

GEOLOGICAL, GEOPHYSICAL AND
GEOCHEMICAL REPORT
ON THE
F.F. CLAIM GROUP

YA 65927 - 942;

YA 67170 - 191;

YA 67206 - 13

N.T.S. 105C/8

Latitude 60°22'N

Longitude 132°05'W

WATSON LAKE MINING DIVISION
YUKON

by

J.C. STEPHEN
M.P. WEBSTER



WORK DONE: July 9 - 23
Aug. 6 - 9, 1982

BY: J.C. Stephen Explorations Ltd.

FUNDED BY: D.C. SYNDICATE

DATED: September 25 1982

09137

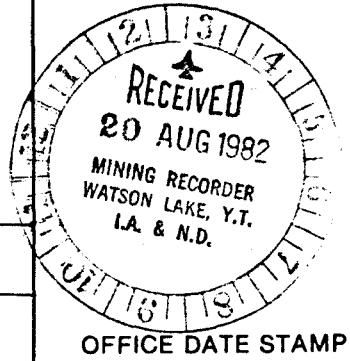
This report has been prepared by
the Geological Survey of Canada
under Section 83 of the Yukon Quartz
Mining Act and is issued as
representation to the amount
of \$ 4,600-.

P. Watson

Regional Manager, Exploration and
Geological Services for Commissioner
of Yukon Territory.



DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT
YUKON QUARTZ MINING ACT
FORM "C" - APPLICATION FOR A CERTIFICATE OF WORK



(This form required in duplicate with sketch showing location of work.)

I (Name) - <u>J.C. STEPHEN</u>	Occupation <u>PROSPECTOR</u>
(Postal Address) <u>% J.C. STEPHEN EXPLORATIONS LTD. 1458 RUPERT ST NORTH VANCOUVER V7J 1G1</u>	

MAKE OATH AND SAY, THAT:

1. I am the owner, or agent of the owner, of the mineral claim(s) to which reference is made herein.
2. I have done, or caused to be done, work on the following mineral claim(s):

(Here list claims on which work was actually done by number and name)

YA 65927-942, YA 67170-191 ; YA 67206-13

situated at SOUTH OF ENGLISH CREEK Claim Sheet No. 105 C/8
in the WATSON LAKE Mining District, to the value of at least \$76.00
dollars, since the 8th day of SEPTEMBER 19 81

to represent the following mineral claims under the authority of Grouping Certificate No. _____

(Here list claims to be renewed in numerical order, by grant number and claim name, showing renewal period requested).

SOME WORK DONE ON ALL CLAIMS
RENEWAL REQUESTED 45 TO ONE YEAR ON

26 Jun 84 FF 1-16 YA 65927-942
25 Sep 82 FF 17-46 YA 67170-191, YA 67206-213

3. The following is a detailed statement of such work: (Set out full particulars of the work done indicating dates work commenced and ended in the twelve months in which such work is required to be done as shown by Section 53.)

GEOLOGICAL AND GEOPHYSICAL WORK TO BE DESCRIBED
IN A SEPARATE REPORT. WORK DONE JULY 9-23; AUG 6-9 1982

Sworn before me at Tesslin Yukon Terr
this 20 day of August 1982
R. Studds
Notary Public

J.C. Stephen
Applicant

2 work.

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GEOLOGICAL, GEOPHYSICAL AND
GEOCHEMICAL REPORT
ON THE F.F. CLAIM GROUP

SUMMARY

Investigation of a gold bearing skarn, reported by the G.S.C. in Memoir 326, resulted in obtaining average grades ranging from 0.078 to 0.216% Sn and 0.046 to 0.097% WO_3 across widths of 6.9 to 23.6 feet along a total length of 2100 feet in the main skarn zone. (See Geological and Sampling Report dated October 1981).

A contoured base map was prepared from air photos by McElhanney Surveying and Engineering Ltd., early in 1982 and this map was used for geological mapping at 1:5000 scale during July and August.

A number of small skarn zones which were indicated by prospecting in 1981 were examined in detail for geological relationships in 1982.

Type samples were collected from several skarn zones for geochemical analysis and a number of the widespread small quartz veins on the property were analysed for several elements with the intention of checking for possible gold concentrations.

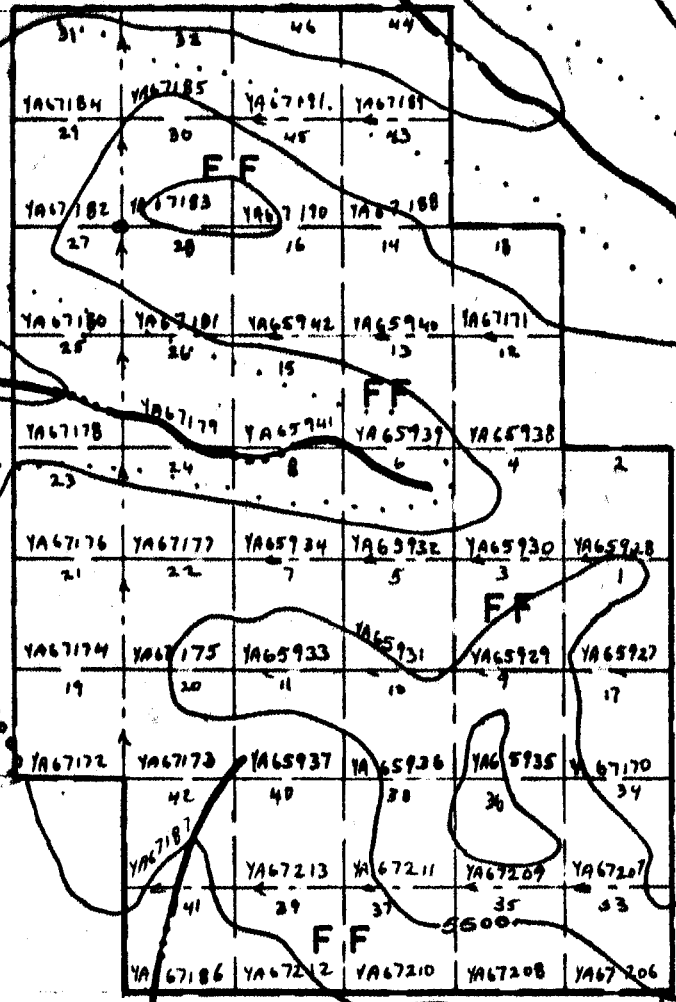
Two magnetometer profiles were obtained over the main skarn zone. A more complete survey was not completed during the time available due to magnetic storms and malfunction of the proton magnetometer.

REGISTER OF CLAIMS

SEE FIGURE 1 CLAIM MAP

<u>Name</u>	<u>Record Number</u>	<u>Date Recorded</u>
F.F. 1 - 16	YA 65927 - 942	June 26, 1981
17 - 32	YA 67170 - 185	September 8, 1981
32 - 40	YA 67206 - 213	September 8, 1981
41 - 46	YA 67186 - 191	September 8, 1981

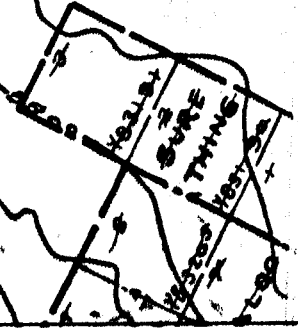
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FF CLAIM GROUP
CLAIM MAP

Scale 1" = 1/2 mile

Aug. 1982

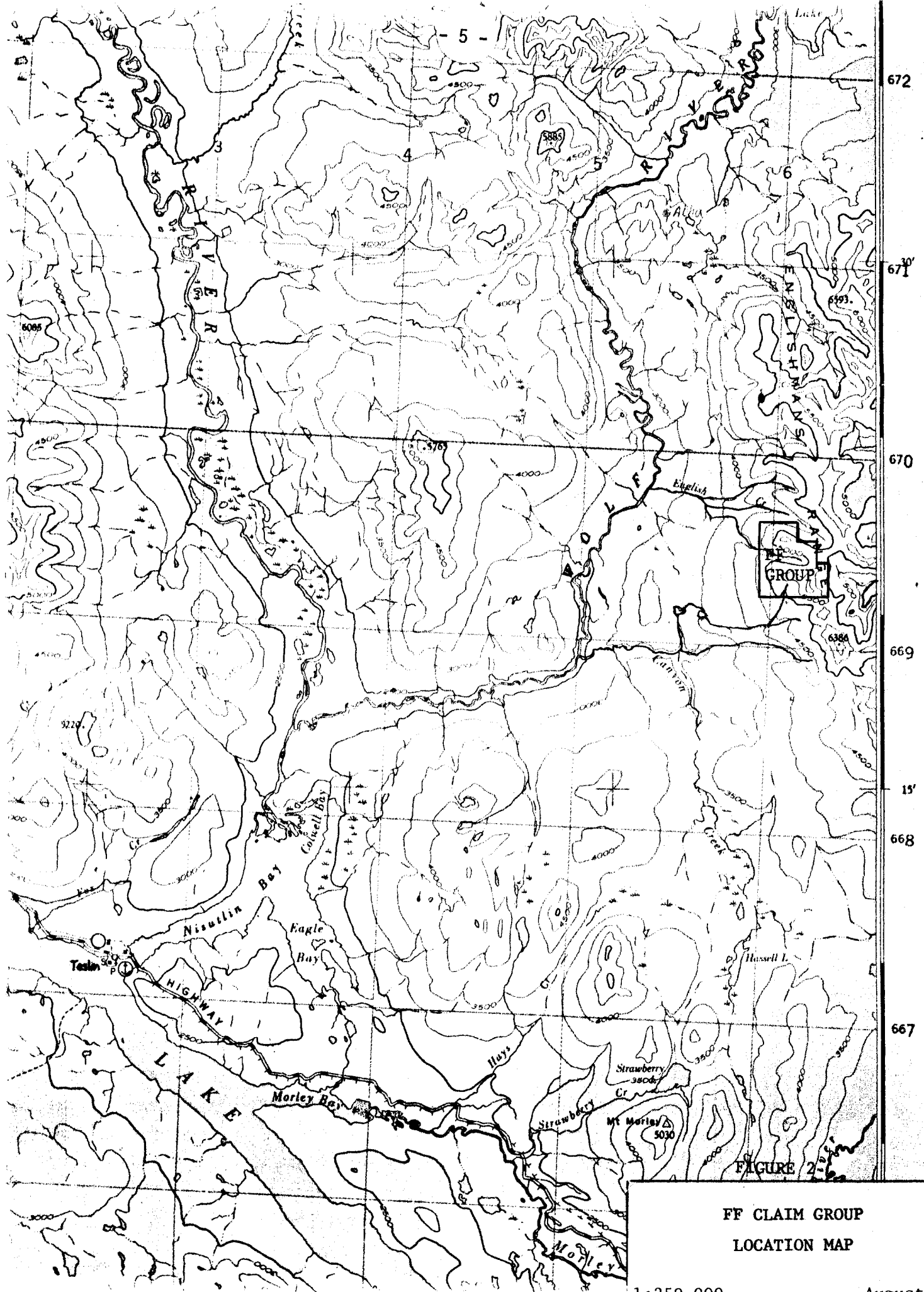


LOCATION AND ACCESS

The claim group is centred on the south branch of English creek at the west contact of the Hake batholith approximately 40 kilometres north east of the village of Teslin. See Figure 2 Topographic Map.

Most of the claim area is above tree line and is moderately rugged with elevations ranging from about 1360 to 1820 metres. Drainage is to the west into the Wolf River.

Access to the property has been entirely by helicopter, primarily through Teslin.



FF CLAIM GROUP
LOCATION MAP

GEOLOGY

Regional geology is described in Memoir 326 by Robert Mulligan 1963. A summary of pertinent portions of that publication was included in our 1981 report on geology and sampling on this property.

The following describes field results of more detailed mapping done as part of the current program.

TABLE OF ROCK UNITS

12. PORPHYRITIC GRANITE - Pink, fine to medium grained, K Spar phenocrysts, also includes white equigranular granite and aplitic dykes and sills.
11. HAKE BATHOLITH - Coarse grained, massive quartz, feldspar, biotite granite.
- Intrusive Contact
10. PHYLLITE - Silvery grey to rusty brown weathering.
9. CHERT PEBBLE CONGLOMERATE - Thin bedded quartzite, greywacke, conglomerate, generally rusty brown weathering.
8. LIMESTONE - Thin bedded, granular to sandy, dirty white to grey.
7. CHERTY QUARTZITE - Argillaceous quartzite, greywacke, chert. Generally very siliceous, light rusty weathering.
6. TUFF, VOLCANIC BRECCIA, ANDESITE - Grey to dark green massive rocks featuring dark green chlorite, actinolite, tourmaline filled fractures. Little or no apparent bedding or structure.
5. ARGILLACEOUS QUARTZITE - Siliceous dark grey to purple-brown interbedded "tuffaceous" and argillitic formations. Some calc-silicate altered beds and lenses. Commonly contains blebs of pyrrhotite.

- 5(a) - black argillite bed, possibly in part lapilli tuff. Possible marker horizon.
- 5(b) - Chert
- 4. LIMESTONE - Massive to thin bedded white to grey limestone. Minor skarn and calc-silicate interbeds.
- 3. SKARN - Red and green garnet skarn, magnetite skarn epidote skarn etc.
- 2. TUFFITE - Greygreen to dark grey siltstone, tuff, lapilli tuff and agglomerate. Minor skarn bands.
- 1. QUARTZ PLAGIOCLASE PORPHYRY - Grey green fine to medium grained massive intrusive or flow. Numerous 2 - 3 mm grey white plagioclase phenocrysts. "Microdiorite"

Rock Descriptions

1. Quartz Plagioclase Porphyry

A single outcrop in the creek west of the main skarn deposit consists of a fresh looking fine to medium grained massive dark grey rock. Grey white 1 to 3 mm anhedral feldspar phenocrysts are common. The groundmass appears brownish on weathered surface but dark grey to purple grey on the fresh surface. It may contain very fine secondary biotite as a result of metamorphism. Rare, very dark quartz eyes occur. Minor fractures are filled with thin pegmatitic quartz veins.

Somewhat higher in the outcrop the groundmass is fine to aphanitic with more prominent dark quartz eyes. Vertical narrow fractures are bleached on the margins and contain dark green chloritic material and small tourmaline crystals.

The rock is probably a relatively coarse grained volcanic flow rather than an intrusive. See Petrographic description J.C.S. 1.

2, Tuffite

Conformably above the quartz plagioclase porphyry is a sequence of thin bedded black siltstone, grey tuff and minor agglomerate. The sequence is apparently about 30 metres in thickness. Siltstone beds are very fine grained, black and massive. Interbedded with this siltstone are beds of variable grain size which appear to be mixtures of silt, volcanic ash and lapilli. See Photos 1 and 3. The agglomerate consists of siltstone and volcanic ash with sparse to numerous rounded pebbles of apparently tuffaceous and volcanic material. See Photo 2. These pebbles range from a few millimetres to about 8 centimetres in long dimension. They appear to be of uniform composition and some may be of fragments of underlying beds.

Thin bands of green skarn occur within the tuffite horizon. Below the main skarn deposit joints and fractures are often coated with fine black tourmaline.

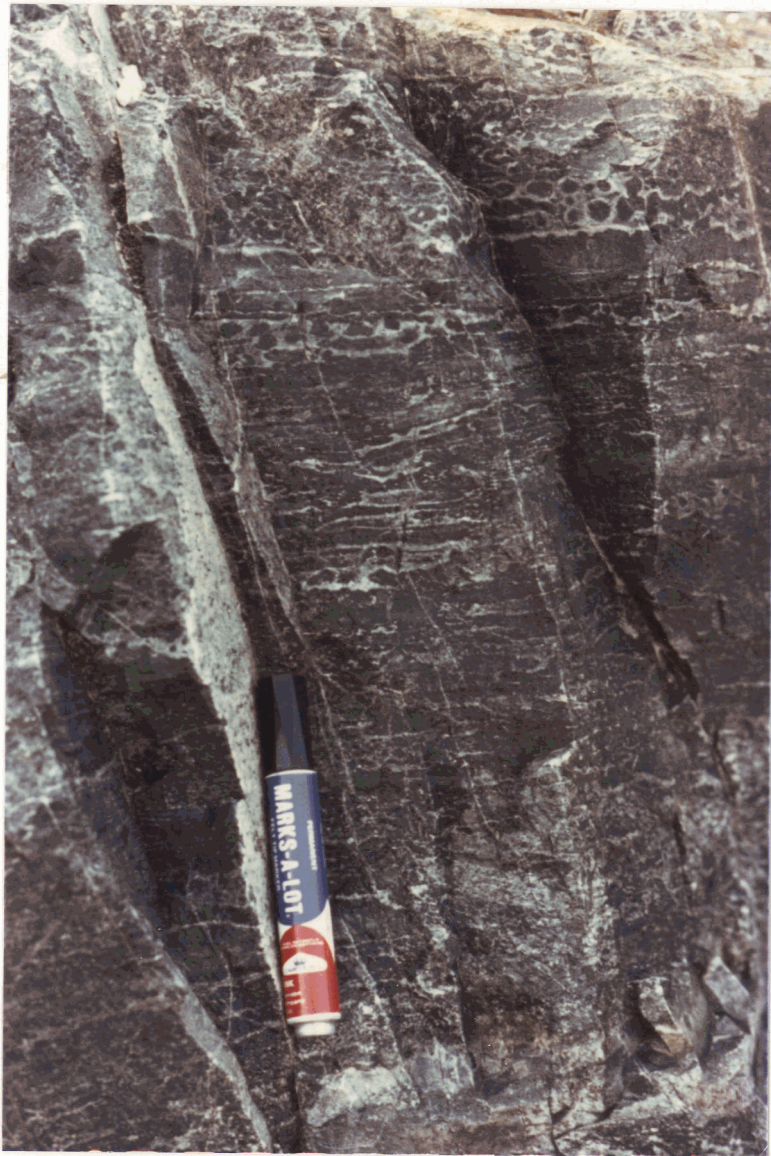


PHOTO 1 TUFFITE HORIZON 19+50E.

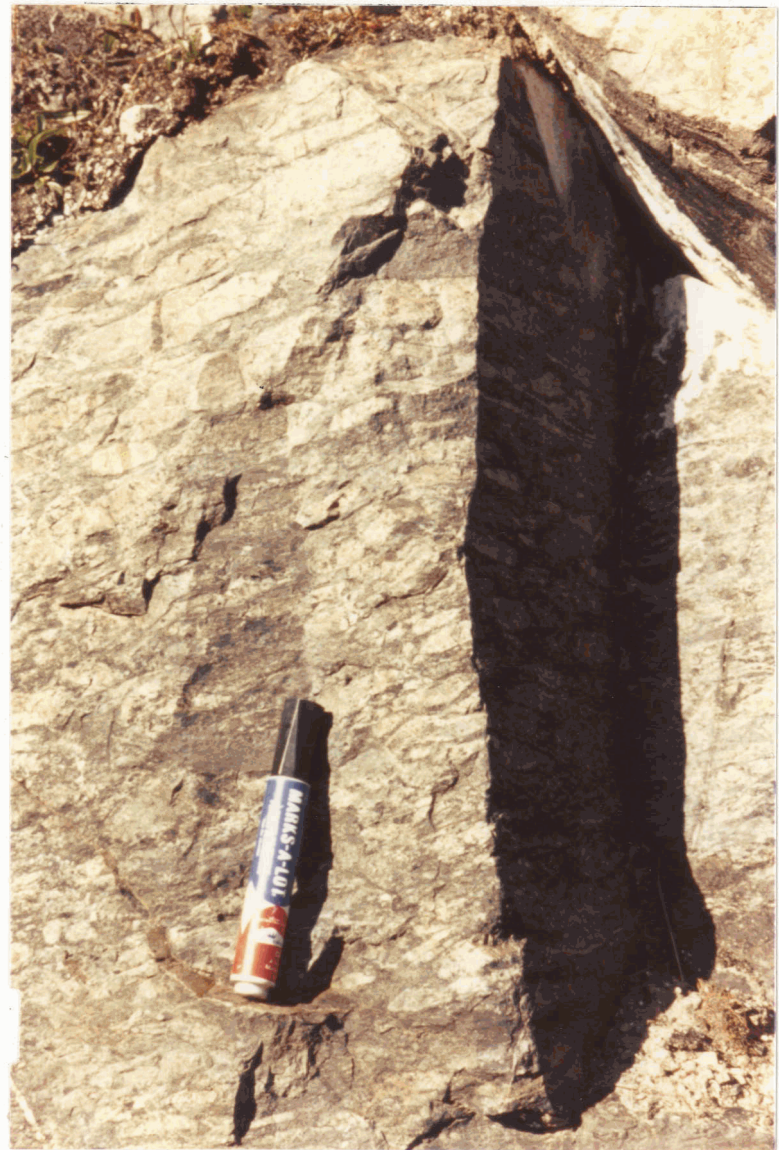


PHOTO 2 TUFFITE HORIZON 13+00E



PHOTO 3 TUFFITE HORIZON 7+00W

3. Skarn

Skarns of varied character occur at several stratigraphic levels on the property. Most of these occur in association with carbonate horizons.

The main skarn horizon occurs on a north facing steep slope almost continuously for about 610 metres. The horizon can be traced westerly a further 200 metres to the creek containing the quartz plagioclase porphyry outcrop and good exposures of tuffite.

Along its length the main skarn generally exhibits a sharp lower contact with the underlying tuffite although the two formations interfinger in some areas. The lower portion of the skarn consists of reddish garnet and epidote at the west end, mainly red garnet in the central portion with a progressive change to a magnetite skarn in the east portion. Several lenses rich in pyrrhotite with some chalcopyrite and arsenopyrite occur at intervals.

Above the red garnet skarn a thin intermittent limestone bed occurs which is followed by a green garnet skarn. Contacts of the the skarn with the limestone beds are usually sharp but may be gradational over several inches with knots of garnet occurring in the limestone in places.

At the east end of the skarn horizon thin irregular vein like skarns cut the limestone beds.

Two large protrusions of magnetite and garnet skarn occur above the main skarn horizon. These follow what visually appear to be fault or fracture zones in the main limestone but no evidence has been found to indicate actual faulting. There is no fracturing through the main skarn nor in the tuffite below. Pegmatitic zones, apparent bedding and other structures apparent in the main skarn bend upward, unbroken, into the upper protrusions.

Relationships of several smaller skarn zones to surrounding rock types are described in a following section.

4. Limestone

The main limestone horizon occurs directly above the main skarn in the central part of the property. In places the limestone appears massive but it is generally bedded with individual beds varying from two or three centimetres to about 60 centimetres in thickness. Folding probably repeats some parts of the horizon but a maximum thickness of about 120 metres is suggested above the main skarn.

Beds of "silicified limestone." calc-silicate and weak skarn occur at irregular intervals throughout the formation.

A single outcrop presumed to belong to this horizon occurs on the north side of the valley near the head of the landslide area.

Chert nodules and lenses occur within the limestone particularly in its upper portions.

5. Argillaceous Quartzite

Rusty brown weathering hornfelsed quartzitic rocks overlie the main limestone formation. These quartzites are impure and quite variable and on claim F.F. 7 the following variations were observed.

- (1) Light greenish grey weathering brown hornfelsed argillaceous (or tuffaceous) quartzite with abundant lenses and thin beds of calc-silicate, Schistosity is weakly developed.
- (2) Lapilli tuff? beds to 15 cm thick in weakly skarned calc-silicate rock.
- (3) Brown rusty tuffaceous quartzite with streaks and lenses of siliceous material which contain pyrrhotite. Rock is micaceous and sheared. Very similar rocks occur at the head of the landslide area on the north side of the main valley.

- (4) brown and rusty weathering argillaceous hornfelsed quartzite
- (5) Sub unit 5a a thin bed of black tuffaceous argillite (or lapilli tuff). A similar bed occurs at several places as indicated on the map and, if continuous, might prove a useful local marker horizon.
- (6) black siltstone irregularly altered to pale white to greenish calc-silicate
- (7) very rusty weathering cherty dark grey pyritic quartzite
- (8) rusty weathering argillaceous quartzite similar to north ridge in part consists of dark brownish black very fine grained hornfelsed siltstone with pyrrhotite on quartz lenses and along fractures

6. Tuff, Volcanic Breccia, Andesite

Grey to dark green-black massive rocks with very little evidence of bedding or other structures. The rock is generally fine grained, dense and very hard. It is characterized mainly by intersecting fractures filled with chlorite, actinolite (?) and tourmaline. The coarsest grained varieties of these rocks are greenish grey granular rocks somewhat similar to the "micro-diorite" but without the abundant phenocrysts and containing small rounded knots of dark green volcanic? material. See petrographic descriptions J.C.S. 2,3 and 4.

7. Cherty Quartzite

These sediments are generally more siliceous than the lower quartzites with a greater abundance of chert. In the southwest portion of F.F. - 7 these are described as cherty hornfels, massive cherty sediments and pale rusty weathering quartzite.

This formation is widespread in the south west portion of the property and, in relation to unit 6, should be equivalent generally to unit 9 to the north. The then sandy limestone, unit 8, and the phyllite, unit 10, were not observed however.

8. Limestone

A thin bed of granular limestone 60 to 120 cm in thickness occurs near No. 1 Post F.F. 29. South of the post large rubble fragments consist of irregular limestone masses enclosed in dark "volcanic" material. The limestone bed probably lies on or close to the volcanics (unit 6) but may be separated by thin quartzite beds.

9. Chert Pebble Conglomerate

Thin bedded rusty brown quartzite, greywacke and fine chert pebble conglomerate occur immediately above unit 8 limestone. Going downhill to the south west and presumably up strata the conglomerate becomes somewhat coarser. These rocks are much more sheared in appearance than unit 7.

10. Phyllite

A single outcrop of silvery grey, black and rusty brown weathering phyllite occurs north of the small lake on F.F. 27. A series of small rusty rubbly areas trending to the east may be a continuation of this horizon but the trend is anomalous for the area. The phyllite is fairly soft and appears to be a highly sheared equivalent of the finest grained phases of unit 9.

11. Hake Batholith

The batholith consists of massive usually fresh looking quartz feldspar biotite granite. In some areas this rock disintegrates rapidly as the feldspars break down but in the north east portion of the property it is relatively hard and fresh.

12. Porphyritic Granite

A local "plug" of pale pink K-spar porphyry occurs as a local plateau in the east portion of Tarn Cirque. The rock is

relatively fresh in appearance. No tourmaline coated joints or signs of greisen alteration were seen.

Near the north west corner of "Tarn" lake an outcrop of medium grained white granite occurs and large blocks of similar rubble extend to the east beyond the creek to two large outcrops of similar equigranular granite at the north west corner of the ridge. This granite is fresh and apparently unaltered. The relatively common small pegmatitic and aplitic dykes and sills in the area are probably related to this granite phase.

STRUCTURE

The sediments which include the tin-tungsten bearing skarn on F.F. group are intruded, in the east portion of the property, by the Hake batholith. The contact is rarely observed directly but is apparently fairly steep in some areas as near the north east boundary. To the south east sediments cap some ridges and intrusion of the batholith is presumed to have been fairly passive. No stopped blocks of sediment have been observed. This situation is similar to that along the contacts of the Seagull batholith.

The sedimentary sequence may be interpreted, from the G.S.C. data, to be overturned. The rock units in this report however are listed with unit 1 as the lowermost topographically and unit 10 as uppermost. On the north ridge and along the western portion of the property dips are generally to the west at up to 50° and trend of the formation to the north west at about 330° . Extent of the limestone horizon around the south and south east contact of the Hake makes overturning difficult to support.

In the central part of the property the main skarn appears to form part of the north limb of an anticline overturned to the south. General attitude of this folding is illustrated with sketched bedding in the limestone outcrop across the boundary of F.F. 7 and 8. (See Photo 4).



PHOTO 4 FOLDING IN LIMESTONE ABOVE MAIN SKARN
FACING EAST AT BOUNDARY OF FF 7 and 8

Plunge of this fold is not definitely known. At the east end of the main skarn the tuffite-limestone contact is apparently folded but the manner of folding is unknown. The protruding limbs of the main skarn zone are presumed to be related to fold structures but a satisfactory geometric model has not been developed.

Faulting is indicated in several places by sharp gullies along ridge tops and by abrupt termination or offset of some formations. No major faulting has been demonstrated although the difference in elevation of the Hake batholith on the north and south sides of the main valley suggests some vertical movement on a possible fault in that valley.

Minor fault block wedges occur above the landslide area north of the main valley and 'step' faulting appears to be present at the head of Tarn Cirque.

MINERALIZATION

Economic interest in the F.F. group is centred on possible tin and/or tungsten concentrations associated with skarn deposits. Results of widely spaced but systematic chip sampling of the main skarn zone (Figure 3) were given in our report of October 1981. Sampling done in 1982 was confined to rock geochemistry on small skarn zones and quartz veins. No petrographic work has been done as yet on the skarn mineralogy.

Sulphide mineralization associated with the main skarn (See Figures 4, 5 and 6) consists primarily of pyrrhotite with lesser chalcopyrite, arsenopyrite and pyrite. The skarns are primarily of red or green garnet or magnetite. The sulphides tend to be concentrated in lenses and do not carry significantly better values than does the ordinary skarn. No concentration of gold was found.

In the small skarns examined there is an apparent increase in pyrite content and traces of gold are present. The best gold assay obtained is 0.04 ounces per ton.

Scheelite occurs sparingly in the main skarn. No effort was made to check individual chip samples for correlation of visible scheelite with the tungsten assays. The sampling done in 1982 however indicates tungsten values to >800 ppm from skarn which shows no scheelite. Wolframite is suspected although it has not been visually identified.

One small rusty zone with copper stain and quartz returned 18.8 ppm Ag, 80 ppb Au, 50 ppm W and 330 ppm Sn. A few minor silver values were found in quartz veins but no other significant values were obtained.

MODIFIED LEGEND FOR MAIN SKARN AND SMALL SKARN ZONES UNIT

Unit

2 Tuffite

3 Skarn

- | | |
|-----------------|---------------|
| a) Red Garnet | f) Silica |
| b) Green Garnet | g) Tourmaline |
| c) Brown Garnet | h) Chlorite |
| d) Magnetite | i) Fluorite |
| e) Sulphides | j) Wolframite |

4 Massive Limestone

- a) Calc-Silicate

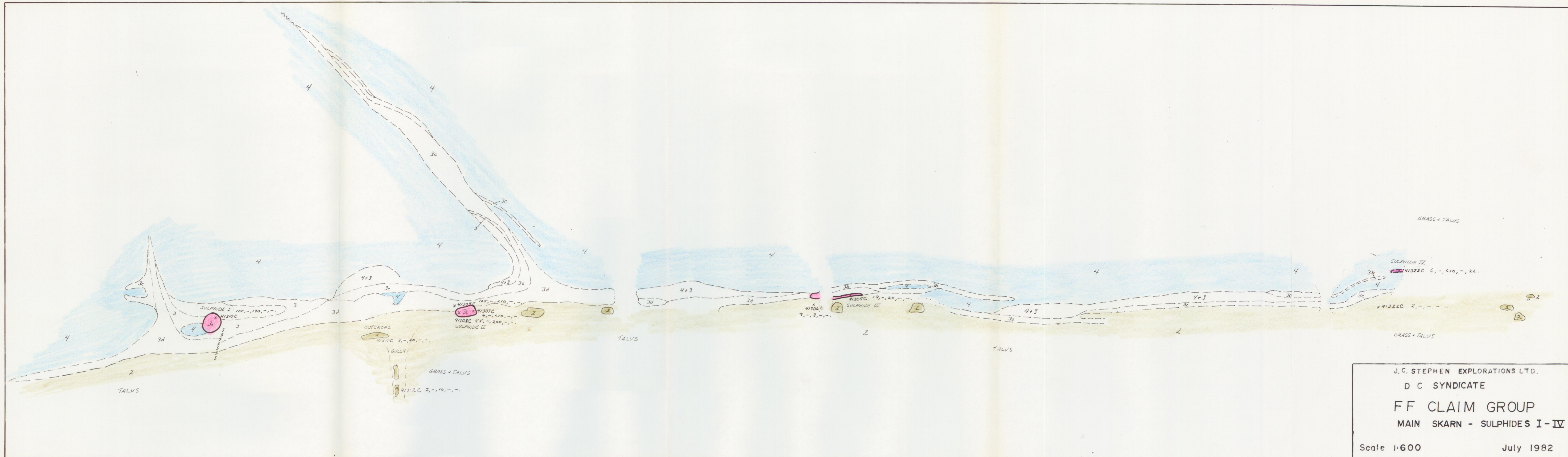
5 Quartzite

- a) Chert
b) Sandstone

12 Granite - Porphyry; Aplite

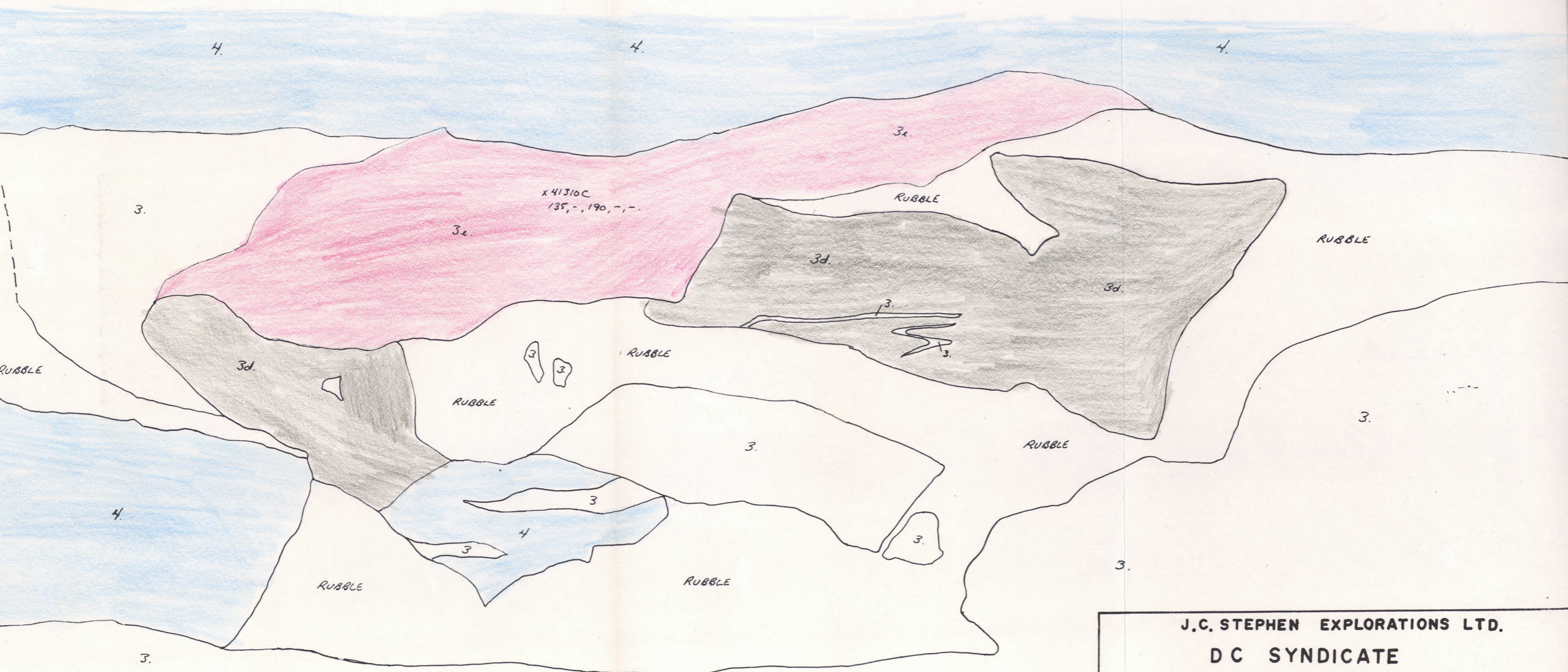
Rock Geochem Results Sn ppm, W ppm, Au ppb, Ag ppm, Cu ppm

Assay Results Sn% WO₃% Au oz/T Ag oz/T Cu%



J.C. STEPHEN EXPLORATIONS LTD.
 D C SYNDICATE
FF CLAIM GROUP
 MAIN SKARN - SULPHIDES I-IV
 Scale 1:600 July 1982

FIGURE 3



J.C. STEPHEN EXPLORATIONS LTD.

DC SYNDICATE

FF CLAIM GROUP

MAIN SKARN - SULPHIDE I

Scale 1" = 2'

July 1982

FIGURE 4

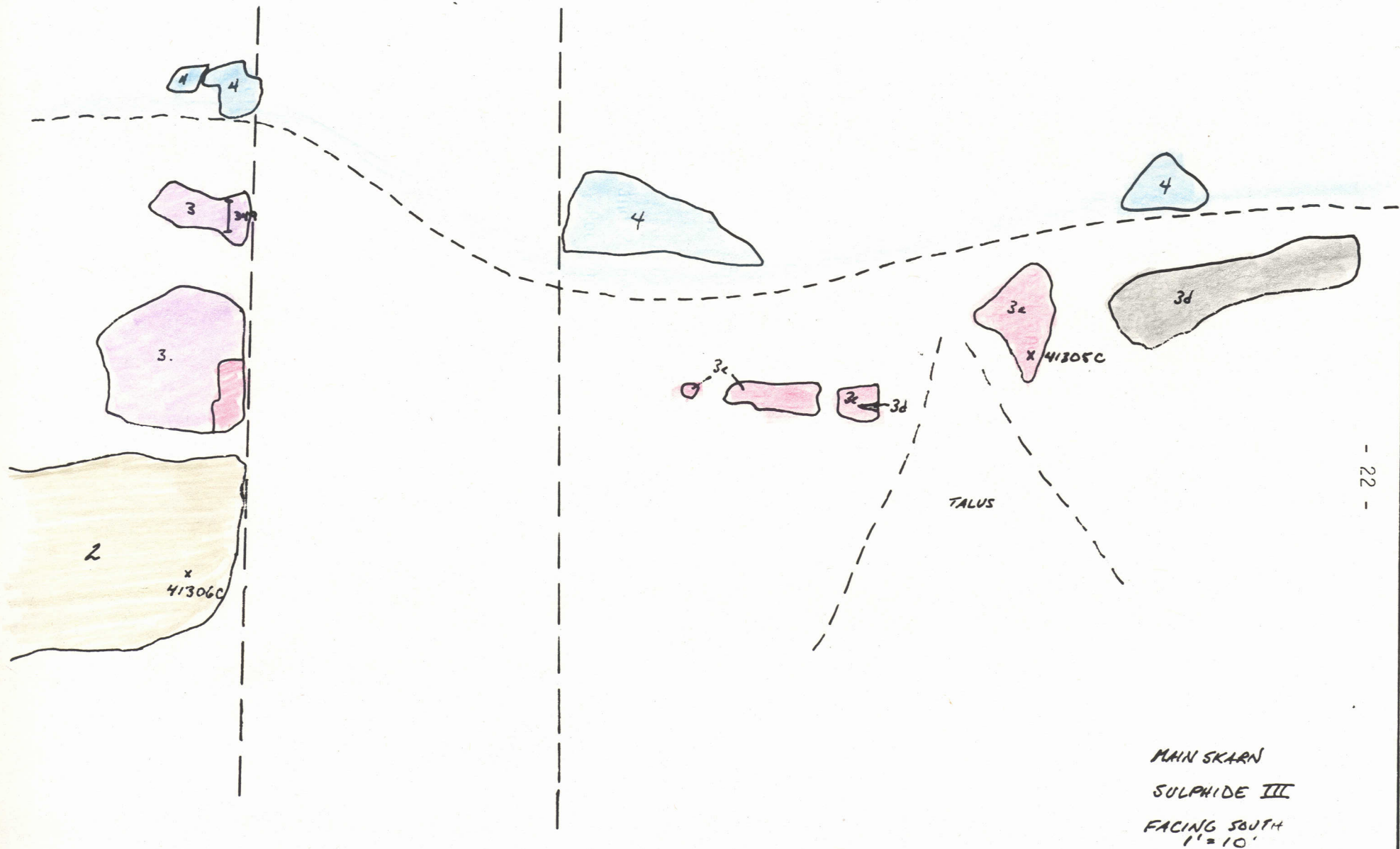


FIGURE 6

SUMMARY OF SMALL SKARN ZONES

Seven skarn zones have been mapped in addition to the main skarn sulphide showings.

Skarns 1 and 2 (Figures 8 to 13) are of similar mineralogy and are found high in the stratigraphic column. These skarns contain red garnets, magnetite, fine grained aplite dykes and crystal aggregates of tourmaline, quartz and fluorite. The red garnets were noted to always overlie the magnetite. Some mixing of magnetite and aplite was apparent but there was no evidence of the dykes being a source for these skarn deposits. A chip sample taken from skarn 2 containing red garnet, fluorite and magnetite assayed >800 ppm W and 5 ppm Sn. However, on lamping no scheelite was found. Wolframite may be the source of the tungsten values obtained.

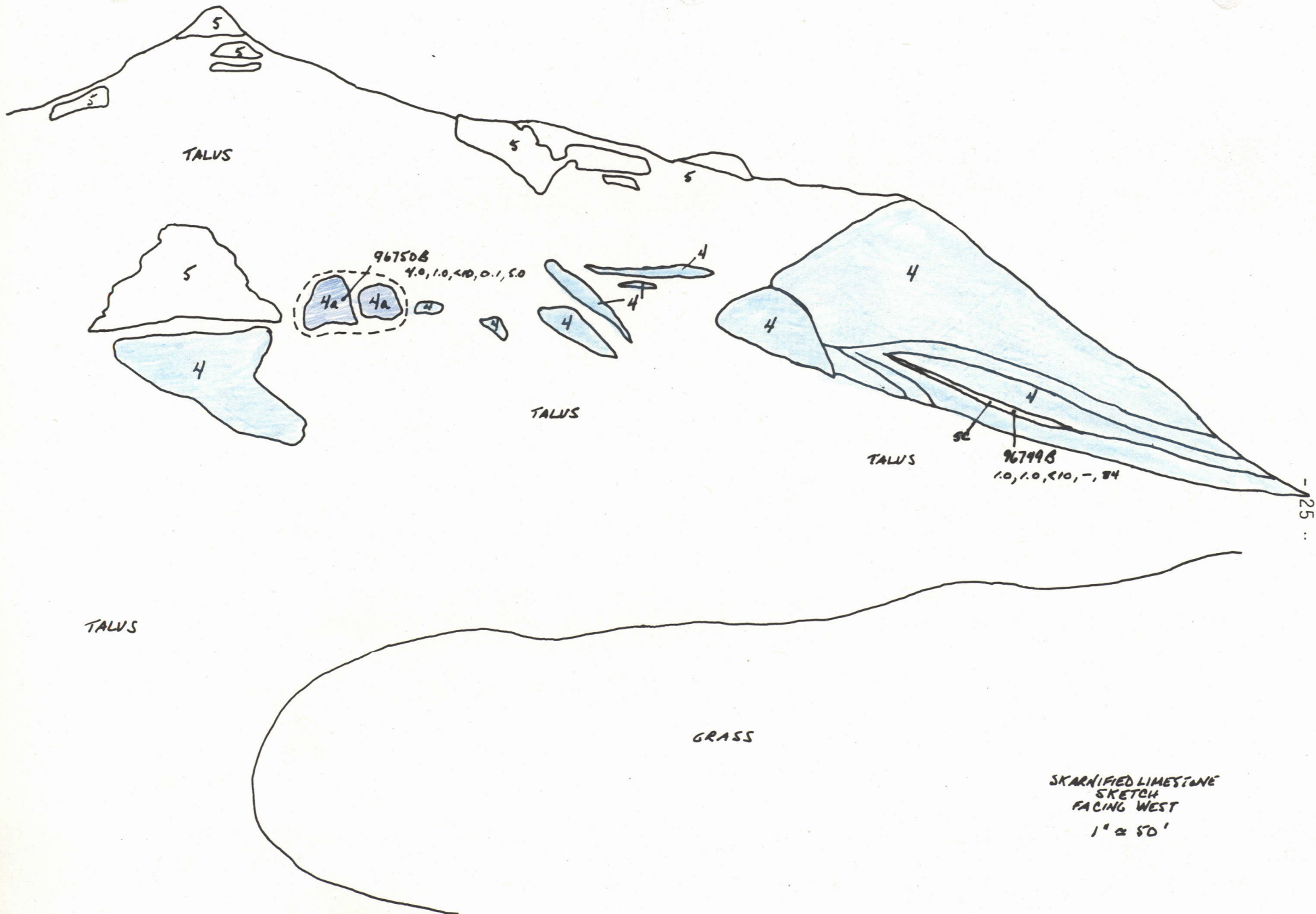
Skarn 3 (Figure 14) was located 25 vertical feet below skarns 1 and 2 and featured wide veins of massive radial tourmaline crystals. Rock geochem results from a 4 foot chip sample were 17 ppm Sn, 12 ppm W, <10 ppb Au. Red garnets were present in small crystal aggregates.

Skarn 4 (Figure 15 - 16) produced rock geochem values as high as 600 ppm W and 1100 ppm Sn. The anomalous tin sample was taken next to the massive sulphide lens from dark green, dense blocky rock, see Figure 16. Red garnet outcrops followed a north-south trend. Comparable rock geochem results of 1100 ppm Sn from skarn 4 and 950 ppm Sn from skarn 1 - magnetite have indicated higher tin concentrations to be found close to but not within red garnet outcrop.

Skarn 5 (Figures 15 and 18) consisted of light green calc-silicate with blebs of red garnet. The skarns close proximity to the large underlying body of calc-silicate limestone may be indicative of its character.

Many red garnet, massive sulphide and skarn-like boulders were found in the area south of and below skarn 5.

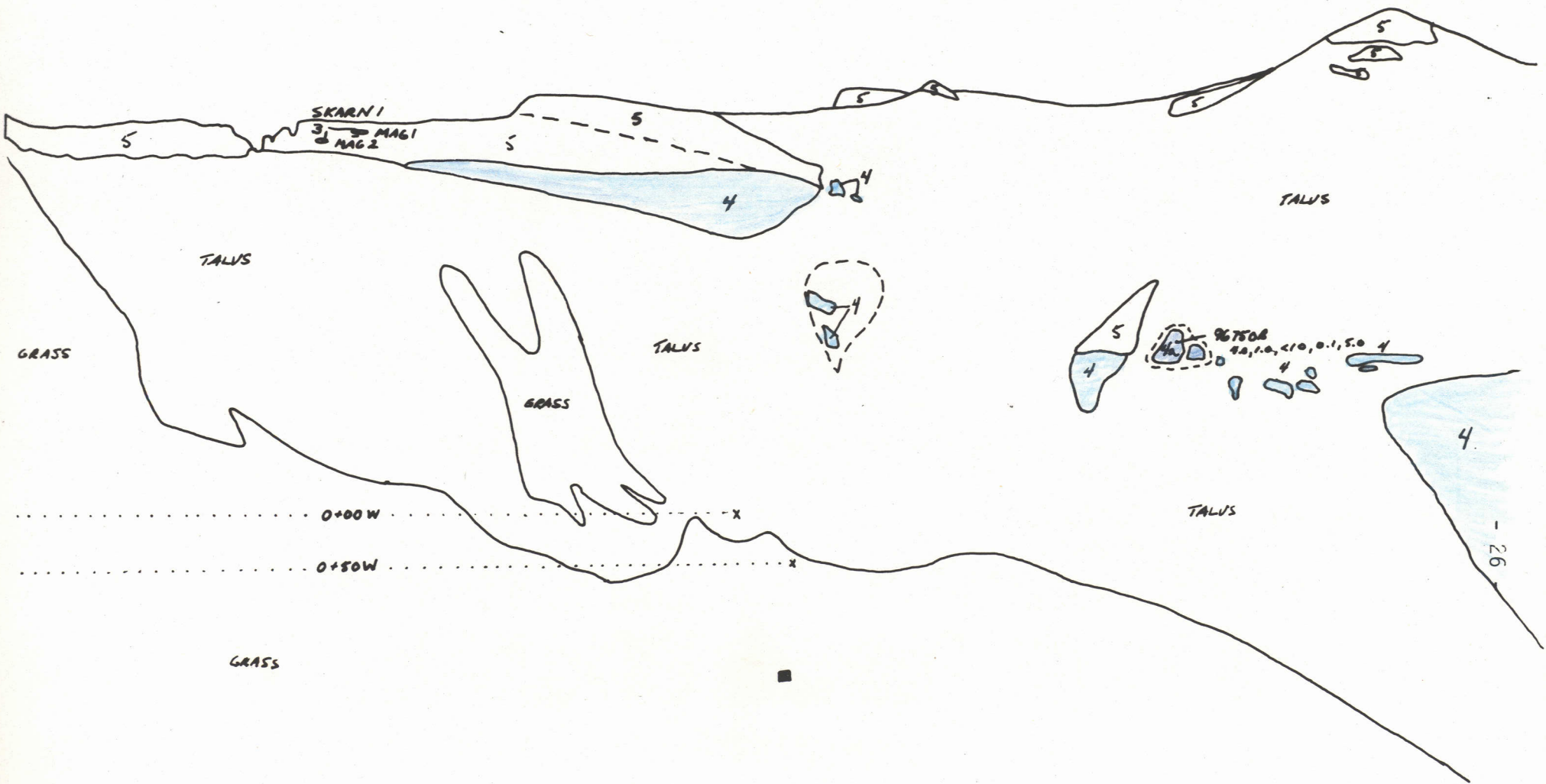
Skarns 6 and 7 (Figures 19 and 21) have similar mixed skarn character. Brown and green garnets dominate red garnet occurrence. Both skarns appear within a limestone horizon and have sudden discreet boundaries between skarn and limey host rock. No sulphide minerals or fluorescent minerals were found at either showing. Skarn 7 is the only skarn other than the main skarn which has green garnets.



-25 ..

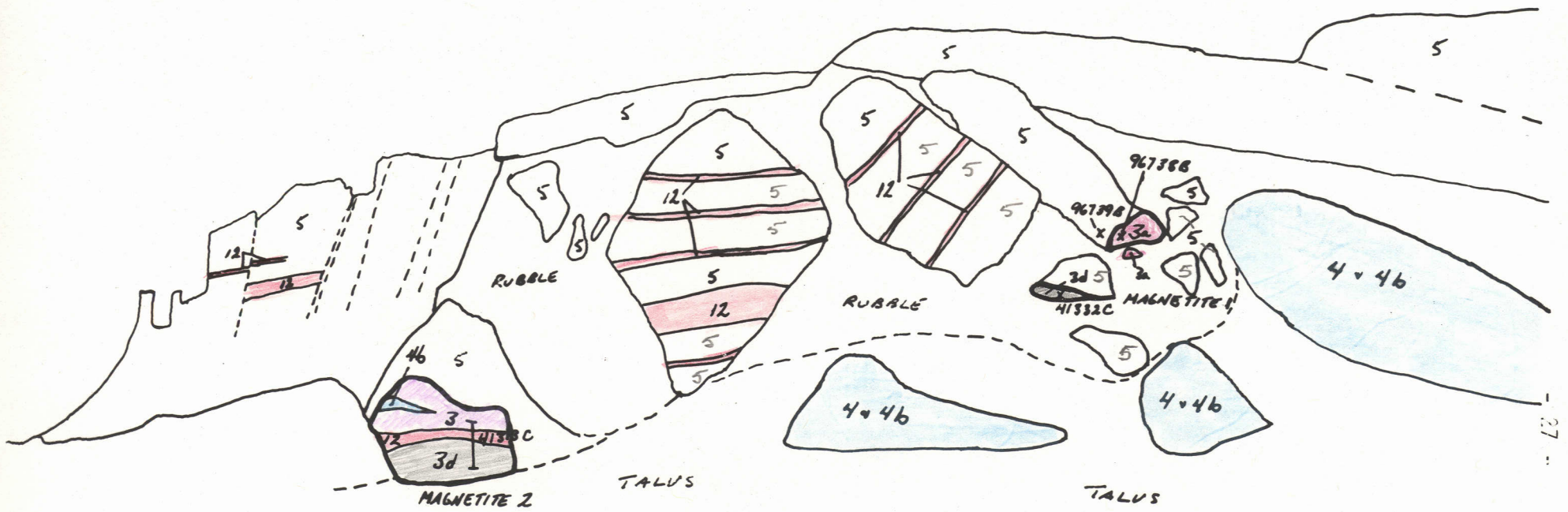
SKARNIFIED LIMESTONE
 SKETCH
 FACING WEST
 1" = 50'

FIGURE 7



SKARN 1
 SKARNIFIED LIMESTONE
 SKETCH
 FACING WEST
 1" = 50'

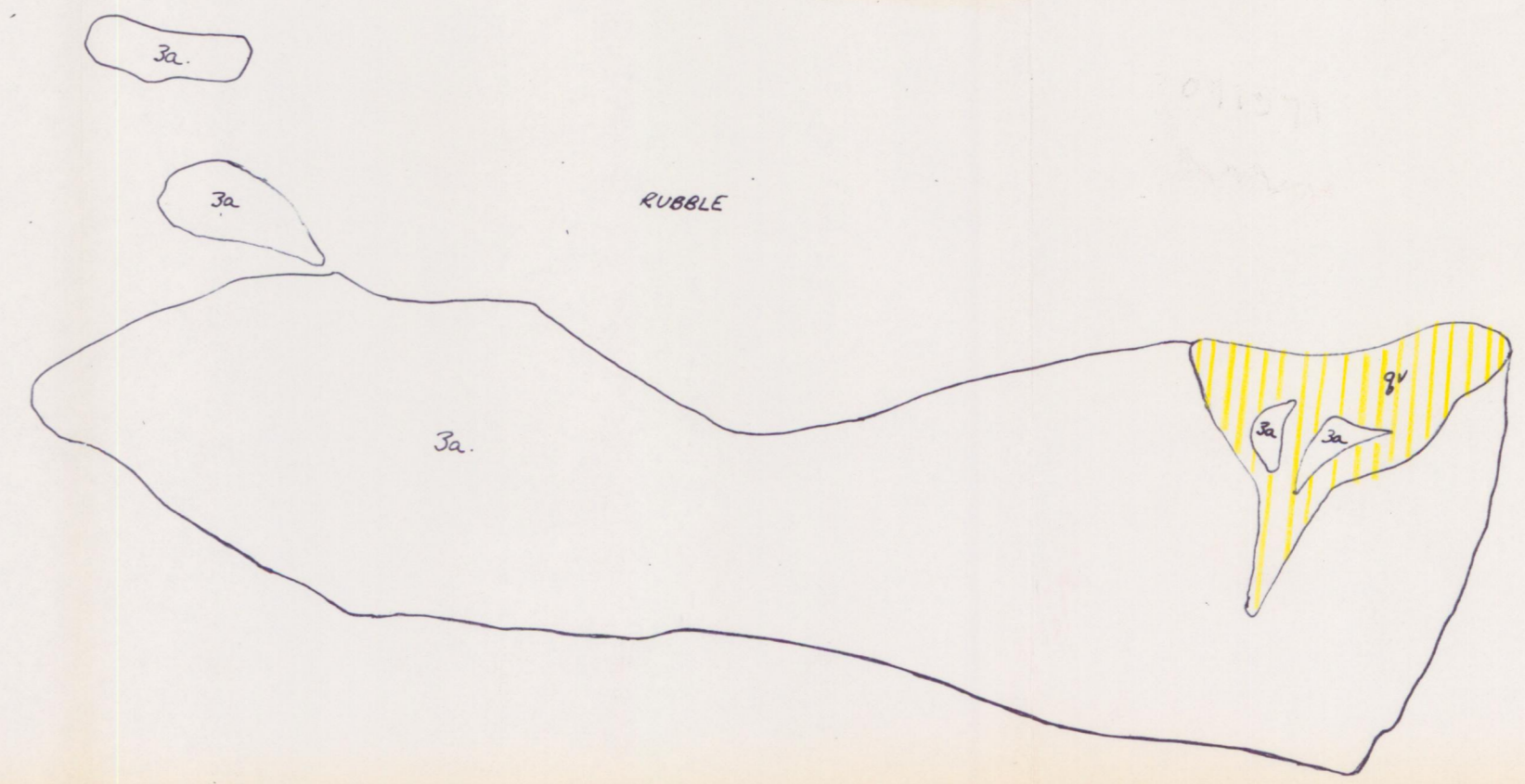
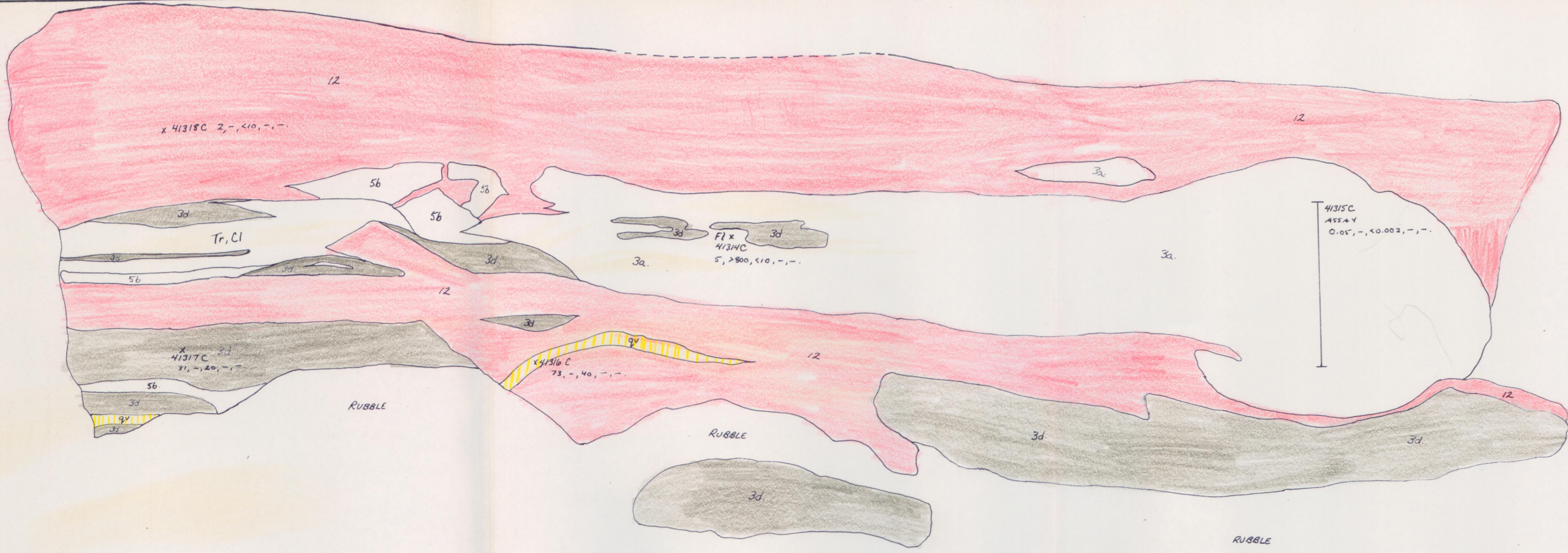
FIGURE 8

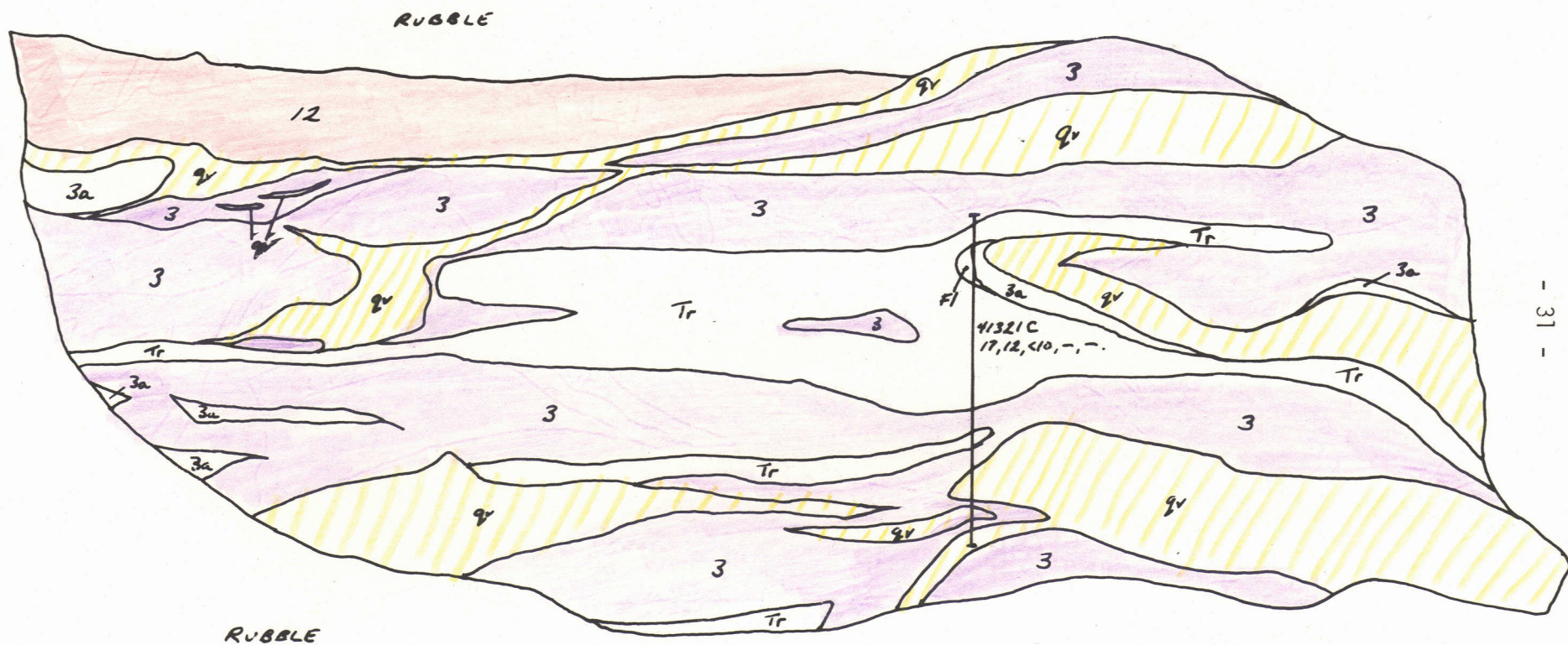


SKARN 1
MAGNETITE 1 AND 2
SKETCH
FACING EAST
1" ≈ 20'

FIGURE 9

FIGURE 13

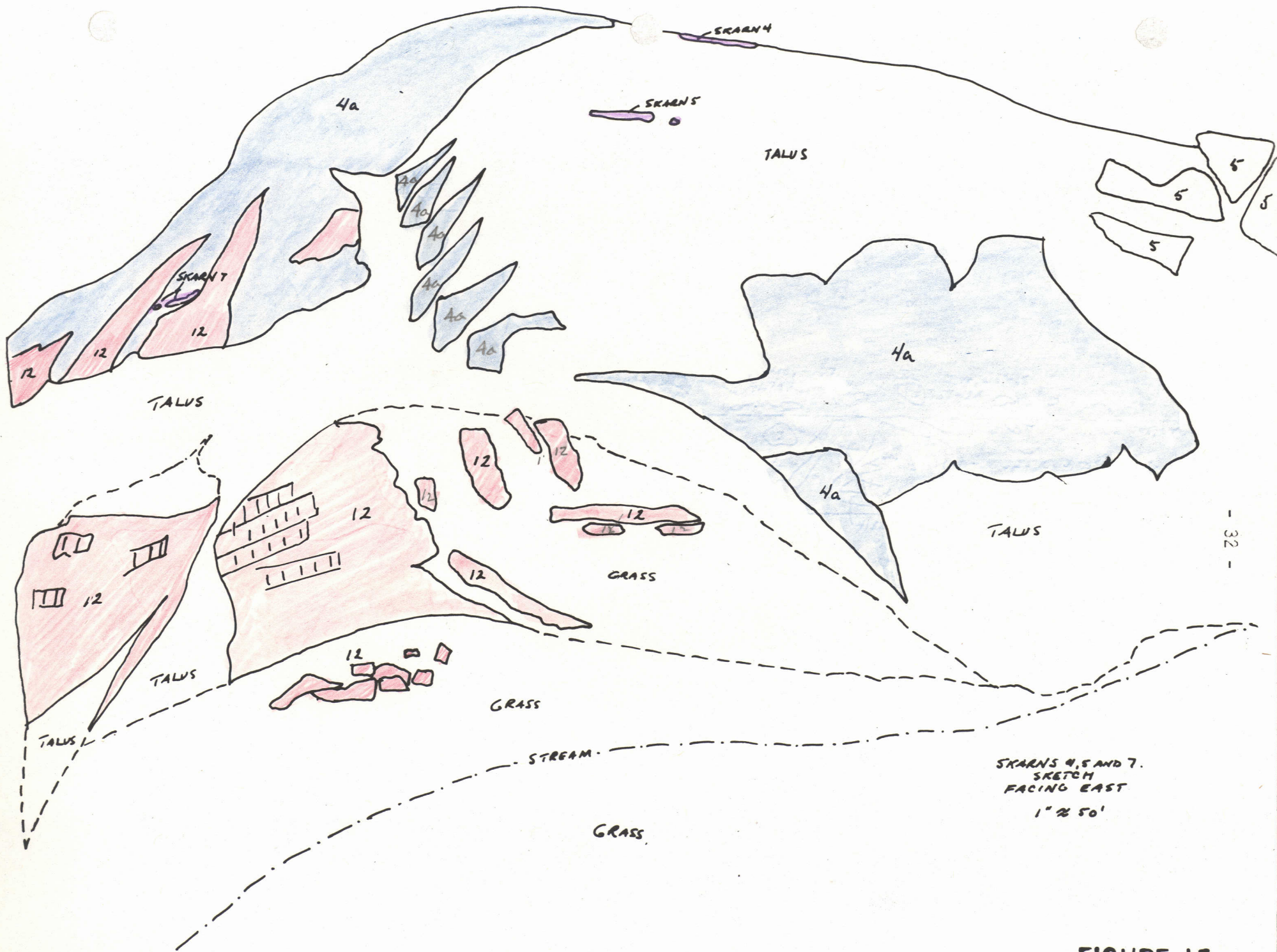




41321C
17, 12, 10, -1, -

SKARN 3
FACING WEST 1" = 2'

FIGURE 14

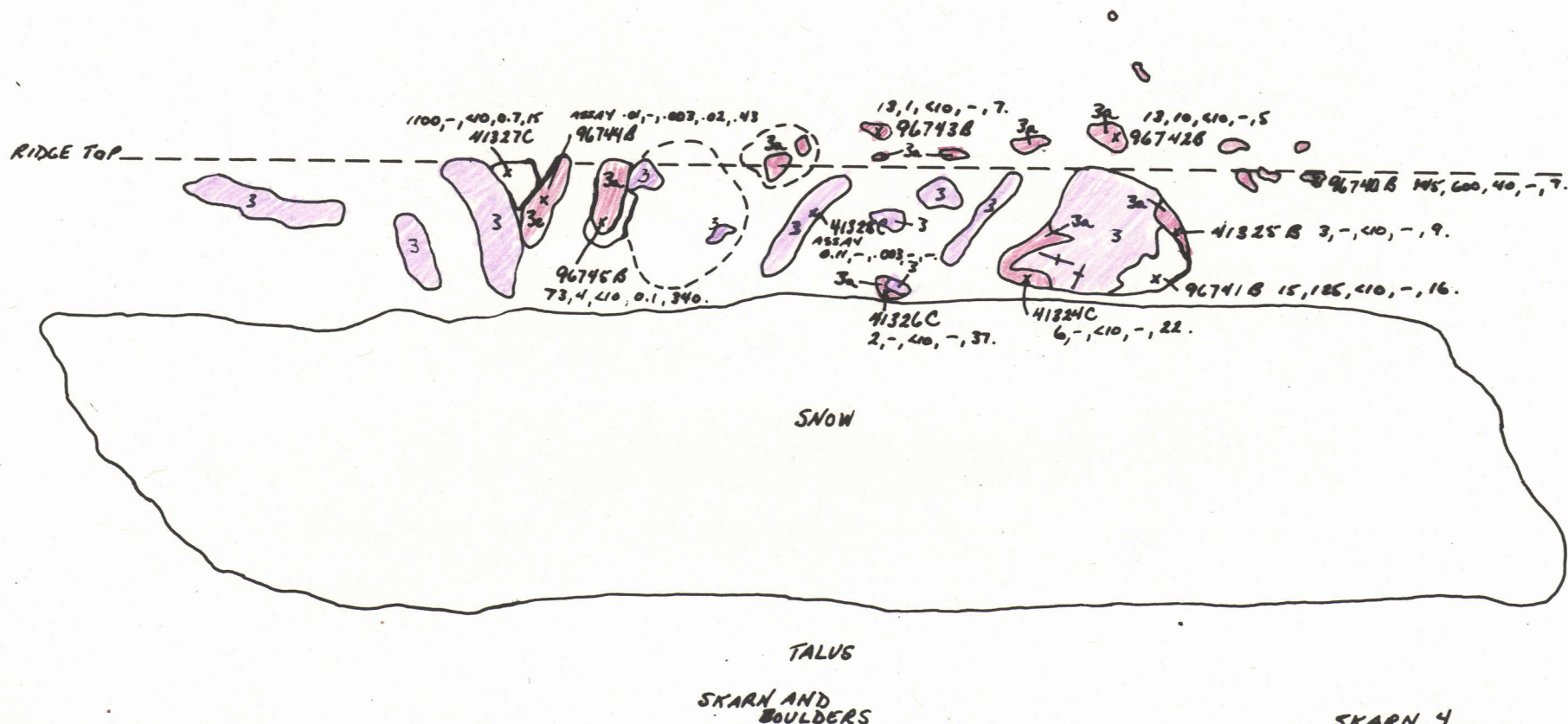


SKARN 4, 5 AND 7.
 SKETCH
 FACING EAST
 1" = 50'

FIGURE 15



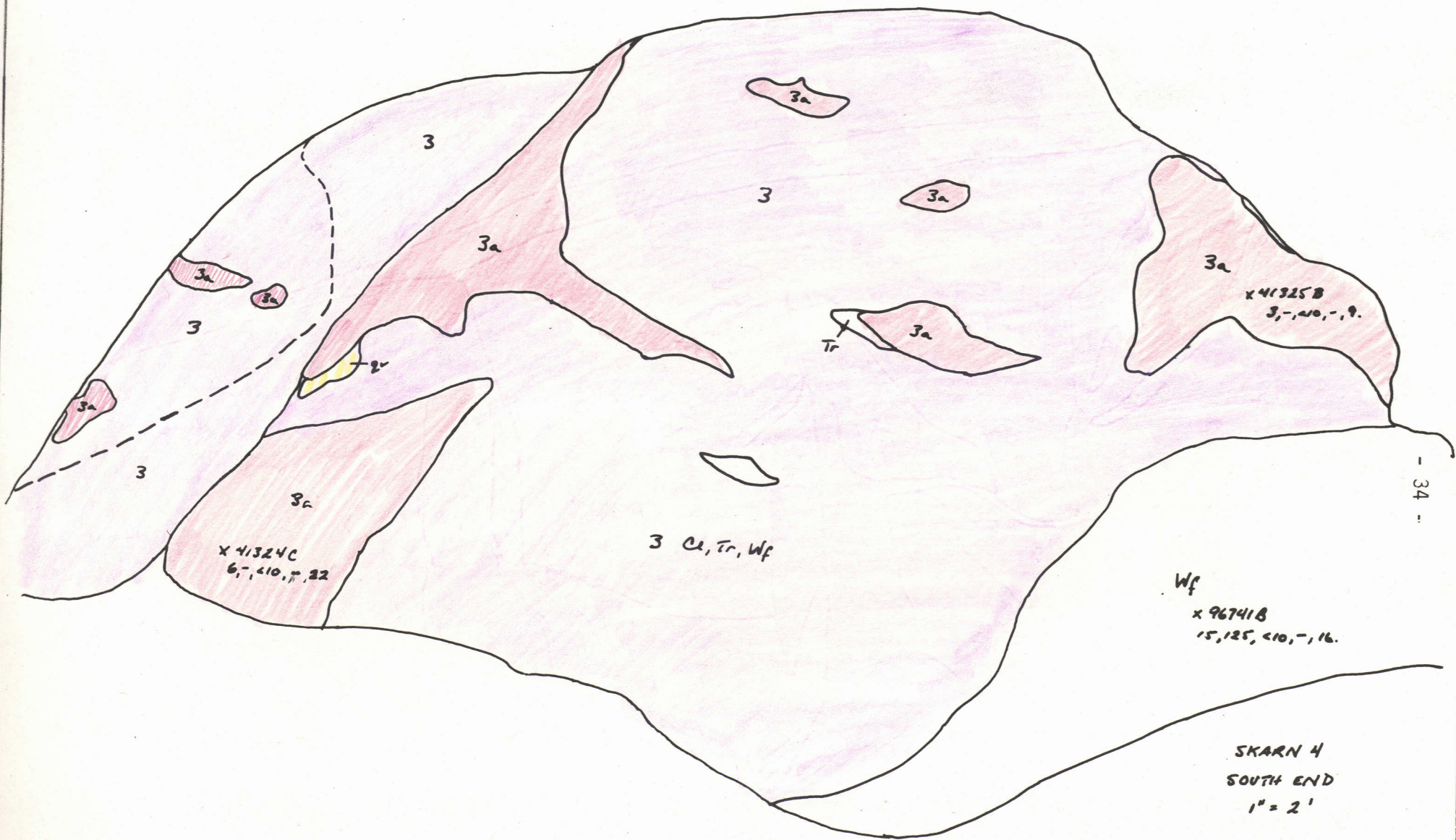
TALUS AND GRASS



33

SKARN 4
PLAN VIEW
1" = 20'

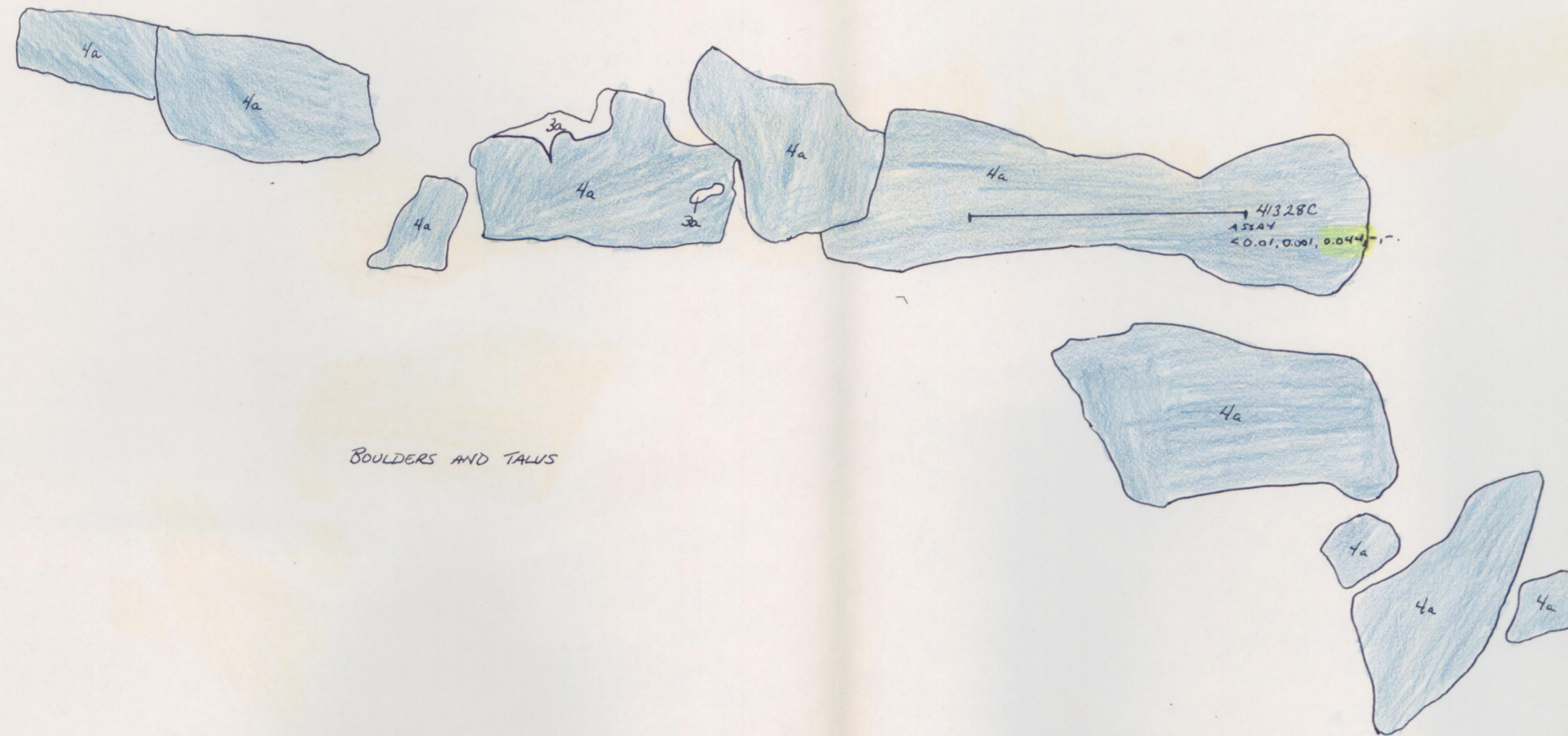
FIGURE 16



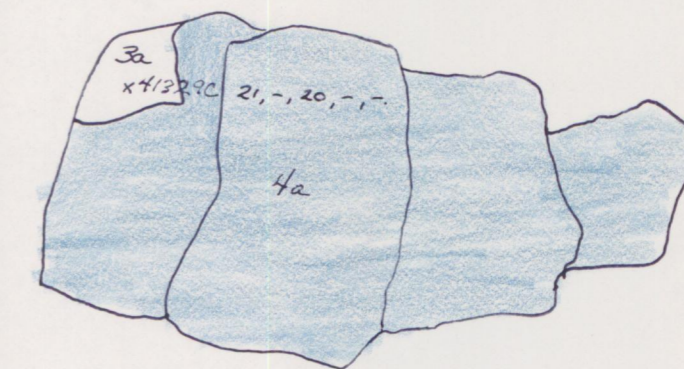
- 34 -

FIGURE 17

FIGURE 18



BOULDERS AND TALUS



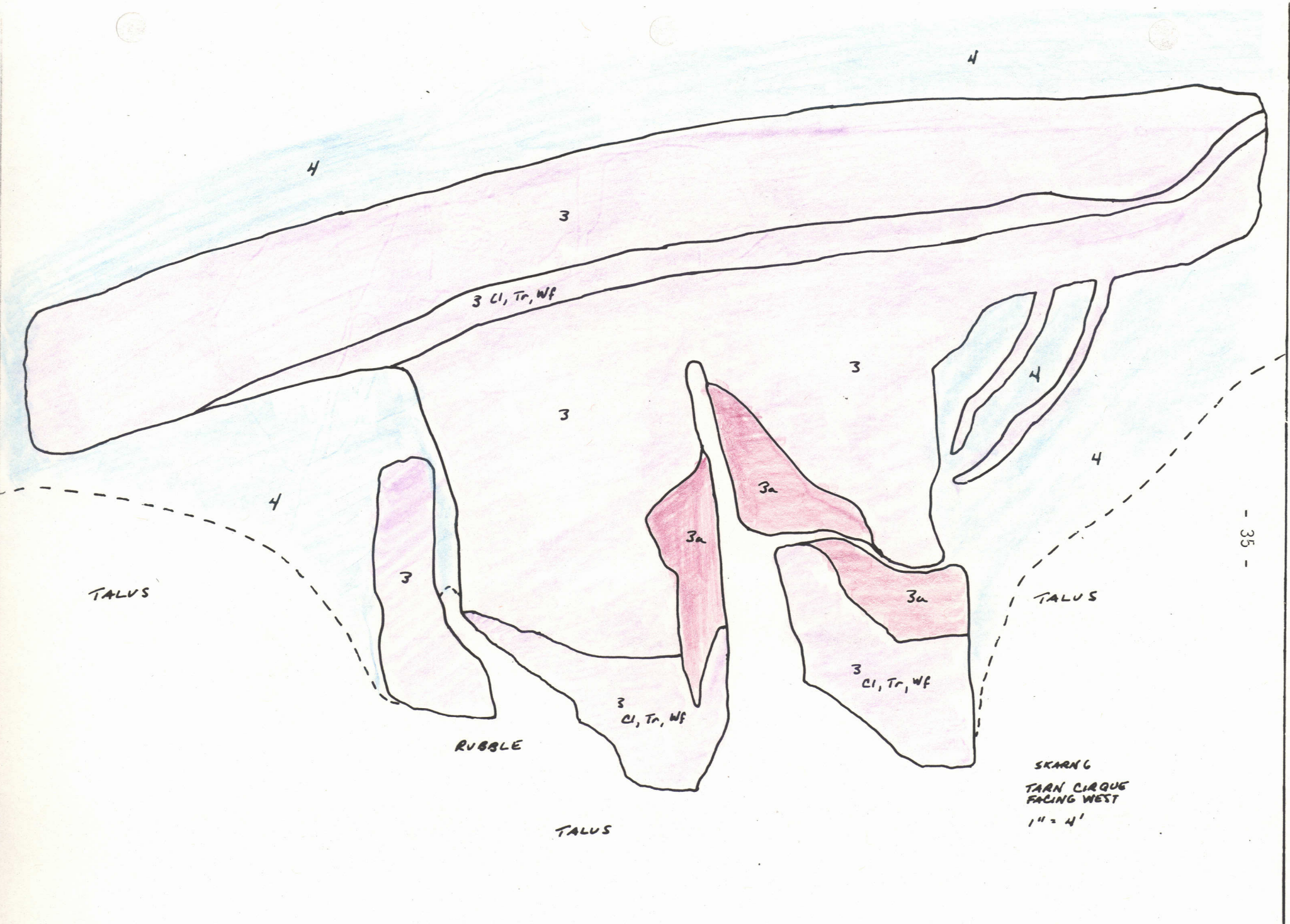
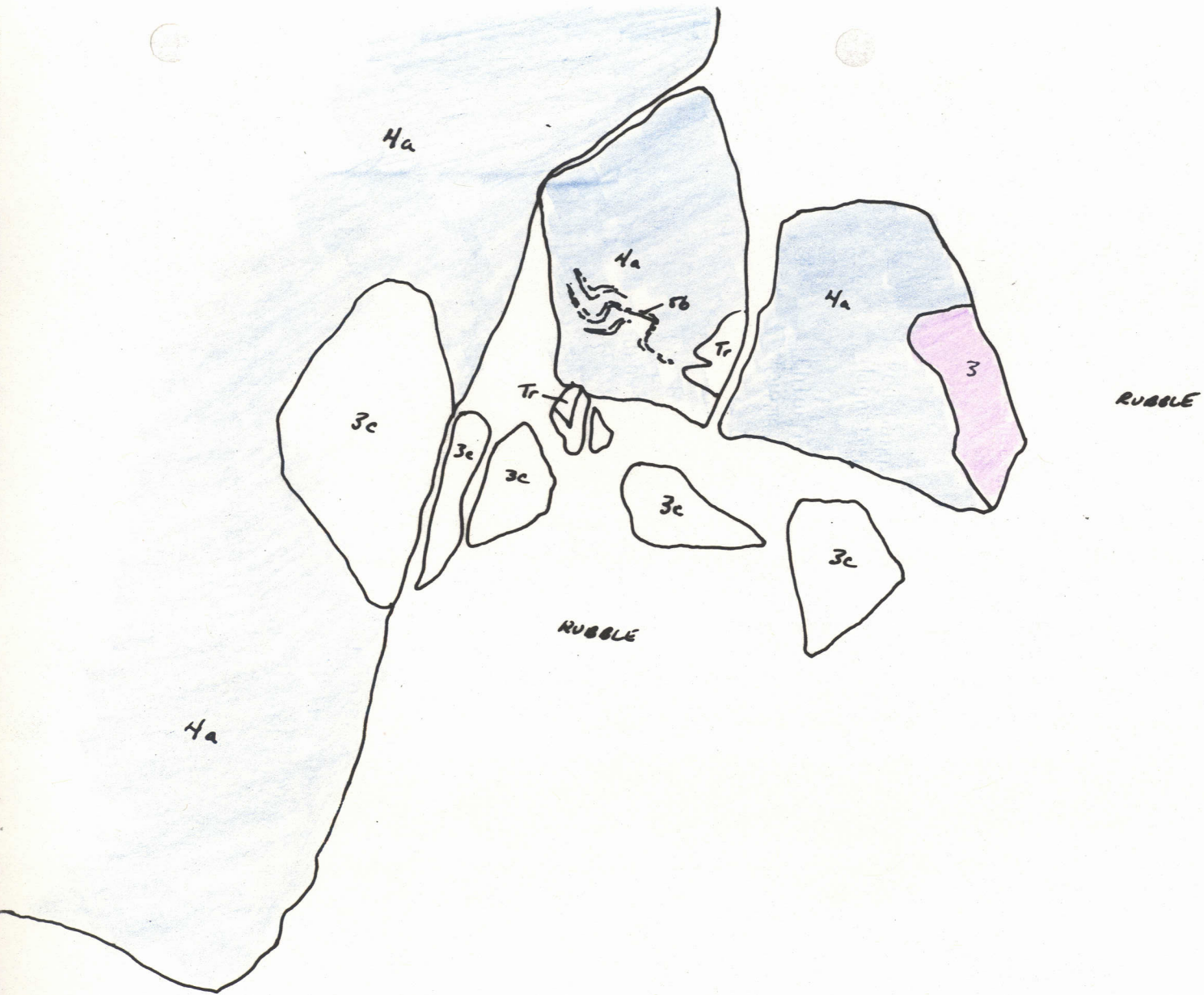


FIGURE 19



SKARN 7 (EAST)
FACING SOUTH
1" = 2'

FIGURE 20

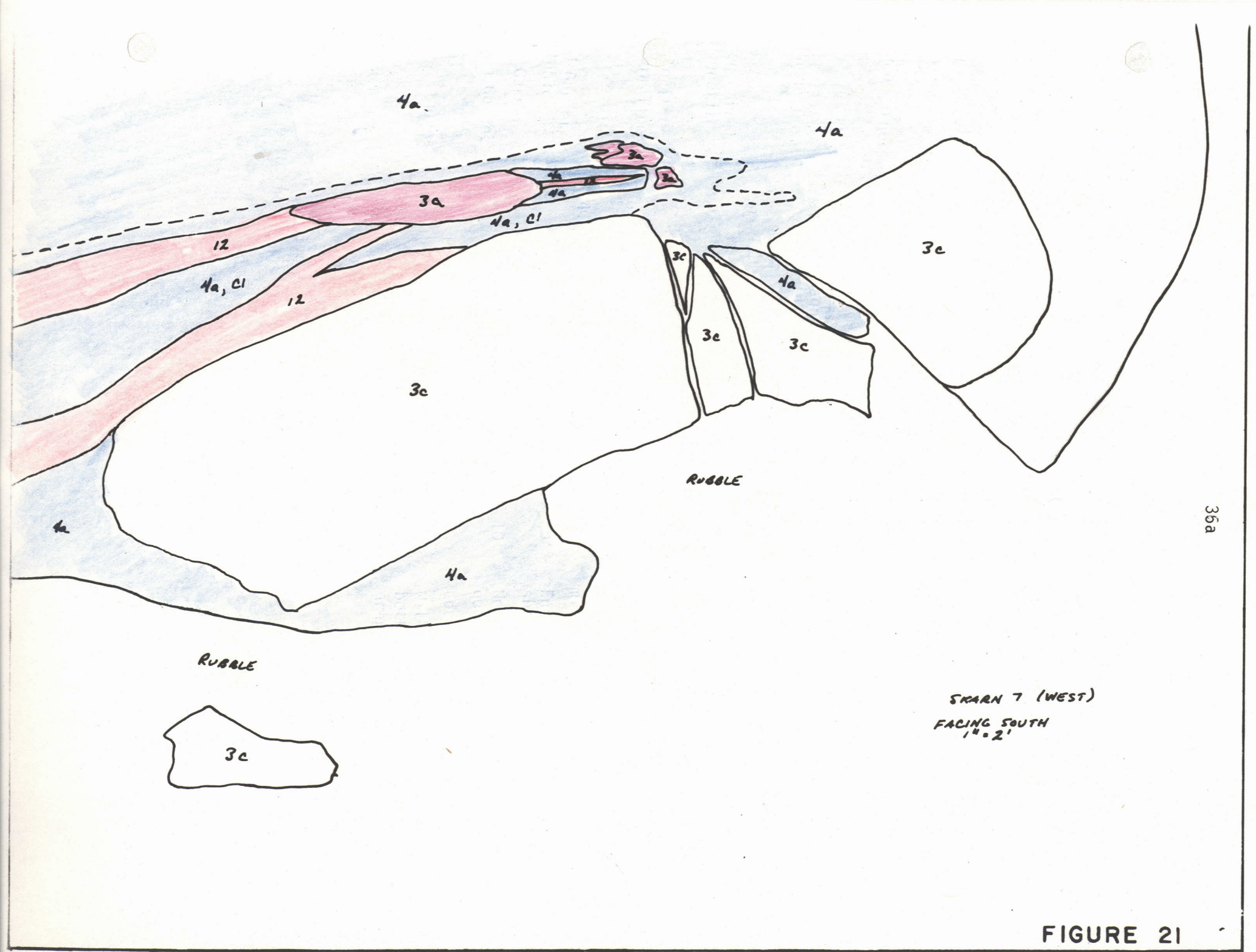


FIGURE 21

SUMMARY F.F. GROUP SMALL SKARNS

<u>Skarn</u>	<u>Type</u>	<u>Dimensions</u>	<u>Relationships</u>
1.	Skarnified Ls	10' x 10'	Chlorite, Coarse Calcite, Beryl, Fluorite. Pyrite at upper contact main limestone
Mag 1.	Red Garnet	20' x 4' 19' x 2'	Garnet, tourmaline, fluorite, chlorite 6' below garnet zone, massive mag- netite, overlain by argillaceous quartzite.
Mag 2.	Magnetite	20' x 6'	Massive magnetite cut by sill like white granite and silica rich strin- gers
2.	Reg Garnet Magnetite		Sill like bands of white granite cut magnetite. Tourmaline, red garnet, quartz vein
3.	Chlorite, Tourmaline	19 x 75	Overall green color, much tourmaline, minor red garnets, fluorite
6.		40' x 20'?	Enclosed within limestone. Irregular shape. Tungsten values
4.	Red Garnet/ Sulphide	20' x 10'	Near top of calc-silicate bottom of quartzite
5.	Red Garnet		Located high in calc-silicate horizon
7.	Brown Garnet	40' x 5'	Within calc-silicate horizon cut by both steep and flat dipping white granite zones.

GEOPHYSICS

MAGNETOMETER SURVEY

A Scintrex MP-2 proton magnetometer was used on the property with the original intention of completing a grid survey on the plateau area above the main skarn zone. The crew were requested to run profile lines from the creek area north of the skarn up over the skarn and south across the plateau first. Two of these profiles were completed but further surveying was prevented by instrument malfunction, magnetic storms and time limitations.

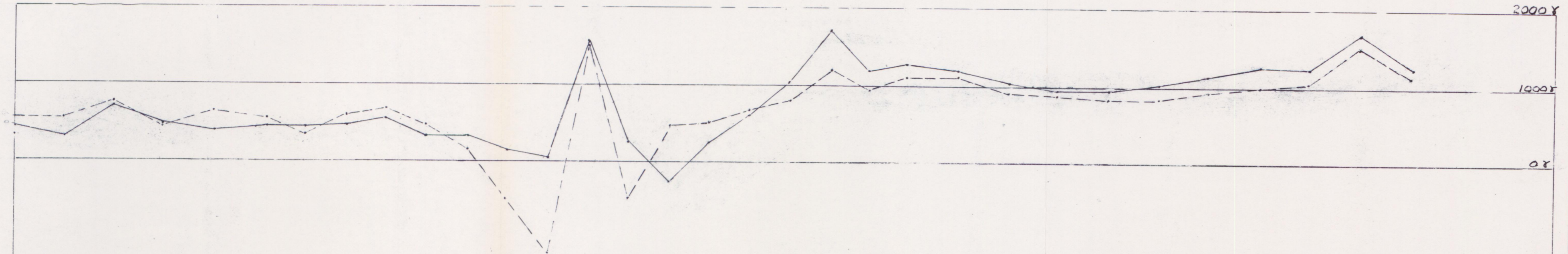
Method

Hip chain and compass lines were run from the creek area in the valley using 25 metre slope distance intervals between readings. Check readings were taken on a camp base station before and after reading the profiles.

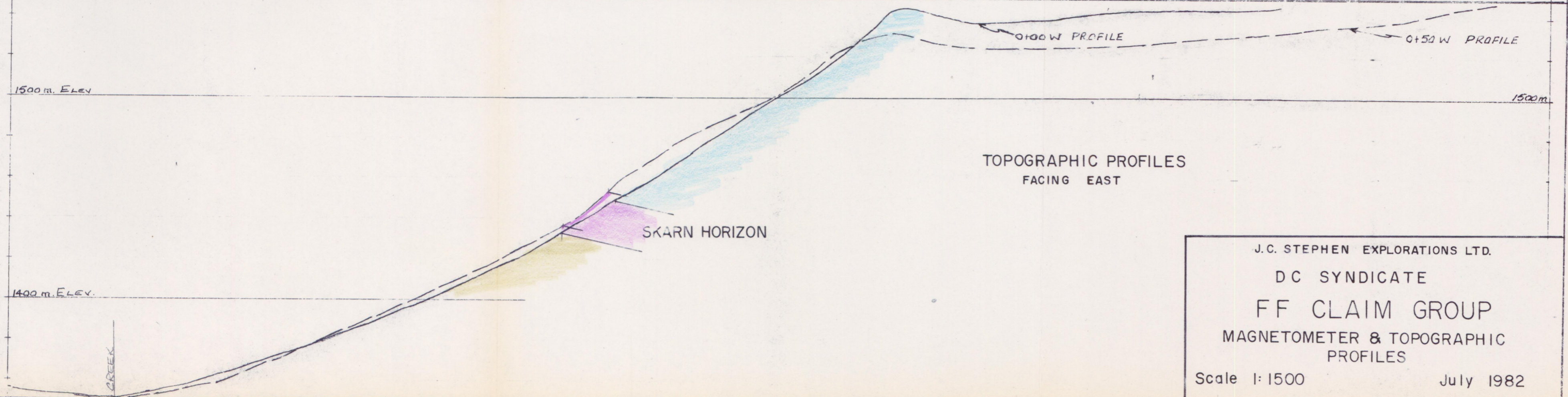
Results

Magnetometer readings on two profiles approximately 50 metres apart across the central flat portion of the main skarn are illustrated on Figure 22.

The magnetic profiles are very similar and indicate a fairly normal profile over the north edge of a flat body. (A.E. Beck, Physical Principles of Exploration Methods, page 100) The relative magnetic high to the south over the plateau area is assumed to be due to underlying magnetite skarn. The extent and shape of this supposed body is unknown and should be investigated by a well controlled grid survey.



MAGNETOMETER PROFILES
 VERTICAL SCALE 1cm-400 γ



TOPOGRAPHIC PROFILES
 FACING EAST

J.C. STEPHEN EXPLORATIONS LTD.
 DC SYNDICATE
 FF CLAIM GROUP
 MAGNETOMETER & TOPOGRAPHIC
 PROFILES
 Scale 1:1500 July 1982

FIGURE 22

Magnetite float which returned 120 ppb Au, 79 ppm Sn was found by Mary Webster on Claim F.F.-4 below the limestone spur north of Tarn Lake. An attempt was made to read magnetic profiles in this area but malfunction of the instrument prevented completion. This area should be grid surveyed particularly in view of its proximity to unit 12 granites.

GEOCHEMISTRY

Method

During mapping rock samples were selected from several rock formations and structures for geochemical determination of Sn W and Au. Where appropriate analysis for other elements was done. The majority of samples were selected from skarns and from quartz veins. All samples were submitted to Chemex Labs, North Vancouver for analysis.

Result

Copies of data sheets covering samples collected are provided with this report as Appendix I.

No significant values were obtained from quartz veins except for sample 25649C which returned anomalous values in silver, tungsten and tin with a trace of gold. This sample is from a small pegmatite quartz filled fracture in tuffite above the "micro-diorite" outcrop. There is a narrow rusty copper bearing zone which may have contaminated the quartz. Narrow skarn zones occur lower in the same outcrop.

More variable results were obtained from skarn specimens with significant tin and tungsten values being indicated in several areas along with traces of gold. Most of the skarn zones located however are too small to provide mineable tonnages and precious metal values are very low.

CONCLUSIONS AND RECOMMENDATIONS

No new skarns with tonnage potential were discovered but magnetite float east of the known main skarn zone suggests the possibility of extension of that zone.

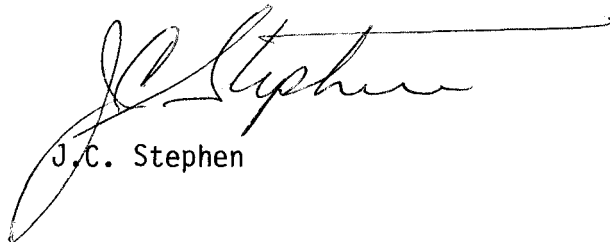
Magnetometer profiles on the plateau above the main skarn zone suggests down dip extension of this zone as well.

Geochemical results for tungsten indicate the probable presence of wolframite in skarn zones near the Hake batholith.

Gold values are present in slightly better than trace amounts which could conceivably provide a credit if economic tin and/or tungsten mineralization can be outlined.

An extensive picket line grid should be established to cover the main skarn zone, the plateau area to the south and the limestone spur area to Tarn Lake. Magnetic anomalies, particularly in proximity to unit 12 granites, should be tested by diamond drilling.

Respectfully submitted,
J.C. Stephen Explorations Ltd.



J.C. Stephen

JCS/ms

STATEMENT OF EXPENDITURES

1. McELHANNEY SURVEYING & ENGINEERING LTD.		
Preparation of Base Map		\$ 2,550.00
2. WAGES AND SALARIES		
George Hill Geologist		
July 9-23 15 days @ \$2000/m +15%		\$ 1,113.00
Mary Webster Senior Assistant		
July 9-23 Aug.6-9 19 days @ \$1800/m +15%		\$ 1,269.00
J.C. Stephen Manager		
July 9,10, Aug.6-9, Sept.19,20 @ \$150/Day		\$ 1,200.00
3. CAMP SUPPLIES AND FOOD		
40 man days @ \$14.		\$ 560.00
4. GEOCHEMISTRY AND ASSAYING		
Chemex invoices 12135, 12344		\$ 770.00
5. HELICOPTER KEYSTONE HELICOPTERS, ATLIN		
<u>Flight Ticket</u>	<u>Date</u>	<u>Time</u>
3682	July 9	1.0 hours
3667	July 11	0.6
3769	July 23	1.0
3795	Aug. 6	1.1
3797	Aug. 9	<u>0.9</u>
		4.6 hours @ \$500.
		\$ <u>2,300.00</u>
		TOTAL
		\$ 9,762.00

A P P E N D I X I

PETROGRAPHIC DESCRIPTIONS



Vancouver Petrographics Ltd.

JAMES VINNELL, Manager
JOHN G. PAYNE, Ph. D. Geologist

P.O. BOX 39
8887 NASH STREET
FORT LANGLEY, B.C.
VOX 1J0

PHONE (604) 888-1323

Report for: J.C. Stephen,
J.C. Stephen Explorations Ltd.
1458 Rupert Street,
North Vancouver, B.C.
V7J 1G1

Invoice 3441

August 27, 1982

Samples: JCS-1, JCS-2, JCS-3, JCS-4.
D.C. Project.

Summary

These rocks are volcanic. JCS-3 and JCS-4 are tuffs. There is no sedimentary component. JCS-1 is a porphyry and JCS-2 is a latite.

The rocks have been metamorphosed to the upper greenschist facies and recrystallisation of the groundmass and phenocrysts has occurred. Veinlets of fine grained hornblende, sometimes with quartz, cut the rocks in no particular direction and appear to be derived from the rocks themselves during metamorphism.

Minor calcite in JCS-2 may have been introduced from an external source.

A.L. Littlejohn, M.Sc. Geologist.

JCS-1 Quartz-plagioclase porphyry

UNIT 1 OF 1982 FF GROUP REPORT
Collected from creek at west end main skarn

This consists of a fine grained groundmass which is crowded with phenocrysts of plagioclase and quartz. Minerals are:

plagioclase (phenocrysts)	35%
quartz (phenocrysts)	13
quartz (groundmass)	16
sericite	16
biotite	10
epidote	10
hematite	minor

The plagioclase forms subhedral phenocrysts up to 2mm in size, averaging about 1mm. It is moderately sericitic and is often corroded at the margins by sericite. Many of them are fractured and stringers and patches of sericite form along these.

The quartz phenocrysts are rounded to subidiomorphic and range in size from 0.5 to 1.5mm. Many of them are fractured and stringers of recrystallised quartz and fine grained sericite form along the fractures. They may be corroded by sericite along the margins.

The groundmass consists of a fine grained intergrowth of quartz, epidote, biotite and sericite.

Sericite and biotite are finely intergrown with grain size less than 0.005mm. Biotite development is patchy and sometimes forms around ragged hematite grains up to 0.4mm in size.

Quartz forms rather shapeless interlocking grains up to 0.04mm in size. The micas are interstitial to the quartz and tend to occur in streaky patches forming a crude foliation around the quartz aggregates.

Epidote forms squat prisms disseminated throughout the groundmass. Grain size ranges from 0.05 to 0.1mm.

JCS-2 Hornblende latite

PART OF UNIT 6 OF 1982 FF GROUP REPORT
Collected near west end of north ridge FF30

This a fine grained rock with a slightly porphyritic texture. Minerals are as follows:

plagioclase	50%
hornblende	35
quartz	3
K-spar	6
calcite	6
hematite	minor
tremolite	minor

Plagioclase forms subidiomorphic, rather ragged laths ranging in size from 0.3 to 1.2mm. They occur in a groundmass consisting mainly of plagioclase also. The groundmass plagioclase forms rounded to subidiomorphic grains ranging in size from 0.005 to 0.1mm and there is a gradation in size from the phenocrysts to the groundmass.

Small patches of fine grained quartz are intergrown with the groundmass plagioclase.

JCS-2 (cont.)

K-spar forms irregularly shaped to subidiomorphic grains of variable size up to 0.3mm in size which may occur in patches of a few grains in the groundmass.

Hornblende occurs in patches and streaks throughout the rock. Individual grains rarely exceed 0.1mm in size and they are somewhat ragged in outline. Patches are variable in size up to 2mm and veins up to 2mm wide with diffuse borders cut across the rock in various directions. A trace of chlorite occurs in a few patches.

Hematite forms ragged grains up to 0.4mm in size scattered in the groundmass.

Calcite forms ragged patches within the groundmass up to 1.5mm in size. It is replacing the plagioclase along the grain boundaries. It is sometimes associated with tremolite.

JCS-3 Andesite tuff PART OF UNIT 6 OF 1982 FF GROUP REPORT
Collected near claim post on north spur.

This is a fine grained inequigranular rock. Minerals are as follows:

plagioclase	70%
hornblende	24
biotite	6
hematite	minor
quartz	minor

(in veinlets)

Plagioclase forms lenticular laths ranging in size from 0.1 to 0.4mm in length. They tend to be aligned.

These are crowded in an extremely fine grained matrix consisting of a mixture of cloudy plagioclase, biotite and hornblende.

The biotite is disseminated in patches within the matrix and also in some of the plagioclase laths.

Pale green hornblende forms thin ragged grains ranging in size from 0.001 to 0.1mm in length. They occur in streaky patches within the matrix and are roughly aligned parallel to the plagioclase. Scattered ragged grains of the same size as the plagioclase are also present. These are recrystallising around the edges to smaller hornblendes intergrown with the groundmass plagioclase. Some of these larger grains have a brownish core.

Hornblende also forms in patches and veinlets up to 1mm wide. Some of these are intergrown with fine grained biotite. The thinner veins may also contain quartz intergrown with the hornblende and sometimes with biotite. A few narrow discontinuous veinlets contain quartz alone. The veins have no particular direction.

Hematite forms ragged grains up to 0.2mm in size scattered in the matrix.

This is a very fine grained rock with scattered phenocrysts of feldspar. Minerals are:

plagioclase	55%
hornblende	12
biotite	15
quartz	18
hematite	minor

Plagioclase forms subhedral to rounded grains ranging in size from 0.2 to 1.0mm, averaging about 0.4mm. These are scattered about a matrix consisting of a fine grained inequigranular mixture of plagioclase, biotite, hornblende and quartz. Many of the larger plagioclase grains have recrystallised to a finer grained aggregate of shapeless plagioclase grains which grade into the groundmass. They are dusted with fine grained biotite.

Occasional quartz grains the same size as the plagioclase are present. These also tend to be absorbed by the groundmass.

Biotite forms small flakes 0.001mm in size which are interstitial to the plagioclase and quartz in the groundmass. It tends to be concentrated in streaks and patches which form a crude foliation.

Hornblende forms small ragged grains 0.005mm or less in size. It tends to form in patches which may be intergrown with biotite around the edges.

Quartz forms small grains intergrown with plagioclase in the groundmass. However it mostly occurs in stringers and thin patches intergrown with biotite and hornblende which are subparallel to the foliation.

A diffuse vein of hornblende intergrown with quartz cuts across the foliation. A few grains of hematite occur in this vein.

Hematite forms ragged grains up to 0.2mm in size scattered through the groundmass.

A P P E N D I X II

GEOCHEMICAL DATA SHEETS

SAMPLER M.P. WEBSTER

PROJECT I-F GROUP

LINE

DATE JULY 1982

AIR PHOTO No.

SAMPLE NUMBER	LOCATION	ROCK TYPE	ALTERATION	MINERALIZATION	STRIKE / DIP	ADDITIONAL REMARKS	APPARENT WIDTH	TRUE WIDTH	ASSAYS					
									Au	Ag	Sn	W	Cu	
41305 C	MAIN SKARN	SULPHIDE III							20	19				
306		HORIZON BELOW	SULPHIDE III						30	9				
307		SULPHIDE II							<10	6				
308		SULPHIDE II							200	55				
309		SULPHIDE II	GREEN GARNET						<10	105				
310		SULPHIDE I							190	135				
311		HORIZON BELOW	SULPHIDE I						20	3				
312		UNDERLYING BED							10	2				
313	SKARN 1			MAGNETITE					0.003	0.11%				
314	SKARN 2		GARNET & FLUORITE						<10	5	7800			
315	2		RED GARNET				CHIP	5'	0.003	0.05%				
316	2		QZ VEINS						40	73				
317	2			MAGNETITE					20	31				
318	2		GRANITE						<10	2				
319	NEAR SKARN 2+3	FLOAT		SULPHIDE					<10	2.3	-			
320	UNIT ABOVE SKARN 2						CHIP	5'	60	51				
321	SKARN 3						CHIP		40	17	12			
322	MAIN SKARN		UNDERLYING HORIZON						-	2				
323	SOUTH NEAR SKARN 2	FLOAT		SULPHIDE					10	22	9		3150 ppm	
324	SKARN 4			RED GARNET, CHOCOTE					<10	6			22	

A P P E N D I X III

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

J.C. STEPHEN

Academic

1950 Associate Member British Institute Engineering Technology
1950-1951 One year Geology University of Alberta

Experience Summary

1947-1955 Development and production experience in engineering and geology at Central Patricia Gold Mines, Eldorado Mining and Refining, Madsen Gold Mines, Hasaga Gold Mines, Pickle Crow Gold Mines as Surveyor, Assistant to the Engineer, Geologist.

1955-1959 Regional exploration experience with Pickle Crow Gold Mines, Combined Developments Ltd., R.C. Crosby and Associates, Jay-Kay Syndicate as Field Geologist.

1959-1961 Municipal construction including monolithic concrete tunnels as Senior Inspector.

1962-1968 Regional exploration with Mastodon Highland Bell Mines as field geologist.

1968-1976 Regional exploration with Bacon and Crowhurst Ltd., as supervisor of exploration syndicates.

1977-Present President J.C. Stephen Explorations Ltd.

Manager	D.C. Syndicate	(Dome, Cominco)
Manager	Target Project	(Dome Exploration)
Manager	B.C. Gold Syndicate	(Newmont, McIntyre, Canada Tungsten)
Manager	Newex Syndicate	(Newmont, Lornex)

During July & August 1982 I was responsible for supervision of the field crew on FF 1 - 46 and prepared this report from the data collected.

September 10, 1982


J.C. Stephen

STATEMENT OF QUALIFICATIONS

MARY P. WEBSTER

EDUCATION

1981 3rd year B.Sc.(Honours) Geology McMaster University
1978 Graduated from North Toronto Collegiate Institute

EXPERIENCE

May to August 1982 J.C. Stephen Explorations Ltd.
Senior Assistant
May to August 1981 Wollex Explorations Ltd.
Prospector
May to August 1980 Abitibi-Price Mineral Resources
Geologists Assistant
May to August 1979 Canadian Occidental Petroleum Ltd.
Junior Geologists Assistant

September 1982

Mary P. Webster

STATEMENT OF QUALIFICATIONS

GEORGE WESLEY HILL

EDUCATION

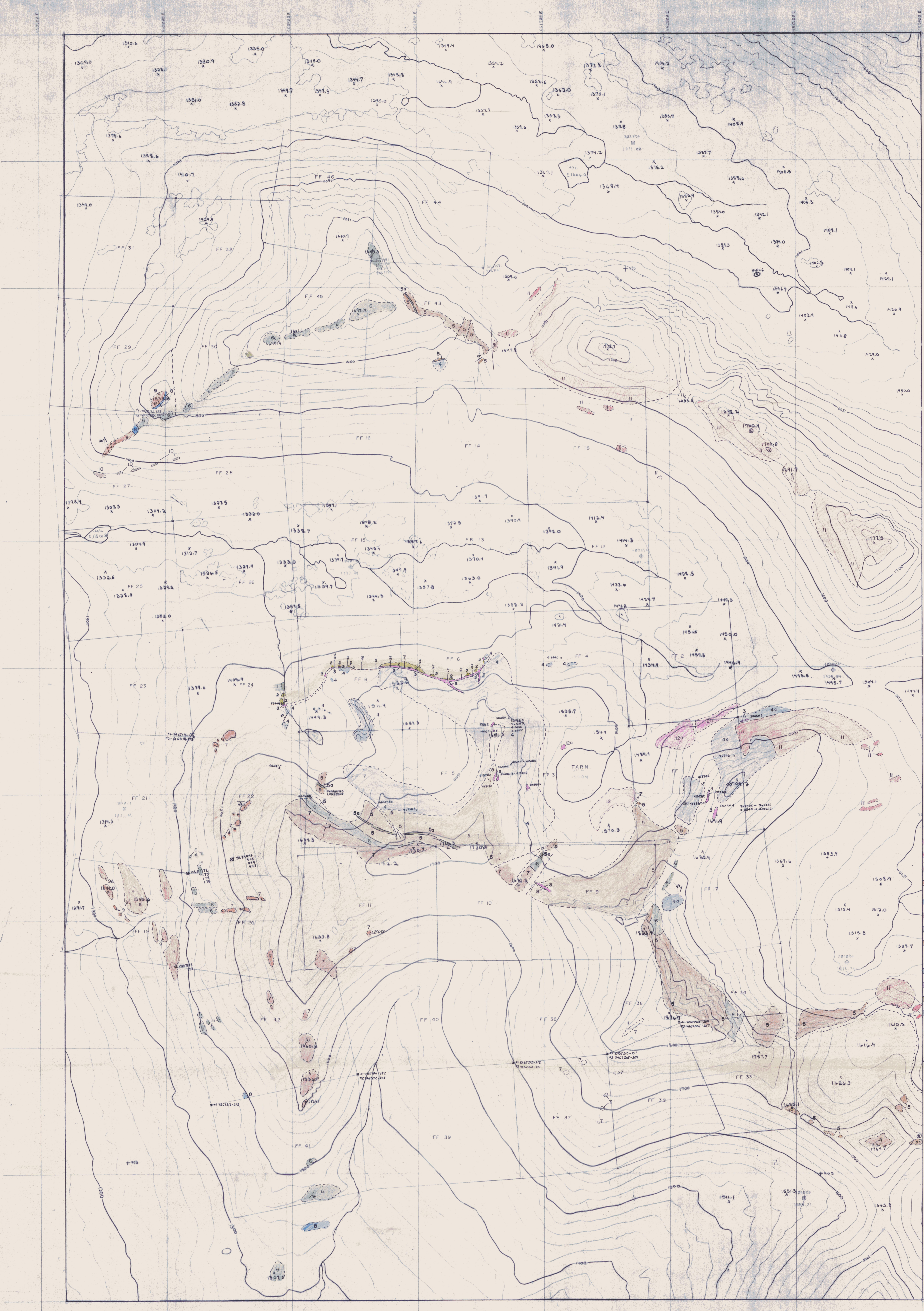
1978 Graduate B.A.(Honours) English Carleton University
1982 Graduate B.Sc. Geology Queen's University

EXPERIENCE

June - September 1982 J.C. Stephen Explorations Ltd.
Geologist
May - August 1981 Gold Fields Mining Co.
Geological Assistant
May - August 1980 Gold Fields Mining Co.
Geological Assistant
May - August 1979 Eldorado Nuclear Ltd.
Geological Assistant

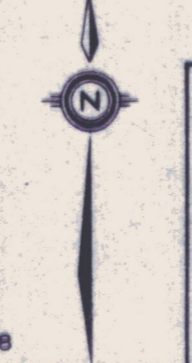
September 1982

G.W. Hill



- LEGEND**
- 10 PORPHYRYIC GRANITE
 - 11 EQUIGRANULAR GRANITE
 - 12 HAKE BATHOLITH
 - 13 PHYLLITE
 - 14 CHERT PEBBLE CONGLOMERATE
 - 15 CHERT
 - 16 SANDY LIMESTONE
 - 17 CHERTY QUARTZITE
 - 18 ANDESITE, VOLCANIC BRECCIA, TUFF
 - 19 ARGILLACEOUS QUARTZITE
 - 20 BLACK ARGILLITE
 - 21 CHERT
 - 22 LIMESTONE
 - 23 CALC-SILICATE
 - 24 SKARN
 - 25 TUFFITE
 - 26 QTZ-PLAG. PORPHYRY
 - EDGE OF MAPPED OUTCROP
 - - - - - OUTCROP
 - - - - - CONTACT
 - 413000 ROCK SAMPLE NUMBER

091371



McElhanney
 McElhanney Surveying & Engineering Ltd.
 200-1168 Albert Street, Vancouver, B.C., Canada.

Scale - 1:5000
 Contour - 20 Metres Interval
 Date - May 1982
 Job No. - 06944-D
 Sheet No. 1 of 1

J.C. STEPHEN EXPLORATION LTD.
 FF
 PRELIMINARY RECONNAISSANCE TYPE MAPPING
 MAP I

Scale of photography 1:30000 flown 1948