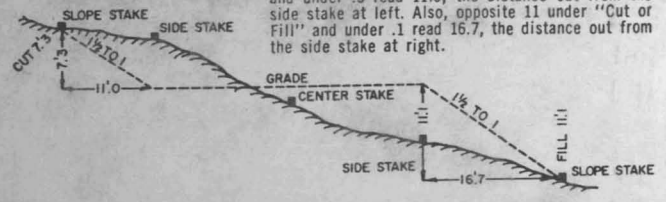
DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

For Curve Tables see end of book.

John B. Heslop
Anvil Mining Corp'n

K+E The paper in this book is made of 50% high grade rag stock with a WATER RESISTING surface sizing.

KEUFFEL & ESSER CO.

Rock Types

JOHN B. HESLOP

1) sericite schist.
2) chlorite biotite schist
3) quartzite
4) graphitic schist
5) massive sulphides
6) Anvil batholith
7) intrusive

galena – gray
sphalerite – brown
chalcopyrite – yellow
pyrite –
pyrrhotite –
massive sulphides – red

faults – blue

(150) = footage
*, X = sample

Bench 4135 — 23/6/71

Station No.

CALC SILICATE GNEISS

1/ R.T. #2 (165) — S_2 118°, 27° S.W.; L_3 152°, 18° SE plunge

2/ Qtz boudin 120°, 5 NW plunge (190)

3/ R.T. #2 — S_2 - 110, 20 SW; L_3 - 150, 19 SE plunge

4/ X R.T. #2 (250) — S_2 - 110, 25 S.W.; L_3 - 155, 19 SE plunge
- interbanded sericite phyllite w/ siliceous carbonate
- laminae of #2 < 2" thick
- qtz-rich layers boudinaged.
* - oriented sample - check 2nd mm foliation.

5/ X R.T. #2 (280) — S_2 - 130, 32° SW; L_3 - 132°, 2° NW plunge

* - oriented sample

5/ Folded calc-silicate showing F_2 fold ▽ ≡ ?

L_3 - 315, 0-5 NW plunge

6/ Folded calc-silicates F_5 (305)

Axis 250°, 20° SW plunge

Active fold.

7/ Qtz boudin in calc-silicate

110°, 25° NW plunge

(326)

8/ Calc-silicate

S_2 - 132°; 34 SW

L_3 - 152, 13 SE plunge

9/ Banded calc-silicate

S_2 - 115, 24 SW

(415)

BENCH 4135 25/6/71

10/ RT #2 S_2 - 110, 20 SW (500)
L_3 - not reliable

11/X Contact between RT #2 + fine-grained qtz diorite ??

S contact 110°, 60° SW (500)

N " 95°, 70° SW (528)

fault north side

12/X (545) RT #2 S_2 - 95°, 24 S
L_3 - 152, 20 SE plunge

13/ RT #2 S_2 - 235, 23 S (580)
L_3 - 155, 22 S plunge

14/ RT #2 S_2 - 90, 22 S (600)
L_3 - 148, 22 S plunge

15/X RT #2 S_2 - 85, 20 S (624)
L_3 - 165, 20 SE plunge

oriented sample - good

$S_1 + S_2$

S_1 ≈ 160, ≈ 65 NE

16/ Blocky calc-silicate w/ very
& minor units of chlorite-biotite
phyllite.
(660) $\begin{cases} S_2 - 105, 30^\circ SW \\ L_3 - 155, 22^\circ SE \text{ plunge} \end{cases}$

17/ As 16 (703) $\begin{cases} S_2 - 102, 20^\circ SW \\ L_3 - 145, 16^\circ SE \text{ plunge} \end{cases}$

18/ " (745) $\begin{cases} S_2 - 98, 25 SW \\ L_3 - 158, 21^\circ SE \text{ plunge} \end{cases}$

Qtz Boudin 245°, 24° SW plunge

19/ RT #2 $\begin{cases} S_2 - 95, 30 SW \\ L_3 - 140, 22^\circ S \text{ plunge} \end{cases}$

RT #2 (800) $\begin{cases} S_2 - 75^\circ, 35 SE \\ L_3 - 135^\circ, 34^\circ S \text{ plunge} \end{cases}$

19/ RT #2 ?? $\begin{cases} S_2 - 94, 45 S \text{ parallel compositional layering} \\ L_3 - 175, 44 S \text{ plunge axes of crenulation folds} \\ S_3 \approx 170 \approx 65 W \\ L_4 - 95, 11^\circ E \text{ plunge kink bands} \\ S_4 \approx 85, \approx 72^\circ N \end{cases}$

#20/ RT #2 $\begin{cases} S_2 - 102, 25^\circ S \\ L_3 - 157, 38^\circ SE \text{ plunge} \end{cases}$
- banded calc-silicate & chlorite phyllite
- phyllite thinly laminated.

- fold axis 55°, 20° SW plunge (820)

$\begin{cases} \text{axial plane } 145^\circ, 50^\circ W & (820) \\ \text{fold axis } 60, 48^\circ SW \text{ plunge} \end{cases}$

21/ RT #2. $\begin{cases} S_2 \ 85, 30^\circ S & (835) \\ L_4 \ 135, 26^\circ SE \text{ plunge} \\ S_4 \ 135, 90^\circ \end{cases}$

22/ RT #2 $\begin{cases} L_2 - 112, 13^\circ NW \text{ plunge } (950) \\ S_2 - 112, 37 SW \end{cases}$

23/ RT #2 Qtz Boudin 80°, 30° NW plunge (958)
" " 60°, 18° NW plunge } @ PFL.

BENCH 4310' 26/6/71

STATION

1/ R.T/ Massive sulphides Gal, Sph, Py in quartz-rich rock. Intruded by quartz diorite

picture

- sulphide-bearing rock extremely altered as is intrusive.
- sharp sulphide-intrusive contacts.
- heavy iron stain gossan with secondary sulphide minerals - malachite & azurite ??
- irregular intrusive masses in sulphides.

2/ RT/Sulphides S_2 180°, 25E

(60) Foliated qtz-rich rock containing abundant malachite & azurite ??
- sulphides not as massive as adjacent section.
- qtzite

3/ Fault zone cuts off sulphides on W side against badly altered phyllite. - 125° strike 90° dip (63)

4/ Fault - 110°, 90°

(104) Intrusive - phyllite contact is a fault. Intrusive highly altered crumbles easily. Phyllite homfelsed - looses some of its penetrative mineral foliation.

(?) 5/ fault in phyllite - 85°, 90°

(117) joints in phyllite - 75°, 75° N.W. 1 prominent set.

qtz boudin 240°, 45° S.W. plunge

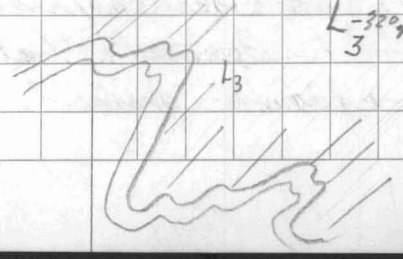
(135) S_2 - 145°, 35° S.W.

(?) 6/ fault 310°, 60 N.E. qtz sericite phyllite non-calcareous.

F_3 folds ?

S_2 crinkled & folded

L_3 -320°, 18° S plunge



7/ Altered qtz-sericite-biotite phyllite — S_2 290°, 45° SW (200); L_3 170, 38 SE plunge

8/ Joints in phyllite — 95, 75° NE (212); 105, 90 NE

9/ #1 — S_2 - 100, 55° SW (315); L_3 - 130°, 37° SE plunge

10/ Altered qtz sericite biotite phyllite — S_2 270, 35 S (350); L_3 not available

11/ Mss contact w/ batholith
" ≈ 27° E dip
- contact runs from 12-51' E of DJ #8:
- massive sulphides extend right to contact but here they are finer grained.

12/ Numerous small veinlets - 120°, 80° SW cut intrusive (1-4 mm) possibly filled w/ chlorite
- intrusive extremely altered - crumbles in hand.
- K spar - kaolin? (84)
often → biotite - bleached out white

13/ Small veinlets? - 15, 75 NW (115)
- variable orientations - undulate

14/ Later dyke of granite - 105°, 90° (135) cuts batholith 6' wide

15/ " 2' wide - 85°, 85 NE (356)

16/ Batholith - blocky - more massive than to West (360) joint surfaces
- 115°, 90°
- 100°, 90°
- 35°, 20 SE
- 110 - 77 NE

17/ Anvil Batholith joint sets
(440)
- 45°, 10 SE
- 115, 85 SW

18/ fault - 30°, 52 NW

(490) joint set - 110°, 80° S.W.

19/ (525) joint set
- 335°, 63° SW
- 0°, 10° E
- 110°, 75° SW

20/ (600) " A.B
- 115° - 86° SW
- 65° - 86° SE
- 130° - 80° SW
- 175° - 70° SW
- 175° - 65° SW
- 80° - 70° SE

21/ (650) " A.B
- 350° - 83° S.W.
- 250° - 80° SE
- 140° - 65° SW

22/ A.B. (865) joint set
- 340°, 35° NE
- 335°, 43° NE

23/ (940) " A.B.
- 340°, 83° SW
- 355°, 75° SW

24/ AB " DLJ #5 (986)
- 315°, 45° NE
- 345°, 70° SW
- 5°, 13° NW

25/ A.B. (1032) Fault - 35° ≈ 75-80° NW

26/ A.B (1120) joints "
- 340°, 80° SW
- 335°, 90°
- 340°, 85° SW
- 65°, 85° SE
- 340°, 17° SW
- 45°, 90°

27/ AB joint - 320-340°, 12° SW

slight 1186-1240

27/ Contact 75°, 90°
- intrusive into Anvil Batholith.
(1190)-(1203) ?
- hornblende rich "hornblende porphyry"?

BENCH 4310' 27/6/71

28/ - fault in Anvil Batholith - 30°, 85°S (1213)
- gtz diorite

joints - { 340°, 75°SW
80°, 85° SE

29/ fault - 30, 66 SE (1257)

30/ fault - 40, 85 SE (1275)

31/ " - 40, 80 SE (1358)
joints { 0, 75 W
5, 25 NW

32/ " { 80, 75 SE (1314)
" { 340, 70 SW
100, 80 SW
335, 20 SW
60, 80 NW

33/ fault - 40°, 80°SE (1430)

34/ joints { 68, 65 SE (1468)
68, 70 SE

Bench 4310' 1344 → end
- extreme spheroidal weathering of intrusive
- development of weathered balls + cigar-shaped rods along upper portion of bench.

BENCH 4345' 27/6/71

1/ (75) Spheroidally altered intrusive - qtz diorite?
- balls and cigar-shaped structures weathered out along joints and vein complex.

veins - 50, 83 NW

- joints - { 75°, 90°
{ 330°, 75° SW
{ 345, 15° SW

2/ " - 345, 15° SW

(100) D+J #3 fault gouge - 65°, 90° - veining in intrusive 11's the faults

veins + joints { 345, 80° SW
{ 10°, 12 NW
{ 345, 75° SW

3/ fault gouge - 75°, 86° SE
(151) truncates spheroidally weathered material on W side.
- spheroidal material possibly down-faulted into place.
- spheroidal balls appear same mineralogical comp as adjacent rocks but adjacent material lacks weathering structures - intense veining etc.
- hornblende - ksbar
- biotite - plag
- qtz

4/ (193) 6' wide fault gouge - 70°, 87° SE - containing numerous veinlets of pinkish-white material??
- rock very crumbly - extremely altered. (possibly projects bench 4310 @ ≈ 1100' E)

5/ joints - 80°, 85° SE (247)

6/ fault zone - fractured, weathered rock cut by pink vein swarm. (275)

7/ - joints { 90, 53° S (312)
{ 45°, 19° NW
{ 330, 87 NE

8/ fault gouge - 65, 90° (300)

10/ (512) joints { 75, 80° SE
330, 82° SW
350, 12° SW

11/ (522) fault gouge - 5', 90° 1' wide

12/ (538) " " - " " -

15/ (642) " 6" " 350, 86° W

16/ joint - 290, 76° NE (912)

17/ (948) " { 280, 85° NE
345, 17° NE
85, 75° NW
70, 60° NW

18/ " - 45, 15° SE (1005)

19/ veins + joints { 310, 80° SW joint
110, 80° NE veins
305, 5° SW "

- network of small veins - most ≤ ¼ inch - contain qtz, graphite + some intrusive material - in intrusive mass. (1240)

Gossan (1360 - 1435)

Bench 4275 27/6/71

1/ Badly weathered qtz sericite phyllite. { S_2 275, 35° SW (200)
L_3 unavailable
joint surface - 35, 70° NW

Bench 4275 30/6/71

2/ fault - 180°, 80° W (258)

3/ " - 295°, 80° NE (300)
- south side of fault breccia

4/ fault - N side of " " -
- 150° 72° NE
grooves - 150°, 26° S pitch oblique slip

fault breccia

1/ fault surface curves to:
-350, 70°E at top of bench.
fault breccia - fragments of qtz sericite phyllite etc badly weathered zone.
Blocks up to 1½' across.

5/ N end of fault surface.

6/ dark zone of graphitic qtz phyllite faulted at north side. S_2 -40°, 30°SE questionable
L_3 -45°, ≈5°SW? plunge

7/ fault -240°, 90° in phyllite
faults north end of graphitic zone.
(road at 395')

8/ qtz-biotite-sericite phyllite w/ minor chlorite -qtz boudins + lenses // foliation. (400)
joints
- 0°, 60°E ✓
- 290°, 85°SW ✓
- 260°, 75°NW ✓
- 0°, 88E ✓

9/ " S_2 - 310°, 20°SW (436) ✓
L_3 - 245°, 13°SE

(70-41=378')

10/ joints in phyllite
- 5°, 90° (482) ✓
- 85°, 86°SE ✓

11/ Contact - 290°, 78°SW (509)
between phyllite + intrusive
Phyllite - altered more siliceous near contact of intrusive.

12/ Intrusive - Ore contact. Ore in quartzite? (526)
≈ 275°, 88°SW approx.

13/ Aplitic intrusive in ore - small block (555 - 559)
260° strike

15/ Contact between massive sulphides and Aplitic Batholith. (588)
only approx. as slide area.

16/ joint set + calcite veining qtz "
- 95°, 68°NW ✓
- 50°, 33°SE ✓
- 310°, 55°SW ✓

17/ 1½' wide - 305, 27° NE
vein complex
-pink weathering material highly altered ???

18/ Apparent contact irregular - between 2 phases of the Anvil Batholith. Unweathered phase cuts lightly altered portion of intrusive. Contact 11's fault but swings E towards top of bench.
fault 1' W of contact.
- 300, 78° NE -
- the two phases appear to be of same mineralogical comp'n but one phase bleached equivalent of the other.

-joints { - 250°, 75° SE ✓
- 0, 50° W ✓

- biotite + hornblende extremely fresh.

19/ Contact - 80, 76° NW approx.
-N side. sharp - minor faulting

20/ joints
- 65°, 97° SE ✓
- 55, 80° NW ✓
- 55, 90° ✓
- 50, 82 NW ✓
- 300, 88 NE ✓
- 255, 34° SE ✓
- 260, 58° SE ✓

21/ fault - 15°, 65° NW 1½' wide - gouge.

22/ joints
- 300, 82° SW (200) ✓
- 35, 56° SE ✓
- 43, 70° SE ✓
- 275, 82° SW ✓
- 320, 70° SW ✓
- 35, 70° SE ✓

1 2 3

Bench 3950' 155°, 70°S
8°N Plunge of grooves
fault in ore - 3990 elevation.

Bench 3990' 115°, 75°N joints in ore

Bench 4275' July 1/71

23/ fault gouge - 60°, 75°NW
3" wide

24/ veining - 45°, 80°NW
veins contain calcite
veins ≈ ¼-½" wide but
cause alt'n of intrusive - up
to ≈ 2-2½ inches away -
veins impart pinkish alt'n
colour to intrusive.
- numerous subparallel veins

25/ faulting (415) - 55°, 68°NW 3' wide
(422) - 345°, 70° SW 1' wide
(427) - 10°, 80° NW 1½' wide
(434) - 55°, 75° NW

26/ fault (448) - 55°, 75°NW - 4' wide

27/ joint sets (572)
- 310°, 70°NE
- 35°, 76° NW
- 340, 62 NE
- 350, 80 SW

28/ fault gouge - 60, 76°NW 2½' wide -
(615) minor graphite near shear.
(650) grooves pitch - 8°N
oblique - slip movement

29/ fault gouge - 320, 87°SW
2½" wide

30/ joint set (700)
- 335, 90°
- 335, 85° SW
- 140, 60° SE
- 4°, 15°W

31/ faults - 340, 85° NE (762-766)
(younger → - 20°, 78°NW (753-762)
cuts older)

32/ fault gouge — 30°, 88°SE (836 - 840)
6" wide
— 340, 62° SW
E side — grooves — 10°SE pitch
oblique-slip movement.

33/ fault gouge — 50, 80°SE (861)
9' wide

34/ joint sets
- 330, 85°SW (882)
- 40, 83°SE
- 35, 12°NW

35/ fault gouge — 330, 85°NE (1004 - 1012)
2' wide
grooves — 30°SE pitch

36/ fault gouge — 30, 75°SE (1041)
2' wide

37/ fault gouge 12' wide — 350°, 75°E (1073)
grooves 24°SE pitch

(D+J #13 = 1073)

38/ fault gouge (1131) 4' wide — 70, 70SE
grooves P 30°SW

39/ fault gouge (1158) — 20, 80° NW
grooves 55°SW P

40/ fault gouge (1190) — 10, 75° NW
6" wide
grooves 15°SW P

A0/ ≈(1190) joint sets
- 10°, 75°SE
- 80, 64°SE
- 0°, 25°W
- 350°, 25° SW

- start of spheroidally weathered material
- " "
" only slightly on top of bench - rest of intrusive dark brown alt'n colour.

A1/ fault gouge — 0°, 68°W
3' wide
bifurcates at top of bench - 2 = parts

42/ Contact between Phyllite & Anvil Batholith.

Bench 4240 ✓ July 1/71

1/ fault gouge (22) - 350, 80° W grooves P 25° SE -

2/ " " (37) - 315, 90° grooves P - 0° -

3/ " (68) " - 345°, 60° SW grooves P 7° NW -

4/ " " (109) - 30° 80° SE 4' wide -

5/ fault gouge (133) - 55°, 70° SE grooves P 0°

6/ " " - 25°, 90° (217) -

7/ " " - 30°, 90° (231) grooves 28° NE -

8/ fault gouge - 70, 80° SE (249-259) -

9/ " " - 70, 75° SE (292) -

10/ " " - 55, 85 NW (310) -

11/ " " (360) -

12/ Contact between phyllite & intrusive — 85, 78° SE (504-543)

Bench (4210-4205) ✓ July 2/71

13/ Extremely altered gtz, biotite sericite phyllite (563) - joint set — {55, 85° SE ✓ 55, 88° SE ✓

14/ " {S_2 = 295, 20° SW (598) {L_3 - not available

15/ joint set — {345, 90° (635) ✓ 75, 85° SE ✓

-(645)- end of phyllite

(West of 0)

1/ fault gouge — 325°, 85°SW
(22-33) 1' wide

2/ " " — 350, 70°E (70-75)
≈6' wide
w/ several calcite veinlets up to 2" wide in gouge.
grooves pitch 30° SE

3/ fault gouge
4/ fault gouge — 50, 75°NW
grooves 27° S.W. P

5/ " " — 45°, 65°NW (153-194)
4' wide
grooves — 10° N.E. P

6/ fault gouge — 350, 86°W
grooves 15° SE

7/ joints — 310, 87°SW
— 60, 75°NW

fault gouge — 40°, 70°NW
2' wide
grooves — 4°NE

8/ " " — 290°, 90° (375)
1' wide

Bench 4240 July 2/71

1/ 2' thick fault gouge in highly altered intrusive rock near ore contact. — 250, 80°SE
(0) grooves pitch 20° SW

2/ 2-6" wide quartz vein cuts (34)
intrusive. Vein faulted w/ offset ≈2½ feet — left movement.
— 310, 90°

3/ joint sets — 295, 80°SW (573)
— 275, 85°S
— 320, 5°SW

4/ fault gouge — 15, 85°NW
— grooves 18° SW P

VANGORDA ROAD — July 3/71

STATION #1

Crenulation lineation — 142-148, 7° NW; 143, 13° "; S_2 - 45, 25° NW

Axis of S_1 fold - 161°, 21 NW

" #2 — S_2 - 174, 30° SW; 122, 23° NW - cren. lineation

#3 VANGORDA DEPOSIT

" #4 — S_1 - 115, 60° SW; S_1 - 100, 40° N; S_1 - 117, 35° SW; S_1 - 117, 90°

F_2 folds (possibly = F_1 folds)

fold axes — 117, 3° NW Plunge; 117, 3° NW "; 121, 5° NW "; 114, 3° NW "

L_2 lineation (11's fold axis) 105, 2-5° SW plunge

Lineation ??

- cuts across L_2 lineation

therefore later event

"one outcrop" — - 127°, 1° NW Plunge; - " " "

S_2 - 0°, 2° W

L_2 - 92°, 2° NW

Tension fractures 37°, 0°

carbonate + qtz filled

station #5

S_1 — - 117°, 72 NE; - 135°, 63 SW; - 165, 42 SW; - 132, 0°; - 145, 65° SW; - 137, 30° NE; - 127, 90°

fold axis of F_2 folds — 120, 20 NW Plunge

STATION #8 - Volcanic rock - chlorite, amphibole schist folded - showing S_1 + L_2 surfaces S_2

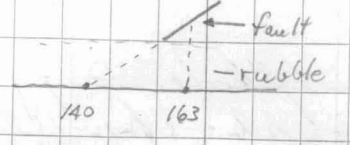
S_1 - 147, 78° SW
S_2 - 162, 22° NE
L_3 - 145, 13° SE plunge

crenulation fold axes // S_2

(Check vs. Dave's book for station 0.))

Bench 4240 July 5/71

- last fault hit tape at 140'
- fault occurs at 163'.



1/ Qtz-sericite phyllite S_2 - 300, 35° SW (190)
L_3 - 260, 35° SW plunge

2/ Joint surfaces - 330, 78° NE (215)
- 300, 75° SW

3/ Qtz - sericite phyllite S_2 - 242, 35° SE (240)
L_3 - unavailable

- joints - 310, 80° NE
- 280, 60° SW

4/ qtz sericite phyllite w/ more qtz content. S_2 - 280, 17° SW (264)
L_3 - not available

5/ Small zone of graphitic schist. Appears to be continuous with zone above but much smaller. (270 - 275)

6/ Massive sulphides - py abundant po, gal + sph + cpy. Ore contains qtz fragments for grains that are aligned // to each other - min foliation.

S contact → 290°, 80°SW

7/ Contact S_2 - 265, 17°SE between ore and quartzite. (N contact) (314') - 295, 85°NE

8/ Qtz sericite S_2 - 295°, 75° NE
phyllite S_2 - 285°, 85°SW (353)
- extremely qtz rich
(dirty qtzite)

9/ Qtzite → See DST pg. 23 for 9 & 10

Bench {4205 - 4135} July 8/71

1/ ((DAVE'S BOOK)) p24 275°, 67°S

Bench 4205 July 9/71

4/ Qtzite S_2 - 90°, 28°S

X Qtzite containing qtz pebbles? or inclusions of vein qtz. Could be a conglomerate? 4205 bench.

5/ Qtzite S_2 - 23°, 35°NW
- compositional layering - conformable to ore above.

- Fault in ore - 5°, 80°SE -
- oblique-slip movement - grooves 15°N pitch
- fault does not penetrate large fault structure to the north.

11/ Qtzite - S_2 - 110°, 53°SW

12/ " compositional S_2 - 125°, 53 SW
layering

13/ fault gouge in Mss - 5°, 67°W -
ore grooves 15°NE pitch
oblique slip

14/ Chlorite - S_2 - 75, 20°SE
biotite schist

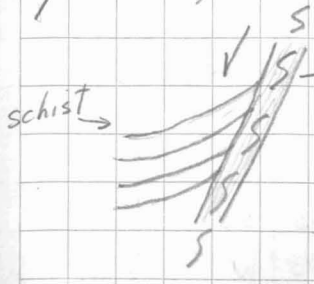
15/ " S_2 - 100°, 33°SW
joint set → 95°, 68°N ✓
L_3 - 155°, 38°SE plunge

fault gouge 3' wide

16/ fault gouge - 110°, 75°SW -
2' wide grooves 25°E - S side down
- abuts qtz to north vs. chlorite-biotite schist to south.

fault gouge - 0°, 75°W -
- small greenstone intrusive filling fault in qtz, chlorite-biotite schist.

16/ - 110°, 75°SW fault -



17/ fault gouge - 355°, 80°W -
in qtzite
bounding massive sulphides
grooves pitch 20°SE

- banding in sulphides (minute) S_2 - 92°, 75°S
- qtz comp S_2 - 340°, 68°SW
layering

F_3?? - fold hinge - 0°, 30°S plunge
in qtzite

- L_3 (possible) // axial trace -
plunge S 20°.

18/ garnet-gtz-sericite schist - appears to be intensely folded
- numerous garnets - almandine
- spessartine

define fold axis
S_2 - 0°, 60° E.
S_2 - 150°, 65° S.E.
S_2 - 170°, 75° W
S_2 - Horizontal

L_3 // F_3 fold axis
- 160°, 35° SE plunge
axial planes - 160°, 90°

19) - fold axis 147°, 35° SW plunge
// to L_3 lineation
S_3 is axial plane
- 145°, 90°.

S_2 { - 137°, 52 SW / S_2 - 155°, 45° NE
- 55°, 25° SE /

20/ - fold axis 130°, 30° SE plunge in gtzite

- fold axial plane - 130°, 90°

Bench 4100 July 9/71

20/ Qtzite S_2 { - 145°, 72° S.W.
- 150°, 73° N.E.
- 52°, 47° S.E.

21/ Qtzite S_2 { 153, 85° SW
167, 85° SW

22/ " S_2 { - 170°, 47° E
- 90°, 30° S
- 150°, 85° SW

L_3 - 150°, 30° SE plunge

18/ " S_2 { - 95°, 45° S
- 50, 30° SE
- 160, 60 NE

23/ " S_2 { - 112, 56° SW
- 85, 35° S

L_3 - 155, 35° SE plunge

joint sets { - 350, 70° E 115°, 60° NE
- 135, 45° NE

24/ Qtzite to qtz sericite schist S_2 { - 145°, 50° NE; - 44°, 30 SE; - 133, 52 SW

L_3 - 147°, 33° SE plunge

axial plane ≈ vertical.

25/ Qtz sericite schist. L_3 - 332, 16° SE plunge

S_2 { - 32°, 21° SE; - 130°, 35° SW

26/ Massive sulphide banding S_2 - 3°, 40° E

Qtzite banding to east - 16°, 40° SE

- small synclinal flexure E of Mss in qtzite.

27/ " compositional layering W of sulphides.

define fold axis!

S_2 { - 150°, 68° SW; - 138, 58° SW; - 130, 44° SW; - horizontal; ≈ 38° S; - 178, 32° E

readings taken W → E

Bench 4065 July 9/71

28/ Qtzite compositional banding - W of E ore lense.

Qtz-Ore contact { S_2 - 345°, 55° NE; S_2 - 350°, 75° NE; S_2 - 330°, 80° NE

29/ Sulphide banding S_2 - 340, 35° NE

30/ Fold in qtzite - core of anticlene { S_2 - 325°, 48° NE E side; S_2 - horizontal; S_2 - 300°, 30° SW W side

fold axis - 320°, 2° S plunge

axial plane 320°, ≈ 90°

31/ Qtzite S_2 = 335, 82° SW N of fault

fault in qtzite - 25°, 88° SE

grooves - 32° NE pitch

Bench 4065 July 11/71

32/ Qt_2 sericite schist

S_2 { - 146, 77° N.E.
{ - 143, 55° S.W.

S_2 - 55, 25 S.E.

F_3 - fold axis 142°, 23° SE plunge
axial planes 142°, 75° SW this is
S_3 foliation

33/ Qt_2 sericite schist

S_2 shows broad warp approx.
strike 135°, 38 S.W.

F_3 fold axis → 160, 28° S.E. plunge

34/ Compositional layering in qtzite S_2 - 104, 54 SW

35/ Qtzite

F_4? fold axis 100, 27° NW plunge
axial plane 110, 60° SW
folded S_2 - small scale tight fold.

36/ Qtzite

folded S_2 { - fold axis - 40, 6° SW plunge
{ - axial plane - 40°, 90°

- 170 dev. of axial planar foliat.
- broad open folds.

37/ Sericite schist { S_2 ≈ 70°, 20° SE
{ L_3 - 128°, 20° SE plunge

Bench 4030 July 13/71

43/ Compositional banding in qtzite

a) S_2 - 45°, 86°SE

F_3 - fold axis - 155, 68°SE plunge - possibly displaced from origional position

b) qtzite L_3 -// fold axis

S_2 - 68°, 68°SE ??

c) F_3 - { fold axis - { 125, 41°S plunge (qtzite)
{ axial plane - { 125°, 70°SE

F_3 - d) { axial plane - { 125, 75°NE (qtzite)
{ fold axis - { 125, 28°SE plunge

- L_3 //'s axis in all cases.

e) S_2 - 245, 35°SE (qtzite)

F_3 - fold axis - 135°, 42°SE plunge (graphitic schist)

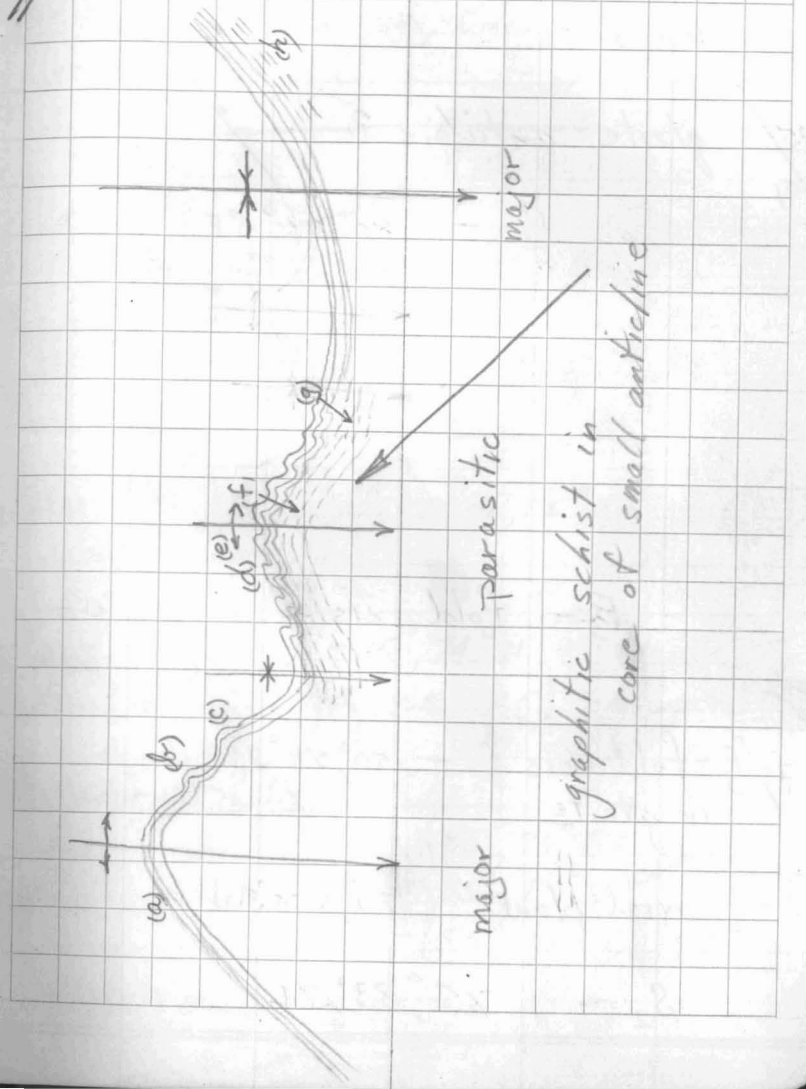
f -

axial plane = S_3 = 140°, 73°SW

L_3 - 140°, 43°SE plunge

g) graphitic schist → S_2 - { 0°, 70°E
S_2 { 20°, 45°SE (qtzite)

43//



44/ qtzite above ± graphitic schist

(b) below qtzite S_2 { 93, 52° SW
{ 80, 45° SE

45/ qtzite anticline ?

(a)

a) S_2 – 80°, 26° SE
b) S_2 – 50°, 32° SE

F_3 – fold axis ≈ 145, 32° SE plunge

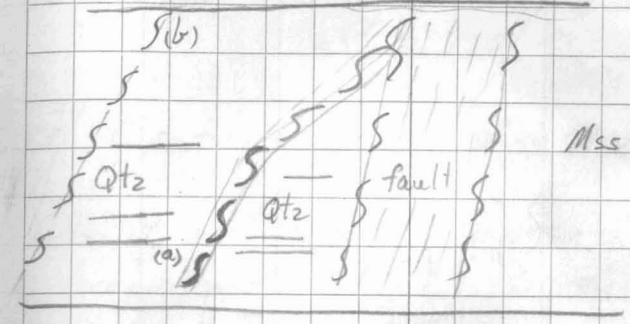
46/ F_3 – fold axis – 150°, 58° SE plunge in qtzite

axial plane 150°, ≈ 75° SW

S_2 – 75°, 33° SE

47/ fault – 350, 76° W –
gouge in sulphides 4' wide
grooves – 350°, 3° SE pitch

– fault abuts sulphides E ± qtzite W.



Qtzite (a) S_2 – 12, 25° SE
comp. layering

Fault in qtzite – 25°, 74° SE –
(b) grooves 25°, ≈ horizontal

E-W between faults

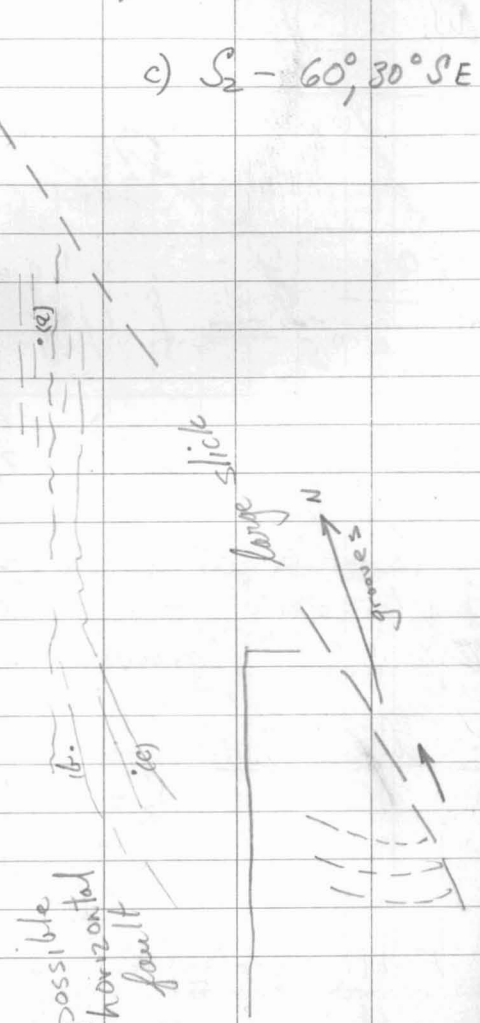
S_2 – { 45°, 20° SE
– { 55°, 19° SE
– { 55°, 20° SE

Fault gouge → 30°, 90°
grooves pitch 16° NE

48/ Qtzite S_2 - ≈40°, 21° SE (a)
comp. banding
F_3 / fold axis - 150°, 25° SE plunge

b) S_2 - 70°, 30° SE

c) S_2 - 60°, 30° SE



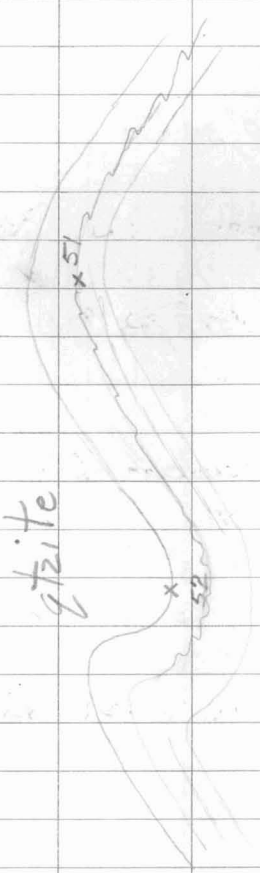
49/ Qtz sericite schist ?? S_2 - 130°, 55° SW

50/ comp'n layering in qtzite
S_2 - 135°, 43° SW

51/ F_3 / fold axis - 170°, 34° SE plunge

Qtzite anticline broad open structure
S_2 - 119, 35° SW
S_2 - 118, 35° SW

52/ Small syncline in qtzite west of anticline.
define fold axis!
S_2 - 130°, 23° SW east side
S_2 - 160°, 82° E west side
S_2 - 145°, 35° SW " "



53/ Comp'n layering in quartzite

S_2 { 158°, 77 NE
150, 38 NE
137, 21 SW

L_3 – 158, 10 SE plunge

fold axis F_3 – 158°, 10° SE Plunge

F_3 – axial plane 158, 90°

54/ fault slicks in gtzites – 145°, 82° SW

– grooves 12° S Pitch

S_2 – 110°, 25° SW

55/ fold axis F_2/F_4 110°, horizontal

axial plane 110°, 90°

Crenulation lineation // axial plane folded S_2

– near gtzite sericite schist contact

folds in sericite schist.

F_3 fold axis – 160°, 30° SE plunge
axial plane – 160°, W

- fold in qtzite — crenulation lineation
- folded S_2 — // fold axis

{ fold axis in sericite schist. 114°;
lineation 142° ??

- lineation does not appear to // fold axis however exposure not the best and attitude of fold axis may not be accurate.

- definitely 2 sets of folds in this area
- qtzite – sericite contact appears to be warped upwards around the 110° trending set of folds. ??

Relationship between the 110 – 160 fold sets is not discernable !!

54/ Comp'n layering in qtzite — S_2 – 65°, 35° SE

Bench 3950 July 13/71

56/ Qtzite comp'n layering — S_2 – 160, 68° NE

Bench 3950 July 14/71

57/ RT #3
a) S_2 – 100°, 28° NE
b) S_2 – 125, 22° SW

fault gouge c) grooves 15° SW plunge 0, 90°
connects to 3990.

57/

very steep - overturned slightly to NE

56/ Qtzite S_2 - 65, 40° SE
(d) comp'n layering
in trough of syncline

58/ Qtzite comp'n layering ↓ S. side of intrusive

S_2 - 148°, 38° S.W.

L_3 - 163°, 12° S.E. plunge

drag fold next to intrusive

F_3 fold axis 168, 17° SE plunge
axial plane 168, 90°

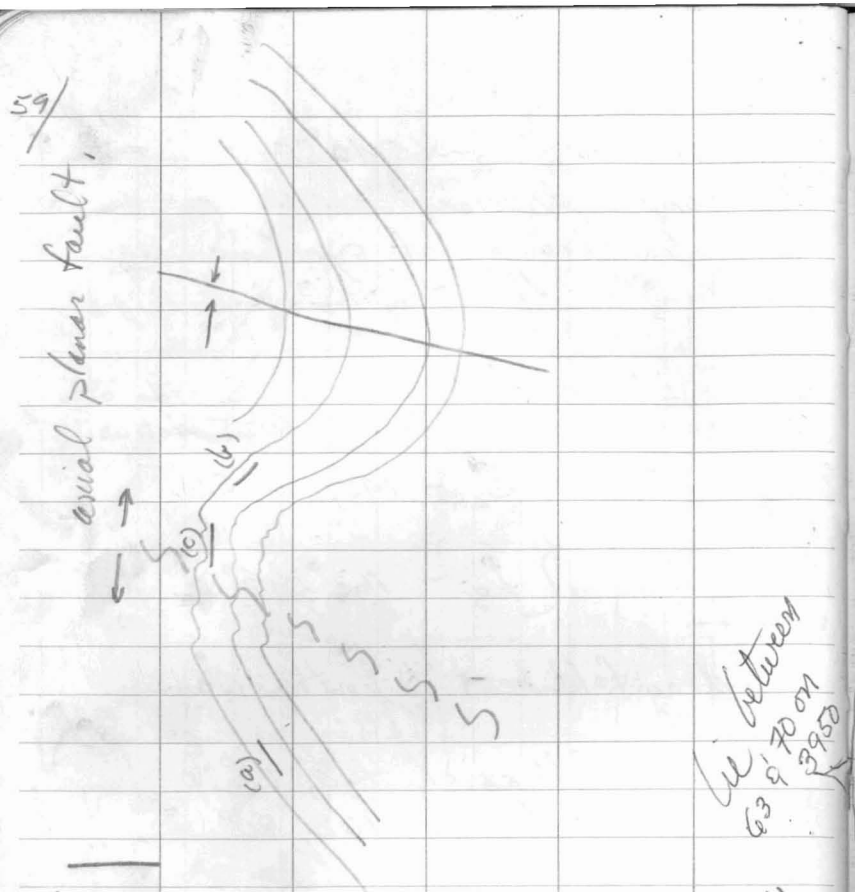
59/ folded qtzite S_2 - 114°, 41° SW F_3

a) define

b) fold axis ! S_2 - 53°, 23° SE

(c) S_2 - 152, 85° NE

L_3 - 152, 30° SE plunge
= fold axis with axial plane 152, 75-80 SW



((West wall of pit O station at 59.))

60/(15) Qtzite comp'n S_2 - 82°, 34° SE layering

61/(26) " S_2 - 87°, 44° SE east side

62/(60) " S_2 - 132°, 54° NE | west side
faults - 0°, 90° slicks 0, 13° N | of syncline
-150, 70° SW " , 5° SE pitch

we between 63 & 70 on 3950

(synclinal axis between 62-63)

63/(81) Qtzite comp'n S_2 - 90°, 10° S
bending

64/(98) " S_2 - 142°, 18° SW

65/(102) " S_2 - 135, 50° SW

66/(107) " S_2 - 140, 35° SW synclinal axis

67/(112) " S_2 - 145°, 5° NE

kink bands ?? - 55°, 5° E plunge

68/(116) S_2 - 50°, 26 SE crest
anticlinal axis

F_2/F_4 (119) { 115°, 5° SE plunge axis
{ 114°, 23° SE " "
-cren. lin. // this axis
axial planes 112°, 60° SW

- these folds on top of 160° set.

73/ fault gouge - 30°, 70° NW in qtzite.

(297) S_2 - 30°, 30° NE

74/ Synclinal axis in qtzite (320)'

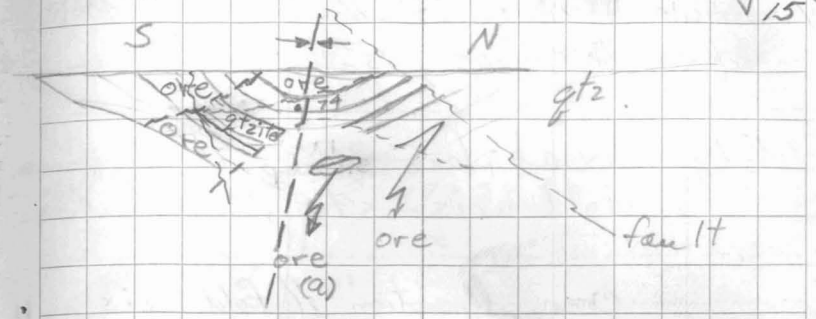
Qtzite comp'n banding

- use data to find true axis

S_2 -
- 18°, 35° SE — N
- 36°, 40° SE
- 35°, 40° SE
- 44°, 53° SE
- 115°, 15° NE
- 85°, 48° NW — S

a) Sulphide banding S_2 - 155°, 10° SW

Synclinal axis ≈ 62° plunge E ∠15°



75/ fault gouge - 320°, 77° SW (355)
in sulphides

grooves - 20° SE pitch

Sulphide - sericite schist contact
≈ 268'

X Sulphides contain large onts of included feldspars etc. -altered material.

76/ Sericite schist in fault zone (400)
S_2 - 105°, 75° S.W.

F_2/F_4 axial plane 115°, 75° SW plunge
fold axis 118°, 2° NW ↙

cren. lineation // fold axis

slicks on fault zone - 2° W pitch

Bench 3910 July 15/71

77/ #3/ (300)
S_2 - 98, 42° SW
L_3 - 155°, 32° SE plunge

S_2 - 75°, 28° SE

#5/ Sulphide banding $S_2 \approx$ 65°, 32° SE

gtzite S_2 - 86°, 20° SE

Unit 5/1 contact ≈(275)'

78/ #1 - S_2 - 85°, 27° SE
L_3 - 142, 25° SE plunge

79/ #3 - S_2 - 73, 23° SE

80/ #3 - S_2 - 107, 36° SW
L_3 - 350°, 39° SE plunge

81/ fault gouge in #5 (250) - 166°, 82° SW
- grooves 9° SE pitch

82/ #3 - S_2 - 155°, 22° NE
S_2 - 125°, 49° NE

- small fold in gtzite near faults - may be due to faults.
- appears to be of 110 trending set.

83/ Large fault – 105°, 65° SW
zone / - graphitic schist 2-3"
along fault – sericite schist
contacts.
- fault swings from almost
horizontal up face.
- " abuts #1 + #5.
Sulphides are faulted here
& badly used.

84/ #1 $\begin{cases} S_2 - 83, 22° SE \\ L_3 - 162, 22° SE \text{ plunge} \end{cases}$

85/ fold axis – 108°, ≈0-5° NW plunge
axial plane – 110°, 75° SW

F_3/F_4 folds in interbanded
#1, #2, #4
- below main contact of #2.
S_1 - 117°, 38° SW
(Ramp to 3870')

86/ May 1 #2 Contact #3/5#

qtzite S_2 - $\begin{cases} 75°, 38° SE \\ 70°, 30° SE \end{cases}$

Qtzite & ore conformable – good
contact – coarse sphalerite.

S – contact w/ore – faulted?
sericite schist vs ore – ore
gouged & broken – hard to identify
definite relations due to road fill
& stuff.

87/ Graphitic-rich S_2 - 90, 22° S
qtzite
$\begin{cases} S_2 - 10, 20° SE \\ L_3 - 135°, 19° SE \text{ plunge} \end{cases}$

find true axis of fold.
$\begin{cases} S_2 - 135°, 45° NE \\ L_3 - 160°, 20° NW \text{ plunge} \end{cases}$

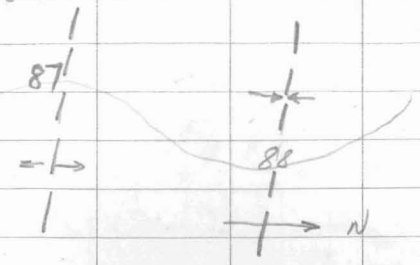
$\begin{cases} S_2 - 147°, 48° NE \\ L_3 - 143°, 5° SE \text{ plunge} \end{cases}$

$\begin{cases} S_2 - 170°, 34° E \\ L_3 - 150°, 2° SE \end{cases}$

F_2/F_4 fold axis ≈ 100°, 22° SE

anticlinal fold crest (87)

88/ Graphitic-rich qtzite – small gentle synclinal hinge (100')
– very gentle, broad open warps in qtzite – as above benches.



#3 define fold axis! N

$\begin{cases} S_2 - 13°, 32° SE \\ L_3 - 155, 27° SE \text{ plunge} \end{cases}$

$S_2 - 60°, 28° SE$

89/ #3 $\begin{cases} S_2\ 175°, 32° E \\ L_3 - 160°, 12° SE \end{cases}$

90/ Kink bands in qtzite 50°, 29° NE plunge
50°, 80° NW dip

$\begin{cases} L_3 - 155, 13° SE \text{ plunge} \\ S_2 - 175°, 36° E \end{cases}$

91/ #1 $\begin{cases} S_2 - 173°, 42° NE \\ L_3 - 155°, 14° SE \text{ plunge} \end{cases}$

– joint set – 95°, 82° NE ✓

92/ fault gouge 2½' wide
qtz (N) vs #1 (S)

– 95°, 70° NE
grooves – 5° NW pitch

#3 $S_2 - 92°, 30° S$

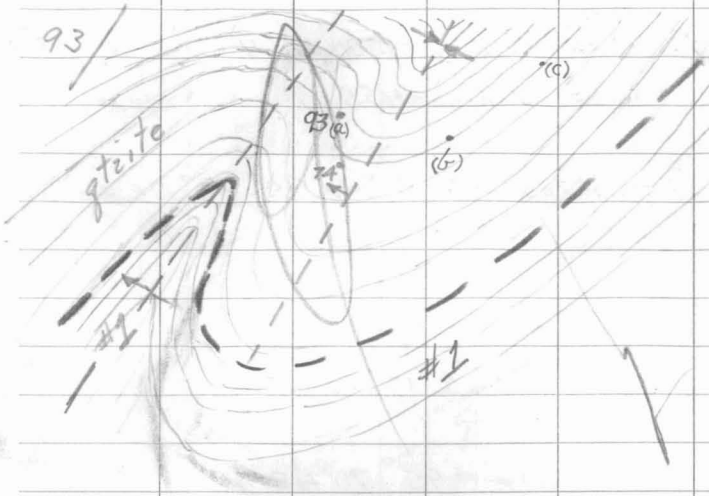
93/ #3 (a) $\begin{cases} S_2 - 45°, 90° \\ (b) \quad -115, 24° SW \\ (c) \quad -275°, 30° SW \end{cases}$

F_3? fold axis ≈ 185°, 24° SE plunge
plane ≈ 185°, 74° W

qtzite

185°

93/



94/ #3 S_2 - 125°, 45°SW

fault gouge - // S_2

95/ " " - 10°, 36°NW (curves)
grooves ≈ 21°SW pitch.

#1 S_2 - 158, 65°SW
15' below fault.

96/ #1 S_2 - 155, 65°SW
S_2 - 130°, 27°SW

joint set - 125°, 85°SW

F_3/

97/ #1 fold axis 155°, 2°NW plunge
axial plane 155°, 75°SW

fault gouge in #1 - 170°, 90°

98/ #3 S_2 - 80, 24°NW
L_3 - 135, 16°NW plunge

99/ Fault gouge - large - continues from bench as above
- 148, 87°SW
grooves 10°SE pitch
in quartzite near gouge - ore contact.

107/ joints – { – 135°, 85°NE
– 130°, 80°NE

#2

{ – 104°, 73°NE
– 125°, 74°NE
– 145°, 75°NE

108/N fault gouge – 100, 38°SW –

#2 S_2 – 90°, 12°S

joints – 160°, 74°NE v

S fault gouge ≈ 100°, 38°SW –

109/ (675) Contact between biotite-chlorite-clinoamphibole? schist and fine-grained gfy-diorite?

contact – ≈ 70°, 75°NW

(3950) intrusive is faulted off – to N on next bench. (3990)

Unit #2 on the ramp contains numerous large qtz boudins elongated in plane of S_2 these boudins range up to ≈ 9-10' long x 3' thick.

#2 S_2 – 120, 22°SW
– N of intrusive.

joint set in intrusive { – 40°, 87°SE
– 165°, 40°NE v
– 335°, 65°SW

– intrusive blocky w/ numerous small faults running thru it.

110/ Fault gouge – 40°, 83°SE –
on S side of intrusive – intrusive – #2 contact

grooves – 27°SW pitch

111/ #2 { S_2 - 86°, 26° SE
{ L_3 - 165°, 22° SW plunge

small fault gouge - 160, 70° SW
grooves - 11° SE pitch

112/ fault gouge - 155°, 80° SW

2 sets of slicks
major 24° SE pitch
cut
minor 20° NW pitch

#2 becomes more blocky & more calcareous towards S end of pit ramp.

113/ #2 (900) { S_2 - 148°, 31° SW
{ L_3 - not available

114/ #2 { S_2 - 175°, 11° SW
{ L_3 - not available

joint set { 158°, 86° NE
{ 98°, 90°

115/ fault gouge - 85°, 85° NW

large horizontal fault gouge ≈ 3' wide - 160°, 34° SW

#2 S_2 - 134, 25° SW

116/ fault gouge - 160°, 88° NE
#2
grooves - 10° SE pitch
" " - 80°, 46° NW
fault curves to horizontal to S ≈ 20' above ramp.

116/ #2 – S_2 – 140°, 17° SW

117/ fault gouge – S_2 – 132°, 48° SW

- fault contains ct filling 1" wide along with gouge.

118/ fault gouge – 175°, 76° W

11's road grooves – 21° NW pitch

– contains calcite

119/ S-fault gouge – 80°, 42° NW

(a) – minor calcite

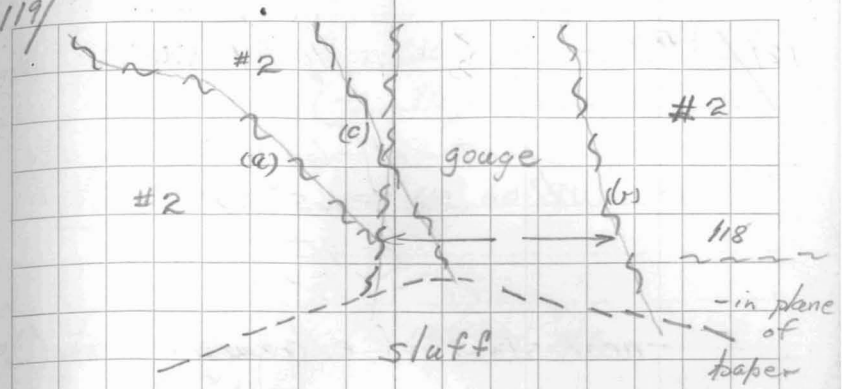
N – fault gouge 9' wide

(b) ≈ 80°, 82° NW

middle fault 80°, 56° NW.

(c) cuts larger fault

119/



joint set { – 135°, 86° NE
– A°, 88° NW

120/ fault gouge – 90°, 85° S

joint set – 154°, 74° NE

#2 – { S_2 – 135°, 14° W
L_3 – not available

joint set – 100°, 70° NE

121/ #2 – S_2 – 160°, 10° SW

joint set { 63°, 76° NW
– 165°, 72° NE
– 45°, 60° SE

– near start of extremely altered material.

122/ #2 S_2 – 110°, 12° SW

badly weathered

(W. side of pit)

Bench 3990 July 17/71

1/ Large fault gouge – 136°, 75° SW
#5/#1 contact.

#1 F_2/F_4 fold axis – 110°, 9° NW plunge
axial plane – 110°, ≈ 85° NE

2/ fault gouge in ore – 162°, 90° –

grooves – 22° SE pitch

3/ – joint set { – 130°, 80° NE ✓
– 30°, 65° NW ✓

– fault gouge – 110°, 60° SW –

4/ fault gouge – 130°, 75° NE ? –

grooves 26° SE pitch

#1 { S_2 – 40°, 25° SE
L_3? – 108°, 25° SE plunge

5/ #1 F_2/F_4 – 115°, 25° SE plunge
fold axis
axial plane – 115°, 72° SW

crenulation lineation – 120°, 25° SE plunge

joint set – 175°, 87° E ✓

fault gouge – 110°, 54° SW –
(as #3)

(275) – massive chalcopyrite in fault gouge w/ po, sph & gal.

6/ fault gouge – 100°, 70° SW

– possibly links w/ adit fault & graphitic schist. ≈ (275)

(200') Badly used rock – punky, crumbles in hand – appears to be thrust zone between units #2 & #1

– cut off by fault from adit.

– alternating green & brown layers represent S_2.

7/ #2 S_2 – 123, 17° SW

joint set { 105°, 90°
{ 20°, 85° NW

joints – { 95°, 60° NE ✓
{ 5°, 80° E ✓

F_2/F_4 fold axis – { 95°, 14° NW plunge
axial plane – { 95°, 60° S

Bench 4205 ✓ July 19/71

1/ Contact between qtz-sericite phyllite and qtz diorite. Phyllite badly altered.

– fault contact here –
35°, 83° NW

grooves – 4° NE pitch

Intrusive – joint set
{ 50°, 40° SE ✓
{ 80°, 50° SE ✓

good set { 170°, 75° SW
{ 75°, 88° SE
{ 28°, 4° NW

Intrusive veining – 175°; ≈70°W

- veins in altered zones ≈ 1' wide.
- " in centre reddish brown Fe oxide material w/ some ct veining ∥ – next altered intrusive rock into less-altered intrusive.
- series of these veins ∥ each other

2/ Altered Qtz-Ser-Schist joint set { 53°, 75°NW ✓ ; 56°, 25°SE ✓

fault gouge in #1 (6" wide) – 50°, 82°NW

Qtzite? – { S_2 – 105°, 28° S.W. ; L_3 – not available

3/ #3 { S_2 – 90°, 27°S ; L_3 – not available

3/ fault gouge – 30°, 64°NW

– " appears to displace intrusive sill ≈ 8'.

(X section)

#4/ fault gouge – 50°, 48°NW

5/ " " – 5°, 55°SE

#3 – #1 contact ?

6/ Altered gtz-sericite schist S_2 – 100, 15°SE

6/ #1 joints - 55°, 88° SE
95°, 55° S
10°, 70° E

Bench 4205 - 4170 ✓ July 19/71

1/ #2 joint surface 70°, 88° SE.
85°, 42° S

- appears to be rock type #2 but is not calcareous
- contains biotite, chlorite & numerous qtz boudins.
- rock lacks blocky calcareous unit.

S_2 130°, 9° NE
270°, 20° N

* rock contains patches of coarse-grained galena.

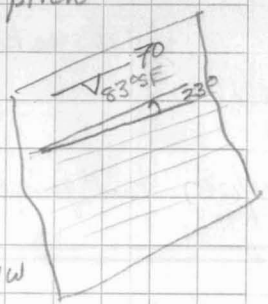
2/ Minor fault in #2
- 60°, 84° NW -
- grooves - 10° NE pitch

3/ fault gouge - 115°, 65° SW -
in ✓#2✓??
- contact - grooves - 17° SE pitch
w/ intrusive

4/ Intrusive joint set 85°, 68° S
170°, 76° W

large fault gouge 60-80 70, 83° SE
grooves - 23° NE° pitch

5/ " " - 80°, 90°
grooves 33° NE



6/ " " - 40°, 53° NW

7/ fault gouge – 150°, 85° NE –

grooves – 25° SE pitch

Bench 4205-4170 ✓ July 20/71

8/ fault gouge – 150°, 82° S.W. –
in intrusive
(185) grooves – ≈ 36° SE pitch

9/ " " – 340, 85° SW
(270)

grooves ≈ 10° SE pitch

joint set { – 45°, 75° SE
– 145°, 78° SW

10/(295) fault gouge – 150, 85° NE

Bench 4170' July 21/71 ✓

11/ fault gouge – 98°, 85° NE –

12/ " " – 155°, 75° NE –
grooves – 35° SE pitch –

13/ 2 fault gouges – 155, 84° NE
in intrusive

grooves – 25° pitch S

– 150°, 88° SW
grooves – 14° SE pitch

14/ (400) Joint set in intrusive –
good readings { – 82°, 85° SE ✓
– 172°, 86° NE ✓
– 137°, 17° SW ✓

15/ fault gouge – 175°, 75° W (420)
grooves – 35° SE pitch –

16/ fault gouge · 0°, 82° W (438)

grooves - 15° S pitch

17/ Large fault gouge ≈ 6' wide - zone of multiple faults. (500)

- 25° ≈ 80° NW.

grooves 27° SW pitch

18/ fault gouge - 125°, 80° NE (580)

grooves - 27° SE pitch

19/ joint set -
- 40°, 75° NW
- 143°, 80° NE
- 160°, 18° SW
- 45°, 68° SE
- 10°, 80° NW
- 125°, 75° SW

20/ fault gouge - 25°, 76° NW (640)

21/ " " - 50, 72° NW (658)

grooves 15° NE pitch

22/ fault gouge - 10°, 83° NW

4205 Bench

- grooves - ≈ 15° SW pitch

23/ " " 35°, 80° NW

" " grooves — 10° SW. pitch

24/ " " . 50°, 58° NW

curves

Bench 4135 ↓ July 21/71

1/ fault gouge 95°, 90° -

3' wide

- minor graphite

joints -
- 30°, 88° SE
- 130°, 72° NE
- 173°, 18° W

2/ fault gouge – 75°, 86° NE
grooves – 5° NE pitch

3/ " " – 85°, 70° NW
grooves 35° NE pitch

4/ " " in intrusive
- fresh intrusive - contains fine-grained zenolith? - igneous material
– 25°, 90°

5/ " " – 0, 50° W
23° N pitch

6/ " " – 10°, 40° NW
(165)

7/ fault gouge – 130°, 75° SW

8/ " " – 20°, 83° SE

9/ " " – 170°, 90°
12° SE pitch (350)

joint set { 100°, 75° SW
3°, 90°

10/ " " – 170°, 90° (365)
slicks ≈ 15° SE pitch

(Graphite in intrusive)

11/ " " – 160°, 90° (425)

12/ " " – 148°, 87° NE (475)

13/ " " – 155°, 90° (500)

14/ #3 { S_2 - 35°, 30° NW
L_3 - not available

- Qtzite definitely folded but may be due to intrusive
Qtzite impure variety + hornfelsed
- Contains less gtz than good quartzite.

15/ Sulphide banding ≈ 70, 12° SE
Sulphides - medium - coarse - grained sphalerite in gtzite.
po, cpy, py

16/ - fault gouge in - 60°, 64° SE
massive sulphides

17/ S_2 - 335°, 33° SW
Qtz - sericite schist
- also contains biotite.

Bench 4135 ✓ July 22/71

18/ #1 { S_2 - 65°, 17° NW
L_3 - not available
- below ore
- gtzite + ore are conformable to the gtz-sericite schist.
- gtzite not found above ore to the north. ??
- top ore contact appears to be displaced by a fault but area covered by sluff.

19/ #3 S_2 ≈ 25°, 32° NW

20/ fault gouge - 110°, 72° SW -
ore - gtzite grooves - 10° SE pitch

20/ H3 S_2 - 135°, 80° SW

- may not be in place?
S of fault.

21/ H3 S_2 - 120°, 70° SW

Bench 4100 July 22/71

22/ - 5' wide fault gouge - possibly continuation of large fault downdropping ore.
- 75° ≈ 90°.

23/ fault gouge - 70° ≈ 90° -

joint set - { 178°, 80° E ✓
83°, 84° NW ✓

24/ fault gouge - 87°, 60° S (25) -

grooves - 40° NE pitch

25/ fault gouge - 15°, 23° NW (32) -

26/ joint set - { 80°, 54° NW (75) ✓
45°, 6° NW ✓
10°, 85° SE ✓

27/ fault gouge - 15°, 78° W -

28/ " " - ≈ vertical -

29/ " " - 35°, 75° NW (165) -

30/ Joint set { 70°, 77° NW dominant (225) ✓
145°, 72° SW ✓
130°, 48° SE ✓

31/ fault gouge – 65°, 75° NW (240) -

32/ joint set – { 163°, 85° SW (275) ✓
45°, 73° NW ✓
95°, 30° S ✓

33/ fault gouge – 60°, 58° NW (283) -

34/ " " – 75°, 60° NW (292) -

35/ " " ≈ 60°, 38° NW (310) -

36/ " " – 70°, 67° NW (340) -

37/ fault gouges { -20°, 90°
-88°, 77° S

- fine to medium-grained massive sulphides in intrusive

38/ fault in ore + intrusive – 85°, 82° S slicks ≈ 14° NE pitch -

39/ fault in ore – 150°, 70° SW (490) -
-grooves 22° SE pitch

40/ " " " – 175°, 70° W (512) -
-grooves 10° SE pitch

41/ 2" " " # 1 – 50°, 87° NW -
– 160°, 63° SW

(East wall)

Bench 4135 ↓ July 29/71

1/ Qtz-sericite schist — S_2 - 91°, 61° S

- weak crenulation lineation - 110°, 22° SE
- possibly F_2/F_4 lineation
- fold axis F_2/F_4 - 110°, 10° SE

2/ fault gouge #1 — 110-140, 75° SW
slicks 10° NW pitch

also - qtz-galena vein.

3/ " " #1 — 75°, 73 NW
- high angle reverse sense of movement.

same spot
- S_2 - 100, 45° SW
- S_1 - 96°, 70-80° S

get specimen

3/ #1 joint — 85°, 90°

4/ #1 S_2 - 109, 43° SW

fault gouge — 120°, 80° SW
slicks - 20° SE pitch

#5/ S_2 - 120°, 33° SW

fault gouge - conformible w/ S_2
- no movement direction seen

joint set - 25°, 90°

L_3 ?? - cren lin. - 185°, 33° S

#1
- S_2 - 135°, 38° SW
- L_3 - 205°, 38° SW plunge

6/ #1 S_2 – 135°, 45° SW
L_3 – 170°, 17° SE plunge
S_3 – 170°, 70° E dip

7/ #1 S_2 – 175°, 18° E

8/ S_2 – 117, 62° SW

fault gouge – 172°, 60° W
slicks 80° N pitch

joint set – 75°, 60° NW

9/ fault gouge – 120°, 50° SW

S_2 – 120°, 60° SW

10/ F_2/F_4 fold axis – N3°, 10° NW plunge
axial plane – 115°, 50°

– fault gouge zone – numerous vertical faults

– andalusite occurs in assoc. w/ these faults.

11/ #1 S_2 – 110°, 70° SW

F_2/F_4 axis – pitch 0° in S_2

– axial planes of these folds are horizontal & appear as drag folds along fault surfaces.
– not general conclusion.

– sulphides occur boudinaged & strung out in the fault zone.
– no. of small pods.

12/ S_2 - 120°, 70° SW in biotite - sericite schist

- fine-grained prismatic mineral noted - prob. staurolite

Bench 4100 ✓ July 24/71 ✓

42/ fault gouges - 165°, 60° NE -

- 95°, 85° N -

slicks 35° E pitch

#1

F_3 / fold axis - 157°, horizontal

L_3 - // fold axis

43/ fault gouge - 75°, 66° NW -

early slicks - 5° W pitch

latest " - 65° W "

- giving dip-slip displacement

44/ #1 - S_2 - 134, 36° SW

F_3 axis - 145, 13° NW

axis // L_3

large fault gouge 3' wide - in #1 + ore (625)

40°, 57° N -

slicks 22° NE pitch

#1 { S_2 - 150°, 52° NE ; S_2 - 145°, 63° SW

F_3 axis 145, 15° NW plunge

L_3 well developed on all limbs of fold - // fold axis.

F_3 plane 145°, 90°

- no definitive grzite between 1 + 5

44/ fault gouge 0°, 70° W
slicks – 8° N pitch

45/ #5 S_2 – 130, 65° NE

Ore involved in F_3 folding (inferred)

46/ Joint in ore – 25°, 85° NW

– fault gouge { – 30°, 85° NW N side of ore.
– slicks vertical

#1(a) S_2 – 40°, 28° SE

Bench 4100 July 26/71

47/ fault gouge – 145°, 85° SW

#1 – S_2 – ≈ 120°, 80° SW only reflect fold.

thin sulphide laminae // S_2

axis – F_2/F_4 – 108°, 8° W plunge
axial plane – 108-110°, 90°

48/ #1 becoming more biotitic

{ S_2 – 112°, 66° SW
{ L_3 ? – 190°, 64° SW plunge

– biotite as irregular blebs

– set of qtz-sulphide fracture fillings 120°, 41° NE subnormal to S_2.

52/ #2 - F_2/F_4 - 135°, 0° plunge axis
axial plane - 135, 80° SW

- folds in S_2 -

53/ #2 S_2 - 135°, 70° SW

crenulation L_3?? - pitch 70° SE in this plane.

joint set - 0°, 60° E

- rough contact between biotite schist & sericite schist.

54/ F_2/F_4 fold axis - 120°, 5-10° NW plunge
- plane - 130°-135°, 70° SW
S_2 - 130-135°, 75° SW

fault gouge - 95°, 70° NE

55/ #2 S_2 - 125°, 65° NE
this reading reflects gradual Δ in dip of S_2 from station #53
- no fold structure found.

- fault gouge conformable S_2

- no reliable L_3 reading.

4065 Bench X July 26/71

1/ fault gouge in massive sulphides { - 0°, 80°W; - slicks 10°N pitch

" " { - 0°, 85°W; - slicks 7°S pitch

" "

2/ fault gouge { - 70°, 85°SE; - slicks horizontal

3/ " " { - 145°, 70°SW; - slicks 17°SE pitch; (- older)

large fault gouge { - 30°, 90°; - slicks ≈ 25°N pitch; (- younger)

fault gouge - 160°-150°, 70-75°NE cuts off sulphides to W.

4/ #6 joint set in biotite-qtz-diorite { - 12°, 80°NW; - 8°, 20°NW - subparallel to sulphide veinlets. copy??

fault gouge #6. - 60°, 80°SE

5/ fault gouge #6. { - 117°, 70°NE; - slicks 15°E

6/ " " - 125°, 85°NE

" " - 90°, 80°S - big fault.

7/ joint set { − 75°, 80 SE ✓ ; − 175°, 90° ; − 170°, 10°W ✓ } · 350'

8/ #1 S_2 − 120°, 57° SW
(17)

tension fractures 110°, 40° NE = ⊥ S_2/
filled w/ Pbs + Py ✓

joint set − 0°, 90° ✓

L_3 − not available

9/ fault in ore − 35°, 90°

slicks − 35° N pitch

10/ #5 F_2/F_4 / axis { 145°, 30° NW plunge ; plane { 145°, 90°

⇒ folds in banding in sulphides

fault gouge − 130°, 85-90° SW

S_2 − 130°, 90°

fault set { − 0°, 90°
#1 1) { slicks 10° pitch NW
2) { − 30°, 90°
slicks 30, 0° plunge

11/ fault gouge #1 { − 180°, 70° W ; − slicks 0-8° N pitch

S_2 − 130°, 75° SW
F_2/F_4 axis − 130°, 5° NW
axial plane − 130°, 90°

cren. lineation 11's the axis of these folds.

11/ fault gouge – 125°, 75° NE (135)

12/ #2 – S_2 – 135°, 85° SW
F_2/F_4 – axis – { 135°, 10° SE
axial plane – { 135°, 85° SW

13/ #1 fault gouge – 125°, 70° SW
2 faults converge at top of bench.

14/ fault gouge – 110°, 85° N
in ore ✓ #1 ✓
S_2 – 178°, 22° E – Banding in sulphides conformible to S_2 in overlying #1 unit.

fault gouge – 115°, 75° SW
– bounding S-side of sulphides.

15/ Qtz boudin line 112°, 0° plunge – in plane of S_2 fol. (235)
S_2 – 114°, 70° SW.

16/ fault gouge – 110°, 80° SW (250)

#1 S_2 – 110°, 70-75°
F_2/F_4 – axis { 105°, 5° NW
axial plane { 105°, 70-75° SW

17/ " " 65°, 80° NW
– slicks – 53° W pitch
– 2nd fault curves.

10' S of faults
S_2 – 130°, 35° SW

F_2/F_4 axis { 130°, 0° plunge
plane { 130°, 90°

18/ fault gouge $-110°, 65°$ SW

$S_2 - 110°, 65°$ SW
$L_3 -$ 70° E pitch in plane of S_2.

19/ #2 $S_2 - 110°, 55°$ SW
F_2/F_4 - axis - 110°, 0° plunge
plane - 110°, 60° SW

20/ fault gouge - 115°, 65° SW

- 125°, 50° SW - fine grained tuffaceous sed. unit conformible to S_2 - w/ " #2 above & below.

Bench 4065 July 27/71

20/ F_2/F_4 - fold axis - 108°, 33° NW
axial plane - 108°, 90°

- fold in tuffaceous material
- fold contains a crenulation lineation // fold axis.

S_2 - define axis of fold

S_2 105°, 70° NE
-112°, 68° SW
-10°, 32° NW

- fault gouge $-120°, 50°$
- fault gouge $-150°, 75°$ SW

F_2/F_4 - fold axis - 110°, 10° W plunge
axial plane - 110°, 80° SW

21/ #2 S_2 - 128, 55° SW
L_3 - 0°, 25° S plunge
- crenulation lineation

2nd lineation - 135°, 5° W this probably same lineation as seen on F_2/F_4 fold hinges. - questionable?

- 130° set possibly the younger??
- hard to tell.

22/#4 S_2 - Avg estimate 110-120°, 40° SW

F_2/F_4 - fold axis - 105°, 0° plunge
- axial plane -

- cren lin. // fold axis

F_2/F_4 - fold axis - 105°, 17° NW plunge
(F_4) axial plane - 105°?, 80° SW.

fold axis //'s & is cren lin. in S_2 which post-dates D_2.
* - development of S_4 foliation

- L_3 - 158°, 32° SE plunge
age relⁿ's of L_3 & other lineation uncertain.

joint set - 30°, 85° NW

23/ #2 S_2 - 50°, 40° SE - probably no
biotite schist in place!!
& interbanded
calc-silicate S_2 - 104°, 45° SW
L_3 - 146°, 15° SE plunge

joint set - 0°, 90°
- 40°, 64° NW

24/ #2 - S_2 - 82°, 30° S
- S_2 - 83°, 30° S

L_3 - 140°, 19° SE plunge

joint set - 55°, 71° NW

Bench 4030 July 27/71

1/ #2 { S_2 - 117°, 30° SW
{ L_3 - 159°, 15° SE plunge

joint set - { 175°, 85° W
{ 112°, 85° N

fault gouge - 72°, 80° SE

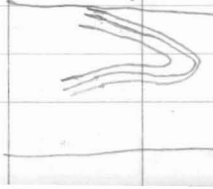
" " - 90°, 50° S

2/ #2 { S_2 - 114°, 16° SW
{ L_3 - 160°, 10° SE plunge

joint { 20°, 80° NW
{ - 165°, 90°
{ - 35°, 90°

3/ #2

- possible F_2 fold - gtz band folded



{ S_2 - 120°, 20° SW
{ L_3 - 150°, 10° SE plunge

joints { - 35°, 90°
{ - 170°, 90°

4/ #2 { S_2 - 127°, 25° SW
{ L_3 - 158°, 11° SE plunge

joints { - 165°, 90°
{ - 45°, 90°

5/ fault gouge - 60°, 60° NW
slicks - 25° NE pitch

" " - 50°, 70° SE

6/ #2 { S_2 - 130°, 25° SW
{ L_3 - 160°, 20° SE plunge

7/ fault gouge – 10°, 70° W
- gouge contains green mineral intergrown with ct.
- mineral probably green calcite.

8/ #2 { S_2 – 149°, 25° SW
L_3 – 150°, 0° plunge
- outcrop may be slumped

joints { – 150°, 90°
– 88°, 62° S

9/ large fault gouge { – 65°, 75° NW
- contact between #2 & fine-grained qtz diorite intrusive!
- fault post-dates intrusive as blocks of #6 found in fault.

fault gouge – 47°, 55° NW
slicks – 42° SW pitch

10/ #2 { S_2 – 117, 37° SW
L_3 – 150°, 20° SE plunge

joints – 10°, 90°

11/ fault gouge – 85°, 70° S
#2
{ S_2 – 127°, 37° SW
L_3 – 175, 17° SE plunge

12/ fault gouge – 65°, 78° NW
#2.
- slicks – 20° SW pitch

13/ #2 { S_2 – 120°, 37° SW
L_3 – 170°, 28° S plunge

joint set { – 10°, 90°
– 160°, 90°
– 70°, 85° SE
– 100°, 53° NE

14/ #2 Biotite schist
S_2 – 117°, 21° SW
L_3 – 150°, 7° SE plunge

(600) joint – 37°, 72° NW ✓

15/ Qtz boudin lines
#2
120°, 10° SE plunge ✓
125°, 0° "

S_2 – 125°, 45° SW

- numerous qtz boudins strung out // to S_2. ✓

16/ fault gouge – 95°, 80° S

- places #1 vs #2
- suggests S side down drop. due to foliation warping.

17/ #4
S_2 – 115°, 27° SW
L_3 – 160°, 20° SE plunge

fault gouge – 65°, 80° SE

18/ #4 - define fold axis !!
S_2
- 103°, 43° SW
- 110°, 40° SW
- 90°, 51° N
- 175°, 22° W
- 187°, 33° W

- anticline - syncline -65°, 38° NW pair in graphitic schist.

- small faults run thru axial plane of folds.

S_2
- 132°, 57° SW
- 130°, 54° SW

F_2/F_4 - fold axis – 105°, 10-20° NW
axial plane – 105°, 90°

18/ - appears as though L_3 is folded by these folds

19/ F_2/F_4 - axis { - 105°, 5° NW plunge
- axial plane { - 105°, 73° SW

- axial plane shows beginning of development of mm foliation as station 22 / 4065.

S_2 - 112°, 32° SW

- tension fractures - 75°, 65° NW
{ - carbonate filled
- subnormal to S_2

- joint set { - 11 tension fractures
& { 0°, 90°

20/ F_4/F_5 - fold axis { - 65°, 5-70° W plunge (60°)
axial plane { - 65°, 65° SE

21/ #2 Biotite schist
- fault gouge - 110°, 75° SW

- #2 contains possible staurolite porphyroblasts - underlies #4 on both walls of pit.

S_2 - 105°, 55° SW

22/ #2 biotite schist { S_2 - 105°, 65° SW
{ L_3 - 140, 60° SE plunge

joint set - 167°, 73° SW

23/ large fault gouge – 178°, 65° W

- 2 sets of slicks
  1) 5° N pitch
  2) 70° N pitch

24/ F_2/F_4 – axis { – 120°, 5° NW
axial plane { – 120°, 90°

#2 Biotite schist
- exposure does not allow L_3.

25/ F_2/F_4 –

S_2 { – 122°, 50° NE
– 70°, 17° NW
– 110°, 65° SW
– 110°, 90°

fold axis { – 112°, 10° W plunge
axial plane { – 110°, 85° NE

fault gouge – 98°, 70-90° N

26/ " " (975) { – 40-45°, 55° NW
– slicks 0° pitch

27/ " " – 75°, 80° SE

#1 S_2 – 55°, 70° SE

F_4/F_5 – axis { 65°, 25° NE plunge
axial plane { 65°, 90°

28/ #2 Biotite schist
S_2 – { 110°, 55° SW
L_3 – { 145°, 34° SE plunge

qtz-andalusite seams present.

F_2/F_4 fold axis { 122°, 10° W plunge
axial plane { 120°, 85° SW

– cren. lin. // axis

- whole surface folded

29/ fault gouge - 85°, 60°N -
#2 - slicks - 45° W pitch
" " - 95°, 75° SW

30/ #2 Biotite schist S_2 {-130°, 80° SW
L_3 {- pitches 75° SE in S_2 plane.

joint -105°, 65°N ✓

31/ fault gouge - 150°, 75° SW
large
-slicks 5-10° NW pitch

Bench 4030 July 28/71

32/ #5 S_2 - 100°, 30° SW

Banding in massive sulphides
(reading not too good.)

joint set {- 68°, 66° NW ✓
- 30°, 80° NW ✓
- horizontal ✓

- Ore contains some fine-grained qtz-rich material containing fine py + gal. Looks like qtzite (possibly brec lumped w/ ore.
- contains fine foliation.

33/ fault gouge thru — ore + sericite schist.
-120°, 90°
slicks -25° SE in fault plane
pitch.

#1 S_2 - in small enclosure between faults 11's faults

#1 S_2 - 145°, 36° NE - N of ore finger & small faults.

34/ fault gouge - 135°, 60° SW

- slicks - 80° NW pitch

S_2 - 11's fault

35/ #1 S_2 - 127°, 87° SW

this also

fault plane - slicks 5° NW pitch

36/ - fault gouge - 160°, 80° W

#1

- slicks - 0° pitch

Two fault sets evident in vicinity this station One set Σ 125 Δ 65-70 SW showing two stages of movement. Earlier dip slip movement along slicks pitching 70-75° NW in plane of fault, later oblique / strike slip movement along slicks pitching 5-15° NW & 0-5° SE in plane of fault. This fault set is // S_2 Second fault set Σ ≈ 160 Δ 80° W) w/ slicks pitching 0° on abc. 125° set cut by 160° set. ∴ 125 set older

37/ " " - 70, 80° NW

#1

38/ " " - 95°, 63° S

1

(1575)

S_2 - 130°, 90°

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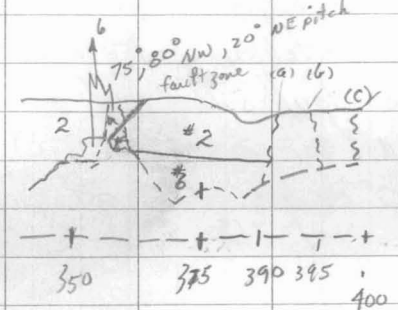
1/ #2 fault gouge a) - 90°, 90°
calc/

b) - 95°, 80° S

c) - 105°, 85° S



2/ - fault gouge - 70°, 47° NW -

- dyke of intrusive material in fault zone.

dyke - 98°, 74° N

fault - same.

fault gouge - 80°, 20° NE -

3/ #2 calc/ $\begin{cases} S_2 - 130°, 20 \\ L_3 - 155, 8° SE \text{ plunge} \end{cases}$

joint set $\begin{cases} - 80°, 80° NW \\ - 160°, 85° NW \end{cases}$? ✓

4/ fault gouge - 150°, 80° SW -

" " - 150°, 72° SW

5/ " " - 150°, 80° SW -

$\begin{cases} S_2 - 145°, 14° SW \\ L_3 - \text{none available} \end{cases}$

joints $\begin{cases} - 93°, 80° N \\ - 15°, 85° NW \end{cases}$ ✓ ✓

6/ " " - 153, 80° SW .

7/ " " - 150°, 80° SW .

andesite dyke? - 105°, 50° SW.

8/ #2 calc
- 150°, 80° SW
- S_2 - 135°, 14° SW
- L_3 - none available

joints
- 30°, 65° NW
- 85°, 70° NW

9/ fault gouge #2 - 110°, 85° NE

10/ #2 calc
- S_2 - 110°, 28° SW
- L_3 - 0°, 18° S plunge

- fault gouge - 95°, 85° N

joints
- 172°, 75° W
- 95°, 85° N

11/ #2 calc.
- S_2 - 111°, 30° SW
- L_3 - 150°, 11° SE plunge

- joints
  - 65°, 55° NW
  - 145°, 90°

12/ #2 calc
- S_2 - 142°, 23° SW
- L_3 - 155°, 4° SE plunge

- joint - 160°, 72° SW

13/ fault gouge - 130°, 50° NE

14/ #2
- S_2 - 135°, 18° SW
- L_3 - 147°, 10° SE plunge

joints
- 55°, 90°
- 160°, 75° SW

15/ #2/ faults - 100°, 85° SW
" - 88°, 75° SE

#2
- S_2 - 112°, 34° SW
- L_3 - 142°, 32° SE plunge

20/ small fault 11's S_2

- fold axis in fault gouge ???

fold axis { 95°, 5-10°W plunge
axial planes { 95°, 70-75°S

21/ #2 biotite schist { S_2 - 110°, 43°SW
{ L_3 - 150°, 16°SE plunge

$L_{5/4}$ - 60°, 40°SW

22/ #2 Biotite Schist { S_2 - 113°, 27°SW
{ L_3 - 147°, 10°SE plunge

$L_{4/5}$ - 90, 24°W plunge

joints { - 72°, 60°SE
{ - 0°, 60°W

23/ fault gouge -68°, 80°SE
(525) slicks - 10°W, pitch
-graphitic schist along gouge 6"

24/ " " -90°, 76°S

S_2 - 125°, 35°SW

25/ F_3/F_4 - axis { - 109°, 6°NW plunge
plane { α 110°, 90°

-monitor larger anticline in tuffaceous material.

- S_2 folded in broad anticline

-110° anticlinal hinge

26/ F_2/F_4 - axis { - 109°, 8° NW plunge
#2b axial plane { - 109°; subvertical

- amplitude 4'
- wavelength 8'

- crenulation lin. // 's axis of fold

- define fold axis !! - S_2 { - 119°, 52° SW
- 114°, 50° SW
- 134°, 28° SW
- 20°, 9° NW
- 90°, 42° N
- 85°, 29° N

*-b- refers to biotite schist

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27/ #2b S_2 { - 115° 65° SW
- 110°, 65° SW
- 143°, 45° SW
- 175°, 28° SW
- 104°, 58° NE
- 112°, 65° NE
- 115°, 52° NE
- 98°, 20° S
- 126°, 48° SW

define fold axis !

fold axis 118°, 23° NW plunge
axial plane N8°, 90°
- crenulation lin. // to this axis

- joint - 30°, 90° -

- axial planar foliation beginning to develop

L_3 - 142, 37° SE plunge

- L_3 only developed on flanks + not on hinges. ?? possible evidence for being destroyed

28/ fault gauge { – 135°, 60° SW
– slicks 0° pitch in fault plane

S_2 – 150°, 45° SW

– F_2/F_4 – fold axis { – 110°, 8° W
axial plane { N0°, 90°

29/ (990) Contact between ore and gtzite. There does not appear to be any major faults running thru contact area. – appears conformable.

≈1000 Ore appears to be folded as sulphide banding is folded. Ore also cut by a series of minor faults – w/ little displacement along them.

& or/and bending in sulphides – define fold axis!!

S_2 { – 110°, 24° SW
– 120°, 32° SW
– 155°, 48° SW
– 115°, 70°-90° SW

gtzite to S (good) { – 130°, 55° SW
– 120°, 48° SW
– 177°, 16° E
– 100°, 15° SW

faults – 50°, 84° NW – whole set of these.

slicks – several sets pitch

large fault on face
– 145°, 85° SW –
slicks – 30° SE pitch – large set.
" – 22° NW small " .

(1060) S_2 – 130-135°, 20° SW in sulphides.

30/ S_2 in massive sulphides — 120°, 25° NE

" — 140°, 50° NE

fault gouge — 30°, 80° NW
- slicks pitch 5° NE

S_2 - around nose of lower ball

S_2 — 108°, 50° NE
— 125°, 78° NE
— 115°, 90°

30/ F_2/F_4 fold axis { — 130°, ≈4° SE plunge
— 129°, ≈4° SE

in #1 N of ore.

31/ fault gouge — 117°, 84° SW
1) - slicks - 57° SE pitch pat.
2) - " - 5° " " "

32/ #5 S_2 — 137°, 37° NE
Massive sulphides

#1 { S_2 — 135°, 47° NE
{ L_3 — 135°, 0° plunge

33/ #1 S_2 – 123, 40° SW

34/ fault gouge – 48°, 82°N
– slicks pitch 27° NE pot.

5 faults ≈ same trend.

#1 S_2 – 150°, 27° SW
145°, 37° SW – fault?

1) S_2 11's fault plane here

2) fault gouge – 55°, 80° SE

35/ fault gouge – 30°, 77 NW
– slicks 5° NE pitch
– gouge ct + gal.

#1 S_2 – 150°, 34° SW
L_3 – 150°, 5° NW pitch

– gouge – 28°, 85° SE ??

36/ fault gouge –

#1 S_2 – 107, 36° SW
L_2/L_4 – 110°, 0° plunge

* L_3 – 161°, 22° SE plunge

Appears as though L_3 is cut + obliterated by L_2/L_4.
– good evidence here.

#1 S_2 – 125°, 48° SW

#5 S_2 – 100°, 38° SW

37/ fold axis – 125°, 0° plunge
#1 →
#5 → S_2 – 82°, 80° N

#1 cren lin 135°, 0
axial plane – 120°, 6° NE

37/ fault gouge – 170°, 72° W –
– slicks 15° S pitch

38/ #1 S_2 – 105°, 34° SW

joint 165°, 75° SW

39/ #5 N contact – 87°, 44° S

S of fault – seems ∦ // S_2 w/ sulphide banding concordant to it.

fault gouge – 65°, 70° NW –

– south side down ??
– reverse movement

#5 S_2 – 63°, 40 SE

joints { – 145°, 85° SW
– 78°, 90°

40/ fault set – 12°, 65° NW –

– slicks 15° NE – pitch

F_4/F_5 axial plane { – 65°, 10° NW plunge
– 65°, 90°

fault gouge – 40°, 90°

slicks – 34° NE prominent
" – 52° SW later small.

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41/ fault gouge in ore
– 165°, 80° SW –
– slicks – 0° – pitch

42/ " " – 0°, 70° E –
cuts thru intrusive

– possible offset of small ore finger ≈ 6–8' along this fault.

43/ fault gouge - 165, 75 SW -
slicks - 15° SE pitch

44/ " " - 175° 65°-80° W -
in #6 - slicks pitch 15° S

- also some vertical slicks here

45/ " " - 150°, 80° SW -
in #6 - slicks pitch 15° S.

46/ " " - 65°, 80° SE
in #6 - slicks pitch 15° SW

47/ " " - 95°, 50°
in #6 - slicks 0° pitch

(Cont. in New book)

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CURVE TABLES

Published by KEUFFEL & ESSER CO.

HOW TO USE CURVE TABLES

Table I. contains Tangents and Externals to a 1° curve. Tan. and Ext. to any other radius may be found nearly enough, by dividing the Tan. or Ext. opposite the given Central Angle by the given degree of curve.

To find Deg. of Curve, having the Central Angle and Tangent: Divide Tan. opposite the given Central Angle by the given Tangent.

To find Deg. of Curve, having the Central Angle and External: Divide Ext. opposite the given Central Angle by the given External.

To find Nat. Tan. and Nat. Ex. Sec. for any angle by Table I.: Tan. or Ext. of twice the given angle divided by the radius of a 1° curve will be the Nat. Tan. or Nat. Ex. Sec.

EXAMPLE

Wanted a Curve with an Ext. of about 12 ft. Angle of Intersection or I. P. = 23° 20′ to the R. at Station 542+72.

Ext. in Tab. I opposite 23° 20′ = 120.87
120.87 ÷ 12 = 10.07. Say a 10° Curve.

Tan. in Tab. I opp. 23° 20′ = 1183.1
1183.1 ÷ 10 = 118.31.

Correction for A. 23° 20′ for a 10° Cur. = 0.16
118.31 + 0.16 = 118.47 = corrected Tangent.

(If corrected Ext. is required find in same way)
Ang. 23° 20′ = 23.33° ÷ 10 = 2.3333 = L. C.

2° 19½′ = def. for sta.	542	I. P. = sta.	542+72
4° 49½′ = " " "	+50	Tan. =	1 .18.47
7° 19½′ = " " "	543	B. C. = sta.	541+53.53
9° 49½′ = " " "	+50	L. C. =	2 .33.33
11° 40′ = " " "	543+	E. C. = Sta.	543+86.86
	86.86		

100 − 53.53 = 46.47 × 3′ (def. for 1 ft. of 10° Cur.) = 139.41′ =
2° 19½′ = def. for sta. 542.

Def. for 50 ft. = 2° 30′ for a 10° Curve.
Def. for 36.86 ft. = 1° 50½′ for a 10° Curve.