

RAINBOW -
TAM
O'SHANTER
1990

"Rite in the Rain"®

WEATHERPROOF
LEVEL BOOK

No. 310

824729

NCI

NEVILLE CROSBY INC.

325 WEST SIXTH AVENUE • VANCOUVER, B.C. V5Y 1L1

TELEPHONE 604/USE-4343 TELEX 04-507762

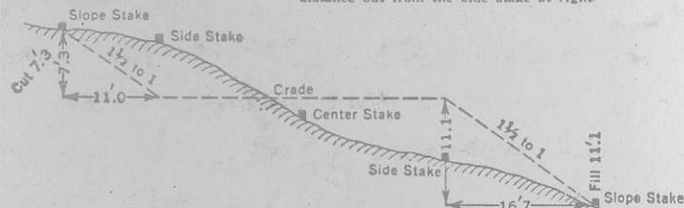
MINING, FORESTRY AND DRAFTING SUPPLIES

L. LEE

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes $1\frac{1}{2}$ 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

April 29/90

Fresh snow on hills (6" @ Jewel Lake)

Drive up Rainbow to start orient survey

69.5 - cross Beaufort's gate

70.1 small knoll on left side of road,
under small power line

Dark grey brown med grained
intrusive (prob Little's Emi unit).

207. Large fresh subhedral ^{black} pyroxene phenos
to 4mm x 2mm in finer grained
matrix, feldspar rich

Outcrop is well jointed @ 026°/75° W

Sample 1 - send in for orient pkg

625 17726 & litho, save piece for

Emi 1? cutting - unaltered Marron
intrusive

70.4 o/c on right side of road
~ 50m before road junction

& immed east of east branch
of Murray Gulch

- v well bedded grey fine-med
grained ^{rich} Sst with thin
carbonaceous interbeds - occasionally
(- Kettle River sed.)

round cobbles - to 20 cm, of
dark grey chert which beds
deform around

Bedding $020^{\circ}/65^{\circ}$ E

(very well developed)

- easternmost (top bed) is
~ 1.5 m thick (top is surface)
with central band grading to
conglomerate & back to sst
Below this avg bed thickness
~ 10 cm.

Sample 2 - Take sample for

BCS 17727 orient study + litho plug

Save 1 piece for cutting

- unaltered Kettle River sands

- Take left road, towards Picture Rk

70.55 cross middle Murray Gulch

70.6 small o/c /subcrop on right side
of road. Not clear what is

going on here - in road bank
and on hill to N is KRS,
tipping shallowly N, but also
exposed in rd cut is large blocks
of orange-brown carb alt'd serp
appears in place but?? Come
back to sort this out

70.8 Cross 'western' Murray Gulch

71.0 o/c on W side (left) of road pas
switchback. o/c of brown fng sand -
silt stone with poorly developed
bedding @ $045^{\circ}/20^{\circ}$ E

71.2 o/c on left side of rd
5m x 30 m @ 045°

Grey fine grained volcanic
(or poss intr?) with 5-10%
coarse euhedral biotite, to 3 mm,
and 45% px phenos to 3 mm
in fng - med gr feldsp rich
gneiss Emi 3

Sample 3 - for orient, litho & cutting
BCS 17728

71.55 junction - go right to PRQ

71.60 large area of o/c to left of
rd & block of alt'd serp
in rd bed, also float of
white chalc vn on o/c

o/c is fine mud grey
prob fine ~~diabase~~ ? intrusive
min. ep & calc alt'n; Kspar
rich matrix; 20% plag, 40% Kspar? + ??

Sample 4 - orient, litho & cutting
BCS 17729 Need to come back to map
this area

71.85 cross fence; coral

72.0 cross fence

72.1 some o/c this area, map in
later

72.25 cross tie line
83+00 N
98+25 E 2 m E of
road

72.55 9800 E 85+50 N
on left side of rd below
powerline & PRQ

72.6 DDH-87-1 on left side
of road

o/c on right side of road
is orange brown - strongly
carb alt'd serp
- fine granular texture with
20% irregular remnant green-black
serp patches avg 1 cm
- rest of rock is pale orange
brown fine granularankerite
(no f??)

BCS 17730 Sample 5 - orient, litho + cut

73.0 @ PRQ

Sample 6 - blue green chalc with
BCS 17731 no serpentine frags or
wall rx - for orient phg

Sample 7 - white chalc vn with no
BLS 17732 serp frags - for orient pkg

Sample 8 - typical fine bx from PRD
BLS 17733 with 20-30% fine orange-br
alt'd serp frags avg 1 cm in
white-grey chalc intrus. For
orient pkg.

74.1 @ Midway Mine

Sample 9 - chip sample from
BLS 17734 sulfide rich siliceous zone
in upper trench. V hard
to sample - 25% sulfides?
(py, cpy, gal + ?) in frag
grey silic intrusive. - for orient
pkg.

Sample 10 - med-coarse grained,
pale grey, strongly ^{silic'd &} clay
BLS 17735 alt'd feldsp porphyry intrusive
5% py, dissem & in stringers.
(Adjacent to sample 9).
For orient + cut
Litho

Sample 11 - pale grey, soapy,
BLS 17736 clay alt'd ^{py} feldsp porph
from SE side of cut
5% dissem py Coarse grained,
5% ^{qtz} eyes - feldsp phenos ^(20% to 50%) to 5 mm, strongly
alt'd to clay. For orient + cut

Sample 12 Fine-med grained, med
grey, massive, blocky fract -
dyke @ upper portal
BLS 17737 10% pr phenos, minor bi to
2 mm in ^{feldsp rich} matrix - prob finer
grained version of Sample 3.
(Emi)
- for litho, orient & cutting

May 2/90

- drive roads @ N end of
property with Graeme
after Wild Rose property exam

Find claim post in area of
chert pebble conglomerate

Final post 36086

- looks like Springbrook conglom,
but mapped as Triassic sharpstone
conglom.

Take samples of rocks from
Tam O'Shanter trench for
orientation survey.

BCS 17738 Well bedded Kettle River
seds from Tam O'Shanter
trench. Immed west of
intrus contact. Bedding
@ $168^{\circ}/30^{\circ}W$. Fng, dark
brown siltstn.

Orient pkg

BCS 17739

Dark green, med grained
diorite $\rightarrow$ granod. intrusive
From S end of Tam trench,
near Kettle Riv contact.
Massive, weak prop alt'd
intrusive $\rightarrow$ minor clss
cpy & mal stain, Minor
qtz/silic stringers/zones.

- For 114th & orient pkg

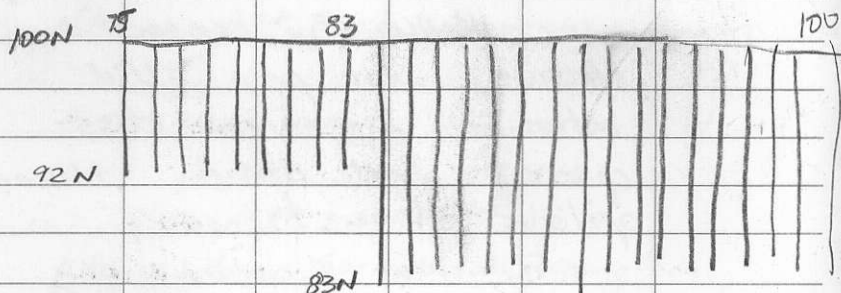
BCS 17740

bx, alt'd ^{dior?} intrusive
From N end of Tam
trench, strong chl-clay
alt'n, minor mal stain
(Fault zn)

-for orient pkg

May 4/90

Grid lines



83+00E 91+00N

+25

+50

+75

92+00N

Take Mike & Greg up to show
them grid & soil sampling

May 5/90

Take Mike & Greg up to
Tam area, chainsaw road
clear

BLS 17741 - form road cut
near Beryl shaft
- silic bx with 40%
bx clasts, avg 1cm (dom
buff feldsp porp tuff (KR?), lesser
dior? intr) in grey silic mtr
Min v. fine py.

May 8/90

Drive up Kerr Creek Rd with GE.
Take left fork through McLeans
up to large open o/c / knoll of
pale brown Marron volcs. Flat
lying flows of with 10% large (to
8 mm) phenos & glomerocrysts of
white fsp & 5% phenos (avg 3mm)
of bio. in fng brown mtrx
(BCS 17742) Litho & orient plug

Park @ dirt pebble conglom /
Deadwood Flt Walk ridge
to "Coryell" - all Marron volcs.
V. good fault contact between
conglom & Marron volcs. Lots
of gts on flt in gully
defining fault zone. Sample
1 piece of float, ~ 200 m
up gully from mv / conglom contact.
Clear-white gts blider, 30 cm
across, angular. Minor hem
stain & rusty fracs.
BCS 17743 orient plug

May 9/90

L 85+00E, 88+00N small ac's of
dark grey-green fng. mod gr microdiorite, 20%
px xtals, avg 1mm in fng mtrx
Massive, rel fresh (rare fsp phenos?)

L 85+05E, 85+35N
10x10 m o/c of hematitic microdior
Fng. 30% fine hem stnd plag, avg
< 1mm, 20% px, fng grey gmass
(rare phenos ~ 4mm)
BCS 17744 - Litho

85+75E 84+50N o/c @ top of
hill of fng purple-green ~~microdiorite~~ altered
volc?? 5% v. large (to 2 cm) hubbl?
xtals in fng mtrx. In cut see 5%
large xenoliths? /
BCS 17745 Litho & cut. ^{aggregates (hem-stained)}
(Knob Hill?) ^{some fine mafics in}
^{purple gmass}

o/c to NW of this has good fng
unaltd microdior in contact to NE
with fng purple-green hubbl phyrn volc
Contact not well exposed, poss steep NW?

B5+50 E, 84+50 N "Greg's SHOWING"

small pit on hillside. Rusty, Fe-carb
alt'd microdiorite. Poor exposure in
pit but abund flt, strong slices on
some pieces. Abund chalc and qtz
vining & flooding

BCS 17746 Rusty alt'd microdior.

with 20% xtaline white qtz vns to 1cm.
Float from pit. (12 el ICP + Au)

BCS 17747 Silic'd rusty microdior

with 20% fng beige qtz (bordering on
chalc) vns avg 1 cm.

B3+85 E 84+75 N

Abund white qtz & chalc vn flt
next to o/c of microdior. Wall rx
on vn flt is Fe-carb alt'd microdior

BCS 17748 - chalc vn flt.

84+00 E 88+15 N

- subcr of grey-green microdior -
locally bordering on crowded fsp porph
- weak perv. silic'n

BCS 17749 (Litho)

B3+60 E 88+75 N

White, weathering orange, v. strongly
silic'd serp?? Locally dark grey patches
within qtz vn / strong silic'd rx

v. strong Fe oxid on surf & fracs.

Well devel fol'n ~~2-4/100~~ 075°/50° N

Dark patches weakly ^{strongly} magnetic

BCS 17750 - ~~litho~~ litho

BCS 17751 In depression between
hills (Fault trace?)

Old pit on strongly alt'd serp
Silic'd, strong Fe-carb alt'd serp
with white qtz (bord on chalc vining)
vining & flooding (12 elem ICP + Au)

In contact with serp to N is
good massive, blocky green intrusive.
rel unaltered, with 5% qtz eyes
avg 3 mm, 15% mafic, 25% fsp (mm)
In fng mtrix. This is drift unit
from on S side of serp
(qtz eyes)

84+00E 89+05N small o/c of dark
grey-green, massive gtz-feldsp porphyry
as above

BCS 17752 - Litho & cut

~~83+70E~~ 92+70N

old shaft & trench - shaft recently
been bulldozed in. Dump pile
shows v. strongly carb alt'd serp
with white-milky, vitreous gtz vns
(to max 20 cm on dump)

BCS 17753 sample of gtz vn (12 el + Au)
from dump

In tr & o/c it appears veining
occurs along sheared contact of
alt'd serp & gtz eye porph (075°/75° N)

Min qtz & py in gtz vns.

BCS 17754 v alt'd serp from trench
(12 el + Au)

Another trench ~ 25 m W.

chl sheared intrus in fault contact
with grey ^{foliated} serp. Strong carb alt'n &

local dark green serp in flt zn
~ 75 cm wide flt zn, 030/80° W

BCS 17755, sample of dark green serp
from fault. 5% white gtz veining
in flt zn (12 el + Au)

84+10E 93+30N

old pit on rusty, pyritic
Silic-seric gtz fsp porph.

10% py,

BCS 17756 - from dump of pit

No good bedrock exposure for
trends. (12 el + Au)

83+75E 93+30N Fresh, grey

strongly porphyritic intrusive. 35%
feldsp phenos avg 2 mm, 20% mafics
(px?) - acicular, avg 1 mm length;
phenos show weak alignment, dark
grey mtrix. Phase of fsp (late,
cutting gtz-eye porph?) or Nelson age

BCS 17757 cut & litho

86+00E 86+75N

Med grained diorite; 20% px? (mafic)

xtals, avg 1-2 mm, show weak alignment

10% feldsp phenos, avg 2 mm, in

fine fsp rich mtrix. Mod perv hem &
carb alt'n. Green, weathering orange colour

BCS 17758 cut & litho

B7+00E B4+75 N large flat area

S of powerline covered by numerous
small o/c & subcrop of fng weak-mod
alt'd diorite. Fe stained matrix (peru
hem - weak chl alt'n) with mafic &
plag x'tals avg 1 mm. May be
very sheared, @ this location shearing
✓ strong @ 030°/70°W

BCS 17759 - Litho & cut

B6+B0E 91+00 N

o/c in road cut of dark green,
strongly silic Qtz Fsp porph. 3%.

Qtz eyes, avg 3 mm clearly visible,
10% Rem mafic phenos visible, avg 4 mm

Mtrx 13 u fine, silic w 2-5% diss py
BCS 17760 Litho & cut

Legend For Field Mapping

8

Coryell dykes & intrusives - syenite

7

Lamprophyre dykes

6

Marron - volcs 6a
- intrus 6b

5

Kettle River Fm 5a - conglom
5b sst/tuff
~~8a~~ -

4

Nelson Plutonic Suite

3

Feldsp porph, Qtz feldsp porph...

3d - Qtz-feld porph (coarse)
3c Coarse fsp porph
3b Crowded fsp porph
3a microdiorite - (subporph)

2

Knob Hill

2b schist, phyllite

2d gst/and

2f chert

2a old diorite

2c chert bx

2e tuff gst

1

Serpentine

1c carb alt'n

1b tab alt'n

1a dark green serp

cherty
tuff

May 10/90

88+00E 86+00N

Abund white - gray chalc
vn bx float/subcrop on o/c of
microdior. Not good on exposure
but pieces v. angular, buried. Rough
trend $\approx 040^\circ$.

$\approx 30\%$ v. rusty ang bx frags,
avg 1 cm (alt'd microd?) in
chalc vn mtrx. Take 2 samples
for 12 elem ICP + Au

BCS 17761 12el ICP + Au

BCS 17762 cut + "

89+00E 85+50N

o/c under powerline & on
road of big dark green m volc?
10-15% mafic phenos, avg 2 mm
in big gmass. Weak - med per
prop (ent-hem) alt'n. Mod
serp on shears. Knob Hill andes? =

BCS 17763 Litho & cut

BCS 17764. alt'd 3a w minor qtz vns
12 elem ICP + Au

90+50E 83+00N

large o/c on B/L, ~~between~~
2 fault(?) gullies. ^{med-} coarse
grained, diorite intrusive

80% plag avg 2 mm, range up to
4 mm

2.5% mafic (inbld? to 1.5 cm
in length, most 1-2 mm.

5% bio, euhedral 1-2 mm

Massive, blocky, fresh intrusive
into fault zone (Much fresher
looking than microdior to W - poss
Nelson? or Marron intrusive)

BCS 17765 Litho & cut

92+00E 84+00N

Subcrop of fresh coarse
grained fsp porph

35% fsp phenos, avg 3-4 mm in
big mafic rich gmass

BCS 17766 Litho & cut

~~(Marron intrusive)~~

in cut & see rare large Kspar phenos.
10% mafic phenos Unit 3c?

93100E 84+75 N

subcrop in open grassy flats
of dark green-brown volc.,
15-20% mafic phenos, avg 1 mm,
< 5% large fsp phenos, avg 3 mm,
in v fine-gr. hem mtrc
Knob Hill ad/gst??

93150E 86+10N

large massive, blocky o/c just N
of road & powerline, define small ridge
in open grassy flat area.
Rk are fresh, fine-med grained,
intrusives,

< 5% euhedral bio to 3 mm,
avg 1 mm

15% fsp phenos avg 1 mm, clear

(rarely to 1.5 cm) 10% med green mafics, 2 mm
in fine feldsp rich grey mtrc
Marron intrus?

BCS 17167 Litho. & cut

May 29/90

Rainbow Grid mapping

92+75E 88+75N o/c in road
cut by Midway Mine, where
fault trace goes through. Generally
fine grained; but do see coarse
fsp phenos on some weathered
surfaces. Pale grey, brown weathering
blocky. Silic'd QFP, min fine
diss py. BCS 17768 weak aligned fsp.

92+50E 88+75N o/c of str.
carb alt'd ^{silic'd} serp in road cut & on
hill near M. Mine - to W of
fault. Take 2.5 m chip across
o/c. BCS 17769 (not then yet)
min white, qtz uning.

92+50 88+00N well jointed, blocky
o/c. Med grained, dark grey,
fsp rich, 5% euhedral bio.
rel. fresh intrusive - (bb).

June 10/90

Rainbow Grid mapping

92+20 E 88+15 N subcrop in
bulldozer cut of v. rusty, blocky
fract qtz feldsp porphyry. Mod
perv clay (serp.?) alt'n. Minor
carb - qtz units BCS 17770 - Litho

92+15 E 88+00 N v. small subcrop on
hillside of strongly silic'd serp (talc
alt'd) and white qtz vining. Can't
tell orient - more of a silica flooding
than true veining. White mesothermal
x-talline qtz BCS 17771 - 12 elem ICP
+ Au

92+00 E 88+00 N O/C with small pit
dug on it, strong ^{shearing} fracturing @ 072°/30° S,
strong carb alt'd serp, strongly silic'd
1 m central shear zone has
v strong silic'n & 10% mariposite.
Chip across shear + .5 m either
side re) 2 m sample
BCS 17772 12 elem ICP + Au

91+75 E 87+50 N large of of carb
alt'd & silic'd serp @ E end of
O/C is well exposed shear zone
145°/50° N, strongly silic'd, locally
narrow white qtz vns, 2-5%
mariposite in shear, minor pyrite
BCS 17773 .1 m chip across
silic'd shear zn.

June 15/90

Grid Mapping - Rainbow

91+60 E 88+75 N

- o/c on W end of knoll

- well fractured, flaggy jointing

- maroon volc, ^{needle like} frg w 20%

subaligned mafic phenos (alt'd), avg

2 mm, 2% coarse mafic phenos, to

1 cm

⇒ Knob Hill andes?

BCS 17774 - litho

@ W end of o/c is pale orange-buff, v. strongly silic'd QFP.

fine-med grained, qtz eyes visible

Min py, int silica flood +

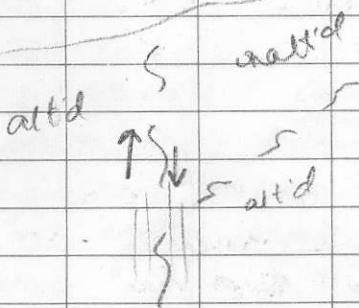
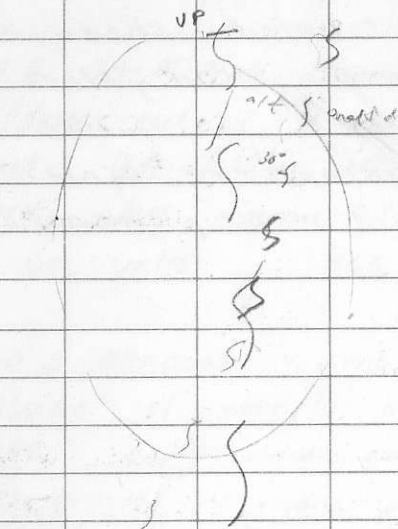
5-10% white chalc uning to

1 cm BCS 17775 12 elem ICP + Au

91+25 E 88+20 N

@ W end of o/c of carb alt'd serp is blue-green - white chalc uning, dip 80° E / 90°

up to 10 cm wide. Also minor white coarse xtal/ine v'ggy qtz uns.



91°25 E 87.50 N

small subcrop / frost heave of
v. str silic'd fsp with
white qtz → chalc qtz uniting
BLS 17777

90°60 E 86°75 N

resistant vn - qtz - chalc qtz
pale orange - white, v. fine grained
20-30 cm wide, trend 010°/90°
Hosted in fine microdior, may
be str silic'd adj to vn (hard to
see here but zone seems wider
than resistive vn.

Vn exposed for ≈ 10 m then lose it
@ break in slope, under
shallow o/b. Good trench
target. } chips across vn
BLS 17778
17779

91°80 E 87°80 N

7' deep shaft dug on v. str
silic'd microdior & qtz vn
Zone about 2 m wide, trend 010/90°
N extension of vn above
BLS 17780 - 2 m chip across N wall of shaft

90°30 E 88°05 N

old pit dug on orange-rusty
weathering highly silic'd microdior?
(or pass Knob Hill??). Perv silic &
carb alt'n. Blocky frags. No good
trend to zone.

BLS 17781

90°00 E 87°50 N

small o/c of orange, strong E carb
alt'd microdior? (could be serp but
non-magnetic). V. silic, with sz
qtz stringers + silica flood.

BLS 17782 Litho

90°20 E 88°10 N

old pit on rusty, strong perv
carb alt'd microdior? Non magnetic
Str silic + qtz units. Blocky frag but weak-
mod flr BLS 17783 from dump

89+60E 88+40N

@ NE end of large o/c that
forms ridge. Well dev fol'n @
030°/20° NW. Pit dug on str
silic'd rx, grey, massive, fng
minor marip? Looks like serp but
non mag. BCS 17785 - Litho & cut
adj to silic'd zone is v rusty
alt'd rx w 10-20% patchy, soft
blue-green mineral (platy) and
v minor blue-green chalc uning
BCS 17784 - 12 elem ICP + Au

89+50E 88+10N

Small partly infilled pit @
base of large o/c. Pit on pale-br →
buff, strong clay-carb alt'd microdiv
Abund white qtz un flt on dump
(massive, white)

BCS 17786 qtz un flt from dump

89+10E 88+25N

@ W end of o/c above - massive,
not well foliated like other side

orange-br weathering, str
silic'n, mod perv carb, fng
minor mariposite. Locally
10% white qtz uns to 10 cm
BCS 17787 qtz uns + silic'd host
12 elem ICP + Au

Took 2 rep pieces from
this o/c for cutting

89+00E 87+00N

o/c of orange-br well foliated
x. Silic, perv carb - 30% of rx is
fng black mottled rx - altering to
orange-br material Non-magnetic
→ silic'd carb alt'd serp

BCS 17788 LITHO ~~EXACT~~

89+25E 87+30N

old pit on massive silic'd serp
Rusty, Fe-carb alt'n
10% white qtz uning @ 150°/50° N
Vns. avg 3 mm in size
BCS 17789 12 elem ICP + Au

June 17/90

BB+90 E 87+75 N

old pit dug on v. rusty
silic'd serp? (non-mag). 2-5% blue
green mineral (soft, as in 17784)
+ min qtz vining
BCS 17790 12 elem ICP + Au

BB+50 E 92+00 N

Large area of o/c of rough,
rubby conglom. = 30% round-
subround cobbles of mainly
microdior-cr fsp porph (pebble
size up to 40 cm) in fine green
tuffaceous mtr w 25% fine fsp
xtals. strong ~~hem~~ hem & mn stain
esp on clasts, min py in mtr.
BCS 17791 - Litho
mod fract @ 360°/50°

BB+85 E 92+50 N

small o/c of massive, blocky
frag. volcs. Fine, xtaline, dark
grey fresh Marron volc. Mafic rich
w 20% fine fsp, 20% fine mafic ??
in fine gmass. (prob andesitic)

90+60 E 90+00 N

Light grey, fine-med grained
massive. o/c in trees. V felsic
w 40-50% squarish fsp avg 1 mm

5-107. 2mm rounded qtz eyes (or
pebbles??), < 5% 3mm mafic
xtals in fgy gmass

BCS 17793 Litho & cut

coarse sst?? / tuff

weak bedding??, rare pebbles visible
prob. tuff

Same as subcrops @

90E 93N & 90+50E 93+50N

90+15E 88+75N

v. fine grained, grey, fresh, massive
plag rich, rare larger mafics (subhd)
Microdior., Min late carb units. Perv carb

alt'n BCS 17794 litho

90+50E 88+30N

old trench dug perp to slope
(ie) straight downhill) on v. alt'd
& fract'd fsp porph - str perv
clay cml alt'n

BCS 17795 12 elem ICP + Au

91+30E 89+00N

old pit dug on good fault
~~040°/80°E~~ 040°/80°E

strongly ^{perv} clay alt'd, rusty
fsp porph? intrusive, poss
minor qtz units. v alt'd, weather
hard to get "fresh" surface

BCS 17796 12 elem ICP + Au

minor green coating on surfaces, poss malach
or celadonite??

91+40E 89+30N

(small) old pit @ base of o/c
good fault planes as 040°/80°E &

320°/80°N, rx are rusty, silic'd
(strong, pervasive) and strongly hematitic
80-20% dusky qtz units, minor
celadonite? (pale green, patchy)

v alt'd but prob is 3a-3c
BCS 17797

90+90E 89+80N

Small narrow o/c
resistive of fgy dark grey
mafic volc Maroon volcs as
to W of here

90+90E 91+75N

- o/c of Maroon volcs
- dark grey-br, med-fine grained
10-15% coarse large (alt'd) mafics
avg .4 cm, rare large tabular
plag in fmg fsp rich mtrc.
BCS 17798 LITHO

91E 94+25N

o/c of fmg-med felsic tuff
30% plag xtals, 20% qtz eyes, min
mafics well bedded? or fract'd
@ 75°/70°N

91E 95+25N

@ base of large o/c of
fmg ^{hmbld} (apx?) phytic volc
dark grey-br, 30% coarse mafic (phenos
weakly aligned)
phenos (avg 4 mm length), prob
hmbld, 10% coarse fsp phenos to
4 mm in fmg fsp rich mtrc
Maroon volc, min carb vults
BCS 17799 Litho

BB+50E 90+50N

o/c of rusty silic'd serp
(non mag) well foliated @ 55°/50°NW
Min qtz uning (white), parallel to
fol'n. Min mariposite.
BCS 17800 12 elem ICP + Au
alt'd serp + qtz un

BB+00E 90+75N

Large o/c of good, green strongly
foliated, strongly magnetiz
serpentine. Soil pit on o/c
ran 63 ppb

fol'n = 025°/60° E

Sample ① 12 elem ICP + Au
BCS 13876

BB+00E 91+60N

Large o/c of good green str
mag 2 fol'd serp as above
Sample ② LITHO BCS 13877

BB+50E 92+00E

base of conglom o/c
These o/c's are unalt'd. Have

rare qtz un frags but
def. post date uning &
silic'n, Fe-carb alt'n in serp.

87+90E 92+00N

o/c of pale grey, coarse
qtz fsp porph. 30% fsp, avg 3mm,
45% qtz eyes, 3mm, 20% fine
mafic in fine grey, silic'd
(weak) gmass.

Locally bx. Prob terminates
to E @ fault.

Sample 3 Litho
BCS 13878

87+75E 91+80N

o/c of rusty, well foliated
non maf, str silic'd serp (ribbon
qtz/chalc par to fol'n)

Sample 4 - 12 elem ICP + Au
BCS 13879

96+00E } v silic'd serp
89+75N } + py

July 4/90

Grid mapping w Mike

87+70E 92+50N

large o/c of strongly Fe carb
alt'd serp with old trench dug
on it. Took sample BCS 13880
of dump material

hem, silic'd serp, strong pen
carb, min qtz stringers, minor
sphal.

87+60E 93+00N

large o/c of coarse mtr supported
cobble conglom. unalt'd except
for v minor rusty stain

87+40E 92+00N

large o/c serp - talc - carb
alt'd w fsp porph dyke
cutting @ $030^{\circ}/70^{\circ}$ N and
par to fol'n @ $145^{\circ}/50^{\circ}$ E.
Min white qtz unring in fsp
porph.

87+00E 97+25N

- large o/c of alt'd serp
- well foliated

- v strong silic'n @ base of o/c
silic'n par to fol'n, white, fine
massive (borders on qtz un)

Sample of this BCS 13882

86+50E 93+50N

base of o/c of alt'd serp
is old pit. 10% fine qtz
stockwork through serp,
strong leaching BCS 13883

85+70E 93+75N

large o/c of clast supported,
pale green conglom. Ang to
sub round pebble - cobble sized

clasts, avg 3-10 cm. Clasts are
100% fine grained fsp porph microdior?
Unalt'd

Sample 13884

85+20 E 93+75 N

@ base of large o/c of carb
alt'd serp is short adit at
050° (3-5 m) on 1 m wide
fault zone trends 050°/90°
V strongly sheared alt'd serp, 5-15%
mariposite.

1 m chip across fault in o/c
above adit BCS 13885

84+90 E 94+25 N

o/c of str sheared fsp porph
dyke (or pass gfp), min py
weak-mod clay-chl alt.

fault/shearing @ 015°/80° E

BCS 3886

85+20 E 94+30 N

small old pit dug in large
area of o/c / subcrop @ top of
ridge - str carb alt'd serp,
silic'd, 5% maripos, mod hem
str.

BCS 13887

also old trench here with little o/c

85 E 99+75 N

large o/c's on hillside of
dark grey-maroon Marron volcs
15-20% white fsp phenos avg 2-3 mm,
subhedral, 5% 10% 1³ mm px phenos; in
fng mtr. Min cc amygdulcs.

84 E 95+50 N

Large o/c near road of
green silic'd fsp porph intrus.

@ base of o/c 13 large bx
zone large flt zn? trends
≈ 100°/60° N??

BCS 13838

July 5/90

Grid mapping to Mike

84+10 E 97+75 N

old trench in str carb alt'd
serp. Peru hem and weak silic'n
Min qtz stockwork
Sample BCS 13889

84+30 E 99+10 N

area of lots of o/c on
grassy S slope. Frg grey-
brown Marron volc
2-5% mafic phenos, avg 2mm
in frg gmass. BCS 13890

83+00 E 95+50 N

large ridge of ^{carb} alt'd serp wt
by vnltz and vns of white
xtalline qtz - dom direct 145°/90°
Vns to 5 cm wide. Minor hem
stain

BCS 13891 - qtz un.

83+20 E 93+50 N

old trench dug on str
carb alt'd serp, silic'd w
qtz vns, 2-5 cm, white, xtalline
No sulf.

BCS 13892 qtz vn + silic'd
serp

83+50 E 93+20 N

old pits and trenches in
trees. Pale buff v. strongly
alt'd serp. Well foliated w silic'n
par to fol'n giving ribbon-like
appearance. Min py & pass
sphal?

BCS 13893

82+30 E 91+50 N

deep trench dug on str silic'd
microdior? (coarse px xtals visible
in frg gmass) Min qtz vnltz, Min
py

BCS 13894 Litho

82E 91+50 N

o/c just uphill of str
w soil anom (15 ppb Au,
1.4 Ag, 215 Zn) of well
sheared (@ 070°/50°N), weak
clay-silic'n in microdior.
Min' py (+ sphal??)
BCS 13895

81+70 E 98+00 N

o/c in trees of equigranular,
fine-med grained, brown 20% fsp,
15% px, min bio

82E 99+75 N

o/c in flat treed area of
equigran. Marron intrus as above
BCS 13896

@ Mini Grid / Midway Mine Area
sample over soil anom

94+50 E 88+75 N

Med grained, green gts eye
porph, weak-med silic'n
BCS 13897

BCS 13898

- same as above
- minor py

BCS 13899 ± 30 m S.

- same as above
- mod fine silic'n
- good jointing 100°/90°

July 8/90

Grid mapping w Mike

79+00 E 95+00 N

small o/c in treed area

Frq, brown-gray, py
phynic volc. Mod perv calc
Str Fe-Mn str

- Knob Hill vokes

LOTS OF MOSIES

BCS 13900 LITHO

July 12/90

79+75 E 91+50 N

Large area of o/c of
mod well jointed Marron
intrus. Mod grained,
equigranular, min hem
str, gray-br colour, min
coarse px? xstals in fsp rich
matrix.

BCS 13901 - Litho

79+75 E 91+00 N

2 old trenches in alt'd
serp. Top trench has
str talc some alt'd coarse

fsp porph intrusive

lower trench exposes

good E-W fault zone

090/70° N

- 2 m wide

BCS 13902 - 12 elem ICP

+ An

- poss minor sphal.

80+10 E 91+30 N

deep. H/adit dug on
✓ str silic'd alt'd serp. shear
trends = 130/90. Min galena
+ 5% mariposite. Min
qtz units.

BLS 13903 12 elem ICP + Au

80+50 E 91+50 N

old trench dug due S
on str alt'd serp
(silic). Cut by v. alt'd
coarse (sp porph dyke
(str serc) / pale alt'd
& silic'n

BLS 13904 12 elem ICP + Au

80+90 E 91+50 N

V silic'd hem string of
qtz eye porph from down
5% py, 5-10% rem qtz
eyes visible
- in trench B alt'd Fe

& qtz eye porph

BLS 13905 12 elem ICP + Au

July 16/90

Rainbow Gnd mapping

Hard to follow L 95 down
Missing in middle.

95 E 92+25 N

large o/c. of ang. conglom
(80% clasts, subang, in pale
gray-green matrix). Clasts avg
5-15 cm. Sits below Marmon
& above alt'd serp. Prob
13 "Springbrook" conglom

94+80 E 91+75 N

@ base of large cliff of
orange-br alt'd serp. Non
magnetic, granular, frag, siliceous
Cut by 25% white chalc'd
vnlts & vns (to 10 cm). Vns
have bx margins with alt'd
serp clasts massive white
chalc'd. Discontinuous & irregular.
No good directional measurement

BLS 13906 - of in

13907 of alt'd host (LITHO)

96+10E 91+75N

short 15 m adit into
hill on large fault $\approx 015^\circ/70^\circ E$
FH zn ≈ 2 m wide - has
min ^{white} chalc viny. O/c is
orange massive alt'd serp.
mod silic'd, cut by minor
white chalc'd units & vns,
may be strongly bx with clast
to Ssm of alt'd serp.

2 samples from dump

13908 - random white chalc on flt. ^{sample 13908}

13909 - 10+ cm wide white
chalc bx on from
large boulder

July 24/90

Rainbow Grid mapping

97+00E 91+75N

large area of o/c on steep
hill of coarse bx

75-80% angular clasts 5-
50 cm of grey-green fng microdior
in grey-green fng mtrix

- Not very alt'd, locally min
hem stn or bleaching

- see good fault contact
with massive microdior in o/c

- suspect that this is
large fault zone, N-NE trending
which cuts serp (along dyke?)
of microdior??)

- doesn't look like basal
conglom because too angular,
& because of fault contact seen

97+00E 95+25N

talus slope below large o/c
of pale grey fng volc/int.
siliceous mtrix with 20% fine

esp, minor bio + px
BCS 13910 - Litho

92+25N 99+75 N

Suber/olc on grassy knoll
of Marron volc - 30% coarse
hnbld phenos (hexag x-section)
avg 4 mm in size in frag
pink grass (Kspar rich)
BCS 13911 Litho.

98+10 E 92+75 N

olc of orange carb alt'd serp
on steep side slope - locally 10%
mariposite, may be str. silic'd,
minor drusy ^{white} gtz units to
1 cm.

BCS 13912 12 elem ICP + Au

98+30 E 92+65 N

Carb alt'd serp on v steep side hill
White gtz/chalk vn to 5 cm +
drusy gtz vnls
BCS 13913 12 elem ICP + Au

98 E 92+50 N

olc of carb alt'd serp in
gully

20 cm wide white gtz
vn exposed over ~ 10 m

BCS 13914 gtz vn
12 elem ICP + Au

July 27/90

L 98+90E 90+85N

Large o/c of porphyry-
gradational from cr fsp porph/
fsp porph @ S end to
coarse gtz eye porph
@ N end. Weak - mod
chl/seric + silic'n

BCS 13915 12 elem 100% Au

L 97+60E 90+80N

Large o/c of dark green
serp. v str fol'n 090°/20°N
@ base of o/c ~~←~~
~~20-302~~ 1x are bx. 20-302
large cobbles - boulders
caught up in fol'n
- base of thrust ??



BCS 13916 dark green serp
from $\frac{3}{4}$ way up
o/c

99+80E 89+25N

o/c on steep slope above
road. Pale grey-white xtal
trff, med-coarse grained, 5%-10%
gtz eyes, 40% fsp ...
(sort of looks like gtz eye porph).
Weak bedding.

BCS 13918 ~ Litho

-adj to this o/c is small o/c
of well bedded, fine brown
mudstn.

o/c's to N along line are
same felsic trff - prob Kettle
River.

Could gtz eye porph be feeder to
this ???

98+50E 88+75N ??

o/c in road cut of green
chl/seric + weak silic'd porph
(fsp?) min py
BCS 13919

Aug 3/90

Tam grid mapping

- L 9+50N 3+50W

2 old claim posts

IP 475191 M

Canada Dry #1

Herb Shear

Aug 16 1963

IP 119081 M

PKK #1

Herb Shear

agent for Perry Knox

(?) 1971

L 9+00N 3+50W

@ top of large ridge of
Maroon volcanics

Take Litho BCS 13920

of pale purple volc, fgy mtrix
with 20-30% v coarse white

fsp (to 4 cm long, avg .5-1 cm)
r 5% fine (2mm bi + pr?) xstals.

L 9+00N 1+00W

large o/c of dark gray fgy
Maroon volcs. Minor fine fsp & pr
xtals. Very strongly jointed / fractured
in all directions.

BCS 13921

LITHO

6+80N 3+50E

Golden fleece? workings

o/c up hill from workings

is pale green, v fine grained

Nelson diorite, weakly bleached

& cut by 2-5% qtz on stockwork
(avg 1mm vnlts, coarse xtadine,
hem stn).

BCS 13922

12 elem ICP + Au

6+80N 3+90E

- Golden fleece? workings

- large excavation @ side of
road. In back face of
pit is v strongly altered Nelson
diorite (rusty, bleaching, strong

clay alt'n).

Take 2 m chip across
this zone

BGS 13923 12 elem ICP + Au

Next pit has v rusty alt'd
dior overlying green chl/carb
alt'd dior (w. min py + cpy?)

Fault contact @ $\approx 330^\circ/40^\circ E$

Take 2 samples

BGS 13924 from green chl
carb alt'd dior in fw of
flt zone, min py + cpy?

12 elem ICP + Au

BGS 13925 1 m chip
above flt contact into
rusty, clay alt'd rx in hw
12 elem ICP + Au

L 7+60N 4E

o/c in road cut of
rusty green dior, frg, silic'd
with qtz stringers & larger
carb vns - 5-10%. fine dis py
Sample 12 elem ICP + Au

Tam Grid Mapping Aug 11/90

Bengal Zone

Trench from shaft NW to $\approx 830 N$
on B/L @ NW most end
exposure poor but in Marron
volcs, then to ~~is~~ is 20 m zone
of no o/c - surface expression
of fault trace. @ E end
of fault K.R. rx ore ^{path} grey
v. fine grained, perv silic'n
with 5% late white qtz units, may
be mod - v strongly bx
these grade Eward into less
alt'd sst. or tuff, weak silic'n
+ 5% qtz units. Poor exposure
in trench.

Looks like what is happening
is main fault (recessive)
cuts KR sids @ Marron
contact N trending, vertical
Marron & KR sids are
relatively unalt'd where

near this fault BUT
@ E end of fault zone
E most fault is $000^\circ/75-90^\circ W$
to E of this fault is
main silic'd zone.

Aug 22/90

Tarn Grid

W Greg

- start BL 7 below Bengal zone
- map E on L 6 then W
on L 5

Large trench @ $5+40N$, $1+25E$
Back face of trench is
rusty, grey, finely bx
vein? trends $015^\circ/30^\circ W$

Sample BGS 13946 $\approx$ 10-15 cm wide

Immediately
to W of face is brown rusty
gauge zone, parallel to above face
BGS 13947 $\approx$ 30 cm wide

Host rx are bleached, pyritic
gst & chert massive, blocky
fracture, locally bx
BGS 13948 bleached pyrite rich
bx gst from dumps Rusty,
minor qtz stringers, 30% fine
py.

5+10 N 0+75 W

- large trench across fault gully below 79-3
- chip sample across trench

BCS 13950 - 2 m chip @ E

end of trench. Rusty, yellow clay alt'd & silic'd KR sst. 5% - 10%

py, locally small massive py pods, min qtz / chalc units
Highly sheared & fract'd.

13951 2 m chip "

13952 2 m chip "

13953 3 m chip - grey-green
fine conglom, 5% py, silic'd
blocky fract. Less intense
shearing & alt'n than
13950, 51, 52

13954 4 m chip same
as 13950... @ very
w end of trench (deep
pit).

13955 - white banded silica

"Sinter Zone".

From boulder @ sloughed
in pit

August 23/90

Meet Ken Caldwell @ 8 am
to show him drill sites.

Backhoe & cat trucked up to
Ingram Creek Rd turnoff Aug 22
pm.

started walking in @ 8 am

- cat + hoe + 2 operators
- fixed creek crossing, arrive
at Dry Lake sites @ 12 noon
- drove back to trucks, stop for
lunch, Doug → home (parked cat)
- Elvio back up to do hoe work

	backhoe + operator	cat + op
8-12:20	4 hr 20 min	8-12 4 hrs
12:20-1:20	lunch	
1:20	start TR-90-01 at Dry lake	
	3 hr	
- 4:30	finish TR-90-02	
	7 hr 30 min	machine time

TR-90-1 15 m @ 130° 15' deep no o/c
then 10 m @ 130° 20' deep no o/c

25 m

1 sample BCS 13601

- hard pan w rusty listwanite ~~clay~~ cobbles

TR-90-2 25 m @ 325° start 10 m
on strike from old pit

25 m

- 10-15' deep, thick grey clay
layer, wet, caving sides of
trench

- spotty bedrock along trench
bottom

~~E~~ end - v. strongly ~~py~~

- talc alt'd serp w minor
py

Aug 24/90

backhoe + operator

q only

8am start moving uphill to
TR-90-3

dig TR-90-3 4.5 hr

9:30 am move to TR-90-4

12:30 pm finish TR-90-4
2 more cld to bottom of hill

1:00 - 1:20 drive Elia up to PRQ 20 min

1:20 start hoe to move up to 2 hr 10 min

to $\approx$ 3:30 PRQ

6 hr 40 min 20 min

TR-90-03

25 m @ 320° from E end
@ 83+90 E 92+60 N (across fault
gully).

5-8' deep, qtz eye porph
for entire length of trench
- several minor x-faults ($\approx 045^\circ$
trend)

- rx weak-mod carb or talc att'd
min py, min qtz units.

BCS 13603-13609 7 samples

TR-90-04

start 88+20 E 93+25 N W end

15 m @ 148° then

62 m @ 135°

77 m

Samples BCS 13610-13619 - 10
samples

Aug 25th

cat + operator

8am start backfilling Dry Lake
trenches & move to PRQ

12:00 arrive PRQ

4 hrs

drive Elia to get truck. 2 trenches
laid out to start excavator on
in afternoon

excavator

1:00-4:00 dig TR-90-05

3 hrs

TR-90-05

58 m @ 267° starting
at

17 samples
BCS 13620-36

Aug 29th

boys meet Elia @ trenches
@ 8 am

- no other bucket or cat operator
so can't start other trench
till I arrive @ 10:45 am

8am-10:45 am Elia's time

10:45 am - 12:15 excav + Elia

1.5 hrs extend TR-90-05 &
start 06.

12:45 - 2:30

excav + Elia

dig TR-90-06

2:30 - 3:00 Doug + Elia + excavator

put on new bucket

3:00 - 3:30 Doug + cat + Elia + excavator

move onto TR-07

3:30 - 5:00 start TR-90-07

total

op
2h 45 min

op + ex
5h 45 min

Doug
4 hr

Doug + cat
1/2 hr

TR-90-06 45 m @ 84°

45 m end at

95 + 34 E

89 + 20 N

26
Samples

25
BCS 13637-649

13 samples

Total to date (Aug 29th pm)

	23	24	25	
cat	4+		4	"2 = 8.5
backhoe	7.30 _m 6 40 _m	3	5.45	= 22 hrs 55 min
op. only	20 m	3.25		3 hr 45 min

Aug 30th

op + mach.

8:45 am

continue digging

- 11:15

TR-90-07

2.5 hr

shut down to service

Need cat to pull up to TR-8

Start in am.

TR-90-07

start @

94+72 E

89+88 N

65 m @ 118 °

samples BLS 13650-73

24 samples

Aug 31

Elio only Bam - 10:30 am 2.5 hr

10:30 am - 4:30 pm

Elio + ~~cat~~ excav 6 hr

+ Doug + cat 6 hr

Sept 1

TR-90-09

65 m long @ 005°

65 m end is 15 m @ 155° from

9425 E

8850 N

Sept 29/90

P-1 93+75 E
89+~~25~~ N
-45° 180°
depth 80 m

P2 93+75 E
89+~~45~~ N 75 N
-60° 150 m
180°

Mob drill to property

Oct 1 /90

Started RDH-90-1 @ night shift

Finish RDH-90-1
93+75 E
89+25 N
-45° 180°
— m depth

Finish Oct 1 /90 @ 10:30 am

Move to RDH-90-2
93+75 E
89+75 N
-60° 180°

Start @ 12 noon

Oct 2/90

RDH-90-3 move set-up to

94+54 E

89+100 N

Start Oct 3rd ~4 pm

Finish Oct 4th ~

Move to RDH-90-4
Oct 4th

Finish 90-4 Oct 7th 2pm

Move to 90-5

Oct 11 7:30
am

Move to Hole 6

9325E 8900 N

93+25 E 88+75 N

9.

93+30E

88+85 N

} Hole 6

Elev ~ 7 m below Hole 1

elev. Hole 1 = Hole 7

TAM-

BB-01

BOX 1 - 51

15 spaces

TAM-BB-02

BOX 1 - 42

TAM-BB-03

BOX 1 - 43

(A) 60 m @ 135

(B) 83+10 E
93+40 N

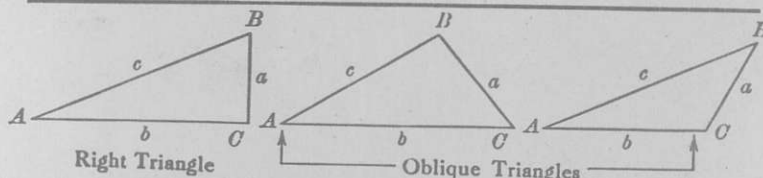
135° 80 m

1164
Thin Rept 1921
1922

AR 562

~~4125~~~~1267~~ ~~5025~~~~881~~ ~~8775~~~~1878~~

TRIGONOMETRIC FORMULAE



Solution of Right Triangles

For Angle A. $\sin = \frac{a}{c}$, $\cos = \frac{b}{c}$, $\tan = \frac{a}{b}$, $\cot = \frac{b}{a}$, $\sec = \frac{c}{a}$, $\csc = \frac{c}{b}$

Given a, b	Required A, B, c	$\tan A = \frac{a}{b} = \cot B$, $c = \sqrt{a^2 + b^2} = a \sqrt{1 + \frac{b^2}{a^2}}$
a, c	A, B, b	$\sin A = \frac{a}{c} = \cos B$, $b = \sqrt{(c+a)(c-a)} = c \sqrt{1 - \frac{a^2}{c^2}}$
A, a	B, b, c	$B = 90^\circ - A$, $b = a \cot A$, $c = \frac{a}{\sin A}$
A, b	B, a, c	$B = 90^\circ - A$, $a = b \tan A$, $c = \frac{b}{\cos A}$
A, c	B, a, b	$B = 90^\circ - A$, $a = c \sin A$, $b = c \cos A$

Solution of Oblique Triangles

Given A, B, a	Required b, c, C	$b = \frac{a \sin B}{\sin A}$, $C = 180^\circ - (A + B)$, $c = \frac{a \sin C}{\sin A}$
A, a, b	B, c, C	$\sin B = \frac{b \sin A}{a}$, $C = 180^\circ - (A + B)$, $c = \frac{a \sin C}{\sin A}$
a, b, C	A, B, c	$A + B = 180^\circ - C$, $\tan \frac{1}{2}(A - B) = \frac{(a - b) \tan \frac{1}{2}(A + B)}{a + b}$, $c = \frac{a \sin C}{\sin A}$
a, b, c	A, B, C	$s = \frac{a + b + c}{2}$, $\sin \frac{1}{2}A = \sqrt{\frac{(s - b)(s - c)}{bc}}$, $\sin \frac{1}{2}B = \sqrt{\frac{(s - a)(s - c)}{ac}}$, $C = 180^\circ - (A + B)$
a, b, c	Area	$s = \frac{a + b + c}{2}$, $\text{area} = \sqrt{s(s - a)(s - b)(s - c)}$
A, b, c	Area	$\text{area} = \frac{b c \sin A}{2}$
A, B, C, a	Area	$\text{area} = \frac{a^2 \sin B \sin C}{2 \sin A}$

REDUCTION TO HORIZONTAL

Horizontal distance = Slope distance multiplied by the cosine of the vertical angle. Thus: slope distance = 319.4 ft. Vert. angle = $5^\circ 10'$. From Table, Page IX. $\cos 5^\circ 10' = .9959$. Horizontal distance = $319.4 \times .9959 = 318.09$ ft.

Horizontal distance also = Slope distance minus slope distance times (1 - cosine of vertical angle). With the same figures as in the preceding example, the following result is obtained. $\cos 5^\circ 10' = .9959$. $1 - .9959 = .0041$. $319.4 \times .0041 = 1.31$. $319.4 - 1.31 = 318.09$ ft.

When the rise is known, the horizontal distance is approximately: -the slope distance less the square of the rise divided by twice the slope distance. Thus: rise = 14 ft., slope distance = 302.6 ft. Horizontal distance = $302.6 - \frac{14 \times 14}{2 \times 302.6} = 302.6 - 0.32 = 302.28$ ft.