
kvartsrik massiv
biotittskifer.
Prøve.

En lys glinsende
fyltisk utseende glimmer.

Lon 122

skifer. Den er meget
finkornet

Linearjon i senifolder

N 140 ϕ

Akseplanets fall 86 N

Aksefall 40 V

Prow	1	Lok	1
"	2	"	2
"	4	"	4
"	6	"	6
"	10	"	10
"	11	"	11
"	13	"	13
"	14	"	14
"	17	"	17
"	41	"	41
"	53A	"	53
"	" B	"	"
"	" C	"	"
"	57	"	57
"	60A	"	60
"	" B	"	"

From 61		To 61
-11-	65	" 65
"	66	" 66
"	70 A	" 70
"	" B	" 70
"	72	" 72
"	76	" 76
"	87	" 87
"	88	" 88
"	90 A	" 90
	" B	- " -
	" C	- " -
"	94	" 94
"	96	" 96
"	104	" 104

Geologiske undersøkelser
på malmhorisont ved
Klaravann

Utført sommeren 1970
av Duncan Large og Bjarne Vasshaug

032.001

BORHULL ER UTSATT PÅ FØLGENDE STEDER

	<u>Retning</u>	<u>Fall fra horisontal 360°</u>
944V - 107 S	N 12°V	60° N
980V - 106 S	N 12°V	40° N
1020V - 132 S	Langs rutenett	55° N
1060V - 134 S	Rett nord	60° N
1100V - 138 S	Langs rutenett	70° N
1140V - 140 S	N 22° Ø	70° N
1180V - 141 S	N 42° Ø	70° N
1220V - 187 S	N 42° Ø	70° N
1260V - 193.3S	N 42° Ø	70° N
1300V - 196 S	N 32° Ø	75° N
1340V - 200 S	N 30° Ø	70° N
1380V - 215.5S	N 30° Ø	70° N

S a m p l e s

The prefix "M" indicates a sample from an ore horizon

No.	Location		N o t e s	
M 1	925 V	19 S	Main Ore Horizon	
M 2	610 V	59 S	From a Green Amphibolite Schist just below Graphite Schist.	
M 3	1035 V	60 S	Main Ore Horizon	
M 4	748 V	11 S	Upper Ore Zone.	B. Vasshaug's No. 1
M 5	748 V	18 S	"	2
M 6	750 V	28 S	"	3,5
M 7	744 V	21 S	"	4
M 8	739 V	39,5 S	"	6
M 9	739 V	56,5 N	Lower Ore Zone	
M 10	"	"	"	
M 11	"	"	"	
M 12	755 V	53 N	"	
M 13	1140 V	70,5 S	Main Ore Zone	
M 14	"	"	"	
M 15	1135 V	70 S	"	
M 16	1140 V	70,5 S	"	
M 17	432 209		Pyrite in Quartz Sericite	
M 18	1300 V	18 N	Pyrite/Chalcopyrite in dark Quartzite/below the Lower Graphite	
M 19	1700 V	178 S	Upper Ore Zone	
M 20	1697 V	171 S	Upper Ore Zone	
M 21	1300 V	15 N	Small ore in interesting rock type/from below the Lower Graphite	
22	1670 V	205 S	Micaceous Chlorite Schist	
23	1676 V	191 S	From Micaceous Horizon at the base of the Upper Micaceous Chlorite Schist.	
M 24	1768 V	155 S	Upper Ore Zone	
25	1540 V	285 S approx.	Staurolite Schist	
M 26	951 V	32 S	Main Ore Zone	
27	998 V	92 S	Quartz Keralophyse in Upper Ore Zone	
28	978 V	55 S	Green Chlorite Schist	
29	982 V	18 N	Amphibole Schist	
30	920 V	41 N	Pink Calcaceous Quartzite horizon	

No.	Location	Notes
31	915 V 46 N	Sequence up the Lower Chlorite Schist
32	924 V 52 N	
33	932 V 63 N	
34	940 V 60 N	Micaceous Graphite Schist
35	1136 V 5 N	Talcose Rock
36	1046 V 2 N	
M 37	985 V 52 N	Fine Dissemination in quartzite below the Lower Graphite

360° Compass

Locations of Dips and Strikes. (All Strike Directions are E from N)

Location	Strike	Dip	Location	Strike	Dip
502 V 3 S	060°	50° to S	580 V 60 N	075°	46° to S
500 V 80 N	098°	49° to S			
510 V 81 N	088°	57° to S			
542 V 75 N	091°	40° to S			
560 V 71 S	094°	46° to S			
600 V 65 S	080°	40° to S			
632 V 62 N	112°	30° to S			
641 V 40 N	088°	36° to S			
694 V 56 N	077°	40° to S			
680 V 87 S	102°	28° to S			
743 V 58 N	064°	41° to S			
780 V 74 N	084°	40° to S			
832 V 58 N	110°	31° to S			
873 V 55 N	084°	36° to S			
897 V 60 N	086°	32° to S			
920 V 19 S	068°	42° to S			
960 V 38 S	065°	37° to S			
997 V 141 S	091°	35° to S			
1055 V 151 S	070°	26° to S			
979 V 102 S	074°	50° to S			
977 V 115 S	064°	46° to S			
912 V 104 S	081°	28° to S			
979 V 21 S	058°	35° to S			
991 V 23 S	080°	26° to S			
1011 V 117 S	097°	22° to S	1471 V 203 S	052°	17° to S
1016 V 12 S	180°	10° to W	1472 V 182 S	129°	33° to S
1025 V 113 S	087°	35° to S	1502 V 205 S	114°	19° to S
1028 V 67 S	046°	24° to W	1519 V 200 S	101°	15° to S
1033 V 17 S	038°	15° to W	1542 V 220 S	093°	21° to S
1037 V 120 S	085°	35° to S	1547 V 97 S	151°	29° to S
1054 V 151 S	070°	26° to S	1557 V 175 S	123°	20° to S
1063 V 120 S	090°	32° to S	1560 V 181 S	114°	27° to S
1069 V 37 S	078°	6° to S	1581 V 199 S	115°	21° to S
1076 V 104 S	090°	23° to S	1620 V 199 S	120°	16° to S

1081 V 40 S	176° 15° to W	1620 V 60 S	127° 27° to S
1093 V 41 S	162° 16° to W	1637 V 193 S	104° 19° to S
1098 V 18 S	161° 34° to W	1640 V 236 S	130° 12° to S
1104 V 35 S	132° 14° to SW	1640 V 142 S	127° 20° to S
1138 V 17 N	120° 22° to S	1697 V 136 S	117° 23° to S
1152 V 96 S	138° 17° to S	1700 V 182 S	117° 28° to S
1153 V 7 S	078° 25° to N		
1159 V 29 S	140° 15° to W		
1247 V 119 S	127° 23° to S	1214 V 58 S	178° 14° to W
1271 V 60 S	140° 15° to S		
1317 V 73 S	134° 12° to S		
1322 V 12 S	180° 15° to W		
1323 V 127 S	135° 17° to S		
1323 V 150 S	121° 12° to S		
1336 V 71 S	127° 13° to S		
1361 V 74 S	158° 12° to S		
1369 V 6 N	124° 26° to S		
1431 V 19 N	090° 21° to S		

Description of Shotholes

1142 V 71.5 S

Chlorite Schists with sparse quartz. White Mica is also found in the rock. It is generally well foliated. Mineralisation is confined to sparsely scattered disseminated pyrite and chalcopyrite.

1140 V 70.5 S

At the top lies 60 cms of a quartzitic chlorite schist with minor white mica. In places the rock is banded with chlorite and white mica alternating with quartzitic bands. The banding is on scale of a few mms. There is no mineralisation in this horizon. Specimen no. M 16..

Below has 2 cms of a dark green Micaceous Chlorite Schist containing disseminated Chalcopyrite.

The main ore horizon extends over a thickness of 12 cms. The Chalcopyrite is coarsely disseminated and veined through the host rock. The host rock here is a dark quartzite with some ferruginous colouring bands. Specimen M 14 1140 V 70.5 S
" M 15 1135 V 70 S

Below the Ore horizon has a Chlorite Quartzite with minor Amphibole and white Mica - also may be some Feldspars. There is accessory finely disseminated chalcopyrite and pyrite. The rock as whole becomes greener and more Chloritic upwards. Thickness 25 cms exposed.
Specimen M 13

Chlorite Schists

Banded. Quartzitic chlorite Schist

Micaceous Chlorite Schist
Mineralised Horizon

Chloritic Quartzite

10 cms

739 V 565 N M 9 - 12

Light Green Quartzitic Micaceous Chlorite Schist.

The Mica is quite prominent and may be a sericitic type.

The rock occasionally takes on a slightly banded appearance.

Mineralisation is confined to very slight dissemination.

Specimen M 10.

Below lies a white weathering quartzite with ferruginous banding and sericite bands. The ore is veined in horizontal bands and is also disseminated. The thickness is approximately 3 cms. Green malachite staining is also found.

Under this ore horizon there is a chloritic/sericitic quartzite. Occasionally the rock is quite coarsely banded inot more and less quartzitic bands. Some chalcopyrite mineralisation is associated with these banding.

Side 6 a

748V - 11S (M4.)

Dessiminasjoner av sulfider (pyritt) i en klorittførende kvartsitt. Hullet ligger helt på den nedre grensen av den øvre malmhorisonten.

748 - 18S (MS)

Dessiminasjoner av sulfider (her ser det også ut til å være kobber til stede) i en klorittførende kvartsittskifer.

Mineraliseringen er jevn over hele den utsprengte flaten. Skiferen synes nederst i hullet å være mer kvartsholdig og massiv.

750V - 28S (M6)

Ganske sterk mineralisering i en klorittskifer som ligger mellom 2 hardere kvartsittiske skifere. Disse 2 ser ikke ut til å inneholde sulfidmineraler på grensen til klorittskiferen.

744V - 21S (M7)

Dessiminasjoner av sulfider i det meste av hullet. En har en grense mellom en kvartsittskifer og en klorittskifer. Mineraliseringen er i den kvartsittiske delen mens det i den klorittiske ikke kan sees spor av malmmineraler.

737V - 33S

Den øvre delen av hullet er kvartsførende og inneholder en mineralisering som minner meget om 750V - 28S. Den nedre delen synes å være finere og den synes heller ikke å inneholde så meget kvarts. Her synes ingen mineralisering.

Side 6 b

Grensen synes å være skarp.

739V - 39,5S (M8)

En kvartsåre med dessiminasjoner. Mektighet 15 cm. På oversiden ligger en noe massiv klorittskifer mens en på undersiden har en vekslende klorittskifer med kvartsband. Ingen synlig mineralisering.

Malmsone 2. (Main ore zone)

924V - 8S

Sprente dessiminasjoner i enkelte band i en kvartsittisk klorittskifer.

925V - 14S

Klorittisk kvartsittskifer med kun enkelte små antydninger til sulfider.

925V - 19S

Underst har man en kvartsittisk klorittskifer med meget svak antydning til sulfidmineraler. I den øvre delen av hullet har en et smalt bånd med rik kobbermineralisering i en kvartsittisk klorittskifer.

925V - 23S

Klorittskifer med meget kvartsinnhold. Noen meget få sulfidmineraler. kan iakttaes.

842V - 0S

Massiv klorittsholdig kvartsittskifer som inneholder svake antydninger til sulfidmineraler på kvartsårer.

860V - 2N

En massiv biotitt klorittskifer som i toppen av hullet har en distinkt overgang til en lysere kvartsrik bergart. Enkelte sulfidmineraler kan oppdages.

860V - 1N

Kvartsittskifer med noe kloritt. Svært lite mineralisering av sulfider.

859V - 0N

Klorittskifer med noe mindre kvarts også litt amfibolførende. Ingen sulfidmineralisering.

857V - 4.5S

En meget skifrig bergart som inneholder kvarts, kloritt, biotitt og litt amfibol.

En har her en del fin desiminasjon av sulfider. (pyritt).

1033V - 62S

Kvartsrik klorittskifer uten noen mineralisering av betydning.

1035V - 60S (M3)

Kvartsbåndet klorittskifer med ganske sterk desiminasjon av sulfider i et kvartsbånd som er ca. 10 cm tykt.

1039,5 - 60S

Kvartsbåndet klorittskifer med noen svake desiminasjoner av sulfider (pyritt).

Stratigraphy

The stratigraphy described below is that between - and including - the lower micaceous graphite schist and the upper graphite schist. However, above the upper graphite schist lies a rusty weathering micaceous (white mica) schist which grades with a schist with muscovite and a little chlorite and prominent staurolite crystals (sample no. 25). There are some thin graphitic horizons in this "staurolite" schist.

The Upper Graphite Schist

This unit has a thickness of 4 - 6 ms. It has a distinctive sharp boundary with the underlying Micaceous Chlorite Schists and a more gradational contact with the overlying rusty weathering. Occasional flakes of white mica are found in the rock, otherwise it is quite pure and clear. Mineralisation is confined to sparsely disseminated pyrite at the base of the unit around 1300 V - 1500 V.

Micaceous Chlorite Schist

The contact between this unit and the underlying Upper Ore Zone is marked by a white weathering feldspathic mica (sericite) rock with streaks of quartz (?keratophyse). There are also two thin muscovite mica bands (sample 23) about 1 m thick near the base of this unit. The overall rock type is a chlorite schist with variable concentrations of mica - mostly white mica. It is rusty weathering in places (sample 22).

Mineralisation is restricted to a thin band of more massive quartzitic Chlorite Schist with minor amphibole. It occurs near the top of the unit - only 1 - 2 m below the Graphite Schist (see sample 2). The band varies from 0 - 50 cms in thickness, but is laterally continuous. The thickness variations are probably a result of tectonism to give "pinch and swell" structures. Other small massive amphibole-bearing bodies were found in this unit, but none with much mineralisation.

The thickness of the whole unit is approximately 10 ms.

Upper Ore Zone

This zone is of the order of 10 ms thick. It contains several rock types. Mineralisation is found in feldspathic sericite schists, quartzites with sericite bands (M 19 - disseminated pyrite) quartzitic chlorite schists (M 24 - good pyrite with some chalcoppyrite) and ordinary chlorite schists. (See descriptions of M 4 - 8 from blastings). Other rock types found are feldspar rich rocks with streaky quartz laminae. (Sample no. 27 - note the quartz on the weathered surface) - these have been tentatively interpreted as keratophyses and form bands of up to 1 m thick in the surrounding greenschist. Mineralisation is particularly good in the zone from 1400 V - 1700 V and further westwards. Most of the sulphide is probably pyrite but the dissemination is often so fine that it is difficult to distinguish pyrite and chalcoppyrite. The mineralisation is usually confined in bands of 20 - 30 cms thickness.

Green Chlorite Schist

This unit separates the Upper Ore Zone from the Main Ore Zone. The rock type is a characteristic green chlorite schist with variable quartz - (sample no. 28) with some mica. The grain size is fine. Amphibole has been found in places (circular Actinolite/tremolite). In general it can be termed a green-schist.

Mineralisation is slight and restricted to pyrite. At 990 V - 78 S there is some mineralisation associated with what appears to be a box-fold in the chlorite schists. Around 650 V - 700 V, 30 N - 40 N there occur some very large pyrite cubes in the greenschist.

Main Ore Zone

This zone is directly associated with the banded sericite quartzites below. It contains massive chalcopyrite. See samples and descriptions of blastings, M 1, M 3, M 13 - 16, M 26.

The Banded Quartzite

This unit is so-called because of the distinctive weathering surface. This shows bands of white quartz that weather out clearly from the surrounding more feldspathic and sericitic quartzite. This rock has been sampled and described from blastings.

Massive Quartzite

Distinguished from the above by a lack of banding and bedding/foliation. Generally it is very coarse grained and contains feldspar and some mafic minerals - probably chlorite. In places it is difficult to distinguish from the overlying banded quartzite - especially around 1100 V. There is little or no mineralisation associated with this rock-type.

The thickness seems to vary considerably and at times there is an amphibole greenschist - 1 - 2 m thick - contained within the unit. Also immediately beneath the massive quartzite there is a greenschist with quartzite. In the east of the area this is very thin 1 - 2 m, but in the west this unit thickens and becomes more massive. There is some slight mineralisation associated with this greenschist - especially in the west, but it is predominantly pyrite.

From 1250 V - 1400 V there is a mineralised zone at the base of the massive quartzite - the rock here has a distinctive banded appearance.

Lower Ore Zone

The mineralisation and rock types of this zone have been described in the descriptions of the shot-holes and samples M 9 - M 12. The mineralisation in this zone seems to be best between 700 V and 950 V. Further west the zone is only distinguished by a banded quartzite appearance - although the rock is

more chloritic than the banded quartzite associated with the main ore-zone. The mineralisation in the west is mostly pyrite with slight chalcopyrite and is not very good.

Amphibole Schists and Amphibolite

These form a distinctive blocky weathering unit under the Lower Ore Zone. The rock type is greenschist with scattered amphibole phenocrysts. The mineralisation associated with this rock-type is slight and restricted to pyrite (sample no. 29).

This unit - and other greenschist units - are characterised by oval shaped structures up to 1 m in length and 30 - 50 cms wide. They normally lie parallel to the schistosity and in the less quartzitic horizons. They may be tectonic pinch and swell structures or they may be pillow structures. In a less tectonically disturbed environment - I would definitely have called them pillow-lavas.

Pink-Weathering Quartzite Horizon

This is a very thin - 30 - 50 cms - horizon, but is most distinctive and is mapped as a marker horizon. It has a vigorous reaction with acid and is calcareous. (Sample no. 30).

Chlorite Schists and Quartzitic Mica Schists

The rock-types in this unit are quite variable but generally become more quartzitic and micaceous up the sequence. (Samples 31 - 33). There is some pyrite mineralisation associated with the greenschists at the base of the unit. The quartz content increases upwards and occurs as thin laminae (1 - 2 mm) in the mica schists.

Micaceous Graphite Schist

This is a thin but prominent band having a distinctive deep rusty weathering. It is laterally variable in mineral composition being in places a pure graphite schist and in others a light gray micaceous graphite schist. The mica is white and probably muscovite. There is no mineralisation in this unit. (Sample no. 34). Thickness of 1 - 3 ms.

The seemingly curious outcrop of this unit at 1200 V basis is a result of the local dip and topography.

Talcose Rock

This outcrops irregularly below the micaceous graphite schist. It is very soft and has a pink-red weathering colour and consists of massive talc and ?serpentine. (Sample no. 35). The presence of this rock type is very distinctive of the prospect and it have been an intrusive ultrabasic in its original form, subsequently hydrolysed and metamorphosed.

Sample no. 36 is an example of the rock type below the graphite schist - found in places where there is no outcrop of the talcose rock.

Quite late in the mapping mineralisation was found in a quartzite - very massive and hard - 4 - 5 ms below the micaceous graphite schist. This mineralisation is quite easily observed as the rock weathers a rusty colour. However, the sulphide is usually disseminated so finely as to be difficult to identify as pyrite or chalcopyrite. (Samples M 37, M 18). M 21 shows some slight mineralisation in what may be an acid extrusive; the sample shows a distinct contact between what may have been two flows. This mineralisation may be continuous with that found at Grid Ref 432-209. (Sample M 17).

The structure of the area is generally quite simple - there being a noticeable change in strike from approximately E - W in the east of the prospect to NW - SE in the west of the prospect. At 1020 V basis there is a strong monoclonal flexure in the lower units of the stratigraphy, but this does not seem to affect the upper ore zone and the units above.

Monoclonal folding can be seen in the schistosity of the green-schists that lie beneath the prospect's stratigraphy. However, in the prospect it is only readily measurable (fold axis and plunge) in the Upper Graphite Schist. I had too little time to be able to take a statistically meaningful number of measurements.

The mineralised horizons have already been mentioned and briefly described. There are two types of mineralisation - thin veins of massive sulphide and disseminated sulphide. The chalcopyrite is usually found as veins in the Main Ore Zone. The disseminated sulphide is usually pyrite but is often so fine grained as to make the distinction between chalcopyrite and pyrite very difficult. Only chemical analyses will enable copper content of the disseminated rocks to be determined. In the Main Ore Zone the mineralisation can be seen to be in the rock fractures indicating sulphide movement after the fracturing of the rock. This would seem to indicate a mobilisation of the ore fluids during or after metamorphism - there is little evidence for hydrothermal activity apart from a few small quartz veins and the lateral extension on a constant stratigraphic horizon of the mineralised horizons may indicate a syngenetic origin of the sulphides with the extrusives; the sulphides then being remobilised and probably concentrated in the present zones.

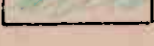
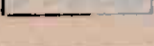
Suggestions

Initially drilling should continue to at least the lower graphite schist and preferably to the mineralised quartzite just below the graphite.

Mineralisation is found in the Upper Ore Zone west from 1700 V; exposure of the Main Ore horizon becomes poor. Hence further drilling west of 1700 V would be useful to determine the extent of the mineralisation.

Mineralisation was found at Grid Ref 426213 when looking at the E.M. anomaly in that area. Further investigation in that area may be advisable.

Fargekode til kart i stratigrafisk orden.

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61		Green Chlorite Schist
12		Mineralised Horizon
3		Banded Quartzite - Quartz Sericite
3		Massive feldspathic Quartzite
41		Greenschist with Chlorite
21		Lower Ore Zone. Host rock variable - usually Qua.
42		Amphibole Schist and Amphibolite
33		Pink weathering Calcareous Quartzite Horizon
56		Chlorite schists and Quartzitic Mica Schists
69		Micaceous Graphite Schist
44		Talcose Rock

T_{21} Strike + Dip with value of Dip

$\rightarrow 21$ Foldaxis Direction with direction and value of plunge

..... Concealed Geologic Boundary

————— Observed Geologic Boundary

⊕ 10 claim markers. Numbers indicated

⊙ shot hole site

· M8 Ore sample location and number

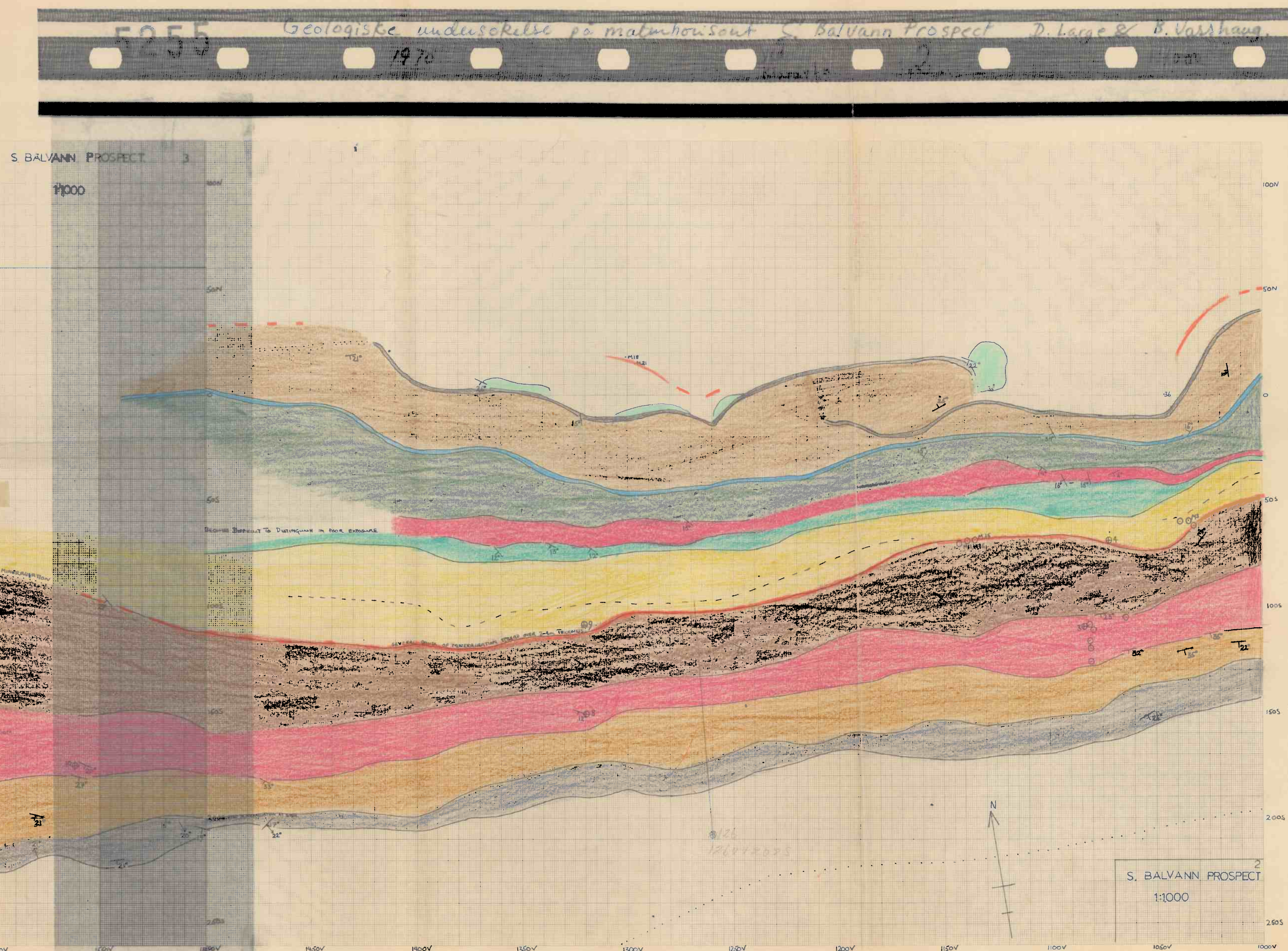
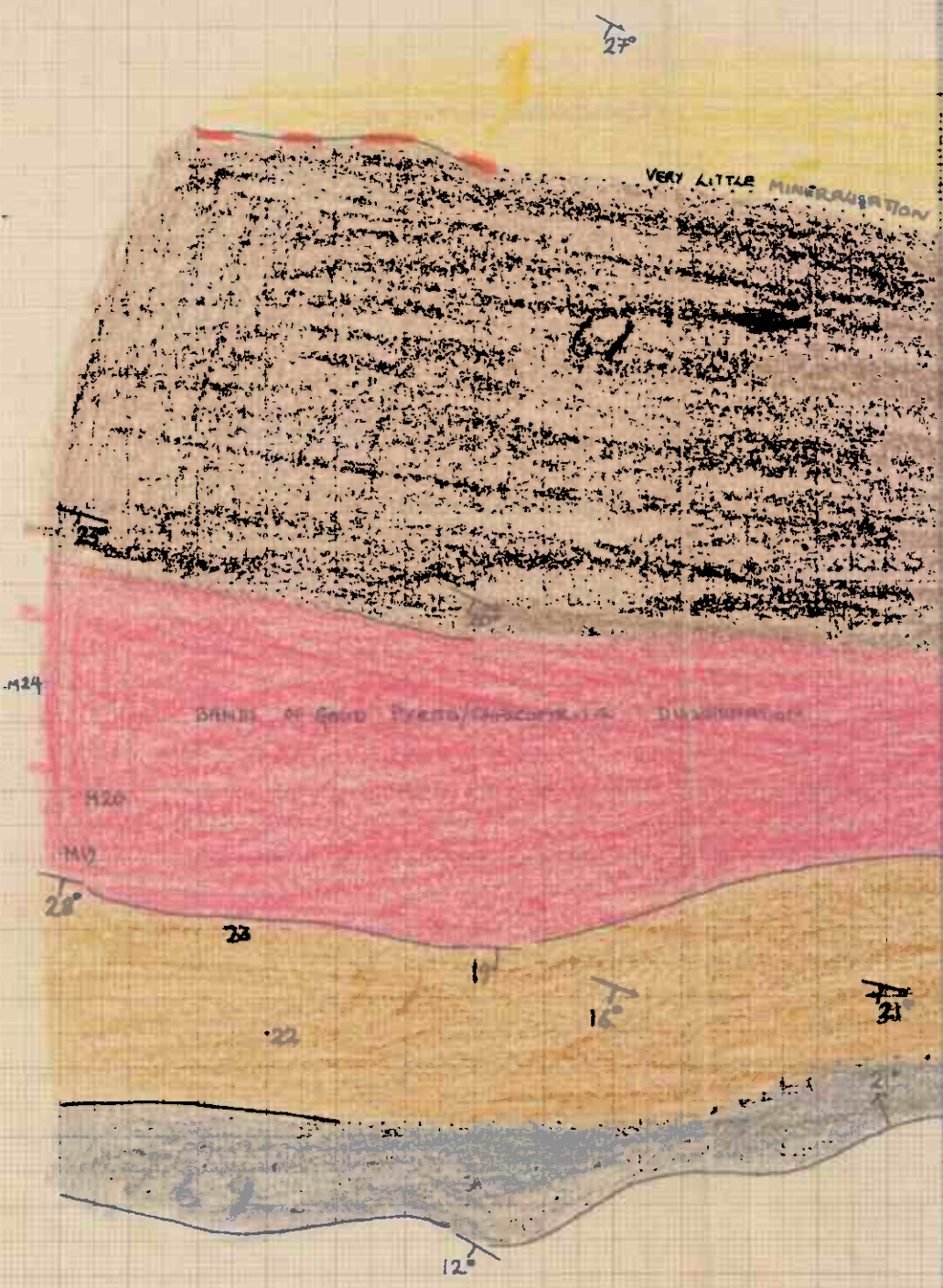
· 36 Rock type Sample location and number

⊕ Permanent markers at 500v and 740v

Fargekode til kart i stratigrafisk orden.

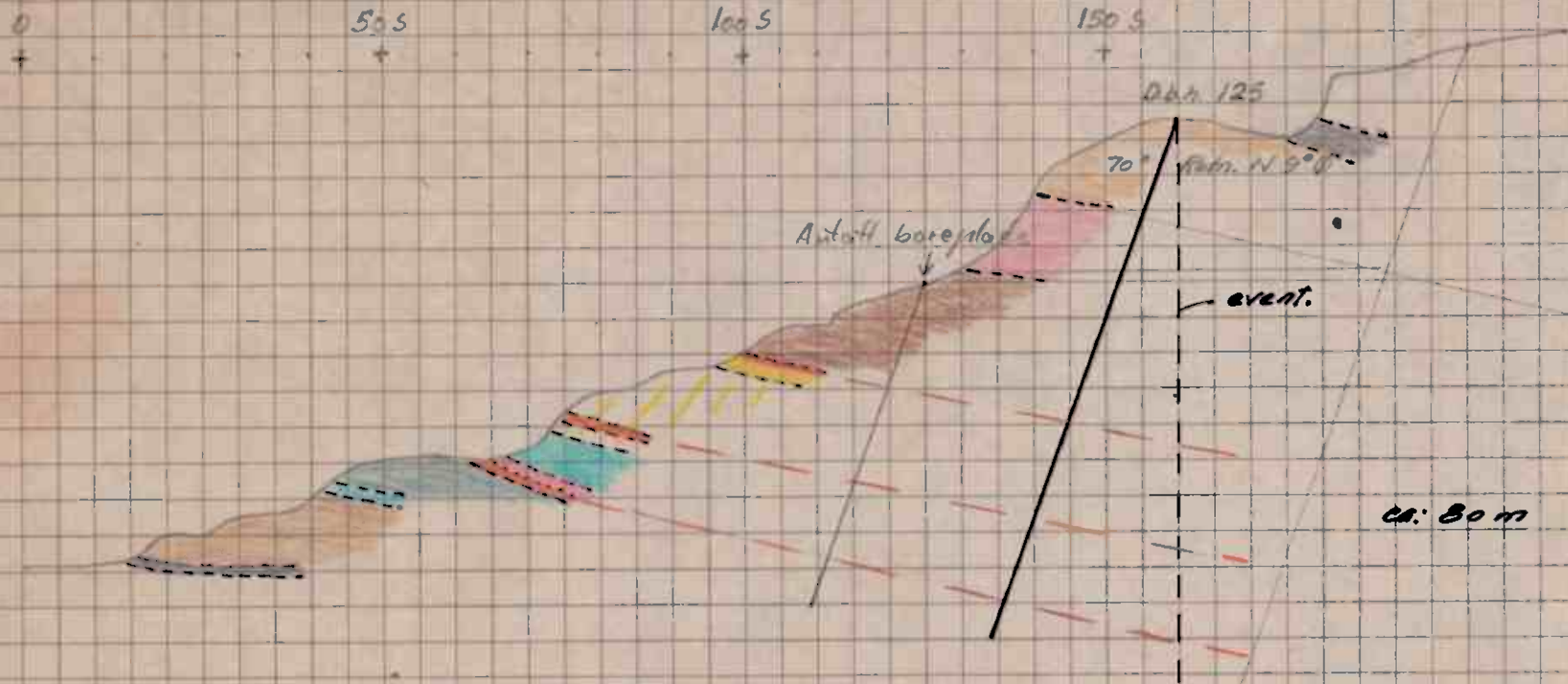
- 69 Grafittsfr.
- 59 Glimmer klorittsfr.
- 21 Øvre malmsone. Klorittsfr./grennsfr. (en Schist + Keratophyes)
- 61 Grønn klorittsfr.
- 12 Mineralisert sone
- 3 Båndet (foldet) kvartsitt-serisitt. (Serisite)
- 3 Massiv feltspatt-kvartsitt
- 41 Grennsfr. m. kloritt
- 21 Nedre (malmsone) varierende brukelig (variable - usually Qua.)
- 42 Amphibolsfr. & amfibolitt (Lite)
- 33 Lyserød forvittret kalkholdig kvartsitt (serisite Horizon)
- 56 Klorittsfr. & kvartsittisk glimmersfr. (Mica Schists)
- 69 Glimmerlignende grafittsfr.
- 44 Talk.

- T₂₁ Strike + Dip with value of Dip
- 21 Foldaxis Direction with direction and value of plunge
- Concealed Geologic Boundary
- Observed Geologic Boundary
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- ⊕ Permanent markers at 500V and 740V



Profile no. 1260 V

1:1000



Diamond boring Jowkesa 1971

29/4-71

O. V. J.



Prof. 620 V



Prof. 660 V



Prof. 700 V



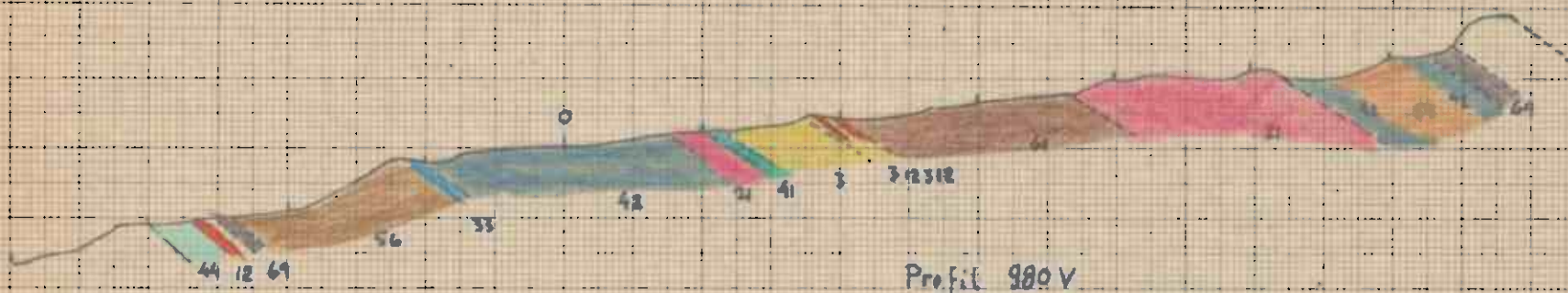
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S. BALVANN PROSPECT

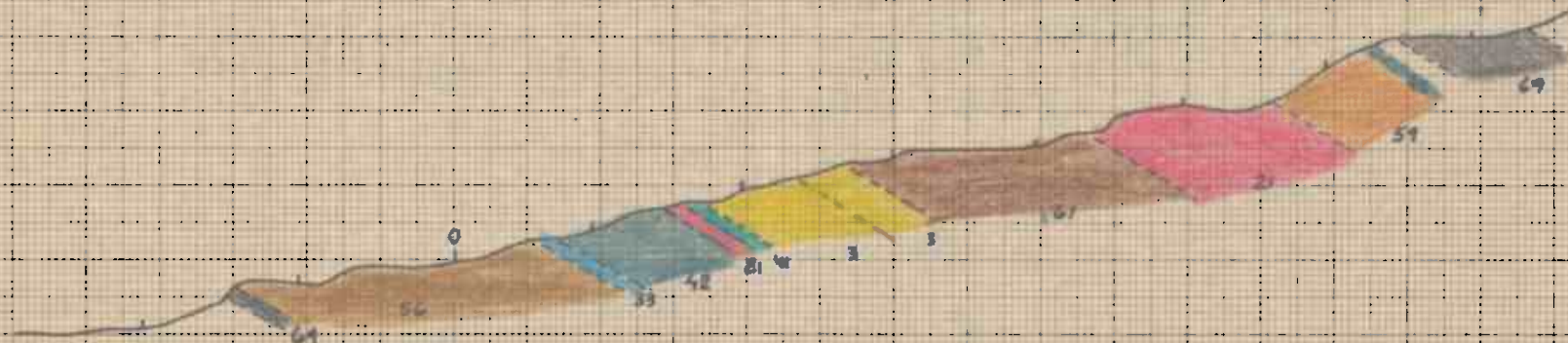
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PROFILES

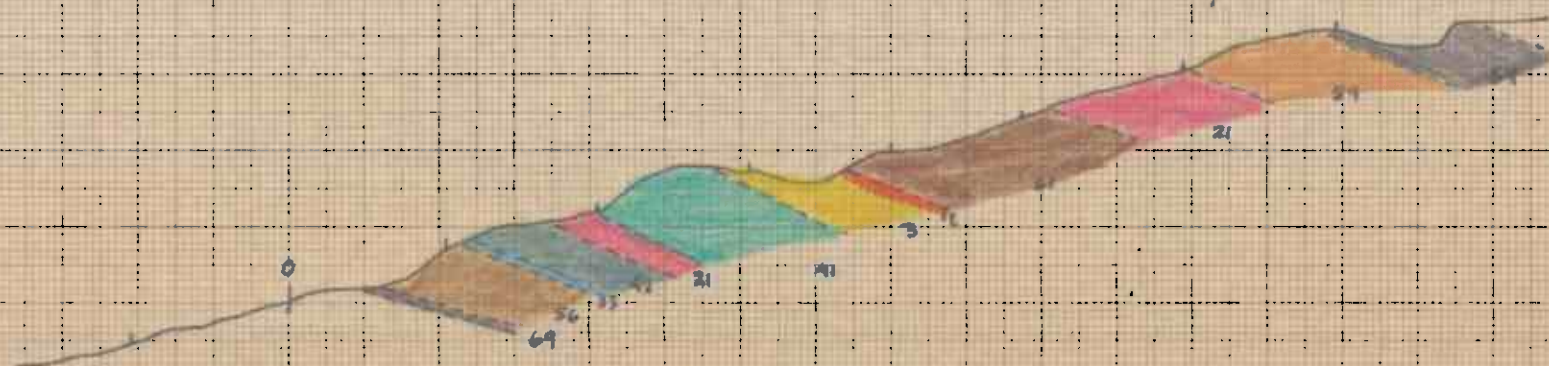
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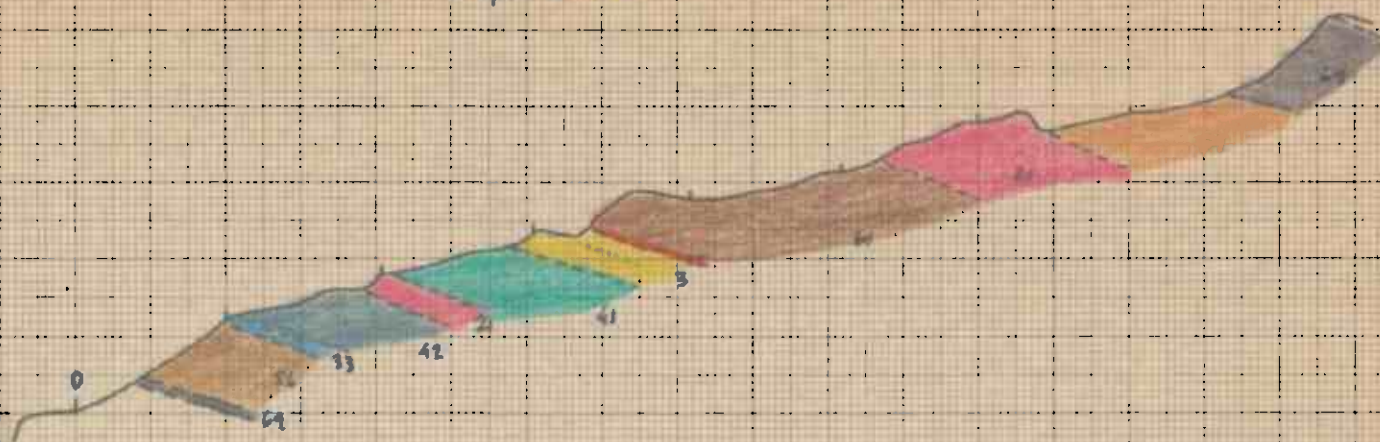
Profil 980V



Profil 1020V



Profil 1060V



Profil 1100V



Profil 1140V

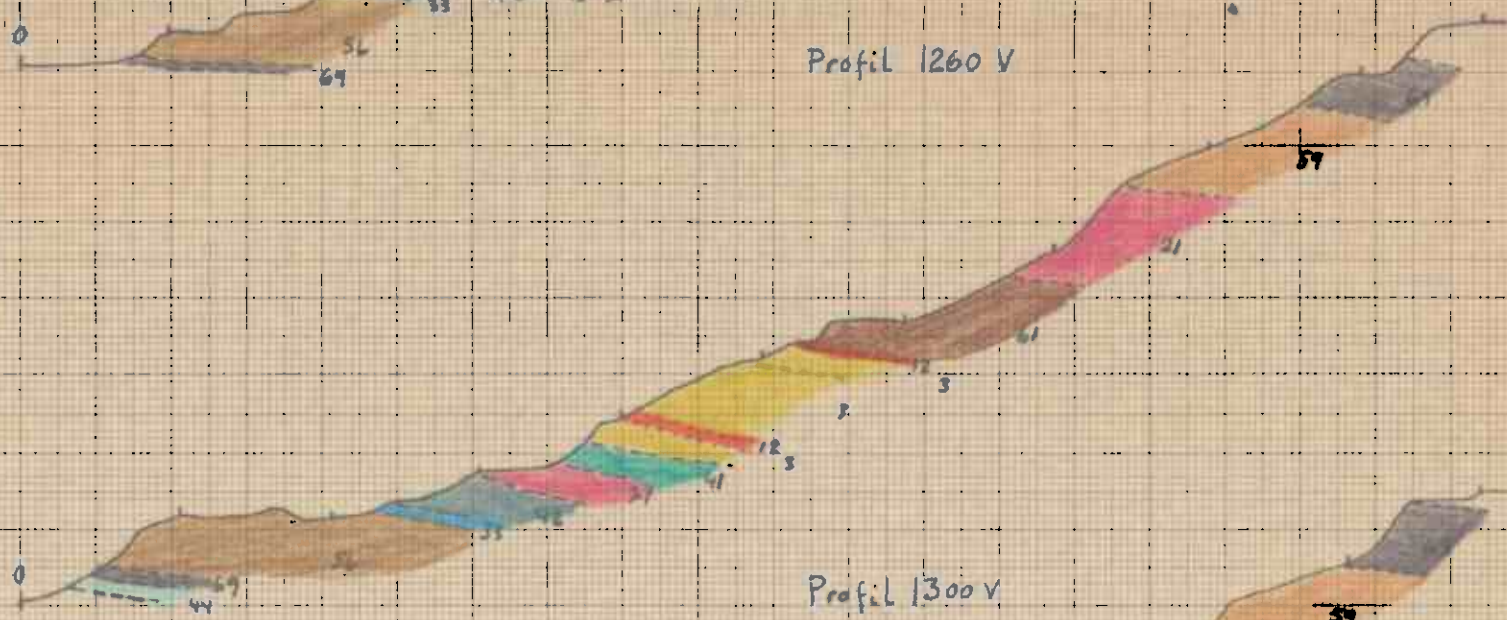
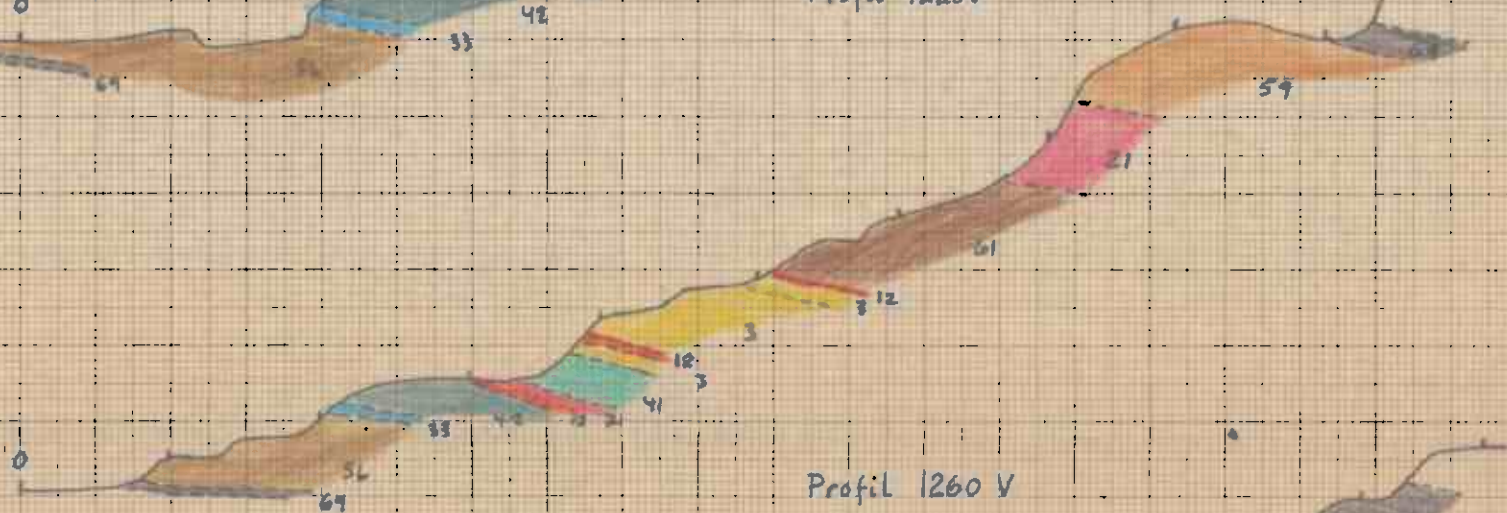
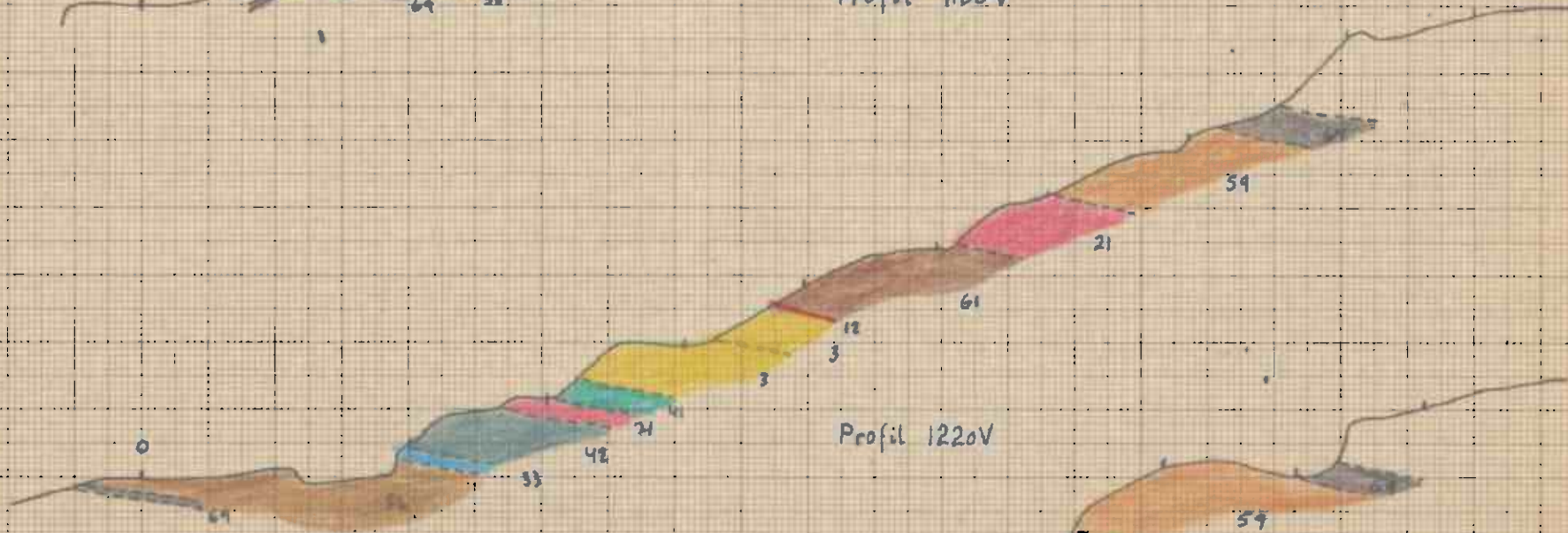
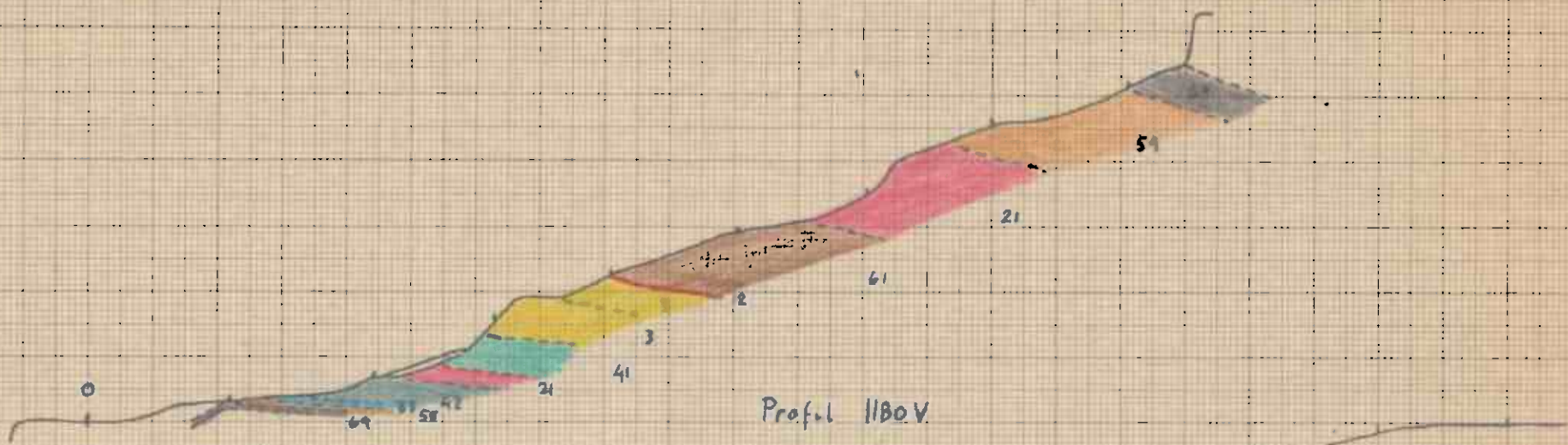
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PROFILES

980V - 1140V

B.V.



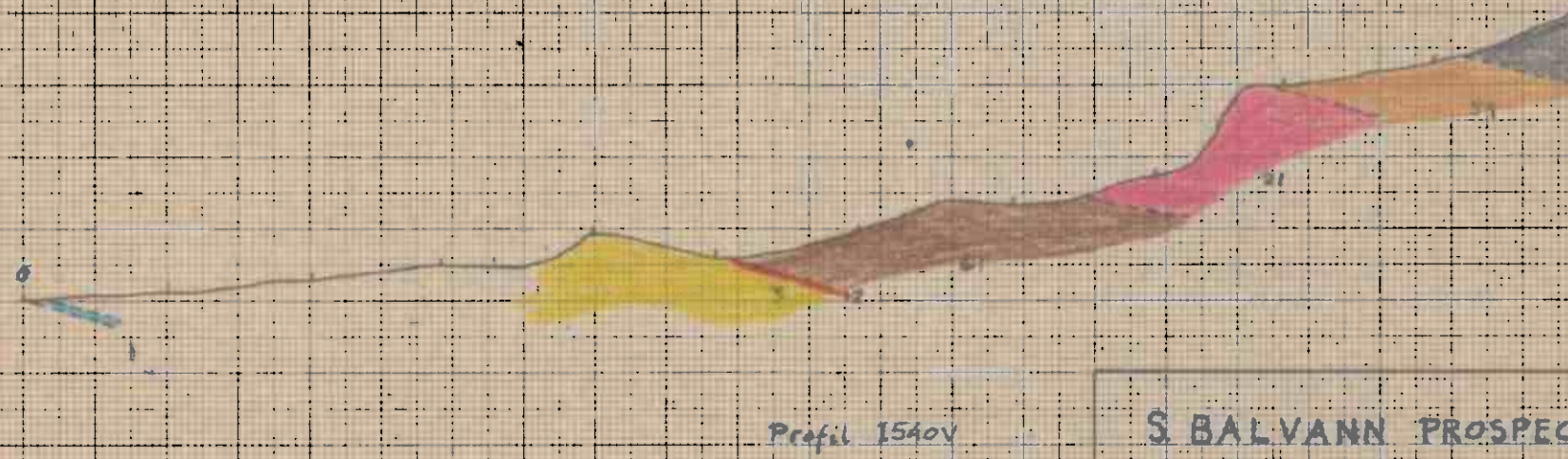
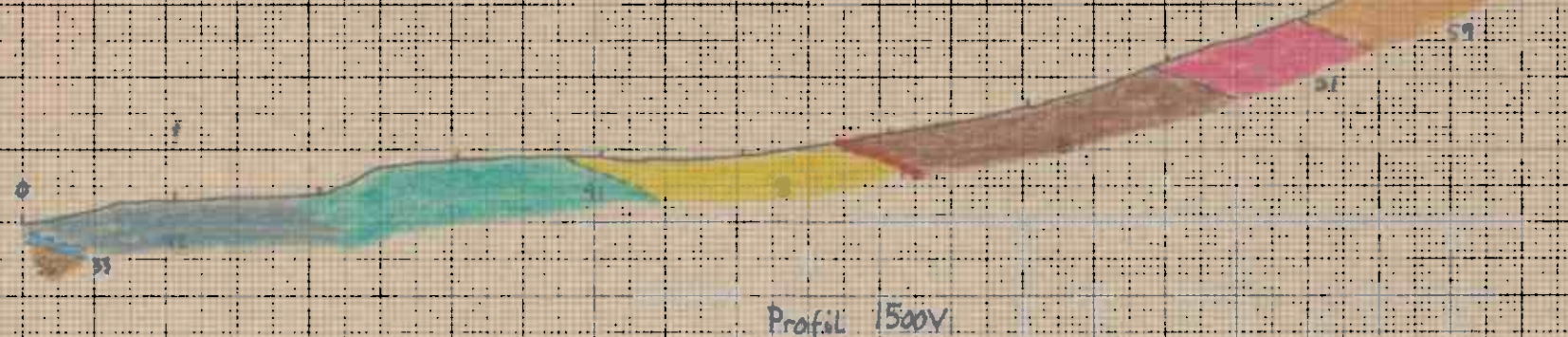
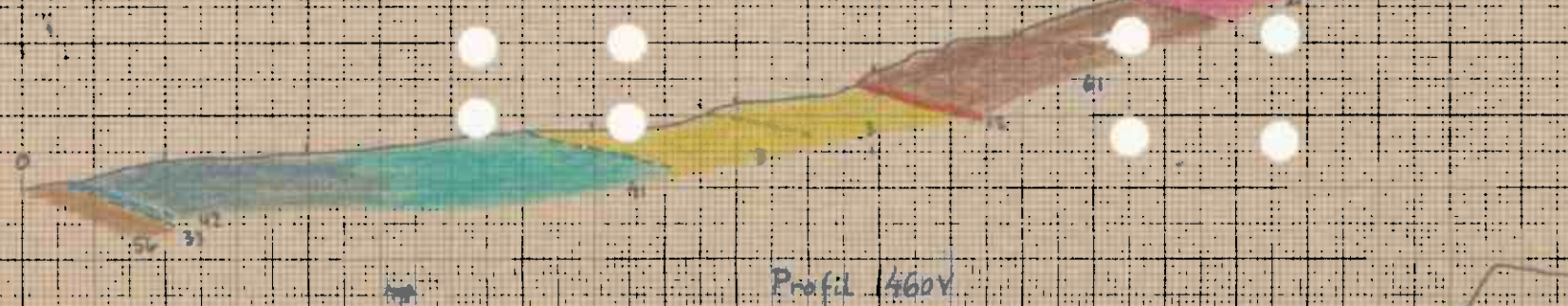
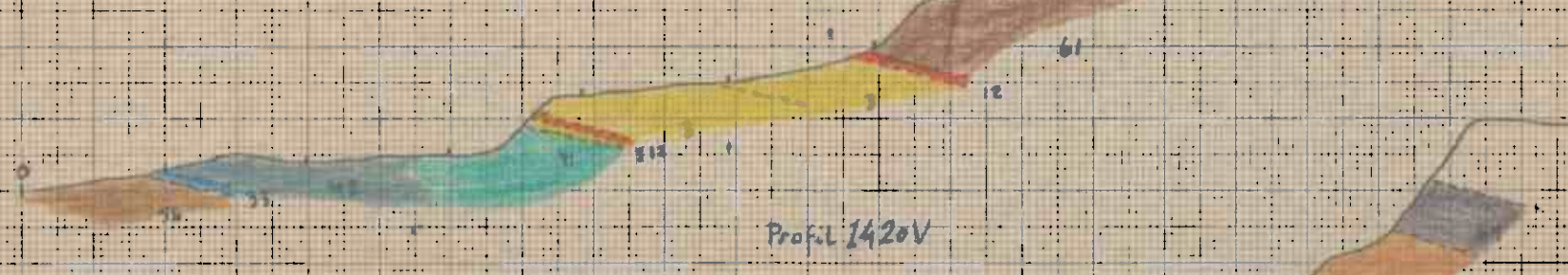
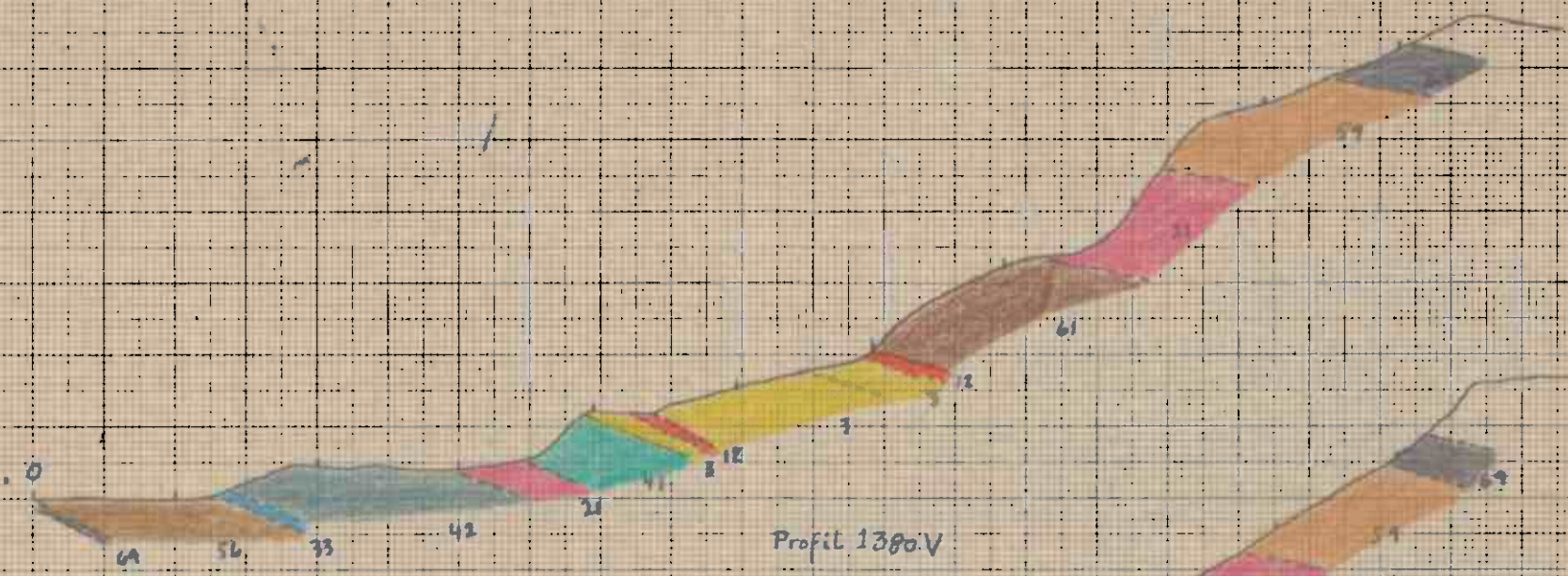
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PROFILES

1180V - 1340V

B.V.



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PROFILES

1380V - 1540V

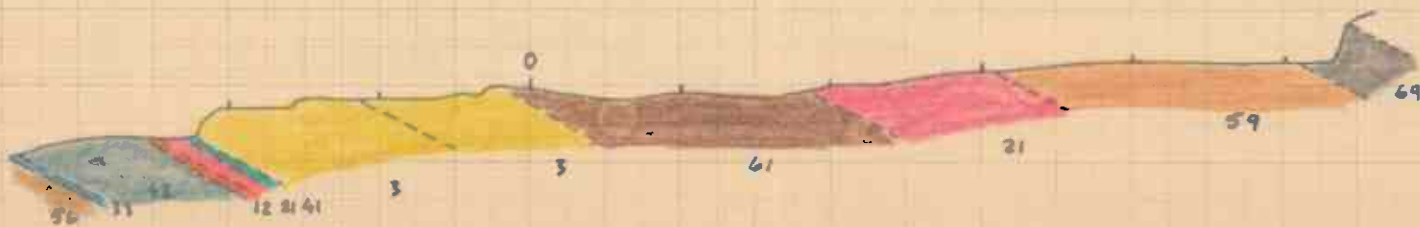
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Prof. L 780V



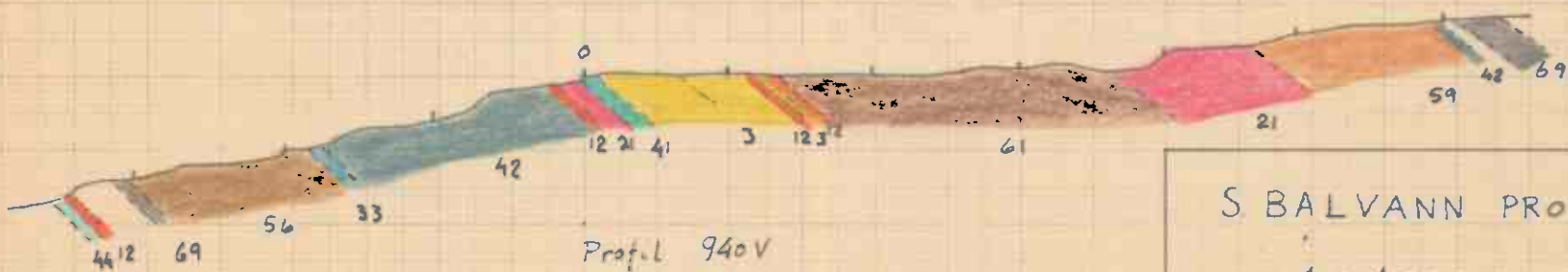
Prof. L 820V



Prof. L 860V



Prof. L 900V



Prof. L 940V

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PROFILES

780V - 940V

Festmarken



Profil 500 v



Profil 540 v



Profil 580 v

S. BALVANN PROSPECT

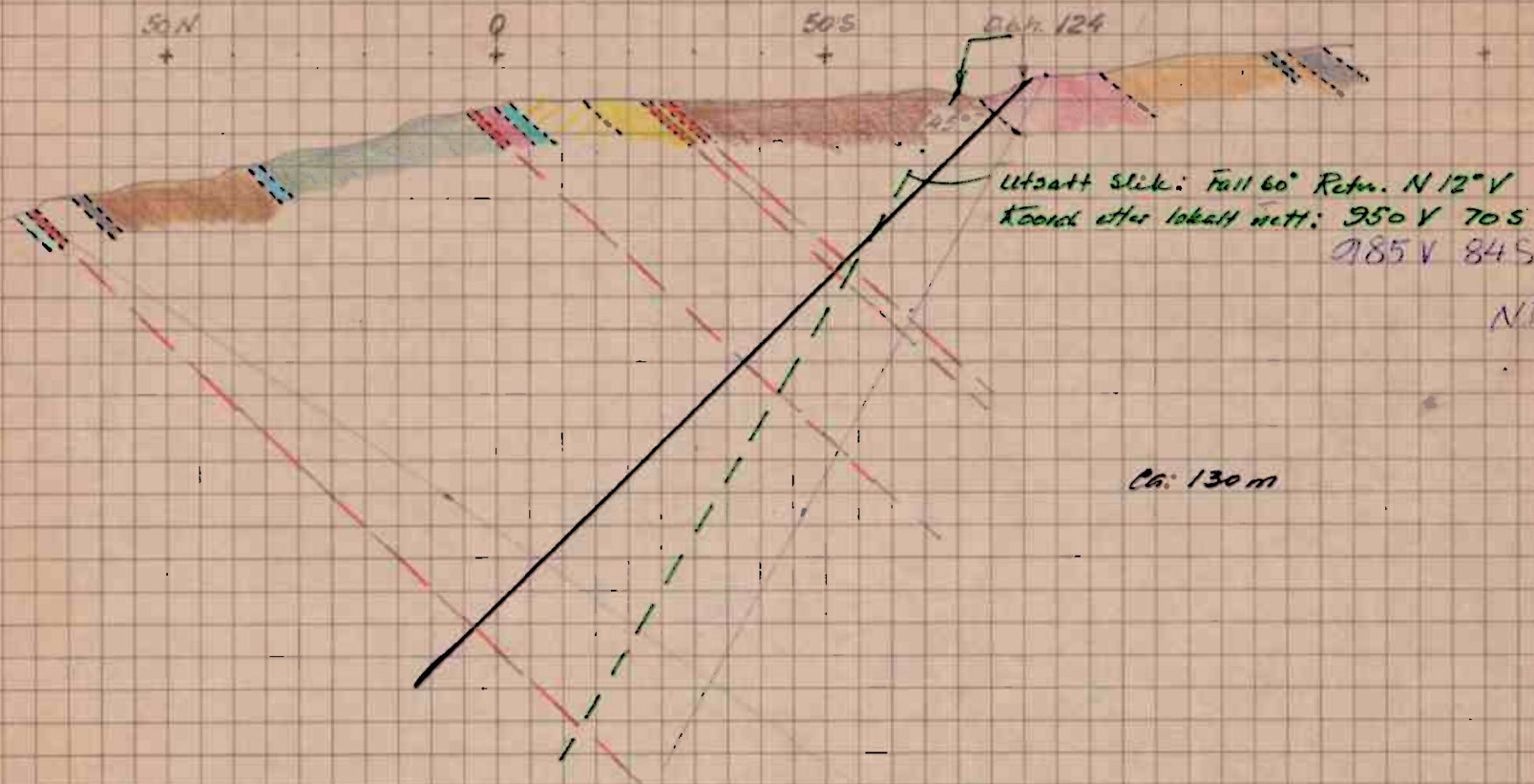
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PROFILES

500 v - 580 v

Profil 940 V

M = 1:1000

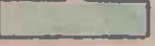
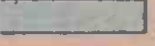


N.R. 14 31 71

Diamantboring Joutso 1971

22/4-71
D. V. 100

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T_2 Strike + Dip with value of Dip

$\rightarrow 21$ Foldaxis Direction with direction and value of plunge

..... Concealed Geologic Boundary

————— Observed Geologic Boundary

⊕ 10 claim markers. Numbers indicated

⊙ shot hole site

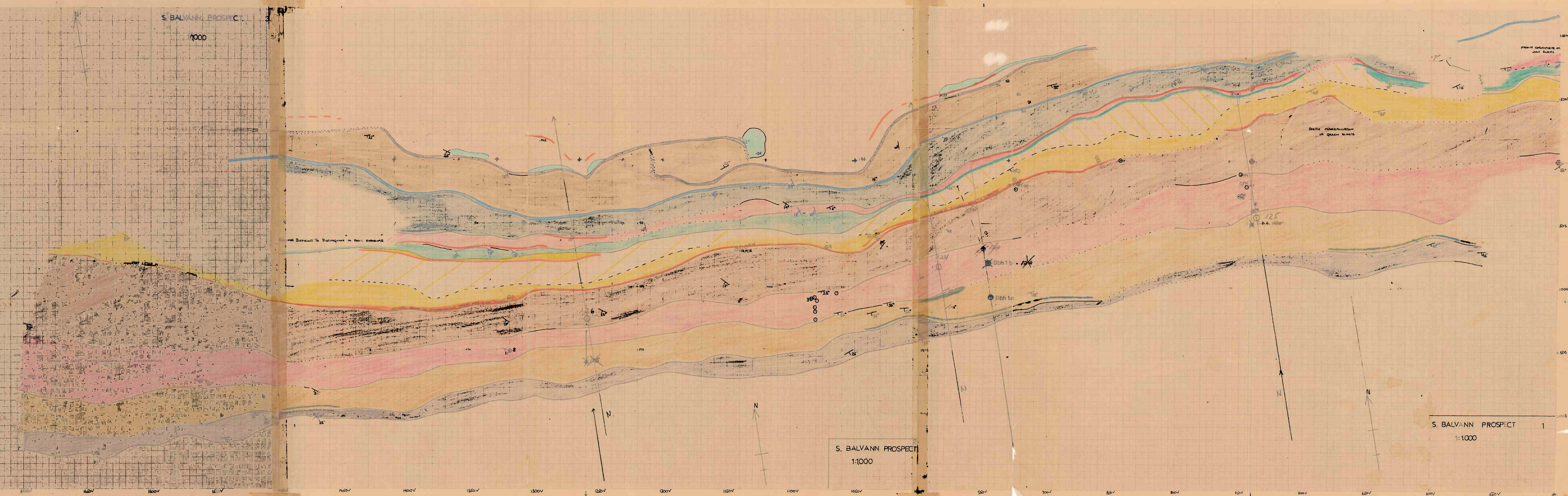
• M8 Ore sample location and number

• 36 Rock type Sample location and number

⊕ Permanent markers at 500V and 740V

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Geologiske undersøkelser
på malmhorisont ved
Klaravann

Utført sommeren 1970
av Duncan Large og Bjarne Vasshaug

BORHULL ER UTSATT PÅ FØLGENDE STEDER

	<u>Retning</u>	<u>Fall fra horisontal 360°</u>
944V - 107 S	N 12°V	60° N
980V - 106 S	N 12°V	40° N
1020V - 132 S	Langs rutenett	55° N
1060V - 134 S	Rett nord	60° N
1100V - 138 S	Langs rutenett	70° N
1140V - 140 S	N 22° Ø	70° N
1180V - 141 S	N 42° Ø	70° N
1220V - 187 S	N 42° Ø	70° N
1260V - 193.3S	N 42° Ø	70° N
1300V - 196 S	N 32° Ø	75° N
1340V - 200 S	N 30° Ø	70° N
1380V - 215.5S	N 30° Ø	70° N

S a m p l e s

The prefix "M" indicates a sample from an ore horizon

No.	Location		N o t e s	
M 1	925 V	19 S	Main Ore Horizon	
M 2	610 V	59 S	From a Green Amphibolite Schist just below Graphite Schist.	
M 3	1035 V	60 S	Main Ore Horizon	
M 4	748 V	11 S	Upper Ore Zone.	B. Vasshaug's No. 1
M 5	748 V	18 S	"	2
M 6	750 V	28 S	"	3,5
M 7	744 V	21 S	"	4
M 8	739 V	39,5 S	"	6
M 9	739 V	56,5 N	Lower Ore Zone	
M 10	"	"	"	
M 11	"	"	"	
M 12	755 V	53 N	"	
M 13	1140 V	70,5 S	Main Ore Zone	
M 14	"	"	"	
M 15	1135 V	70 S	"	
M 16	1140 V	70,5 S	"	
M 17	432 209		Pyrite in Quartz Sericite	
M 18	1300 V	18 N	Pyrite/Chalcopyrite in dark Quartzite/below the Lower Graphite	
M 19	1700 V	178 S	Upper Ore Zone	
M 20	1697 V	171 S	Upper Ore Zone	
M 21	1300 V	15 N	Small ore in interesting rock type/from below the Lower Graphite	
22	1670 V	205 S	Micaceous Chlorite Schist	
23	1676 V	191 S	From Micaceous Horizon at the base of the Upper Micaceous Chlorite Schist.	
M 24	1768 V	155 S	Upper Ore Zone	
25	1540 V	285 S approx.	Staurolite Schist	
M 26	951 V	32 S	Main Ore Zone	
27	998 V	92 S	Quartz Keralophyse in Upper Ore Zone	
28	978 V	55 S	Green Chlorite Schist	
29	982 V	18 N	Amphibole Schist	
30	920 V	41 N	Pink Calcaceous Quartzite horizon	

No.	Location	Notes
31	915 V 46 N	Sequence up the Lower Chlorite Schist
32	924 V 52 N	
33	932 V 63 N	
34	940 V 60 N	Micaceous Graphite Schist
35	1136 V 5 N	Talcose Rock
36	1046 V 2 N	
M 37	983 V 52 N	Fine Dissemination in quartzite below the Lower Graphite

360° Compass

Locations of Dips and Strikes. (All Strike Directions are E from N)

Location	Strike	Dip	Location	Strike	Dip
502 V 3 S	060°	50° to S	580 V 60 N	075°	46° to S
500 V 80 N	098°	49° to S			
510 V 81 N	088°	57° to S			
542 V 75 N	091°	40° to S			
560 V 71 S	094°	46° to S			
600 V 65 S	080°	40° to S			
632 V 62 N	112°	30° to S			
641 V 40 N	088°	36° to S			
694 V 56 N	077°	40° to S			
680 V 87 S	102°	28° to S			
743 V 58 N	064°	41° to S			
780 V 74 N	084°	40° to S			
832 V 58 N	110°	31° to S			
873 V 55 N	084°	36° to S			
897 V 60 N	086°	32° to S			
920 V 19 S	068°	42° to S			
960 V 38 S	065°	37° to S			
997 V 141 S	091°	35° to S			
1055 V 151 S	070°	26° to S			
979 V 102 S	074°	50° to S			
977 V 115 S	064°	46° to S			
912 V 104 S	081°	28° to S			
979 V 21 S	058°	35° to S			
991 V 23 S	080°	26° to S			
1011 V 117 S	097°	22° to S	1471 V 203 S	052°	17° to S
1016 V 12 S	180°	10° to W	1472 V 182 S	129°	33° to S
1025 V 113 S	087°	35° to S	1502 V 205 S	114°	19° to S
1028 V 67 S	046°	24° to W	1519 V 200 S	101°	15° to S
1033 V 17 S	038°	15° to W	1542 V 220 S	093°	21° to S
1037 V 120 S	085°	35° to S	1547 V 97 S	151°	29° to S
1054 V 151 S	070°	26° to S	1557 V 175 S	123°	20° to S
1063 V 120 S	090°	32° to S	1560 V 181 S	114°	27° to S
1069 V 37 S	078°	6° to S	1581 V 199 S	115°	21° to S
1076 V 104 S	090°	23° to S	1620 V 199 S	120°	16° to S

1081 V 40 S	176°	15° to W	1620 V 60 S	127°	27° to S
1093 V 41 S	162°	16° to W	1637 V 193 S	104°	19° to S
1098 V 18 S	161°	34° to W	1640 V 236 S	130°	12° to S
1104 V 35 S	132°	14° to SW	1640 V 142 S	127°	20° to S
1138 V 17 N	120°	22° to S	1697 V 136 S	117°	23° to S
1152 V 96 S	138°	17° to S	1700 V 182 S	117°	28° to S
1153 V 7 S	078°	25° to N			
1159 V 29 S	140°	15° to W			
1247 V 119 S	127°	23° to S	1214 V 58 S	178°	14° to W
1271 V 60 S	140°	15° to S			
1317 V 73 S	134°	12° to S			
1322 V 12 S	180°	15° to W			
1323 V 127 S	135°	17° to S			
1323 V 150 S	121°	12° to S			
1336 V 71 S	127°	13° to S			
1361 V 74 S	158°	12° to S			
1369 V 6 N	124°	26° to S			
1431 V 19 N	090°	21° to S			

Description of Shotholes

1142 V 71.5 S

Chlorite Schists with sparse quartz. White Mica is also found in the rock. It is generally well foliated. Mineralisation is confined to sparsely scattered disseminated pyrite and chalcopyrite.

1140 V 70.5 S

At the top lies 60 cms of a quartzitic chlorite schist with minor white mica. In places the rock is banded with chlorite and white mica alternating with quartzitic bands. The banding is on scale of a few mms. There is no mineralisation in this horizon. Specimen no. M 16.

Below has 2 cms of a dark green Micaceous Chlorite Schist containing disseminated Chalcopyrite.

The main ore horizon extends over a thickness of 12 cms. The Chalcopyrite is coarsely disseminated and veined through the host rock. The host rock here is a dark quartzite with some ferruginous colouring bands. Specimen M 14 1140 V 70.5 S
" M 15 1135 V 70 S

Below the Ore horizon has a Chlorite Quartzite with minor Amphibole and white Mica - also may be some Feldspars. There is accessory finely disseminated chalcopyrite and pyrite. The rock as whole becomes greener and more Chloritic upwards. Thickness 25 cms exposed.
Specimen M 13

Chlorite Schists

Banded. Quartzitic chlorite Schist

Micaceous Chlorite Schist
Mineralised Horizon

Chloritic Quartzite

10 cms

739 V 565 N M 9 - 12

Light Green Quartzitic Micaceous Chlorite Schist.

The Mica is quite prominent and may be a sericitic type.

The rock occasionally takes on a slightly banded appearance.

Mineralisation is confined to very slight dissemination.

Specimen M 10.

Below lies a white weathering quartzite with ferruginous banding and sericite bands. The ore is veined in horizontal bands and is also disseminated. The thickness is approximately 3 cms. Green malachite staining is also found.

Under this ore horizon there is a chloritic/sericitic quartzite. Occasionally the rock is quite coarsely banded inot more and less quartzitic bands. Some chalcopryite mineralisation is associated with these banding.

Side 6 a

748V - 11S (M4.)

Dessiminasjoner av sulfider (pyritt) i en klorittførende kvartsitt. Hullet ligger helt på den nedre grensen av den øvre malmhorisonten.

748 - 18S (MS)

Dessiminasjoner av sulfider (her ser det også ut til å være kobber til stede) i en klorittførende kvartsittskifer.

Mineraliseringen er jevn over hele den utsprengte flaten. Skiferen synes nederst i hullet å være mer kvartsholdig og massiv.

750V - 28S (M6)

Ganske sterk mineralisering i en klorittskifer som ligger mellom 2 hardere kvartsittiske skifere. Disse 2 ser ikke ut til å inneholde sulfidmineraler på grensen til klorittskiferen.

744V - 21S (M7)

Dessiminasjoner av sulfider i det meste av hullet. En har en grense mellom en kvartsittskifer og en klorittskifer. Mineraliseringen er i den kvartsittiske delen mens det i den klorittiske ikke kan sees spor av malmmineraler.

737V - 33S

Den øvre delen av hullet er kvartsførende og inneholder en mineralisering som minner meget om 750V - 28S. Den nedre delen synes å være finere og den synes heller ikke å inneholde så meget kvarts. Her synes ingen mineralisering.

Side 6 b

Grensen synes å være skarp.

739V - 39,5S (M8)

En kvartsåre med dessiminasjoner. Mektighet 15 cm. På oversiden ligger en noe massiv klorittskifer mens en på undersiden har en vekslende klorittskifer med kvartsband. Ingen synlig mineralisering.

Malmsone 2. (Main ore zone)

924V - 3S

Spredte dessiminasjoner i enkelte band i en kvartsittisk klorittskifer.

925V - 14S

Klorittisk kvartsittskifer med kun enkelte små antydninger til sulfider.

925V - 19S

Underst har man en kvartsittisk klorittskifer med meget svak antydning til sulfidmineraler. I den øvre delen av hullet har en et smalt bånd med rik kobbermineralisering i en kvartsittisk klorittskifer.

925V - 23S

Klorittskifer med meget kvartsinnhold. Noen meget få sulfidmineraler, kan iakttas.

842V - 0S

Massiv klorittholdig kvartsittskifer som inneholder svake antydninger til sulfidmineraler på kvartsårer.

860V - 2N

En massiv biotitt klorittskifer som i toppen av hullet har en distinkt overgang til en lysere kvartsrik bergart. Enkelte sulfidmineraler kan oppdages.

860V - 1N

Kvartsittskifer med noe kloritt. Svært lite mineralisering av sulfider.

859V - 0N

Klorittskifer med noe mindre kvarts også litt amfibolførende. Ingen sulfidmineralisering.

857V - 4.5S

En meget skifrig bergart som inneholder kvarts, kloritt, biotitt og litt amfibol.

En har her en del fin desiminasjon av sulfider. (pyritt).

1033V - 62S

Kvartsrik klorittskifer uten noen mineralisering av betydning.

1035V - 60S (M3)

Kvartsbåndet klorittskifer med ganske sterk desiminasjon av sulfider i et kvartsbånd som er ca. 10 cm tykt.

1039,5 - 60S

Kvartsbåndet klorittskifer med noen svake desiminasjoner av sulfider (pyritt).

Stratigraphy

The stratigraphy described below is that between - and including - the lower micaceous graphite schist and the upper graphite schist. However, above the upper graphite schist lies a rusty weathering micaceous (white mica) schist which grades with a schist with muscovite and a little chlorite and prominent staurolite crystals (sample no. 25). There are some thin graphitic horizons in this "staurolite" schist.

The Upper Graphite Schist

This unit has a thickness of 4 - 6 ms. It has a distinctive sharp boundary with the underlying Micaceous Chlorite Schists and a more gradational contact with the overlying rusty weathering. Occasional flakes of white mica are found in the rock, otherwise it is quite pure and clear. Mineralisation is confined to sparsely disseminated pyrite at the base of the unit around 1300 V - 1500 V.

Micaceous Chlorite Schist

The contact between this unit and the underlying Upper Ore Zone is marked by a white weathering feldspathic mica (sericite) rock with streaks of quartz (?keratophyre). There are also two thin muscovite mica bands (sample 23) about 1 m thick near the base of this unit. The overall rock type is a chlorite schist with variable concentrations of mica - mostly white mica. It is rusty weathering in places (sample 22).

Mineralisation is restricted to a thin band of more massive quartzitic Chlorite Schist with minor amphibole. It occurs near the top of the unit - only 1 - 2 m below the Graphite Schist (see sample 2). The band varies from 0 - 50 cms in thickness, but is laterally continuous. The thickness variations are probably a result of tectonism to give "pinch and swell" structures. Other small massive amphibole-bearing bodies were found in this unit, but none with much mineralisation.

The thickness of the whole unit is approximately 10 ms.

Upper Ore Zone

This zone is of the order of 10 ms thick. It contains several rock types. Mineralisation is found in feldspathic sericite schists, quartzites with sericite bands (M 19 - disseminated pyrite) quartzitic chlorite schists (M 24 - good pyrite with some chalcopryrite) and ordinary chlorite schists. (See descriptions of M 4 - 8 from blastings). Other rock types found are feldspar rich rocks with streaky quartz laminae. (Sample no. 27 - note the quartz on the weathered surface) - these have been tentatively interpreted as keratophyses and form bands of up to 1 m thick in the surrounding greenschist. Mineralisation is particularly good in the zone from 1400 V - 1700 V and further westwards. Most of the sulphide is probably pyrite but the dissemination is often so fine that it is difficult to distinguish pyrite and chalcopryrite. The mineralisation is usually confined in bands of 20 - 30 cms thickness.

Green Chlorite Schist

This unit separates the Upper Ore Zone from the Main Ore Zone. The rock type is a characteristic green chlorite schist with variable quartz - (sample no. 28) with some mica. The grain size is fine. Amphibole has been found in places (circular Actinolite/tremolite). In general it can be toned a green-schist.

Mineralisation is slight and restricted to pyrite. At 990 V - 78 S there is some mineralisation associated with what appears to be a box-fold in the chlorite schists. Around 650 V - 700 V, 30 N - 40 N there occur some very large pyrite cubes in the greenschist.

Main Ore Zone

This zone is directly associated with the banded sericite quartzites below. It contains massive chalcopyrite. See samples and descriptions of blastings, M 1, M 3, M 13 - 16, M 26.

The Banded Quartzite

This unit is so-called because of the distinctive weathering surface. This shows bands of white quartz that weather out clearly from the surrounding more feldspathic and sericitic quartzite. This rock has been sampled and described from blastings.

Massive Quartzite

Distinguished from the above by a lack of banding and bedding/foliation. Generally it is very coarse grained and contains feldspar and some mafic minerals - probably chlorite. In places it is difficult to distinguish from the overlying banded quartzite - especially around 1100 V. There is little or no mineralisation associated with this rock-type.

The thickness seems to vary considerably and at times there is an amphibole greenschist - 1 - 2 m thick - contained within the unit. Also immediately beneath the massive quartzite there is a greenschist with quartzite. In the east of the area this is very thin 1 - 2 m, but in the west this unit thickens and becomes more massive. There is some slight mineralisation associated with this greenschist - especially in the west, but it is predominantly pyrite.

From 1250 V - 1400 V there is a mineralised zone at the base of the massive quartzite - the rock here has a distinctive banded appearance.

Lower Ore Zone

The mineralisation and rock types of this zone have been described in the descriptions of the shot-holes and samples M 9 - M 12. The mineralisation in this zone seems to be best between 700 V and 950 V. Further west the zone is only distinguished by a banded quartzite appearance - although the rock is

more chloritic than the banded quartzite associated with the main ore-zone. The mineralisation in the west is mostly pyrite with slight chalcopyrite and is not very good.

Amphibole Schists and Amphibolite

These form a distinctive blocky weathering unit under the Lower Ore Zone. The rock type is greenschist with scattered amphibole phenocrysts. The mineralisation associated with this rock-type is slight and restricted to pyrite (sample no. 29).

This unit - and other greenschist units - are characterised by oval shaped structures up to 1 m in length and 30 - 50 cms wide. They normally lie parallel to the schistosity and in the less quartzitic horizons. They may be tectonic pinch and swell structures or they may be pillow structures. In a less tectonically disturbed environment - I would definitely have called them pillow-lavas.

Pink-Weathering Quartzite Horizon

This is a very thin - 30 - 50 cms - horizon, but is most distinctive and is mapped as a marker horizon. It has a vigorous reaction with acid and is calcareous. (Sample no. 30).

Chlorite Schists and Quartzitic Mica Schists

The rock-types in this unit are quite variable but generally become more quartzitic and micaceous up the sequence. (Samples 31 - 33). There is some pyrite mineralisation associated with the greenschists at the base of the unit. The quartz content increases upwards and occurs as thin laminae (1 - 2 mm) in the mica schists.

Micaceous Graphite Schist

This is a thin but prominent band having a distinctive deep rusty weathering. It is laterally variable in mineral composition being in places a pure graphite schist and in others a light gray micaceous graphite schist. The mica is white and probably muscovite. There is no mineralisation in this unit. (Sample no. 34). Thickness of 1 - 3 ms.

The seemingly curious outcrop of this unit at 1200 V basis is a result of the local dip and topography.

Talcose Rock

This outcrops irregularly below the micaceous graphite schist. It is very soft and has a pink-red weathering colour and consists of massive talc and ?serpentine. (Sample no. 35). The presence of this rock type is very distinctive of the prospect and it has been an intrusive ultrabasic in its original form, subsequently hydrolysed and metamorphosed.

Sample no. 36 is an example of the rock type below the graphite schist - found in places where there is no outcrop of the talcose rock.

Quite late in the mapping mineralisation was found in a quartzite - very massive and hard - 4 - 5 ms below the micaceous graphite schist. This mineralisation is quite easily observed as the rock weathers a rusty colour. However, the sulphide is usually disseminated so finely as to be difficult to identify as pyrite or chalcopyrite. (Samples M 37, M 18). M 21 shows some slight mineralisation in what may be an acid extrusive; the sample shows a distinct contact between what may have been two flows. This mineralisation may be continuous with that found at Grid Ref 432-209. (Sample M 17).

The structure of the area is generally quite simple - there being a noticeable change in strike from approximately E - W in the east of the prospect to NW - SE in the west of the prospect. At 1020 V basis there is a strong monoclinel flexure in the lower units of the stratigraphy, but this does not seem to affect the upper ore zone and the units above.

Monoclinel folding can be seen in the schistosity of the green-schists that lie beneath the prospect's stratigraphy. However, in the prospect it is only readily measurable (fold axis and plunge) in the Upper Graphite Schist. I had too little time to be able to take a statistically meaningful number of measurements.

The mineralised horizons have already been mentioned and briefly described. There are two types of mineralisation - thin veins of massive sulphide and disseminated sulphide. The chalcopyrite is usually found as veins in the Main Ore Zone. The disseminated sulphide is usually pyrite but is often so fine grained as to make the distinction between chalcopyrite and pyrite very difficult. Only chemical analyses will enable copper content of the disseminated rocks to be determined. In the Main Ore Zone the mineralisation can be seen to be in the rock fractures indicating sulphide movement after the fracturing of the rock. This would seem to indicate a mobilisation of the ore fluids during or after metamorphism - there is little evidence for hydrothermal activity apart from a few small quartz veins and the lateral extension on a constant stratigraphic horizon of the mineralised horizons may indicate a syngenetic origin of the sulphides with the extrusives; the sulphides then being remobilised and probably concentrated in the present zones.

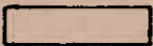
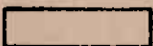
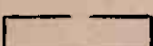
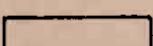
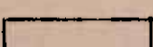
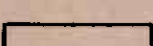
Suggestions

Initially drilling should continue to at least the lower graphite schist and preferably to the mineralised quartzite just below the graphite.

Mineralisation is found in the Upper Ore Zone west from 1700 V; exposure of the Main Ore horizon becomes poor. Hence further drilling west of 1700 V would be useful to determine the extent of the mineralisation.

Mineralisation was found at Grid Ref 426213 when looking at the E.M. anomaly in that area. Further investigation in that area may be advisable.

Fargekode til kart i stratigrafisk orden.

69		Graphite Schist
59		Micaceous Chlorite Schist
21		Upper Ore Zone (Chlorite Schists/Green Schist + Keratophyres)
61		Green Chlorite Schist
12		Mineralised Horizon
3		Banded Quartzite - Quartz Sericite
3		Massive feldspathic Quartzite
41		Greenschist with Chlorite
21		Lower Ore Zone. Host rock variable - usually Qua.
42		Amphibole Schist and Amphibolite
33		Pink weathering Calcareous Quartzite Horizon
56		Chlorite schists and Quartzitic Mica Schists
69		Micaceous Graphite Schist
44		Talcose Rock

T_{21}

Strike + Dip with value of Dip

$\rightarrow 21$

Foldaxis Direction with direction and value of plunge

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Concealed Geologic Boundary

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Observed Geologic Boundary

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claim markers. Numbers indicated

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shot hole site

·M8

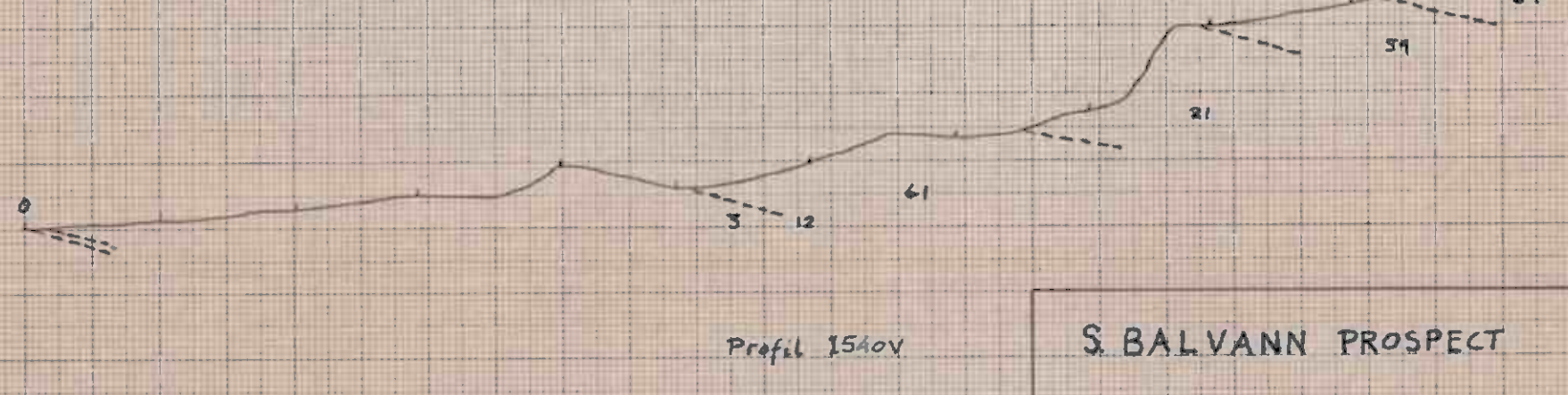
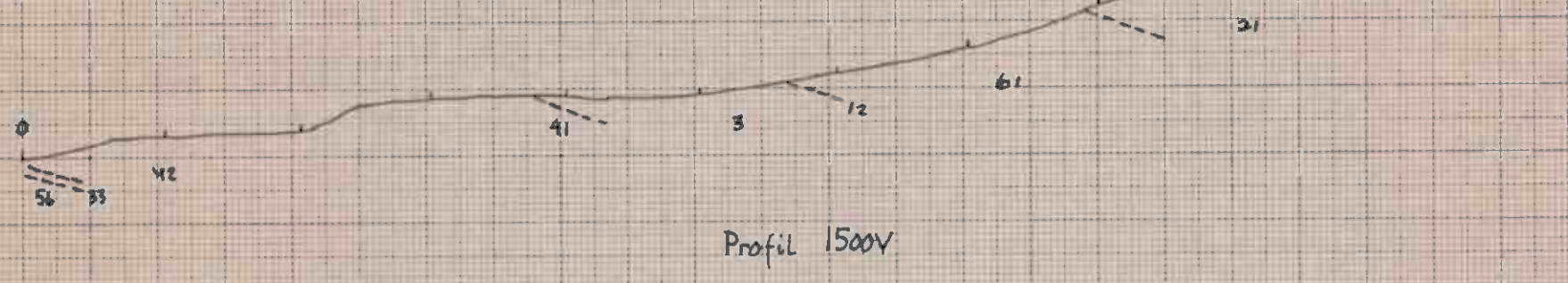
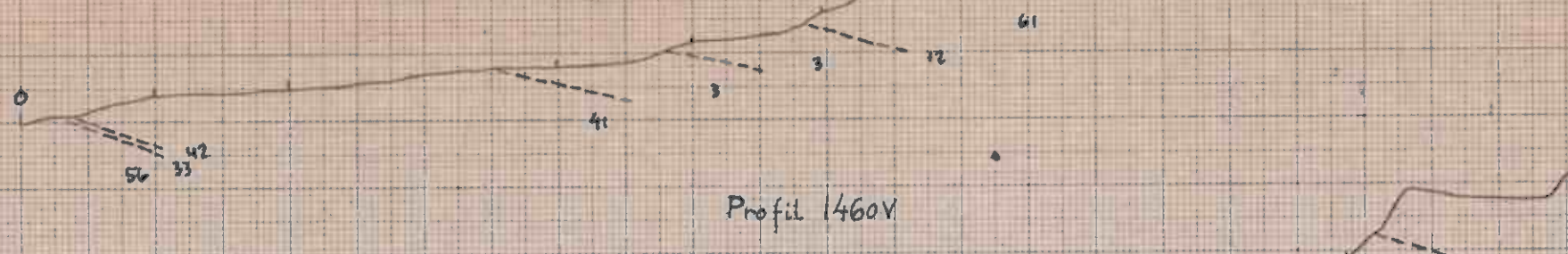
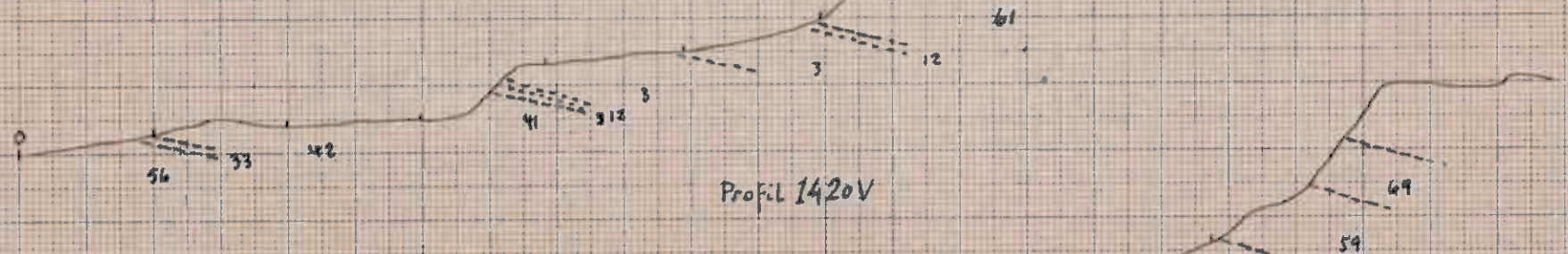
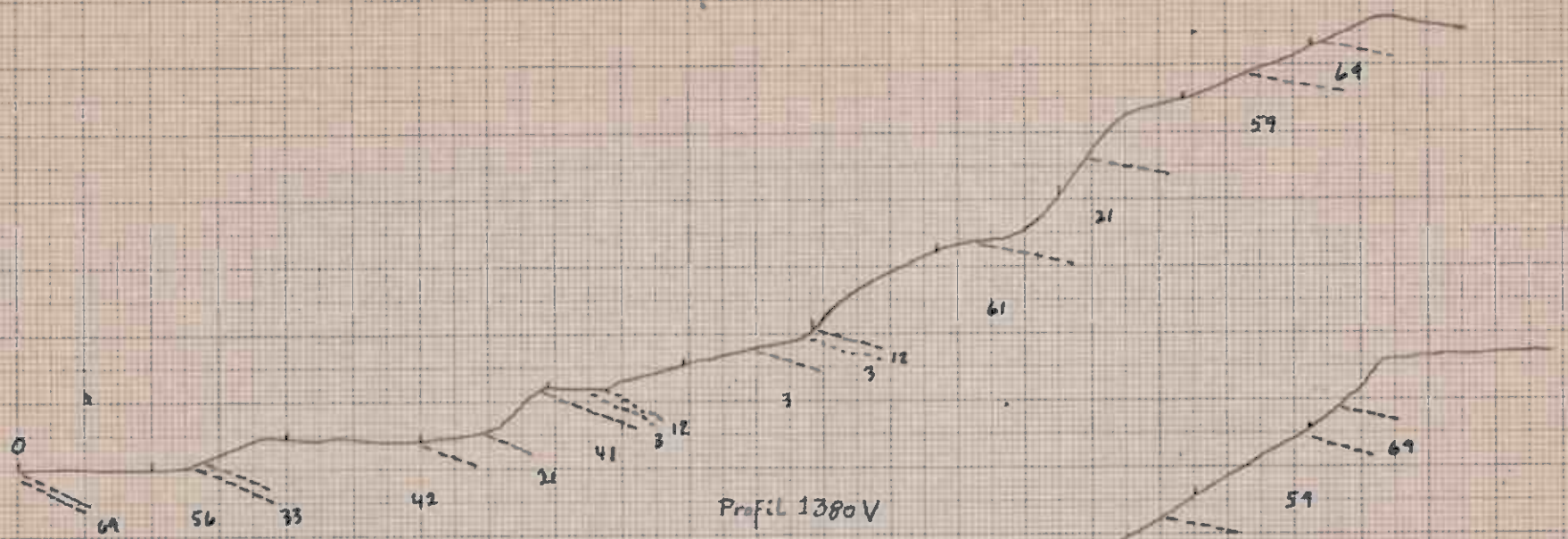
Ore sample location and number

·36

Rock type Sample location and number



Permanent markers at 500v and 740v



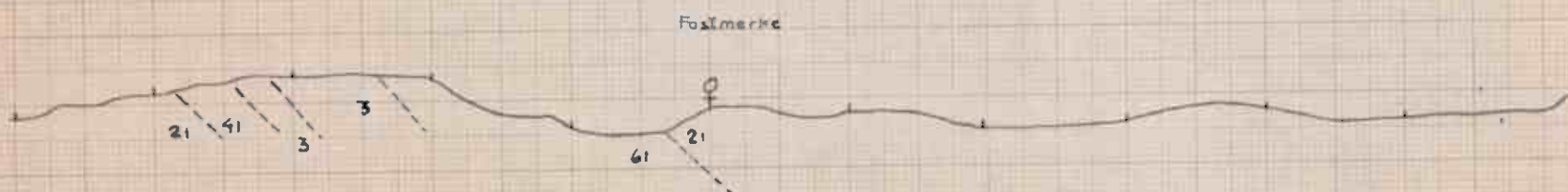
S. BALVANN PROSPECT

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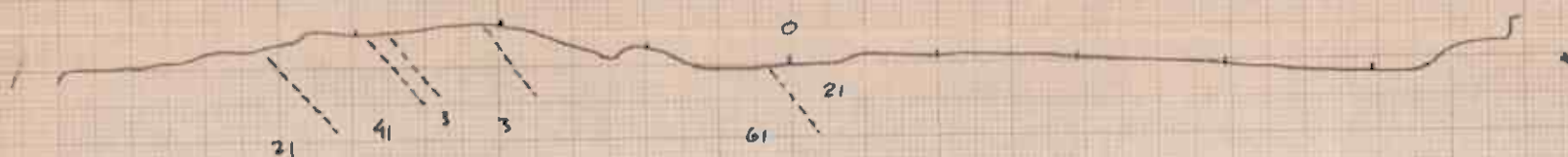
PROFILES

1380V - 1540V

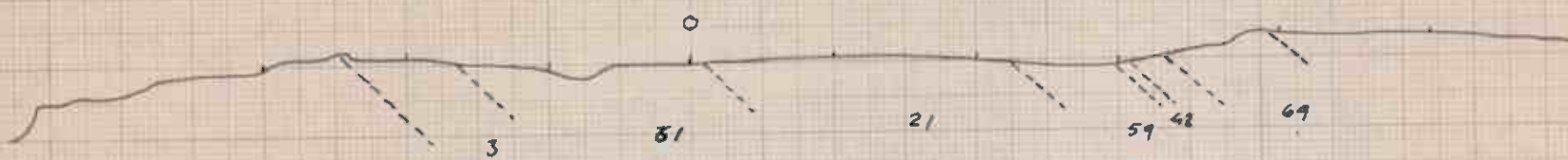
B.V.



Profil 500V



Profil 540V



Profil 580V

S. BALVANN PROSPECT

1 : 1000

PROFILES

500V - 580V



Profel 620 V



Profel 660 V



Profel 700 V



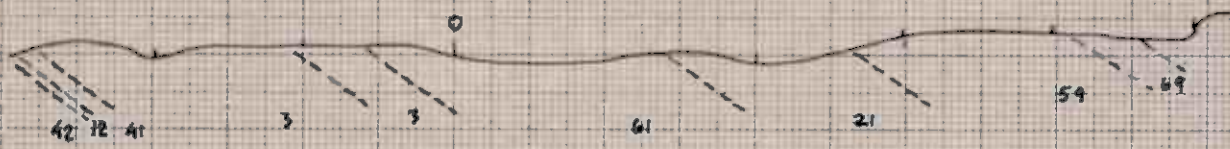
Profel 740 V

S. BALVANN PROSPECT

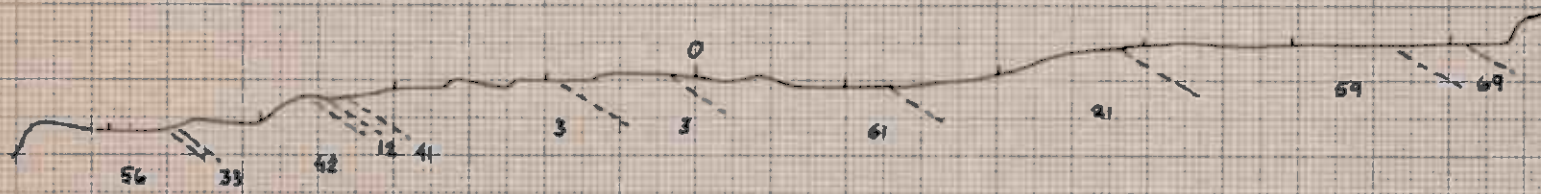
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PROFILES

620 V - 740 V



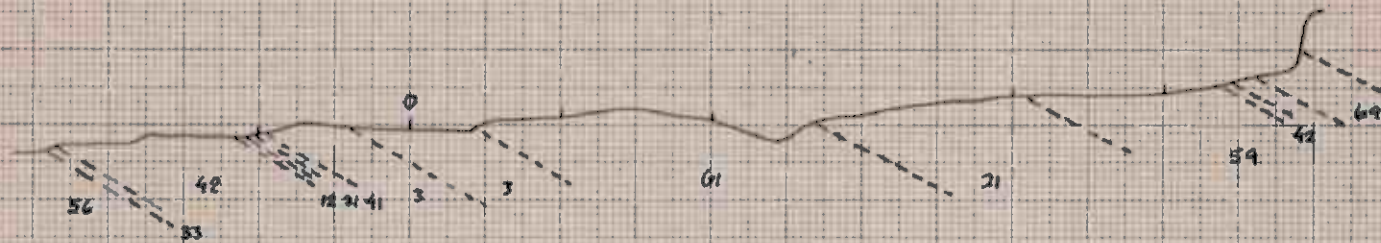
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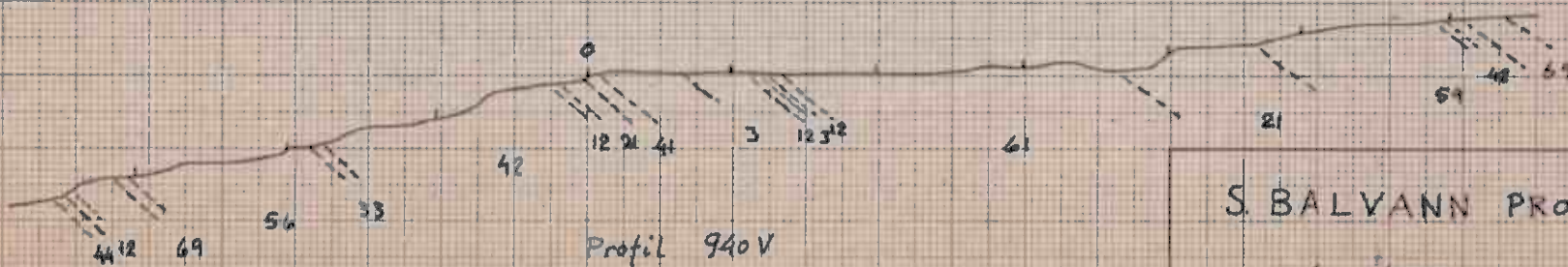
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Profil 860V



Profil 900V



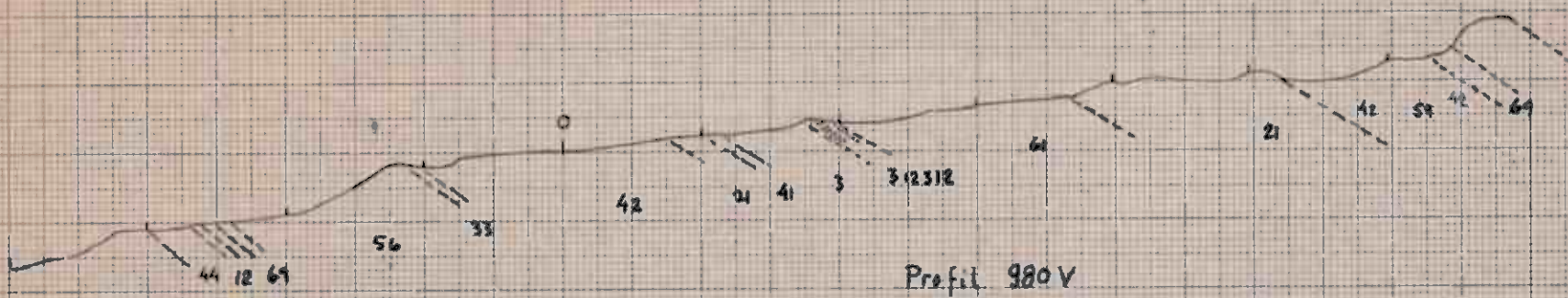
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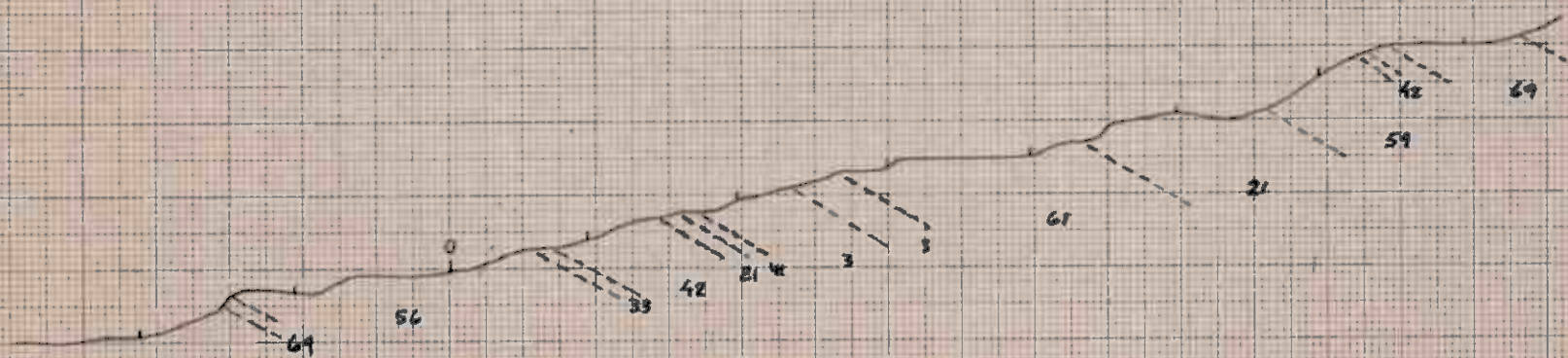
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PROFILES

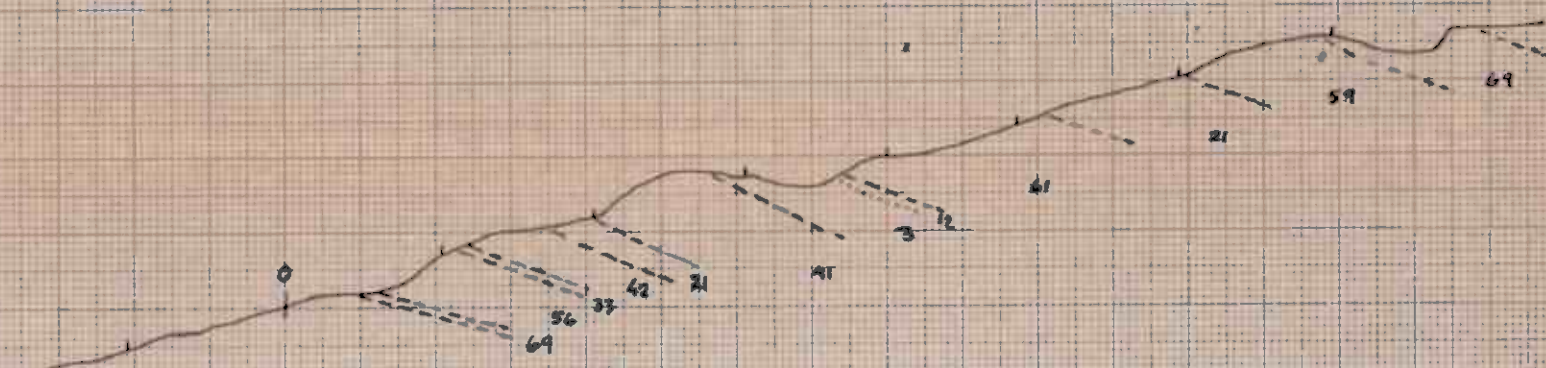
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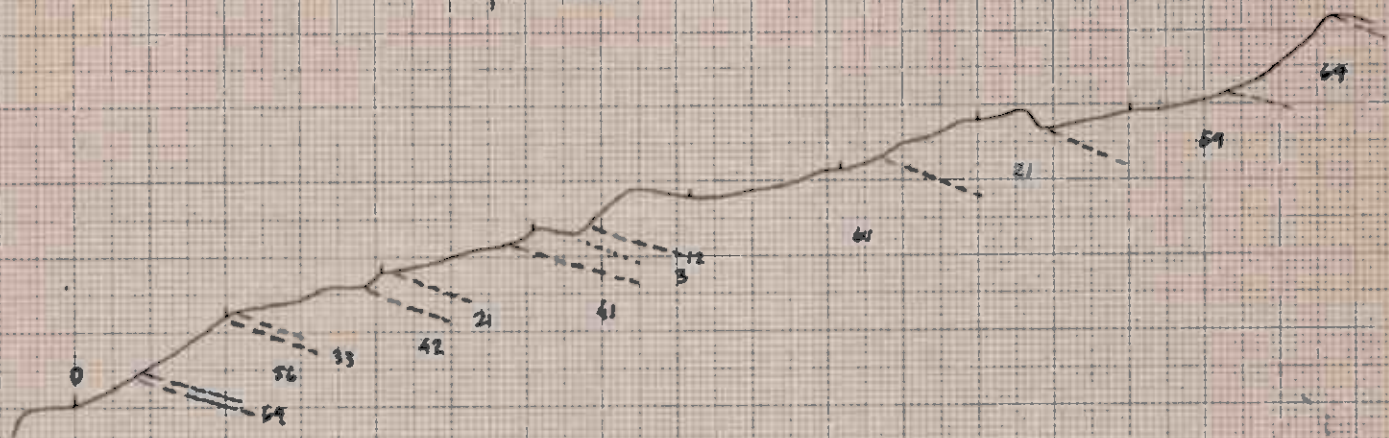
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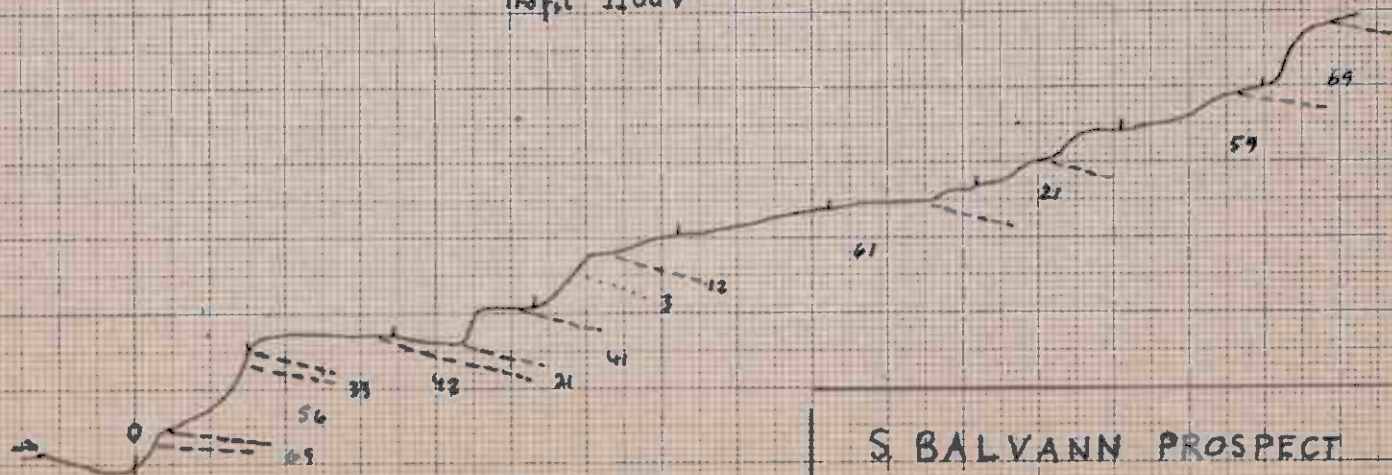
Profil 1020V



Profil 1060V



Profil 1100V



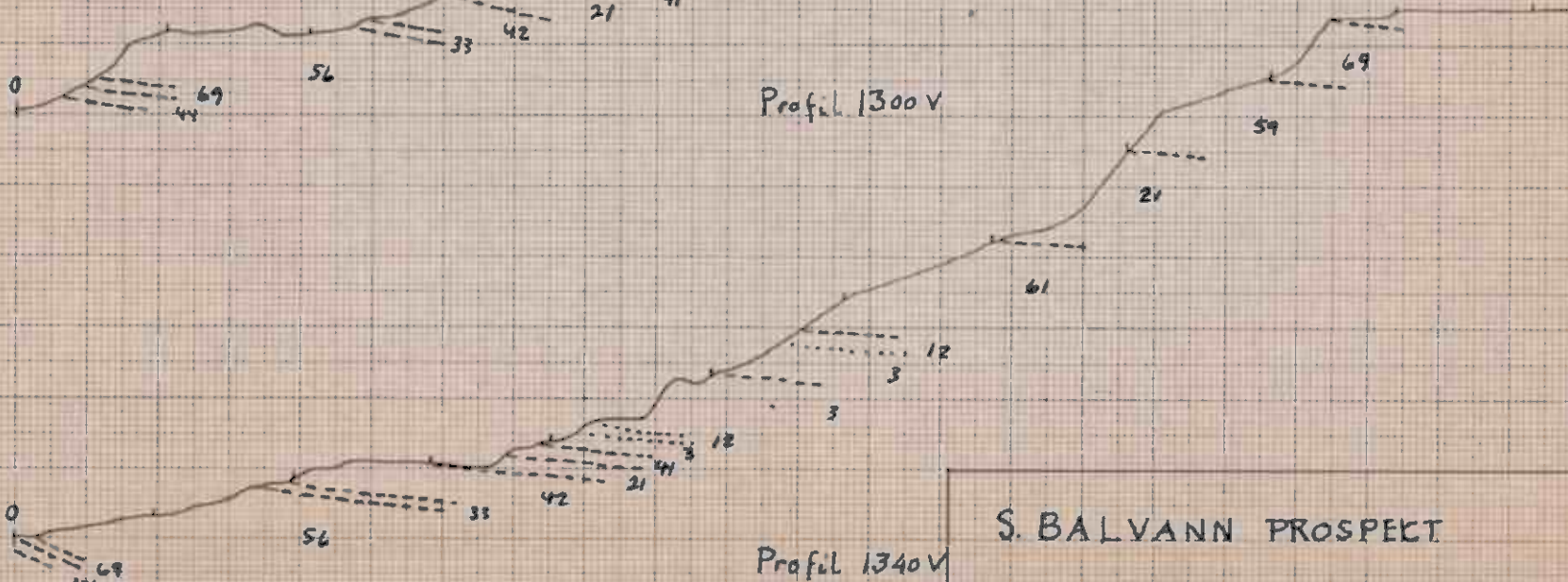
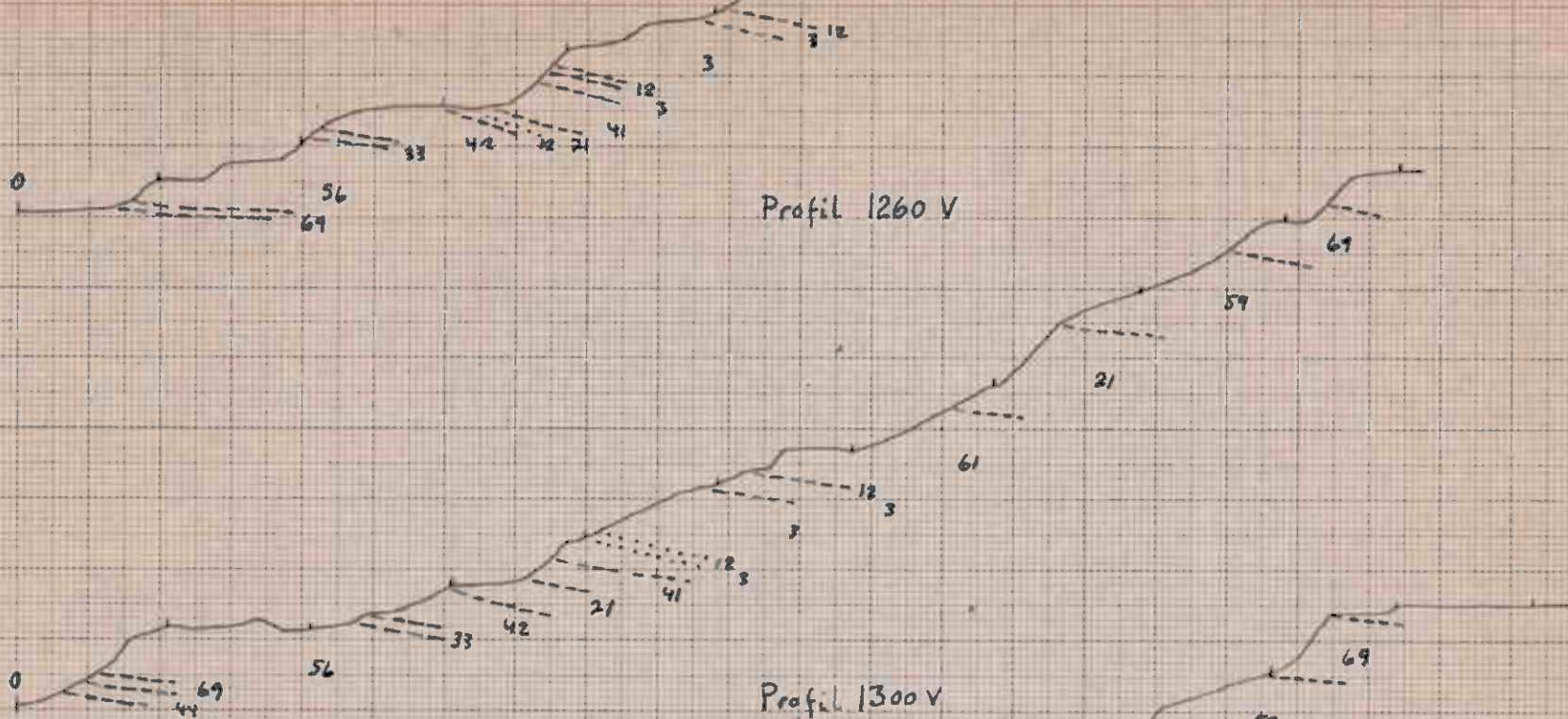
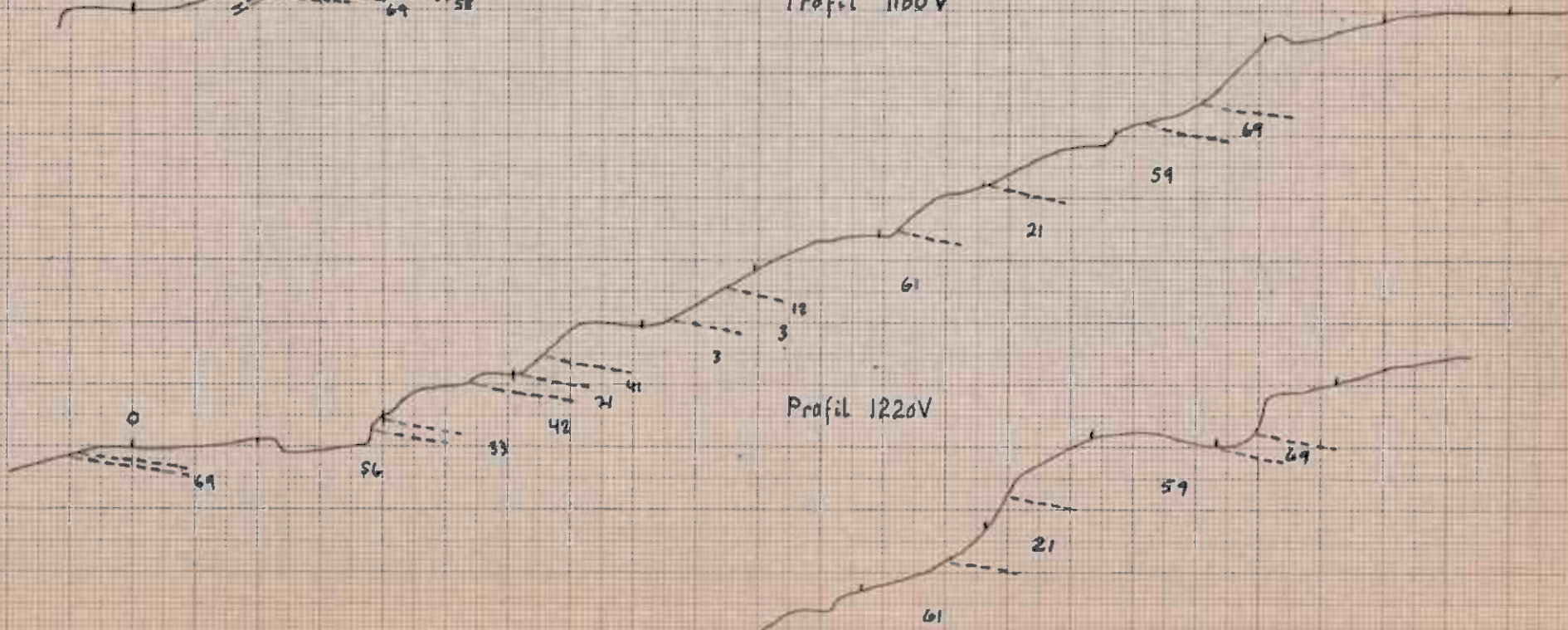
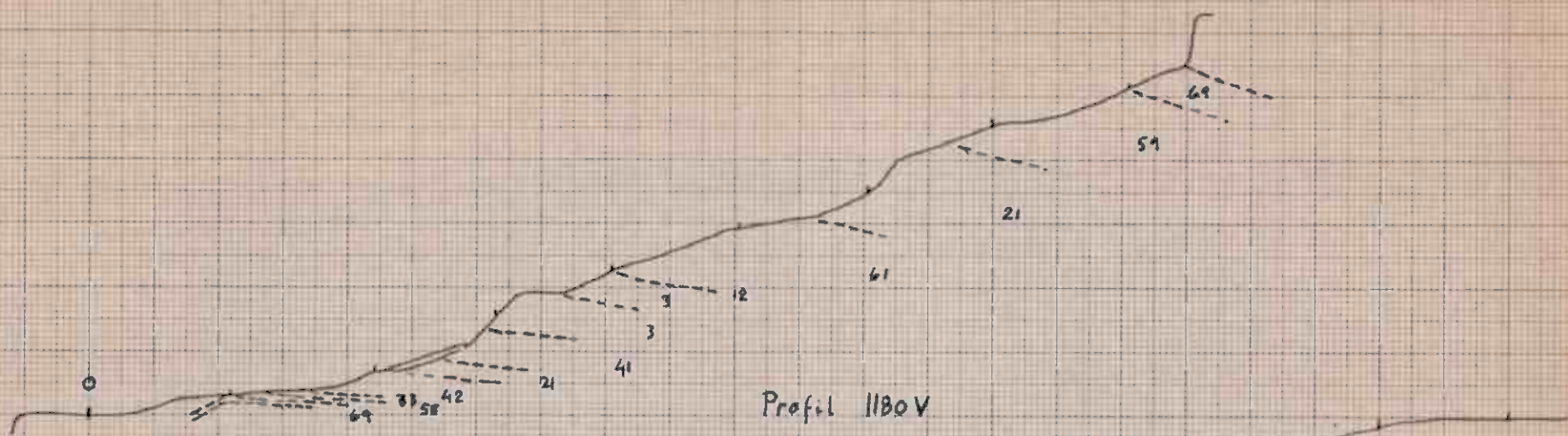
Profil 1140V

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1:2000

PROFILES

980V - 1140V



S. BALVANN PROSPEKT

1 : 1000

PROFILES

1180V - 1340V

B.V.

Geologiske undersøkelser
på malmhorisont ved
Klaravann

Utført sommeren 1970

av Duncan Large og Bjarne Vasshaug

032.001

BORHULL ER UTSATT PÅ FØLGENDE STEDER

	<u>Retning</u>	<u>Fall fra horizontal 360°</u>
944V - 107 S	N 120V	60° N
980V - 106 S	N 12°V	40° N
1020V - 132 S	Langs rutenett	55° N
1060V - 134 S	Rett nord	60° N
1100V - 138 S	Langs rutenett	70° N
1140V - 140 S	N 22° Ø	70° N
1180V - 141 S	N 42° Ø	70° N
1220V - 187 S	N 42° Ø	70° N
1260V - 193.3S	N 42° Ø	70° N
1300V - 196 S	N 32° Ø	75° N
1340V - 200 S	N 30° Ø	70° N
1380V - 215.5S	N 30° Ø	70° N

S a m p l e s

The prefix "M" indicates a sample from an ore horizon

No.	Location		N o t e s	
M 1	925 V	19 S	Main Ore Horizon	
M 2	610 V	59 S	From a Green Amphibolite Schist just below Graphite Schist.	
M 3	1035 V	60 S	Main Ore Horizon	
M 4	748 V	11 S	Upper Ore Zone. B. Vasshaug's No. 1	
M 5	748 V	18 S	"	2
M 6	750 V	28 S	"	3,5
M 7	744 V	21 S	"	4
M 8	739 V	39,5 S	"	6
M 9	739 V	56,5 N	Lower Ore Zone	
M 10	"	"	"	
M 11	"	"	"	
M 12	755 V	53 N	"	
M 13	1140 V	70,5 S	Main Ore Zone	
M 14	"	"	"	
M 15	1135 V	70 S	"	
M 16	1140 V	70,5 S	"	
M 17	432 209		Pyrite in Quartz Sericite	
M 18	1300 V	18 N	Pyrite/Chalcopyrite in dark Quartzite/below the Lower Graphite	
M 19	1700 V	178 S	Upper Ore Zone	
M 20	1697 V	171 S	Upper Ore Zone	
M 21	1300 V	15 N	Small ore in interesting rock type/from below the Lower Graphite	
22	1670 V	205 S	Micaceous Chlorite Schist	
23	1676 V	191 S	From Micaceous Horizon at the base of the Upper Micaceous Chlorite Schist.	
M 24	1768 V	155 S	Upper Ore Zone	
25	1540 V	285 S approx.	Staurolite Schist	
M 26	951 V	32 S	Main Ore Zone	
27	998 V	92 S	Quartz Keralophyse in Upper Ore Zone	
28	978 V	55 S	Green Chlorite Schist	
29	982 V	18 N	Amphibole Schist	
30	920 V	41 N	Pink Calcaceous Quartzite horizon	

No.	Location		Notes
31	915 V	46 N	Sequence up the Lower Chlorite Schist
32	924 V	52 N	
33	932 V	63 N	
34	940 V	60 N	Micaceous Graphite Schist
35	1136 V	5 N	Talcoose Rock
36	1046 V	2 N	
M 37	983 V	52 N	Fine Dissemination in quartzite below the Lower Graphite

360° Compass

Locations of Dips and Strikes. (All Strike Directions are E from N)

Location	Strike	Dip	Location	Strike	Dip
502 V 3 S	060°	50° to S	580 V 60 N	075°	46° to S
500 V 80 N	098°	49° to S			
510 V 81 N	088°	57° to S			
542 V 75 N	091°	40° to S			
560 V 71 S	094°	46° to S			
600 V 65 S	080°	40° to S			
632 V 62 N	112°	30° to S			
641 V 40 N	088°	36° to S			
694 V 56 N	077°	40° to S			
680 V 87 S	102°	28° to S			
743 V 58 N	064°	41° to S			
780 V 74 N	084°	40° to S			
832 V 58 N	110°	31° to S			
873 V 55 N	084°	36° to S			
897 V 60 N	086°	32° to S			
920 V 19 S	068°	42° to S			
960 V 38 S	065°	37° to S			
997 V 141 S	091°	35° to S			
1055 V 151 S	070°	26° to S			
979 V 102 S	074°	50° to S			
977 V 115 S	064°	46° to S			
912 V 104 S	081°	28° to S			
979 V 21 S	058°	35° to S			
991 V 23 S	080°	26° to S			
1011 V 117 S	097°	22° to S	1471 V 203 S	052°	17° to S
1016 V 12 S	180°	10° to W	1472 V 182 S	129°	33° to S
1025 V 113 S	087°	35° to S	1502 V 205 S	114°	19° to S
1028 V 67 S	046°	24° to W	1519 V 200 S	101°	15° to S
1033 V 17 S	038°	15° to W	1542 V 220 S	093°	21° to S
1037 V 120 S	085°	35° to S	1547 V 97 S	151°	29° to S
1054 V 151 S	070°	26° to S	1557 V 175 S	123°	20° to S
1063 V 120 S	090°	32° to S	1560 V 181 S	114°	27° to S
1069 V 37 S	078°	6° to S	1581 V 199 S	115°	21° to S
1076 V 104 S	090°	23° to S	1620 V 199 S	120°	16° to S

1081 V 40 S	176°	15° to W	1620 V 60 S	127°	27° to S
1093 V 41 S	162°	16° to W	1637 V 193 S	104°	19° to S
1098 V 18 S	161°	34° to W	1640 V 236 S	130°	12° to S
1104 V 35 S	132°	14° to SW	1640 V 142 S	127°	20° to S
1138 V 17 N	120°	22° to S	1697 V 136 S	117°	23° to S
1152 V 96 S	138°	17° to S	1700 V 182 S	117°	28° to S
1153 V 7 S	078°	25° to N			
1159 V 29 S	140°	15° to W			
1247 V 119 S	127°	23° to S	1214 V 58 S	178°	14° to W
1271 V 60 S	140°	15° to S			
1317 V 73 S	134°	12° to S			
1322 V 12 S	180°	15° to W			
1323 V 127 S	135°	17° to S			
1323 V 150 S	121°	12° to S			
1336 V 71 S	127°	13° to S			
1361 V 74 S	158°	12° to S			
1369 V 6 N	124°	26° to S			
1431 V 19 N	090°	21° to S			

Description of Shotholes

1142 V 71.5 S

Chlorite Schists with sparse quartz. White Mica is also found in the rock. It is generally well foliated. Mineralisation is confined to sparsely scattered disseminated pyrite and chalcopyrite.

1140 V 70.5 S

At the top lies 60 cms of a quartzitic chlorite schist with minor white mica. In places the rock is banded with chlorite and white mica alternating with quartzitic bands. The banding is on scale of a few mms. There is no mineralisation in this horizon. Specimen no. M 16.

Below has 2 cms of a dark green Micaceous Chlorite Schist containing disseminated Chalcopyrite.

The main ore horizon extends over a thickness of 12 cms. The Chalcopyrite is coarsely disseminated and veined through the host rock. The host rock here is a dark quartzite with some ferruginous colouring bands. Specimen M 14 1140 V 70.5 S
" M 15 1135 V 70 S

Below the Ore horizon has a Chlorite Quartzite with minor Amphibole and white Mica - also may be some Feldspars. There is accessory finely disseminated chalcopyrite and pyrite. The rock as whole becomes greener and more Chloritic upwards. Thickness 25 cms exposed.
Specimen M 13

Chlorite Schists

Banded. Quartzitic chlorite Schist

Micaceous Chlorite Schist
Mineralised Horizon

Chloritic Quartzite

10 cms

739 V 565 N M 9 - 12

Light Green Quartzitic Micaceous Chlorite Schist.

The Mica is quite prominent and may be a sericitic type.

The rock occasionally takes on a slightly banded appearance.

Mineralisation is confined to very slight dissemination.

Specimen M 10.

Below lies a white weathering quartzite with ferruginous banding and sericite bands. The ore is veined in horizontal bands and is also disseminated. The thickness is approximately 8 cms. Green malachite staining is also found.

Under this ore horizon there is a chloritic/sericitic quartzite. Occasionally the rock is quite coarsely banded inot more and less quartzitic bands. Some chalcopryite mineralisation is associated with these banding.

Side 6 a

748V - 11S (M4.)

Dessiminasjoner av sulfider (pyritt) i en klorittførende kvartsitt. Hullet ligger helt på den nedre grensen av den øvre malmhorisonten.

748 - 18S (MS)

Dessiminasjoner av sulfider (her ser det også ut til å være kobber til stede) i en klorittførende kvartsittskifer.

Mineraliseringen er jevn over hele den utsprengte flaten. Skiferen synes nederst i hullet å være mer kvartsholdig og massiv.

750V - 28S (M6)

Ganske sterk mineralisering i en klorittskifer som ligger mellom 2 hardere kvartsittiske skifere. Disse 2 ser ikke ut til å inneholde sulfidmineraler på grensen til klorittskiferen.

744V - 21S (M7)

Dessiminasjoner av sulfider i det meste av hullet. En har en grense mellom en kvartsittskifer og en klorittskifer. Mineraliseringen er i den kvartsittiske delen mens det i den klorittiske ikke kan sees spor av malmmineraler.

737V - 33S

Den øvre delen av hullet er kvartsførende og inneholder en mineralisering som minner meget om 750V - 28S. Den nedre delen synes å være finere og den synes heller ikke å inneholde så meget kvarts. Her synes ingen mineralisering.

Side 6 b

Grensen synes å være skarp.

739V - 39,5S (M8)

En kvartsåre med dessiminasjoner. Mektighet 15 cm. På oversiden ligger en noe massiv klorittskifer mens en på undersiden har en vekslende klorittskifer med kvartsband. Ingen synlig mineralisering.

Malmsone 2. (Main ore zone)

924V - 3S

Sprede dessiminasjoner i enkelte band i en kvartsittisk klorittskifer.

925V - 14S

Klorittisk kvartsittskifer med kun enkelte små antydninger til sulfider.

925V - 19S

Underst har man en kvartsittisk klorittskifer med meget svak antydning til sulfidmineraler. I den øvre delen av hullet har en et smalt bånd med rik kobbermineralisering i en kvartsittisk klorittskifer.

925V - 23S

Klorittskifer med meget kvartsinnhold. Noen meget få sulfidmineraler. kan iakttas.

842V - 0S

Massiv klorittholdig kvartsittskifer som inneholder svake antydninger til sulfidmineraler på kvartsårer.

860V - 2N

En massiv biotitt klorittskifer som i toppen av hullet har en distinkt overgang til en lysere kvartsrik bergart. Enkelte sulfidmineraler kan oppdages.

860V - 1N

Kvartsittskifer med noe kloritt. Svært lite mineralisering av sulfider.

859V - ON

Klorittskifer med noe mindre kvarts også litt amfibolførende. Ingen sulfidmineralisering.

857V - 4.58

En meget skifrig bergart som inneholder kvarts, kloritt, biotitt og litt amfibol.

En har her en del fin desiminasjon av sulfider. (pyritt).

1033V - 62S

Kvartsrik klorittskifer uten noen mineralisering av betydning.

1035V - 60S (M3)

Kvartsbåndet klorittskifer med ganske sterk desiminasjon av sulfider i et kvartsbånd som er ca. 10 cm tykt.

1039,5 - 60S

Kvartsbåndet klorittskifer med noen svake desiminasjoner av sulfider (pyritt).

Stratigraphy

The stratigraphy described below is that between - and including - the lower micaceous graphite schist and the upper graphite schist. However, above the upper graphite schist lies a rusty weathering micaceous (white mica) schist which grades with a schist with muscovite and a little chlorite and prominent staurolite crystals (sample no. 25). There are some thin graphitic horizons in this "staurolite" schist.

The Upper Graphite Schist

This unit has a thickness of 4 - 6 ms. It has a distinctive sharp boundary with the underlying Micaceous Chlorite Schists and a more gradational contact with the overlying rusty weathering. Occasional flakes of white mica are found in the rock, otherwise it is quite pure and clear. Mineralisation is confined to sparsely disseminated pyrite at the base of the unit around 1300 V - 1500 V.

Micaceous Chlorite Schist

The contact between this unit and the underlying Upper Ore Zone is marked by a white weathering feldspathic mica (sericite) rock with streaks of quartz (?keratophyse). There are also two thin muscovite mica bands (sample 23) about 1 m thick near the base of this unit. The overall rock type is a chlorite schist with variable concentrations of mica - mostly white mica. It is rusty weathering in places (sample 22).

Mineralisation is restricted to a thin band of more massive quartzitic Chlorite Schist with minor amphibole. It occurs near the top of the unit - only 1 - 2 m below the Graphite Schist (see sample 2). The band varies from 0 - 50 cms in thickness, but is laterally continuous. The thickness variations are probably a result of tectonism to give "pinch and swell" structures. Other small massive amphibole-bearing bodies were found in this unit, but none with much mineralisation.

The thickness of the whole unit is approximately 10 ms.

Upper Ore Zone

This zone is of the order of 10 ms thick. It contains several rock types. Mineralisation is found in feldspathic sericite schists, quartzites with sericite bands (M 19 - disseminated pyrite) quartzitic chlorite schists (M 24 - good pyrite with some chalcopyrite) and ordinary chlorite schists. (See descriptions of M 4 - 8 from blastings). Other rock types found are feldspar rich rocks with streaky quartz laminae. (Sample no. 27 - note the quartz on the weathered surface) - these have been tentatively interpreted as keratophyses and form bands of up to 1 m thick in the surrounding greenschist. Mineralisation is particularly good in the zone from 1400 V - 1700 V and further westwards. Most of the sulphide is probably pyrite but the dissemination is often so fine that it is difficult to distinguish pyrite and chalcopyrite. The mineralisation is usually confined in bands of 20 - 30 cms thickness.

Green Chlorite Schist

This unit separates the Upper Ore Zone from the Main Ore Zone. The rock type is a characteristic green chlorite schist with variable quartz - (sample no. 28) with some mica. The grain size is fine. Amphibole has been found in places (circular Actinolite/tremolite). In general it can be toned a green-schist.

Mineralisation is slight and restricted to pyrite. At 990 V - 78 S there is some mineralisation associated with what appears to be a box-fold in the chlorite schists. Around 650 V - 700 V, 30 N - 40 N there occur some very large pyrite cubes in the greenschist.

Main Ore Zone

This zone is directly associated with the banded sericite quartzites below. It contains massive chalcopyrite. See samples and descriptions of blastings, M 1, M 3, M 13 - 16, M 26.

The Banded Quartzite

This unit is so-called because of the distinctive weathering surface. This shows bands of white quartz that weather out clearly from the surrounding more feldspathic and sericitic quartzite. This rock has been sampled and described from blastings.

Massive Quartzite

Distinguished from the above by a lack of banding and bedding/ foliation. Generally it is very coarse grained and contains feldspar and some mafic minerals - probably chlorite. In places it is difficult to distinguish from the overlying banded quartzite - especially around 1100 V. There is little or no mineralisation associated with this rock-type.

The thickness seems to vary considerably and at times there is an amphibole greenschist - 1 - 2 m thick - contained within the unit. Also immediately beneath the massive quartzite there is a greenschist with quartzite. In the east of the area this is very thin 1 - 2 m, but in the west this unit thickens and becomes more massive. There is some slight mineralisation associated with this greenschist - especially in the west, but it is predominantly pyrite.

From 1250 V - 1400 V there is a mineralised zone at the base of the massive quartzite - the rock here has a distinctive banded appearance.

Lower Ore Zone

The mineralisation and rock types of this zone have been described in the descriptions of the shot-holes and samples M 9 - M 12. The mineralisation in this zone seems to be best between 700 V and 950 V. Further west the zone is only distinguished by a banded quartzite appearance - although the rock is

more chloritic than the banded quartzite associated with the main ore-zone. The mineralisation in the west is mostly pyrite with slight chalcopyrite and is not very good.

Amphibole Schists and Amphibolite

These form a distinctive blocky weathering unit under the Lower Ore Zone. The rock type is greenschist with scattered amphibole phenocrysts. The mineralisation associated with this rock-type is slight and restricted to pyrite (sample no. 29).

This unit - and other greenschist units - are characterised by oval shaped structures up to 1 m in length and 30 - 50 cms wide. They normally lie parallel to the schistosity and in the less quartzitic horizons. They may be tectonic pinch and swell structures or they may be pillow structures. In a less tectonically disturbed environment - I would definitely have called them pillow-lavas.

Pink-Weathering Quartzite Horizon

This is a very thin - 30 - 50 cms - horizon, but is most distinctive and is mapped as a marker horizon. It has a vigorous reaction with acid and is calcareous. (Sample no. 30).

Chlorite Schists and Quartzitic Mica Schists

The rock-types in this unit are quite variable but generally become more quartzitic and micaceous up the sequence. (Samples 31 - 33). There is some pyrite mineralisation associated with the greenschists at the base of the unit. The quartz content increases upwards and occurs as thin laminae (1 - 2 mm) in the mica schists.

Micaceous Graphite Schist

This is a thin but prominent band having a distinctive deep rusty weathering. It is laterally variable in mineral composition being in places a pure graphite schist and in others a light gray micaceous graphite schist. The mica is white and probably muscovite. There is no mineralisation in this unit. (Sample no. 34). Thickness of 1 - 3 ms.

The seemingly curious outcrop of this unit at 1200 V basis is a result of the local dip and topography.

Talcose Rock

This outcrops irregularly below the micaceous graphite schist. It is very soft and has a pink-red weathering colour and consists of massive talc and ?serpentine. (Sample no. 35). The presence of this rock type is very distinctive of the prospect and it have been an intrusive ultrabasic in its original form, subsequently hydrolysed and metamorphosed.

Sample no. 36 is an example of the rock type below the graphite schist - found in places where there is no outcrop of the talcose rock.

Quite late in the mapping mineralisation was found in a quartzite - very massive and hard - 4 - 5 ms below the micaceous graphite schist. This mineralisation is quite easily observed as the rock weathers a rusty colour. However, the sulphide is usually disseminated so finely as to be difficult to identify as pyrite or chalcopyrite. (Samples M 37, M 18). M 21 shows some slight mineralisation in what may be an acid extrusive; the sample shows a distinct contact between what may have been two flows. This mineralisation may be continuous with that found at Grid Ref 432-209. (Sample M 17).

The structure of the area is generally quite simple - there being a noticeable change in strike from approximately E - W in the east of the prospect to NW - SE in the west of the prospect. At 1020 V basis there is a strong monoclinel flexure in the lower units of the stratigraphy, but this does not seem to affect the upper ore zone and the units above.

Monoclinel folding can be seen in the schistosity of the green-schists that lie beneath the prospect's stratigraphy. However, in the prospect it is only readily measurable (fold axis and plunge) in the Upper Graphite Schist. I had too little time to be able to take a statistically meaningful number of measurements.

The mineralised horizons have already been mentioned and briefly described. There are two types of mineralisation - thin veins of massive sulphide and disseminated sulphide. The chalcopyrite is usually found as veins in the Main Ore Zone. The disseminated sulphide is usually pyrite but is often so fine grained as to make the distinction between chalcopyrite and pyrite very difficult. Only chemical analyses will enable copper content of the disseminated rocks to be determined. In the Main Ore Zone the mineralisation can be seen to be in the rock fractures indicating sulphide movement after the fracturing of the rock. This would seem to indicate a mobilisation of the ore fluids during or after metamorphism - there is little evidence for hydrothermal activity apart from a few small quartz veins and the lateral extension on a constant stratigraphic horizon of the mineralised horizons may indicate a syngenetic origin of the sulphides with the extrusives; the sulphides then being remobilised and probably concentrated in the present zones.

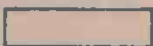
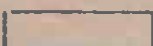
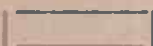
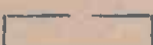
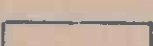
Suggestions

Initially drilling should continue to at least the lower graphite schist and preferably to the mineralised quartzite just below the graphite.

Mineralisation is found in the Upper Ore Zone west from 1700 V; exposure of the Main Ore horizon becomes poor. Hence further drilling west of 1700 V would be useful to determine the extent of the mineralisation.

Mineralisation was found at Grid Ref 426213 when looking at the E.M. anomaly in that area. Further investigation in that area may be advisable.

Fargekode til kart i stratigrafisk orden.

69		Graphite Schist
59		Micaceous Chlorite Schist
21		Upper Ore Zone (Chlorite Schists/Green Schist + Keratophyres)
61		Green Chlorite Schist
12		Mineralised Horizon
3		Banded Quartzite - Quartz Sericite
3		Massive feldspathic Quartzite
41		Greenschist with Chlorite
21		Lower Ore Zone. Host rock variable - usually Qua.
42		Amphibole Schist and Amphibolite
33		Pink Weathering Calcareous Quartzite Horizon
56		Chlorite schists and Quartzitic Mica Schists
69		Micaceous Graphite Schist
44		Talcose Rock



Strike + Dip with value of Dip



Foldaxis Direction with direction and value of plunge



Concealed Geologic Boundary



Observed Geologic Boundary



claim markers. Numbers indicated



shot hole site



Ore sample location and number



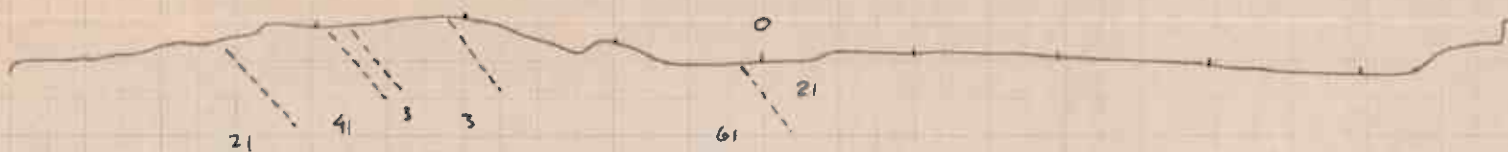
Rock type Sample location and number



Permanent markers at 500v and 740v



Profil 500 v



Profil 540 v



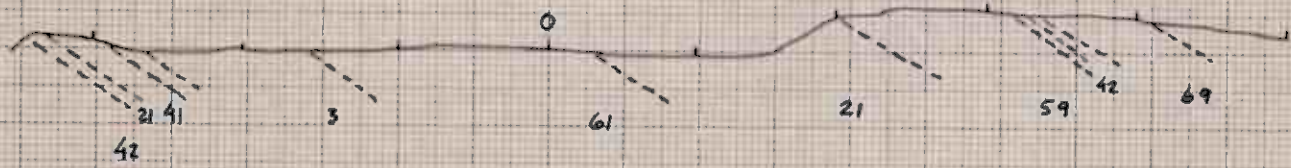
Profil 580 v

S. BALVANN PROSPECT

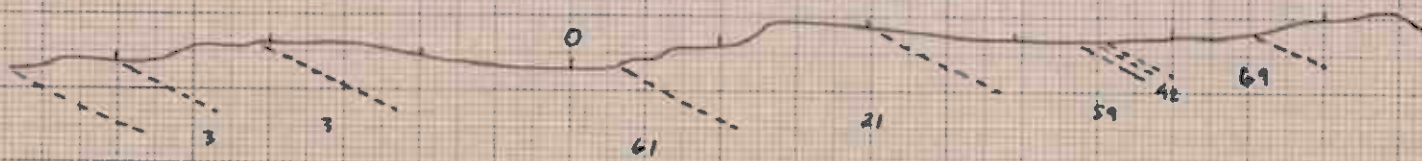
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PROFILES

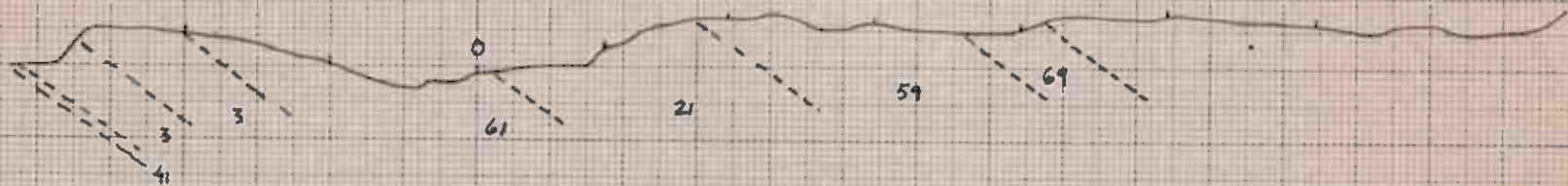
500 v - 580 v



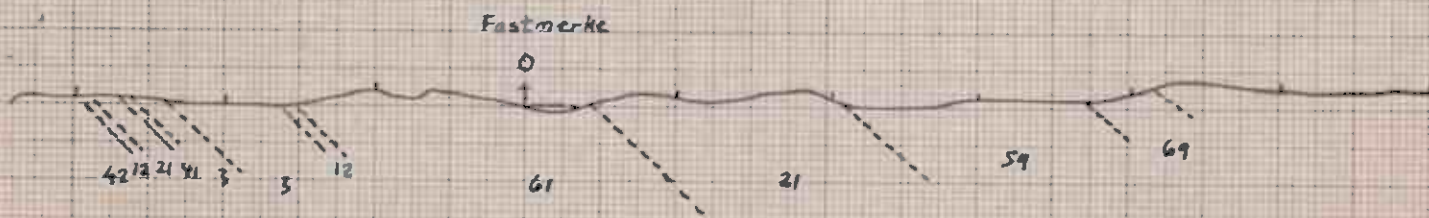
Profil 620 V



Profil 660 V



Profil 700 V



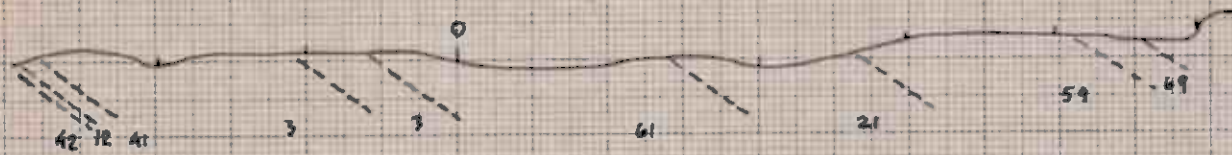
Profil 740 V

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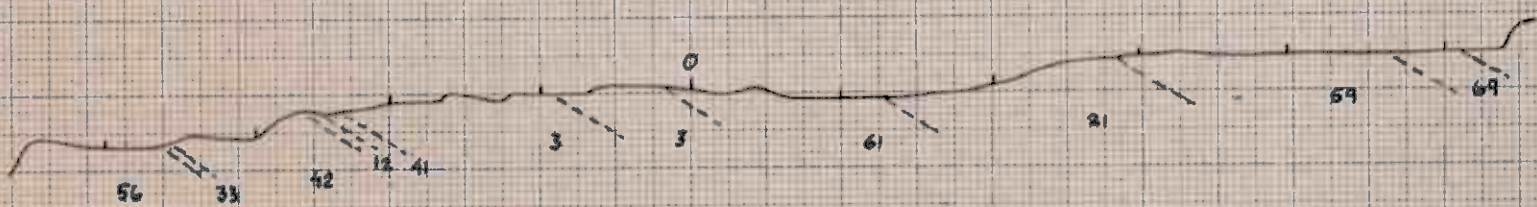
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PROFILES

620 V - 740 V



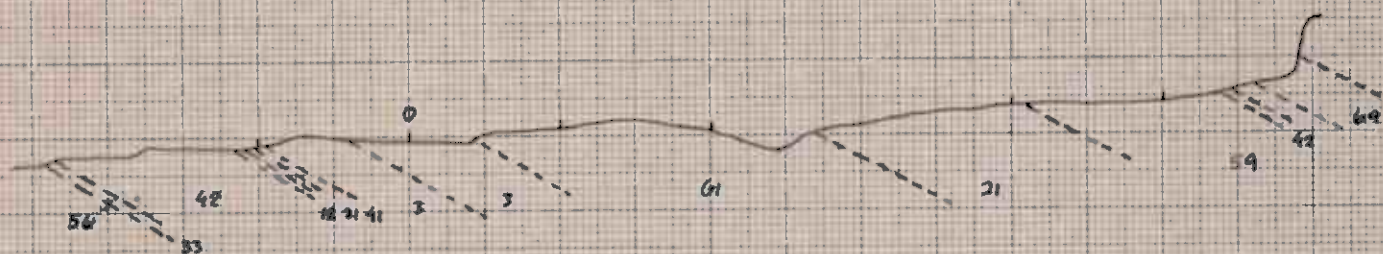
Profil 780V



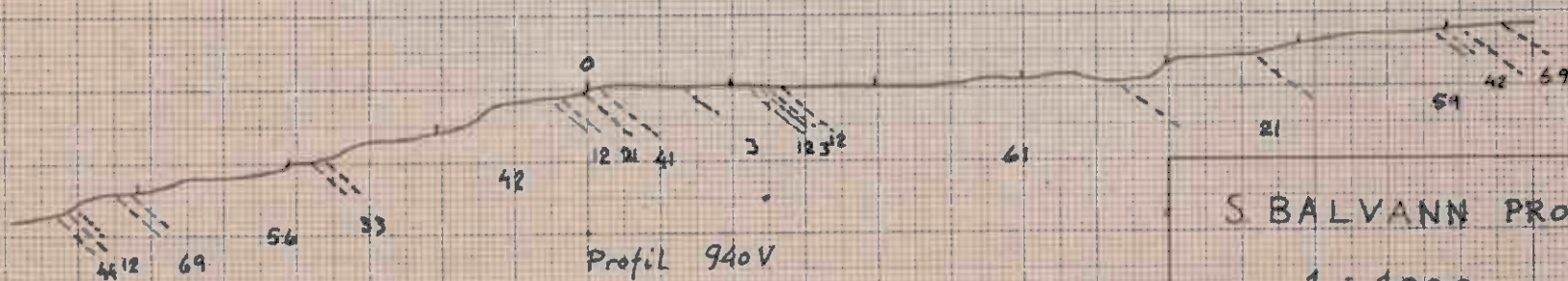
Profil 820V



Profil 860V



Profil 900V



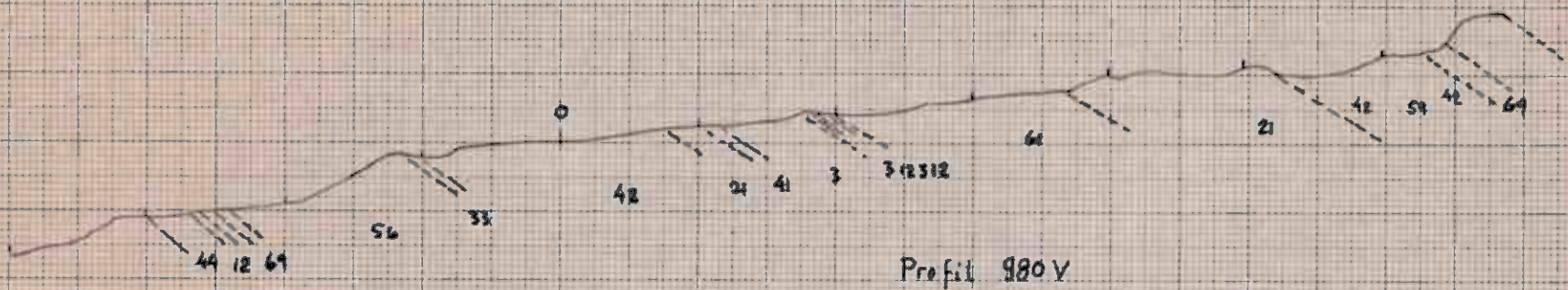
Profil 940V

S BALVANN PROSPECT

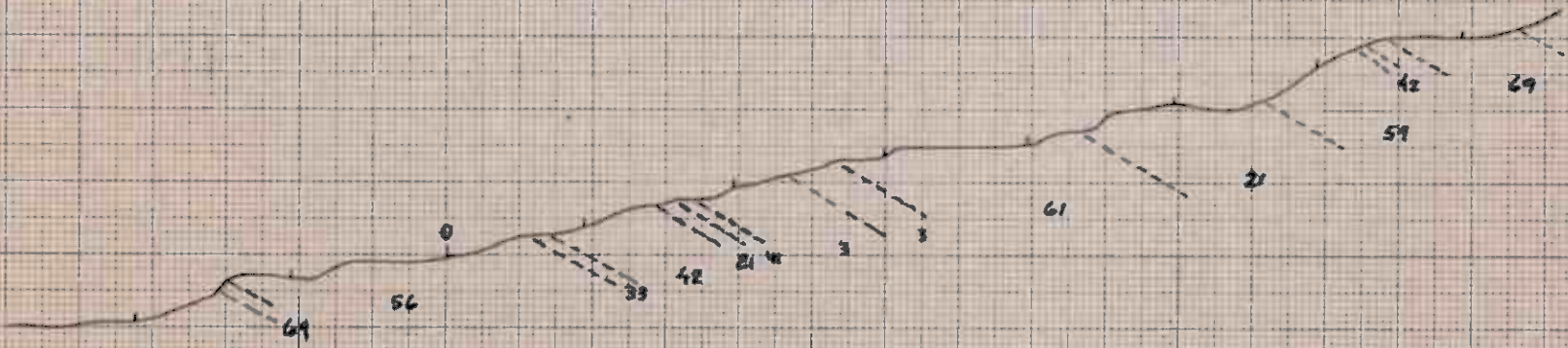
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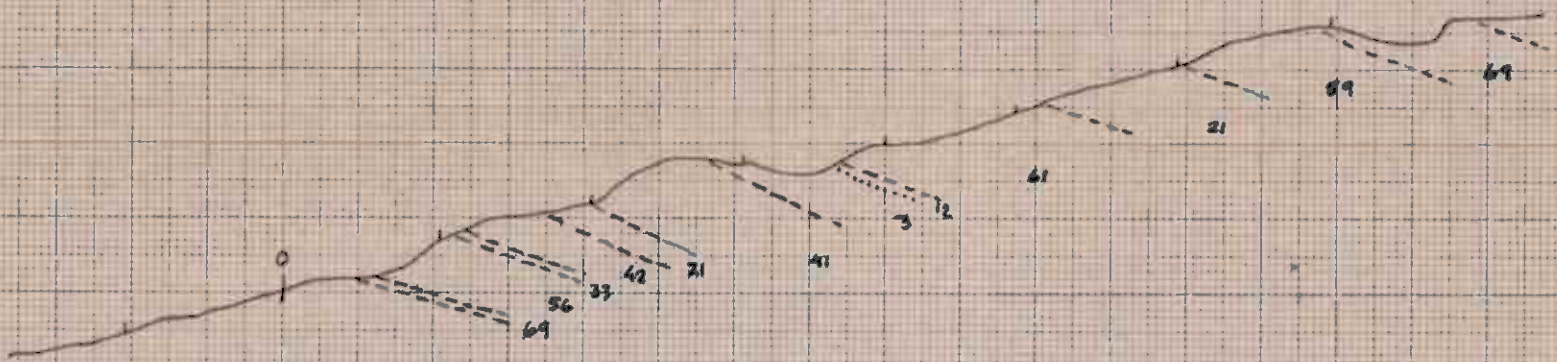
780V - 940V



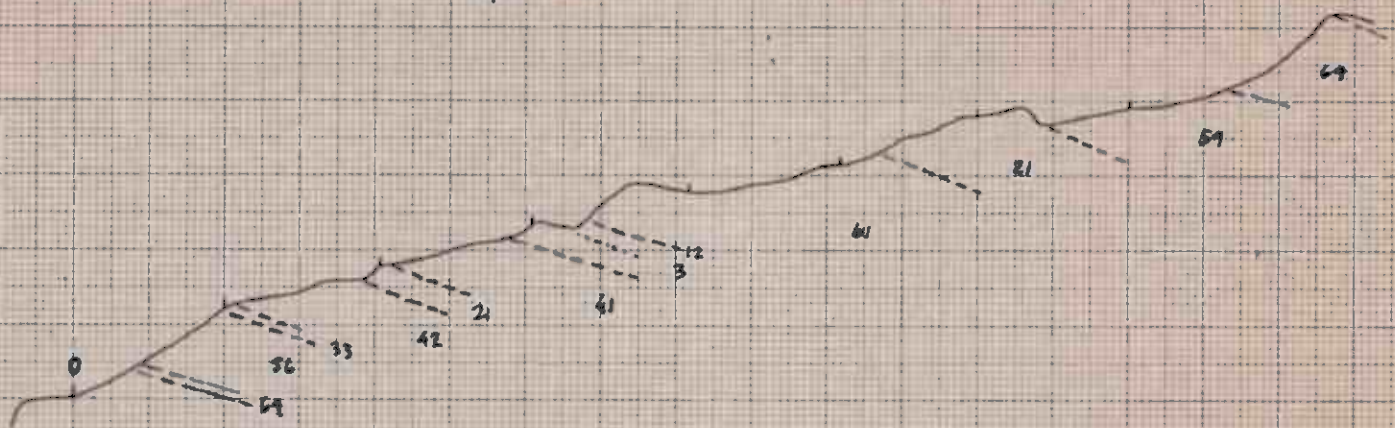
Profil 980V



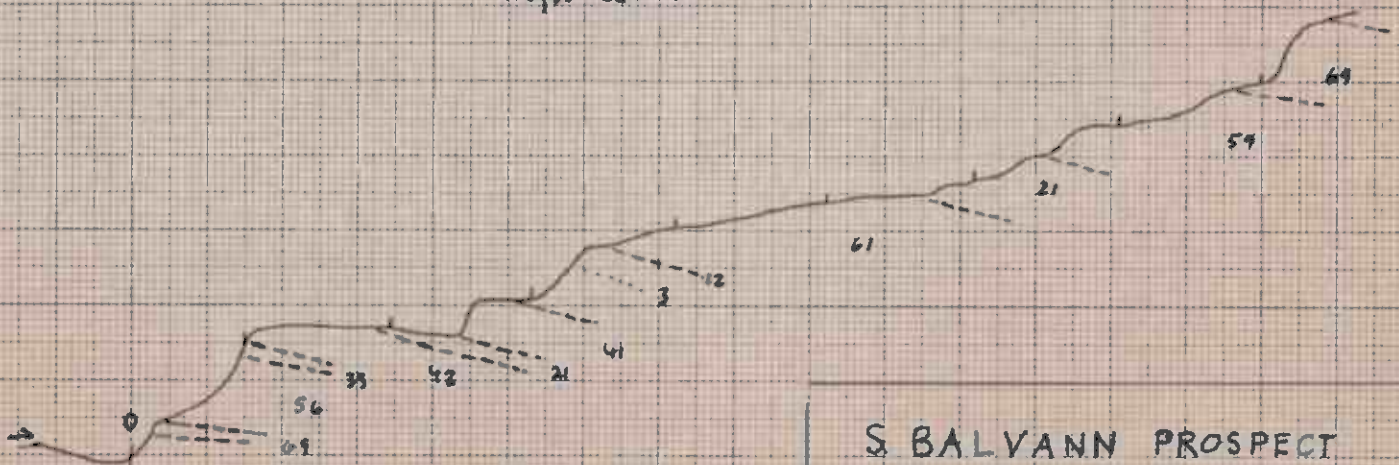
Profil 1020V



Profil 1060V



Profil 1100V



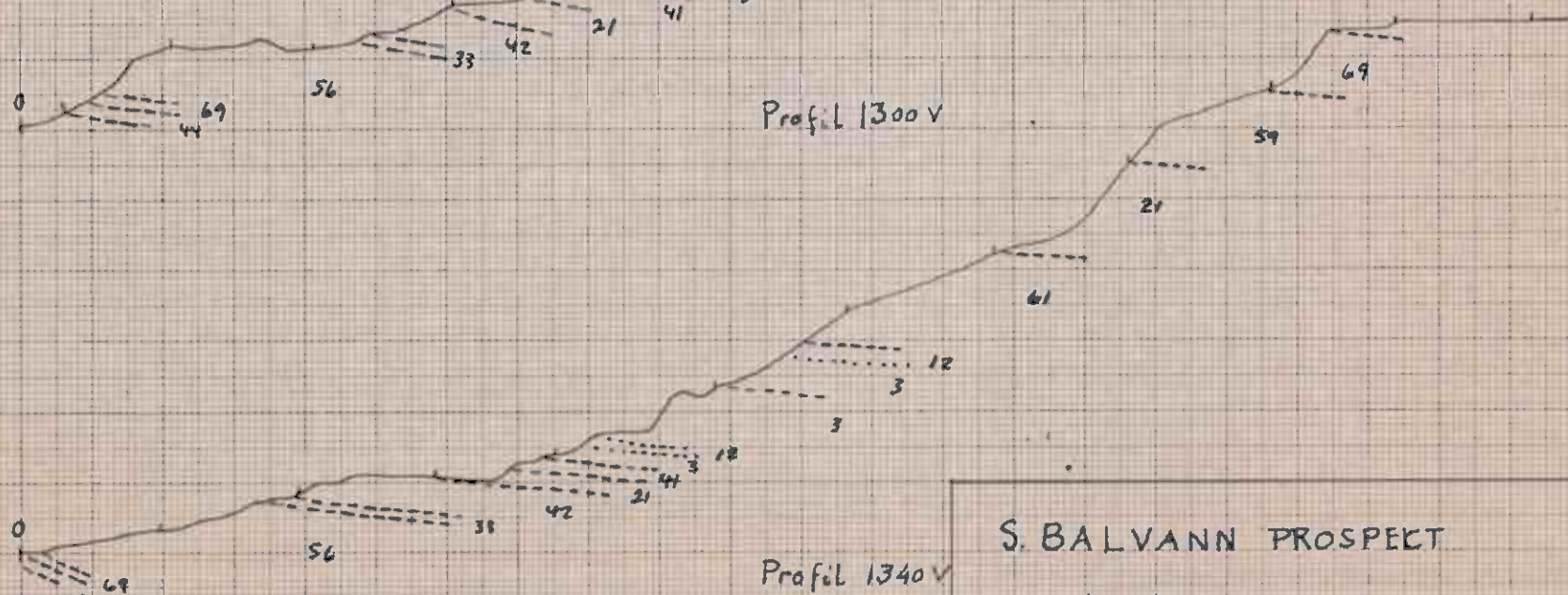
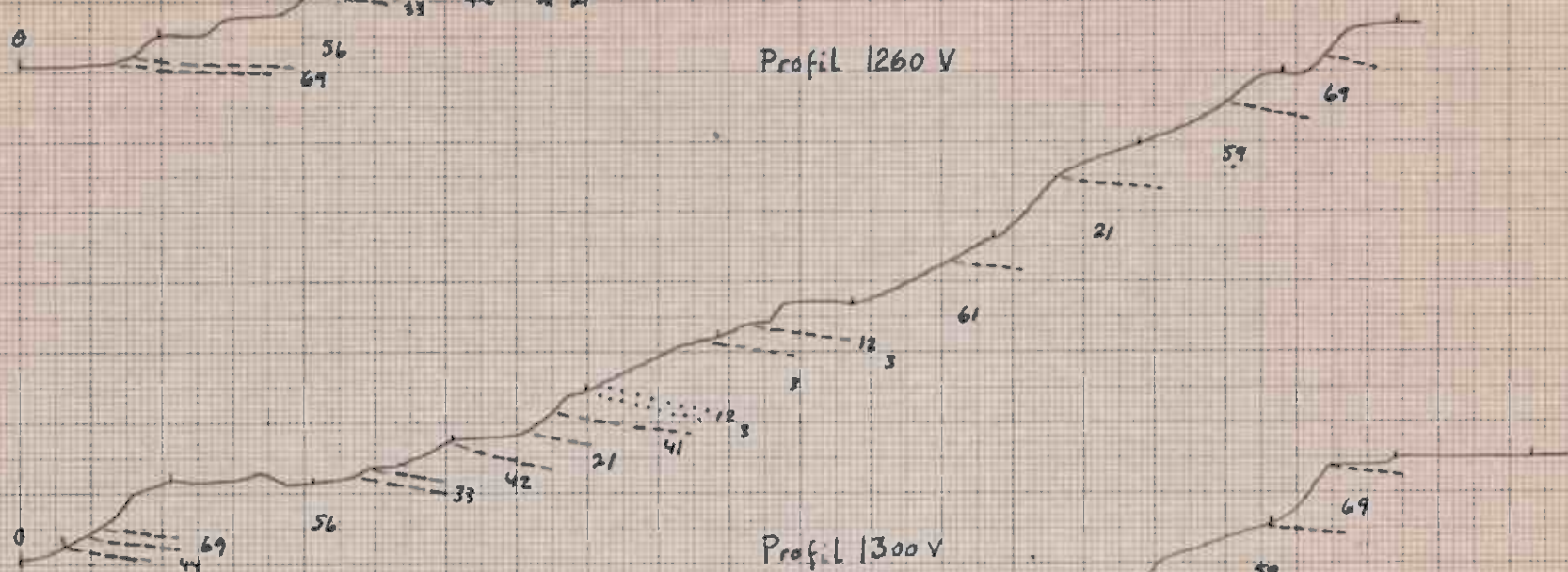
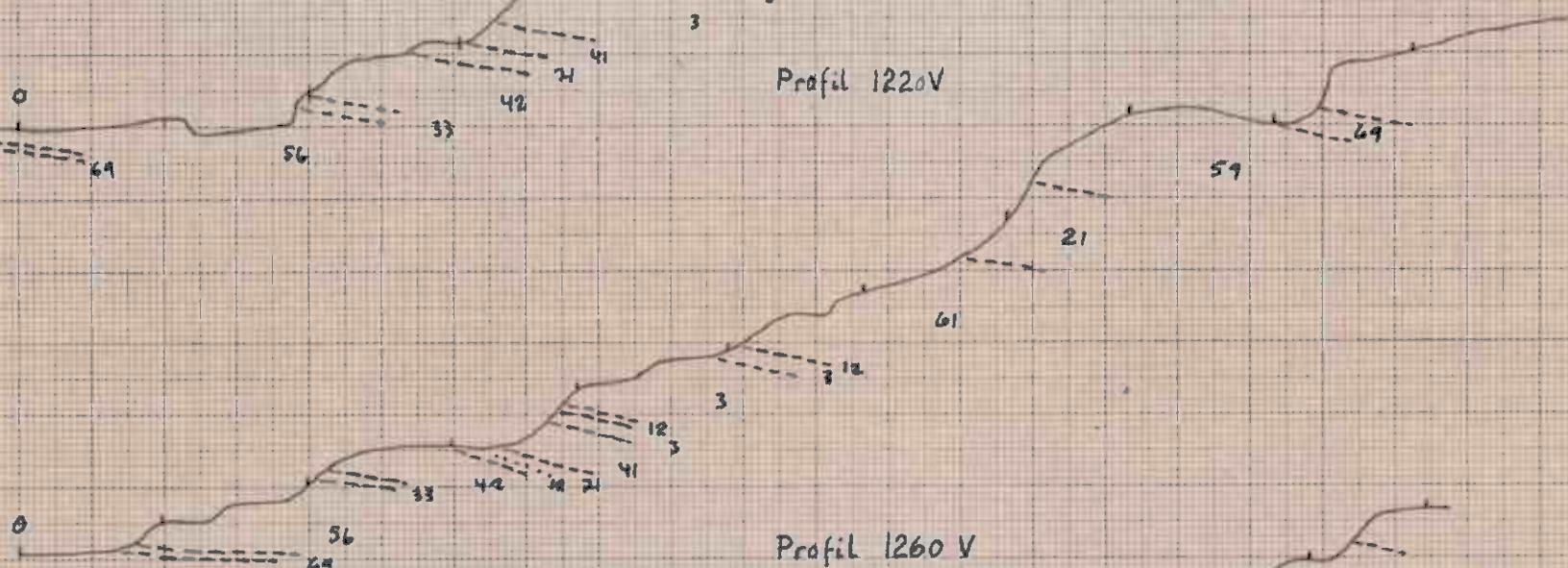
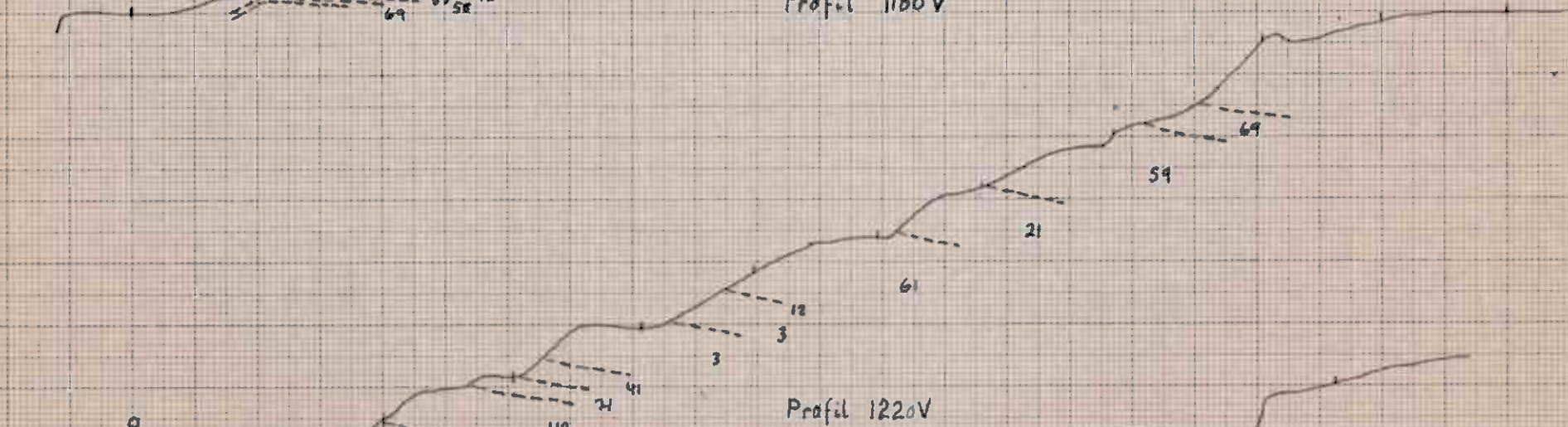
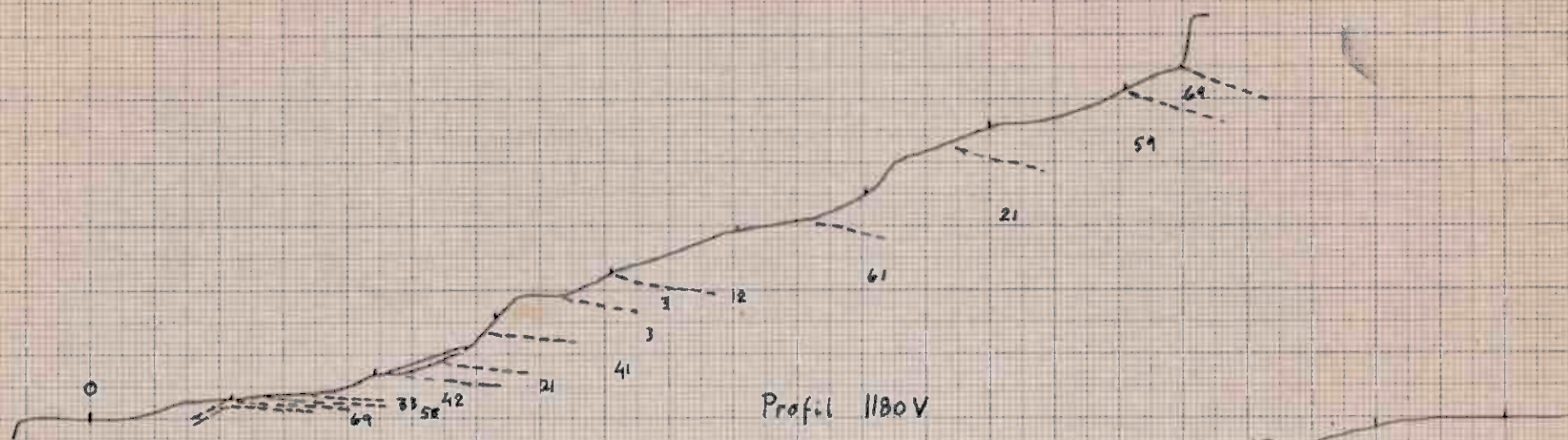
Profil 1140V

S BALVANN PROSPECT

1 : 1000

PROFILES

980V - 1140V



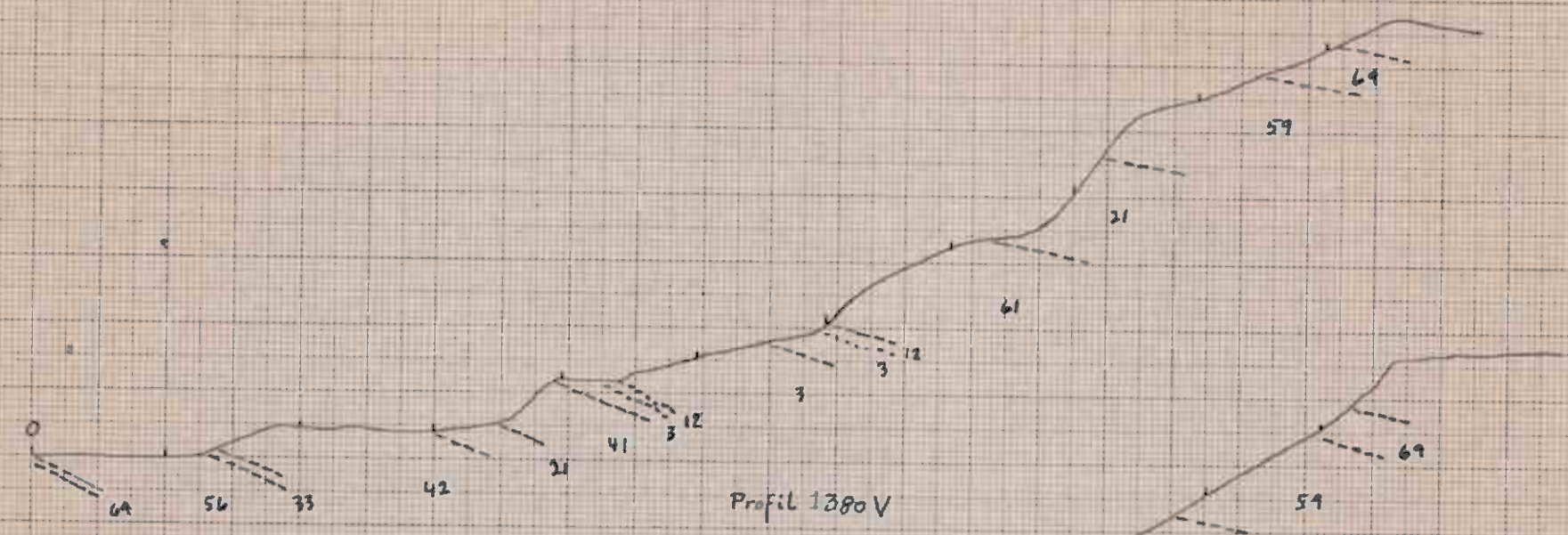
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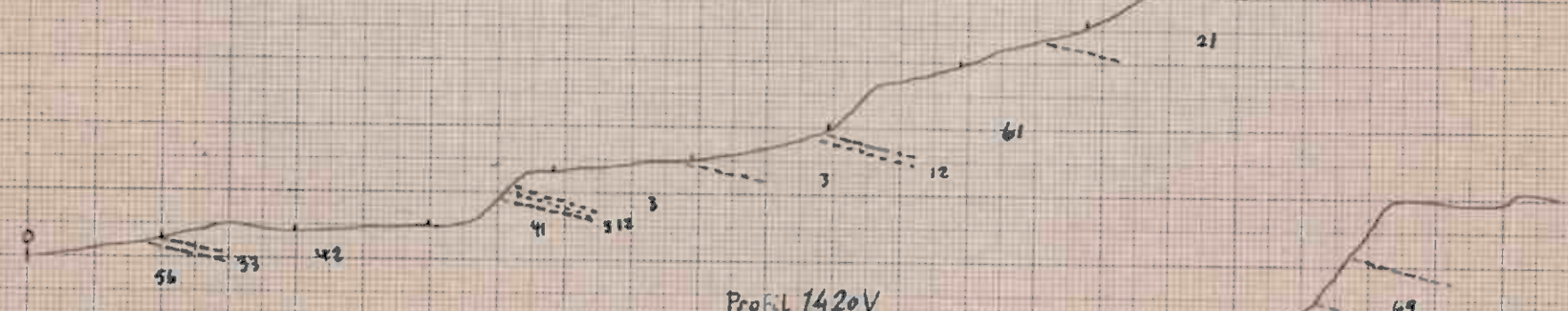
PROFILES

1180V - 1340V

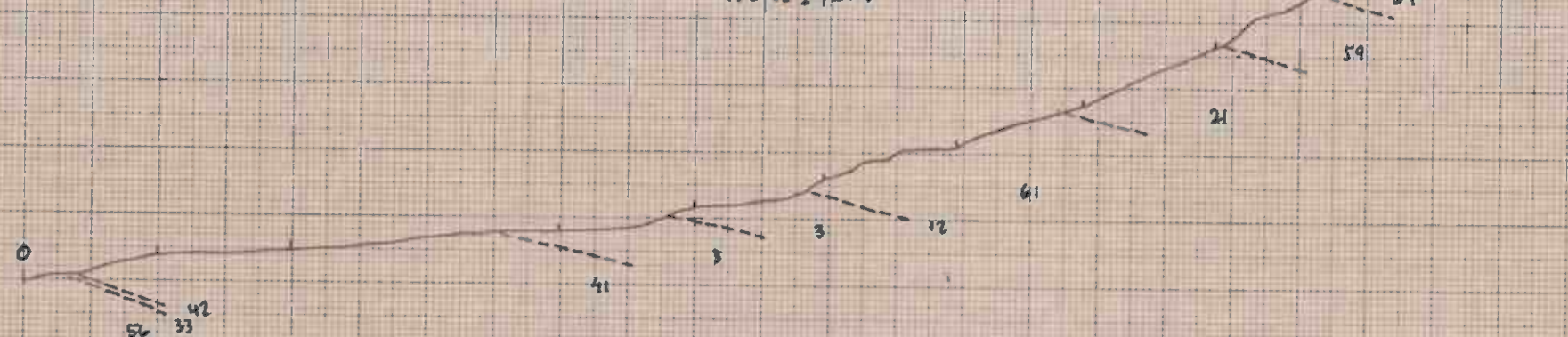
B.V.



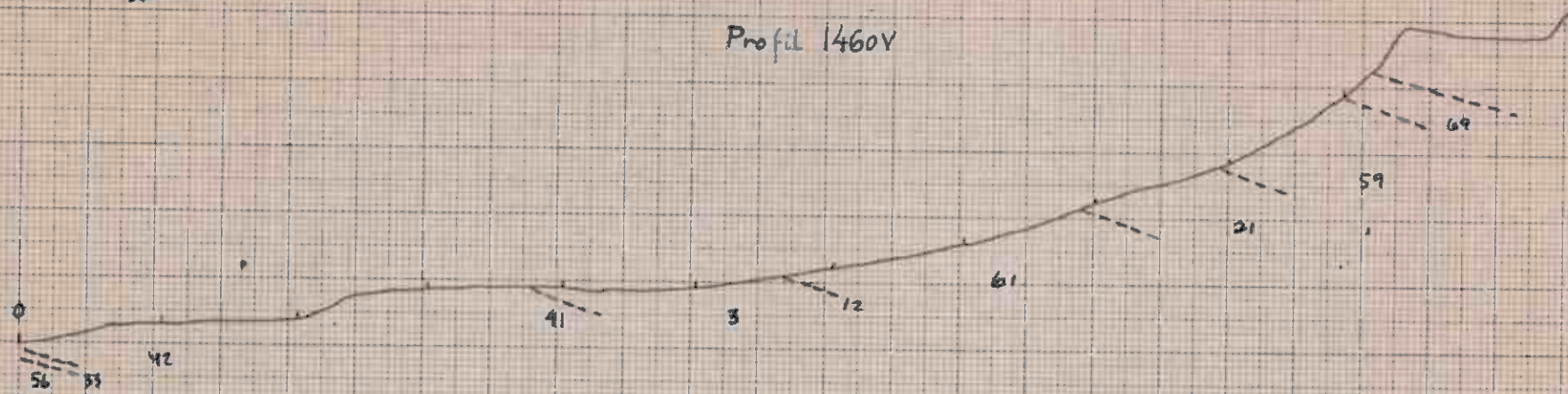
Profil 1380V



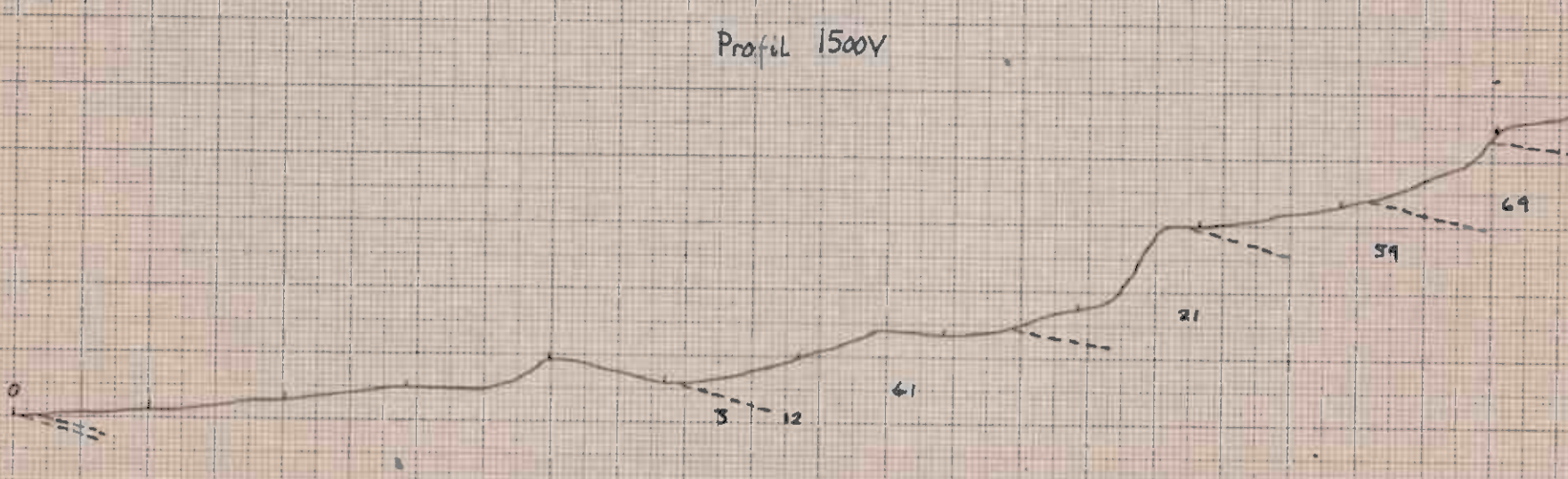
Profil 1420V



Profil 1460V



Profil 1500V



Profil 1540V

S. BALVANN PROSPECT

1: 1000

PROFILES

1380V - 1540V

B.V.

Geologiske undersøkelser
på malmhorisont ved
Klaravann

Utført sommeren 1970
av Duncan Large og Bjarne Vasshaug

032.001

BORHULL ER UTSATT PÅ FØLGENDE STEDER

		<u>Retning</u>	<u>Fall fra horisontal 360°</u>
944V - 107 S	1a	N 12°V	60° N
980V - 106 S		N 12°V	40° N
1020V - 132 S		Langs rutenett	55° N
1060V - 134 S		Rett nord	60° N
1100V - 138 S		Langs rutenett	70° N
1140V - 140 S		N 22° Ø	70° N
1180V - 141 S		N 42° Ø	70° N
1220V - 187 S		N 42° Ø	70° N
1260V - 193.3S		N 42° Ø	70° N
1300V - 196 S		N 32° Ø	75° N
1340V - 200 S		N 30° Ø	70° N
1380V - 215.5S		N 30° Ø	70° N
946V - 81S	1b	N 12° V	60° N

S a m p l e s

The prefix "M" indicates a sample from an ore horizon

No.	Location		Notes	
M 1	925 V	19 S	Main Ore Horizon	
M 2	610 V	59 S	From a Green Amphibolite Schist just below Graphite Schist.	
M 3	1035 V	60 S	Main Ore Horizon	
M 4	748 V	11 S	Upper Ore Zone.	B. Vasshaug's No. 1
M 5	748 V	18 S	"	2
M 6	750 V	28 S	"	3,5
M 7	744 V	21 S	"	4
M 8	739 V	39,5 S	"	6
M 9	739 V	56,5 N	Lower Ore Zone	
M 10	"	"	"	
M 11	"	"	"	
M 12	755 V	53 N	"	
M 13	1140 V	70,5 S	Main Ore Zone	
M 14	"	"	"	
M 15	1135 V	70 S	"	
M 16	1140 V	70,5 S	"	
M 17	432 209		Pyrite in Quartz Sericite	
M 18	1300 V	18 N	Pyrite/Chalcopyrite in dark Quartzite/below the Lower Graphite	
M 19	1700 V	178 S	Upper Ore Zone	
M 20	1697 V	171 S	Upper Ore Zone	
M 21	1300 V	15 N	Small ore in interesting rock type/from below the Lower Graphite	
M 22	1670 V	205 S	Micaceous Chlorite Schist	
M 23	1676 V	191 S	From Micaceous Horizon at the base of the Upper Micaceous Chlorite Schist.	
M 24	1768 V	155 S	Upper Ore Zone	
M 25	1540 V	285 S approx.	Staurolite Schist	
M 26	951 V	32 S	Main Ore Zone	
M 27	998 V	92 S	Quartz Keralophyse in Upper Ore Zone	
M 28	978 V	55 S	Green Chlorite Schist	
M 29	982 V	18 N	Amphibole Schist	
M 30	920 V	41 N	Pink Calcaceous Quartzite horizon	

No.	Location		Notes
31	915 V	46 N	Sequence up the Lower Chlorite Schist
32	924 V	52 N	
33	932 V	63 N	
34	940 V	60 N	
35	1136 V	5 N	Micaceous Graphite Schist
36	1046 V	2 N	Talcose Rock
M 37	983 V	52 N	Fine Dissemination in quartzite below the Lower Graphite

360° Compass

Locations of Dips and Strikes. (All Strike Directions are E from N)

Location	Strike	Dip	Location	Strike	Dip
502 V 3 S	060°	50° to S	580 V 60 N	075°	46° to S
500 V 80 N	098°	49° to S			
510 V 81 N	088°	57° to S			
542 V 75 N	091°	40° to S			
560 V 71 S	094°	46° to S			
600 V 65 S	080°	40° to S			
632 V 62 N	112°	30° to S			
641 V 40 N	088°	36° to S			
694 V 56 N	077°	40° to S			
680 V 87 S	102°	28° to S			
743 V 58 N	064°	41° to S			
780 V 74 N	084°	40° to S			
832 V 58 N	110°	31° to S			
873 V 55 N	084°	36° to S			
897 V 60 N	086°	32° to S			
920 V 19 S	068°	42° to S			
960 V 38 S	065°	37° to S			
997 V 141 S	091°	35° to S			
1055 V 151 S	070°	26° to S			
979 V 102 S	074°	50° to S			
977 V 115 S	064°	46° to S			
912 V 104 S	081°	28° to S			
979 V 21 S	058°	35° to S			
991 V 23 S	080°	26° to S			
1011 V 117 S	097°	22° to S	1471 V 203 S	052°	17° to S
1016 V 12 S	180°	10° to W	1472 V 182 S	129°	33° to S
1025 V 113 S	087°	35° to S	1502 V 205 S	114°	19° to S
1028 V 67 S	046°	24° to W	1519 V 200 S	101°	15° to S
1033 V 17 S	038°	15° to W	1542 V 220 S	093°	21° to S
1037 V 120 S	085°	35° to S	1547 V 97 S	151°	29° to S
1054 V 151 S	070°	26° to S	1557 V 175 S	123°	20° to S
1063 V 120 S	090°	32° to S	1560 V 181 S	114°	27° to S
1069 V 37 S	078°	6° to S	1581 V 199 S	115°	21° to S
1076 V 104 S	090°	23° to S	1620 V 199 S	120°	16° to S

1081 V 40 S	176°	15° to W	1620 V 60 S	127°	27° to S
1093 V 41 S	162°	16° to W	1637 V 193 S	104°	19° to S
1098 V 18 S	161°	34° to W	1640 V 236 S	130°	12° to S
1104 V 35 S	132°	14° to SW	1640 V 142 S	127°	20° to S
1138 V 17 N	120°	22° to S	1697 V 136 S	117°	23° to S
1152 V 96 S	138°	17° to S	1700 V 182 S	117°	28° to S
1153 V 7 S	078°	25° to N			
1159 V 29 S	140°	15° to W			
1247 V 119 S	127°	23° to S	1214 V 58 S	178°	14° to W
1271 V 60 S	140°	15° to S			
1317 V 73 S	134°	12° to S			
1322 V 12 S	180°	15° to W			
1323 V 127 S	135°	17° to S			
1323 V 150 S	121°	12° to S			
1336 V 71 S	127°	13° to S			
1361 V 74 S	158°	12° to S			
1369 V 6 N	124°	26° to S			
1431 V 19 N	090°	21° to S			

Description of Shotholes

1142 V 71.5 S

Chlorite Schists with sparse quartz. White Mica is also found in the rock. It is generally well foliated. Mineralisation is confined to sparsely scattered disseminated pyrite and chalcopyrite.

1140 V 70.5 S

At the top lies 60 cms of a quartzitic chlorite schist with minor white mica. In places the rock is banded with chlorite and white mica alternating with quartzitic bands. The banding is on scale of a few mms. There is no mineralisation in this horizon. Specimen no. M 16.

Below has 2 cms of a dark green Micaceous Chlorite Schist containing disseminated Chalcopyrite.

The main ore horizon extends over a thickness of 12 cms. The Chalcopyrite is coarsely disseminated and veined through the host rock. The host rock here is a dark quartzite with some ferruginous colouring bands. Specimen M 14 1140 V 70.5 S
" M 15 1135 V 70 S

Below the Ore horizon has a Chlorite Quartzite with minor Amphibole and white Mica - also may be some Feldspars. There is accessory finely disseminated chalcopyrite and pyrite. The rock as whole becomes greener and more Chloritic upwards. Thickness 25 cms exposed.
Specimen M 13

Chlorite Schists

Banded. Quartzitic chlorite Schist

Micaceous Chlorite Schist
Mineralised Horizon

Chloritic Quartzite

10 cms

739 V 565 N M 9 - 12

Light Green Quartzitic Micaceous Chlorite Schist.

The Mica is quite prominent and may be a sericitic type.

The rock occasionally takes on a slightly banded appearance.

Mineralisation is confined to very slight dissemination.

Specimen M 10.

Below lies a white weathering quartzite with ferruginous banding and sericite bands. The ore is veined in horizontal bands and is also disseminated. The thickness is approximately 8 cms. Green malachite staining is also found.

Under this ore horizon there is a chloritic/sericitic quartzite. Occasionally the rock is quite coarsely banded inot more and less quartzitic bands. Some chalcopyrite mineralisation is associated with these banding.

Side 6 a

748V - 11S (M4.)

Dessiminasjoner av sulfider (pyritt) i en klorittførende kvartsitt. Hullet ligger helt på den nedre grensen av den øvre malmhorisonten.

748 - 18S (MS)

Dessiminasjoner av sulfider (her ser det også ut til å være kobber til stede) i en klorittførende kvartsittskifer.

Mineraliseringen er jevn over hele den utsprengte flaten. Skiferen synes nederst i hullet å være mer kvartsholdig og massiv.

750V - 28S (M6)

Ganske sterk mineralisering i en klorittskifer som ligger mellom 2 hardere kvartsittiske skifere. Disse 2 ser ikke ut til å inneholde sulfidmineraler på grensen til klorittskiferen.

744V - 21S (M7)

Dessiminasjoner av sulfider i det meste av hullet. En har en grense mellom en kvartsittskifer og en klorittskifer. Mineraliseringen er i den kvartsittiske delen mens det i den klorittiske ikke kan sees spor av malmmineraler.

737V - 33S

Den øvre delen av hullet er kvartsførende og inneholder en mineralisering som minner meget om 750V - 28S. Den nedre delen synes å være finere og den synes heller ikke å inneholde så meget kvarts. Her synes ingen mineralisering.

Side 6 b

Grensen synes å være skarp.

739V - 39,5S (M8)

En kvartsåre med dessiminasjoner. Mektighet 15 cm. På oversiden ligger en noe massiv klorittskifer mens en på undersiden har en vekslende klorittskifer med kvartsband. Ingen synlig mineralisering.

Malmsone 2. (Main ore zone)

924V - 8S

Spredte dessiminasjoner i enkelte band i en kvartsittisk klorittskifer.

925V - 14S

Klorittisk kvartsittskifer med kun enkelte små antydninger til sulfider.

925V - 19S

Underst har man en kvartsittisk klorittskifer med meget svak antydning til sulfidmineraler. I den øvre delen av hullet har en et smalt bånd med rik kobbermineralisering i en kvartsittisk klorittskifer.

925V - 23S

Klorittskifer med meget kvartsinnhold. Noen meget få sulfidmineraler. kan iakttaes.

842V - 0S

Massiv klorittholdig kvartsittskifer som inneholder svake antydninger til sulfidmineraler på kvartsårer.

860V - 2N

En massiv biotitt klorittskiifer som i toppen av hullet har en distinkt overgang til en lysere kvartsrik bergart. Enkelte sulfidmineraler kan oppdages.

860V - 1N

Kvartsittskiifer med noe kloritt. Svært lite mineralisering av sulfider.

859V - 0N

Klorittskiifer med noe mindre kvarts også litt amfibolførende. Ingen sulfidmineralisering.

857V - 4.5S

En meget skifrig bergart som inneholder kvarts, kloritt, biotitt og litt amfibol.

En har her en del fin desiminasjon av sulfider. (pyritt).

1033V - 62S

Kvartsrik klorittskiifer uten noen mineralisering av betydning.

1035V - 60S (M3)

Kvartsbåndet klorittskiifer med ganske sterk desiminasjon av sulfider i et kvartsbånd som er ca. 10 cm tykt.

1039,5 - 60S

Kvartsbåndet klorittskiifer med noen svake desiminasjoner av sulfider (pyritt).

Green Chlorite Schist

This unit separates the Upper Ore Zone from the Main Ore Zone. The rock type is a characteristic green chlorite schist with variable quartz - (sample no. 28) with some mica. The grain size is fine. Amphibole has been found in places (circular Actinolite/tremolite). In general it can be toned a green-schist. Mineralisation is slight and restricted to pyrite. At 990 V - 78 S there is some mineralisation associated with what appears to be a box-fold in the chlorite schists. Around 650 V - 700 V, 30 N - 40 N there occur some very large pyrite cubes in the greenschist.

Main Ore Zone

This zone is directly associated with the banded sericite quartzites below. It contains massive chalcopyrite. See samples and descriptions of blastings, M 1, M 3, M 13 - 16, M 26.

The Banded Quartzite

This unit is so-called because of the distinctive weathering surface. This shows bands of white quartz that weather out clearly from the surrounding more feldspathic and sericitic quartzite. This rock has been sampled and described from blastings.

Massive Quartzite

Distinguished from the above by a lack of banding and bedding/foliation. Generally it is very coarse grained and contains feldspar and some mafic minerals - probably chlorite. In places it is difficult to distinguish from the overlying banded quartzite - especially around 1100 V. There is little or no mineralisation associated with this rock-type.

The thickness seems to vary considerably and at times there is an amphibole greenschist - 1 - 2 m thick - contained within the unit. Also immediately beneath the massive quartzite there is a greenschist with quartzite. In the east of the area this is very thin 1 - 2 m, but in the west this unit thickens and becomes more massive. There is some slight mineralisation associated with this greenschist - especially in the west, but it is predominantly pyrite.

From 1250 V - 1400 V there is a mineralised zone at the base of the massive quartzite - the rock here has a distinctive banded appearance.

Lower Ore Zone

The mineralisation and rock types of this zone have been described in the descriptions of the shot-holes and samples M 9 - M 12. The mineralisation in this zone seems to be best between 700 V and 950 V. Further west the zone is only distinguished by a banded quartzite appearance - although the rock is

Stratigraphy

The stratigraphy described below is that between - and including - the lower micaceous graphite schist and the upper graphite schist. However, above the upper graphite schist lies a rusty weathering micaceous (white mica) schist which grades with a schist with muscovite and a little chlorite and prominent staurolite crystals (sample no. 25). There are some thin graphitic horizons in this "staurolite" schist.

The Upper Graphite Schist

This unit has a thickness of 4 - 6 ms. It has a distinctive sharp boundary with the underlying Micaceous Chlorite Schists and a more gradational contact with the overlying rusty weathering. Occasional flakes of white mica are found in the rock, otherwise it is quite pure and clear. Mineralisation is confined to sparsely disseminated pyrite at the base of the unit around 1300 V - 1500 V.

Micaceous Chlorite Schist

The contact between this unit and the underlying Upper Ore Zone is marked by a white weathering feldspathic mica (sericite) rock with streaks of quartz (?keratophyse). There are also two thin muscovite mica bands (sample 23) about 1 m thick near the base of this unit. The overall rock type is a chlorite schist with variable concentrations of mica - mostly white mica. It is rusty weathering in places (sample 22).

Mineralisation is restricted to a thin band of more massive quartzitic Chlorite Schist with minor amphibole. It occurs near the top of the unit - only 1 - 2 m below the Graphite Schist (see sample 2). The band varies from 0 - 50 cms in thickness, but is laterally continuous. The thickness variations are probably a result of tectonism to give "pinch and swell" structures. Other small massive amphibole-bearing bodies were found in this unit, but none with much mineralisation.

The thickness of the whole unit is approximately 10 ms.

Upper Ore Zone

This zone is of the order of 10 ms thick. It contains several rock types. Mineralisation is found in feldspathic sericite schists, quartzites with sericite bands (M 19 - disseminated pyrite) quartzitic chlorite schists (M 24 - good pyrite with some chalcopyrite) and ordinary chlorite schists. (See descriptions of M 4 - 8 from blastings). Other rock types found are feldspar rich rocks with streaky quartz laminae. (Sample no. 27 - note the quartz on the weathered surface) - these have been tentatively interpreted as keratophyses and form bands of up to 1 m thick in the surrounding greenschist. Mineralisation is particularly good in the zone from 1400 V - 1700 V and further westwards. Most of the sulphide is probably pyrite but the dissemination is often so fine that it is difficult to distinguish pyrite and chalcopyrite. The mineralisation is usually confined in bands of 20 - 30 cms thickness.

more chloritic than the banded quartzite associated with the main ore-zone. The mineralisation in the west is mostly pyrite with slight chalcopyrite and is not very good.

Amphibole Schists and Amphibolite

These form a distinctive blocky weathering unit under the Lower Ore Zone. The rock type is greenschist with scattered amphibole phenocrysts. The mineralisation associated with this rock-type is slight and restricted to pyrite (sample no. 29).

This unit - and other greenschist units - are characterised by oval shaped structures up to 1 m in length and 30 - 50 cms wide. They normally lie parallel to the schistosity and in the less quartzitic horizons. They may be tectonic pinch and swell structures or they may be pillow structures. In a less tectonically disturbed environment - I would definitely have called them pillow-lavas.

Pink-Weathering Quartzite Horizon

This is a very thin - 30 - 50 cms - horizon, but is most distinctive and is mapped as a marker horizon. It has a vigorous reaction with acid and is calcareous. (Sample no. 30).

Chlorite Schists and Quartzitic Mica Schists

The rock-types in this unit are quite variable but generally become more quartzitic and micaceous up the sequence. (Samples 31 - 33). There is some pyrite mineralisation associated with the greenschists at the base of the unit. The quartz content increases upwards and occurs as thin laminae (1 - 2 mm) in the mica schists.

Micaceous Graphite Schist

This is a thin but prominent band having a distinctive deep rusty weathering. It is laterally variable in mineral composition being in places a pure graphite schist and in others a light gray micaceous graphite schist. The mica is white and probably muscovite. There is no mineralisation in this unit. (Sample no. 34). Thickness of 1 - 3 ms.

The seemingly curious outcrop of this unit at 1200 V basis is a result of the local dip and topography.

Talcose Rock

This outcrops irregularly below the micaceous graphite schist. It is very soft and has a pink-red weathering colour and consists of massive talc and ?serpentine. (Sample no. 35). The presence of this rock type is very distinctive of the prospect and it may have been an intrusive ultrabasic in its original form, subsequently hydrolysed and metamorphosed.

Sample no. 36 is an example of the rock type below the graphite schist - found in places where there is no outcrop of the talcose rock.

Quite late in the mapping mineralisation was found in a quartzite - very massive and hard - 4 - 5 ms below the micaceous graphite schist. This mineralisation is quite easily observed as the rock weathers a rusty colour. However, the sulphide is usually disseminated so finely as to be difficult to identify as pyrite or chalcopyrite. (Samples M 37, M 18). M 21 shows some slight mineralisation in what may be an acid extrusive; the sample shows a distinct contact between what may have been two flows. This mineralisation may be continuous with that found at Grid Ref 432-209. (Sample M 17).

The structure of the area is generally quite simple - there being a noticeable change in strike from approximately E - W in the east of the prospect to NW - SE in the west of the prospect. At 1020 V basis there is a strong monoclonal flexure in the lower units of the stratigraphy, but this does not seem to affect the upper ore zone and the units above.

Monoclonal folding can be seen in the schistosity of the green-schists that lie beneath the prospect's stratigraphy. However, in the prospect it is only readily measurable (fold axis and plunge) in the Upper Graphite Schist. I had too little time to be able to take a statistically meaningful number of measurements.

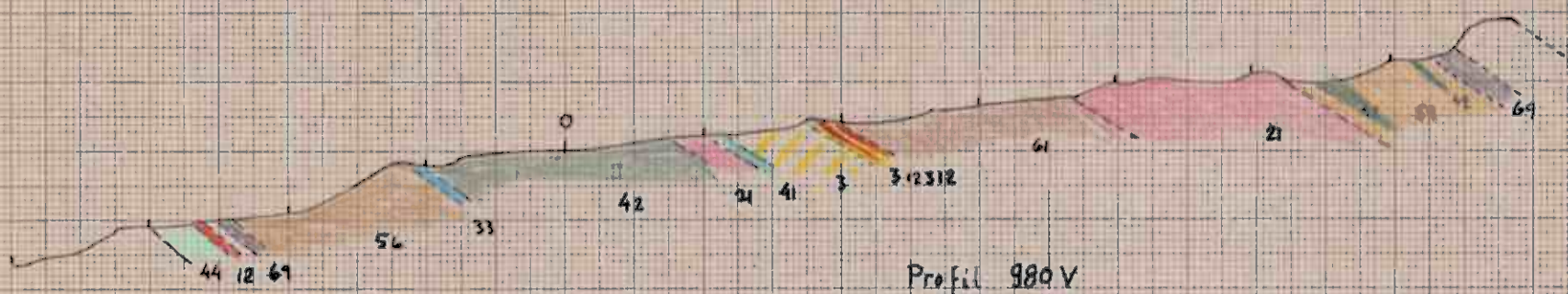
The mineralised horizons have already been mentioned and briefly described. There are two types of mineralisation - thin veins of massive sulphide and disseminated sulphide. The chalcopyrite is usually found as veins in the Main Ore Zone. The disseminated sulphide is usually pyrite but is often so fine grained as to make the distinction between chalcopyrite and pyrite very difficult. Only chemical analyses will enable copper content of the disseminated rocks to be determined. In the Main Ore Zone the mineralisation can be seen to be in the rock fractures indicating sulphide movement after the fracturing of the rock. This would seem to indicate a mobilisation of the ore fluids during or after metamorphism - there is little evidence for hydrothermal activity apart from a few small quartz veins and the lateral extension on a constant stratigraphic horizon of the mineralised horizons may indicate a syngenetic origin of the sulphides with the extrusives; the sulphides then being remobilised and probably concentrated in the present zones.

Suggestions

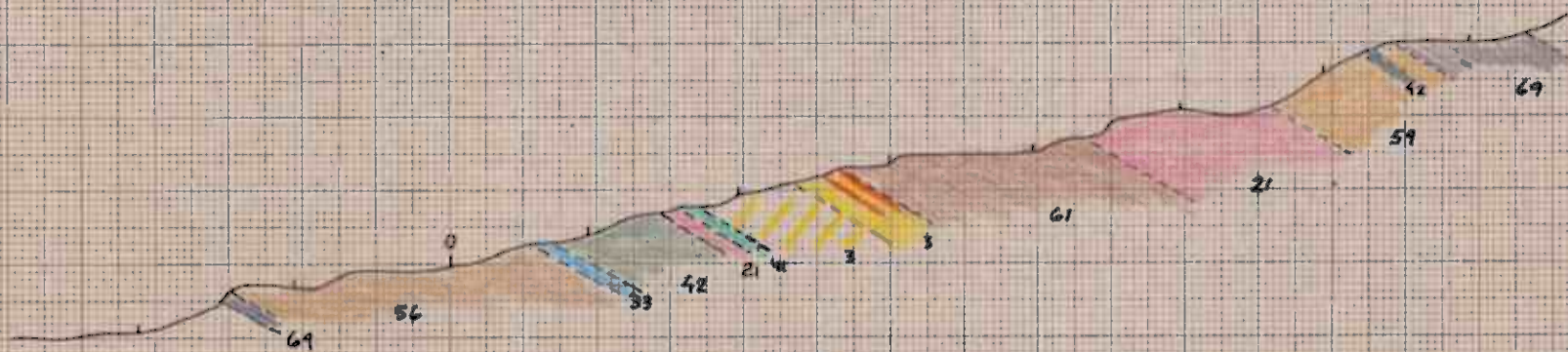
Initially drilling should continue to at least the lower graphite schist and preferably to the mineralised quartzite just below the graphite.

Mineralisation is found in the Upper Ore Zone west from 1700 V; exposure of the Main Ore horizon becomes poor. Hence further drilling west of 1700 V would be useful to determine the extent of the mineralisation.

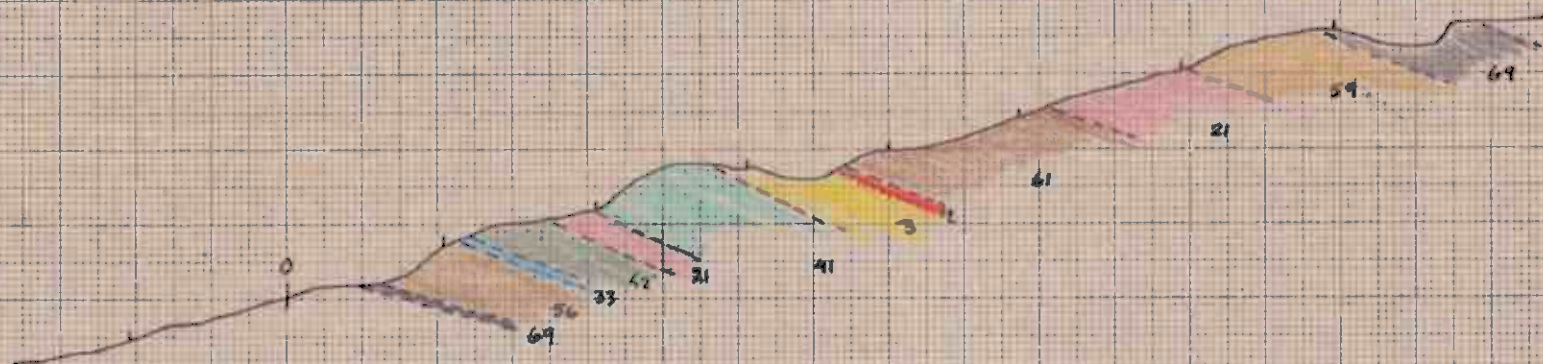
Mineralisation was found at Grid Ref 426213 when looking at the E.M. anomaly in that area. Further investigation in that area may be advisable.



Profil 980V



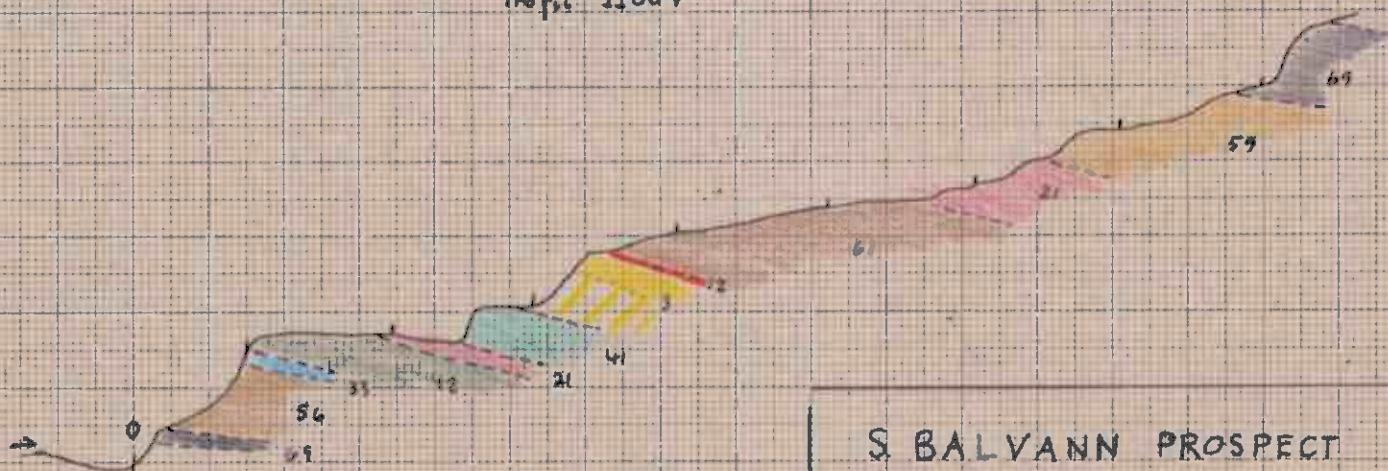
Profil 1020V



Profil 1060V



Profil 1100V



Profil 1140V

S. BALVANN PROSPECT

1:1000

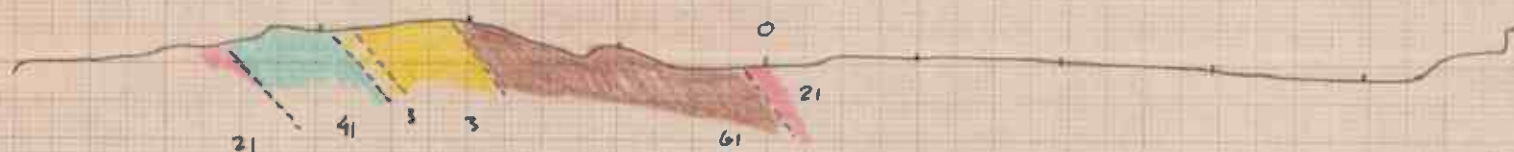
PROFILES

980V - 1140V

B.V.



Profil 500 V



Profil 540 V



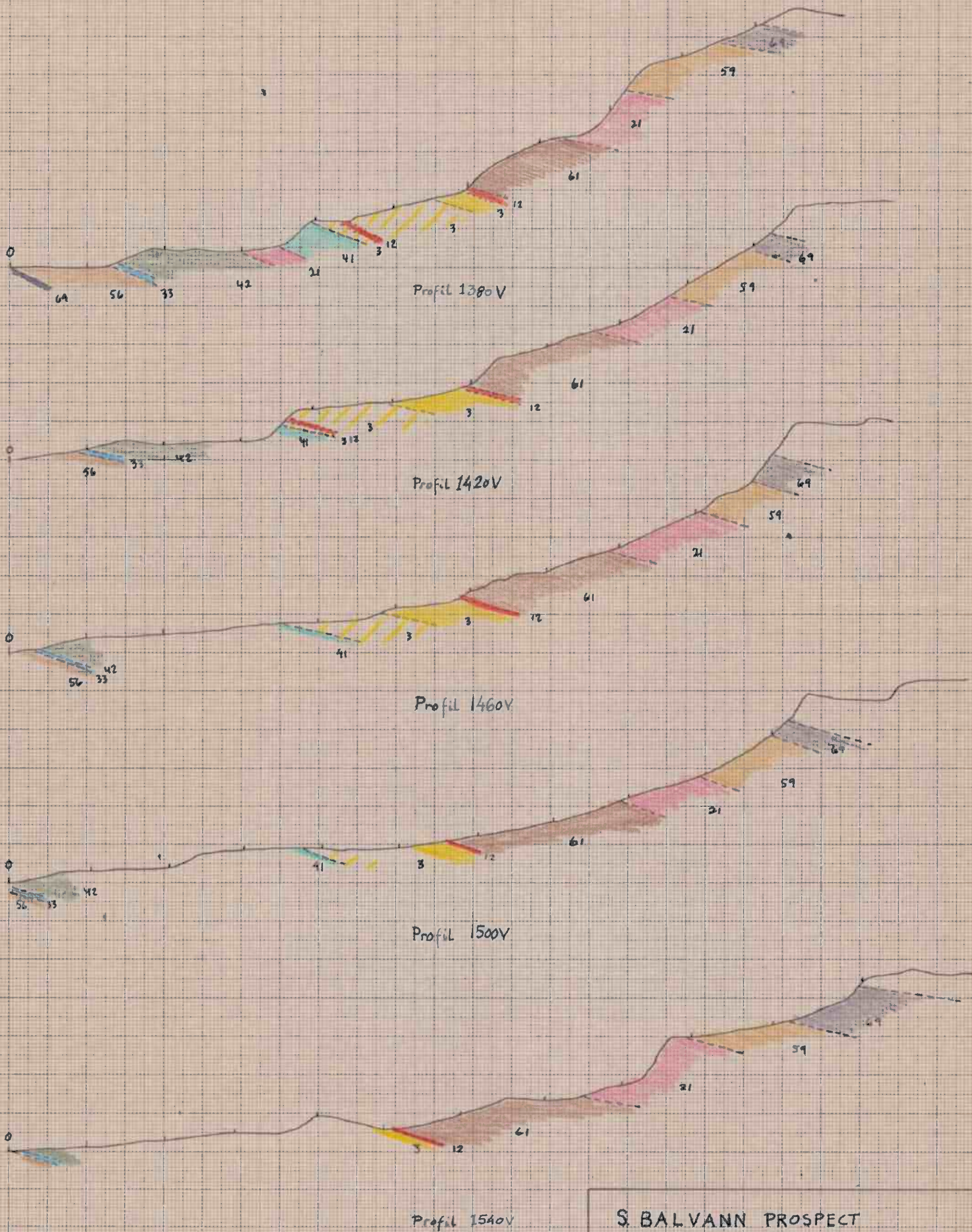
Profil 580 V

S. BALVANN PROSPECT

1 : 1000

PROFILES

500 V - 580 V

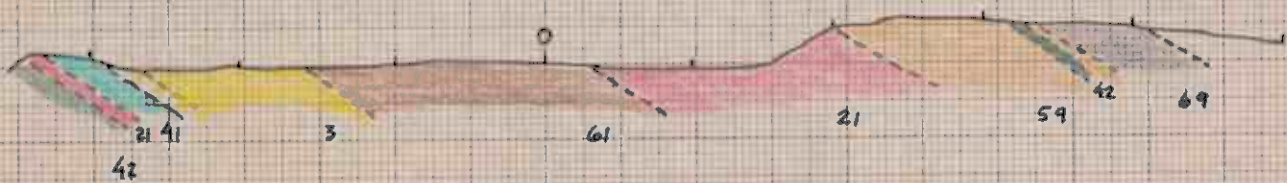


S. BALVANN PROSPECT

1: 1000

PROFILES

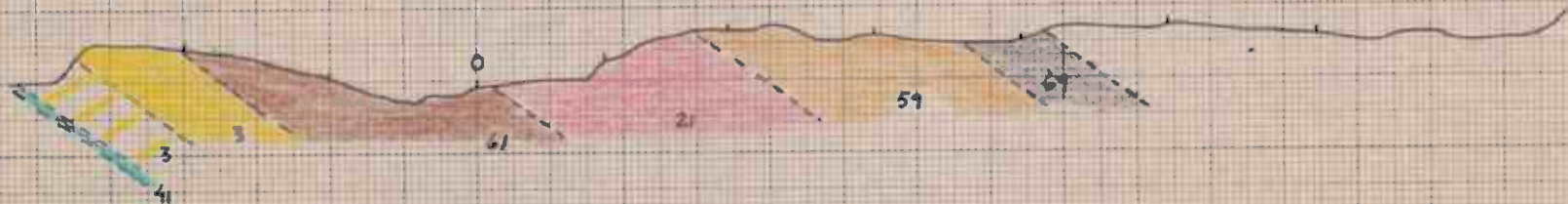
1380V - 1540V



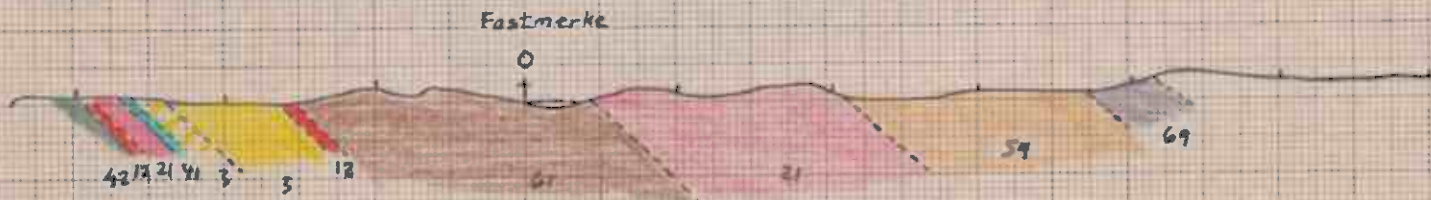
Profil 620 V



Profil 660 V



Profil 700 V



Profil 740 V

S. BALVANN PROSPECT

1 : 1000

PROFILES

620 V - 740 V



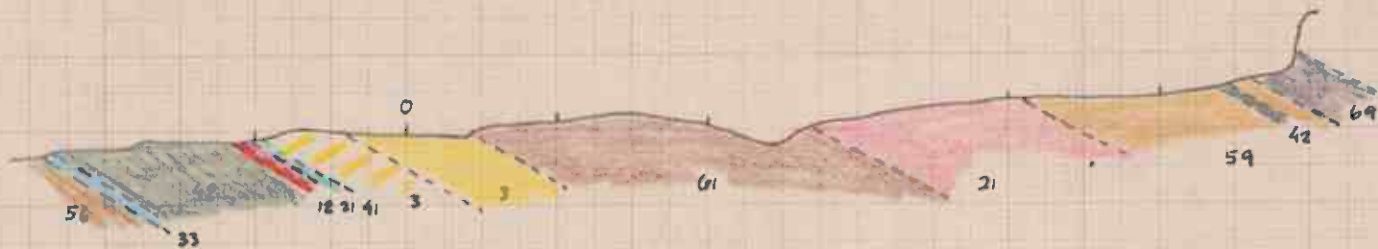
Prof. L 780V



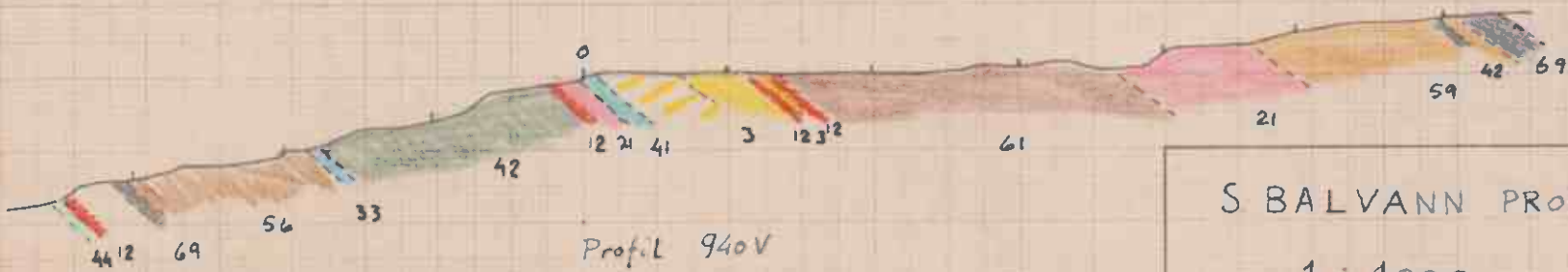
Prof. L 820V



Prof. L 860V



Prof. L 900V



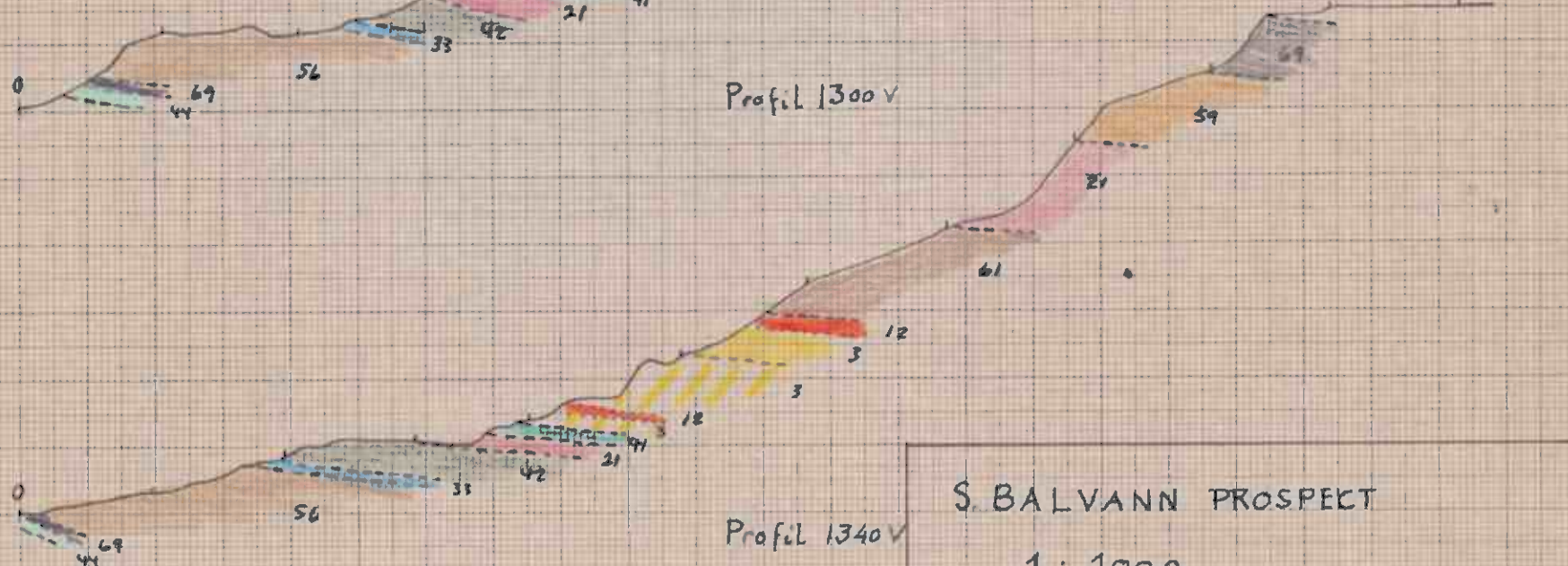
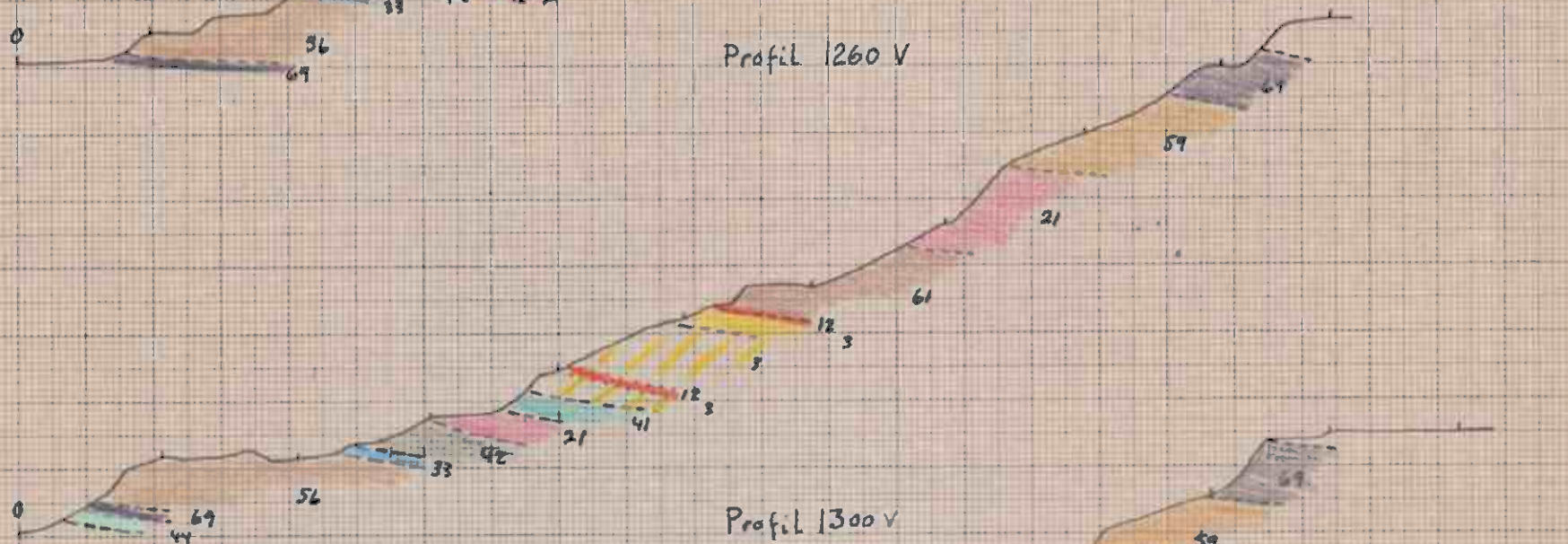
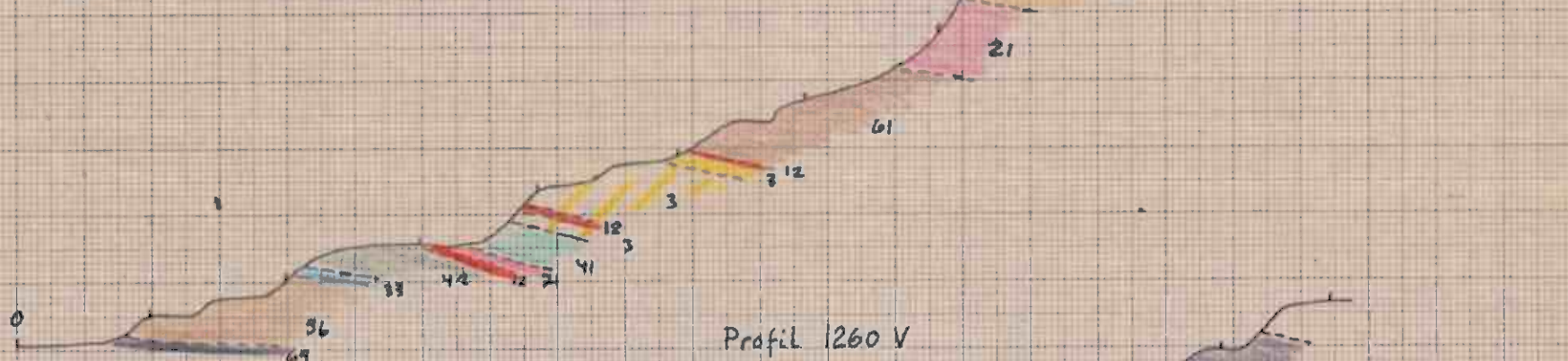
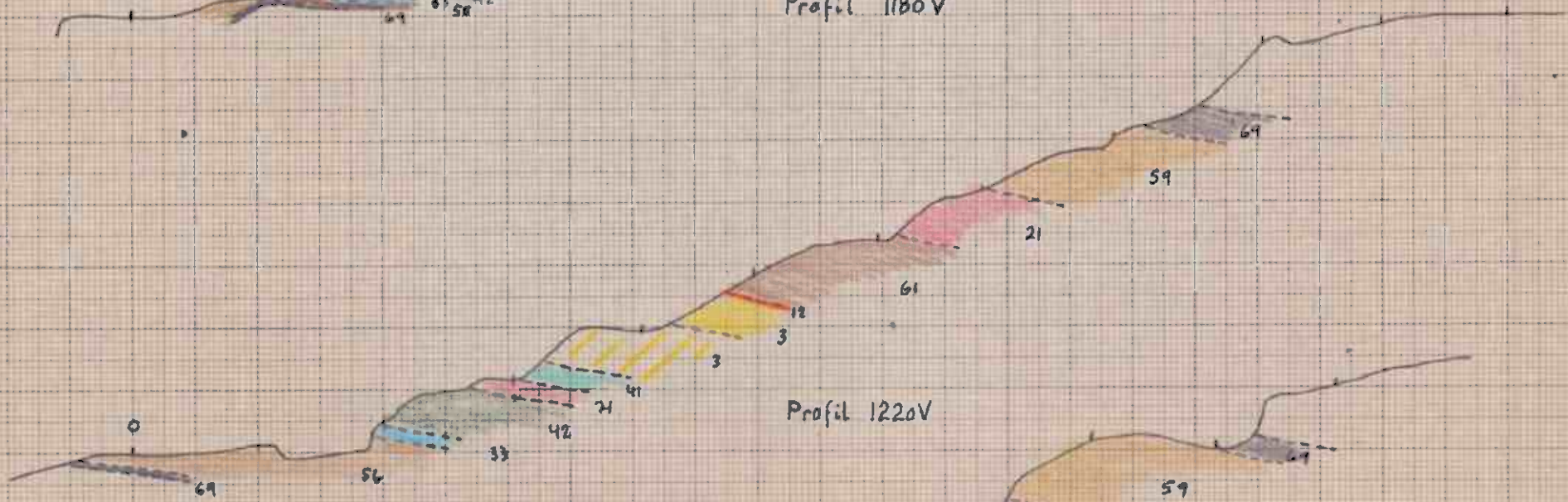
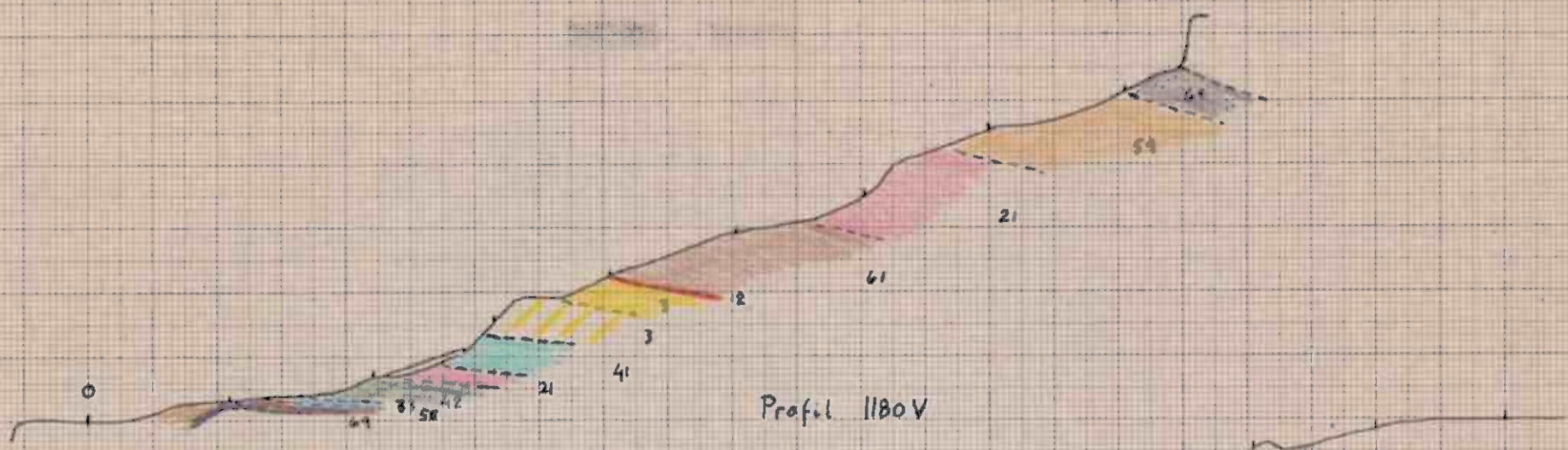
Prof. L 940V

S BALVANN PROSPECT

1 : 1000

PROFILES

780V - 940V



S. BALVANN PROSPEKT

1 : 1000

PROFILES

1180V - 1340V

B.V.