60001840

Mining District File Summary Sheet

DISTRICT	Rosebud
DIST_NO	4010
COUNTY If different from written on document	Pershing
TITLE If not obvious	Rosebud Field Note Book 4
AUTHOR	Mitchell, P
DATE OF DOC(S)	1998
MULTI_DIST Y / N? Additional Dist_Nos:	
QUAD_NAME	Sulphur 7½'
P_M_C_NAME (mine, claim & company names)	Rosebud Mine
COMMODITY If not obvious	gold; silver
NOTES	Field notebook; geology NOTE: Scan covers 60p.

Keep docs at about 250 pages if no oversized maps attached
(for every 1 oversized page (>11x17) with text reduce
the amount of pages by ~25)

SS: DP 8/1/08
Initials Date

DB:
Initials Date

SCANNED:
Initials Date

Revised: 1/22/08

6000184c MITCHELL 4010

Book 4

Keuffel & Esser Company

ROSEBUD

82 0020

Weatherproof Field Book

"Rite in the Rain" All-Weather Paper

32 Leaves

4 5/8" X 7"

NEW ZEALAND enza FUJI #4121

CURVE FORMULAS

$T = R \tan \frac{1}{2} I$

$T = \frac{50 \tan \frac{1}{2} I}{\text{Sin.} \frac{1}{2} D}$

$\text{Sin.} \frac{1}{2} D = \frac{50}{R}$

$\text{Sin.} \frac{1}{2} D = \frac{50 \tan \frac{1}{2} I}{T}$

$R = T \cot. \frac{1}{2} I$

$R = \frac{50}{\text{Sin.} \frac{1}{2} D}$

$E = R \text{ ex. sec } \frac{1}{2} I$

$E = T \tan \frac{1}{4} I$

$\text{Chord def.} = \frac{\text{chord}^2}{R}$

$\text{No. chords} = \frac{I}{D}$

Tan. def. = ½ chord def.

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.) and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance. Multiply the angle by .01745, and the product by the distance.

GENERAL DATA

Right Angle Triangles. Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt. $10.10^2 \div 200 = .5$. $100 + .5 = 100.5$ hyp.

Given Hyp. 100, Alt. $25.25^2 \div 200 = 3.125$. $100 - 3.125 = 96.875$ = Base.

Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.

Leveling. The correction for curvature and refraction, in feet and decimals of feet is equal to $0.574\,d^2$, where d is the distance in miles. The correction for curvature alone is closely, $\frac{2}{3}d^2$. The combined correction is negative.

Probable Error. If d_1, d_2, d_3, etc. are the discrepancies of various results from the mean, and if Σd^2 = the sum of the squares of these differences and n = the number of observations, then the probable error of the mean $= \pm 0.6745 \sqrt{\frac{\Sigma d^2}{n(n-1)}}$

MINUTES IN DECIMALS OF A DEGREE

1′	.0167	11′	.1833	21′	.3500	31′	.5167	41′	.6833	51′	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

INCHES IN DECIMALS OF A FOOT

1-16	3-32	⅛	3-16	¼	5-16	⅜	½	⅝	¾	⅞
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729

1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

20-8-98

180½°, 241°, 209½° = Rd junction

317°, +04°, 101′ = 11 E side grd.

Centerg Rd

310°, +07°, 49′

+07°, 125′

Qt

296′

315°, +10°, 55′

297°, +01°, 92′

241°, +0°,

18′

122°, +01°, 54′ = 100% Qt

17′

25′

315°, -06°, 240′ = 100% Qt

13′

287

4′

RS-426 1099.6 - 1104 = R1 at log + location on x-section - Add.

RS-418 1058 - 1061.9 = basal Kaunia Mtns Volcanics Conglomerate = Barrel Springs Conglomerate

• Jessie Arthur

lower b = 014,37E

upper b = 007,57E

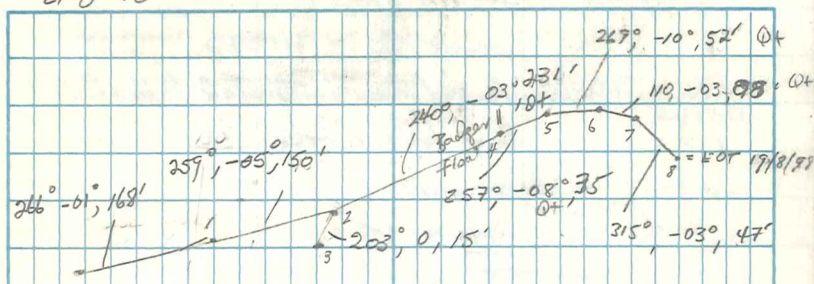
> 1892N, 4792E (to N)

= ∡ unconformity ~ 20°

up section zone b = 004,38E

UNDERGROUND DAY
COFFEE TO DENAY

21-8-98



Qt @, otherwise = Qt

(*) 131 = Covered Stope

0-1	4-38 = rd @ .38 o/c to 146' (N) 92 = b
1-2	30-40, @ 43 = DL breakaway #1, 53-72' 93-95
2-4	0-25', @ 58 = cultural story, 138-150
4-5	
5-6	
6-7	17-64 = Badger o/c, 79' = stream
7-8	42-47 → 47-58'

(*) 087, 34 W

MINE TOUR –

EXPLORATION DRIFT strong green material = source

~200' = Major (?) fault zone in face

LST (leopard spotted tuff) + planar laminated

= unit w/ different features.

Pumice box < Vitrophyre 1-10' thick

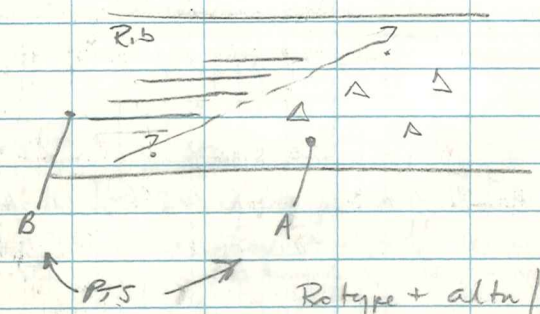
Planar lam

LST

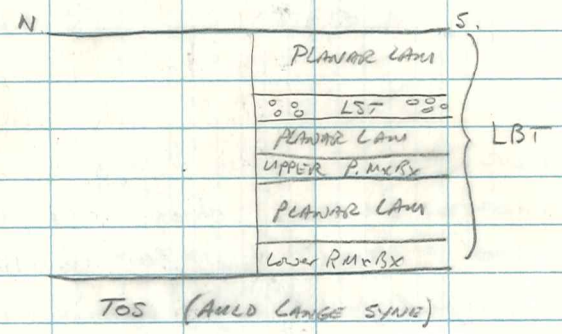
Stope 24 = Second Stop

SAMPLE A = Planar laminated tuff (bozer?)

B = Pink MxBx



Rotype + alter/prin



2068N, 4800E = Qt brown

2068N, 4804E = Qt brown o/c = NW 150° w/sticks =?

2072N 4804E = large o/c

Flow-banded Rl ± jasperoid

In 2nd valley, w = fb-Rl ± jasperoid + Mn Adit; also 1 true A-B style qtz vein; fb = 342, 70W =

2072N, 4800E = Qt brown w/ Badger mx clasts

~100' NE = $oc of Rl, fb to mass.

~75' WSW = o/c fb Rl (to massive)

w/ good AB Qtz veins

~100' w = fb-Rl (to massive) = o/c

~=200' w = large o/c Rl = staying xenolithic, massive, looks welded = possible vent "box" some fb clasts.

@ old A-F = fragmented, xenolithic Rl; possible "vent box", rock looks welded! At old F

ANITA →

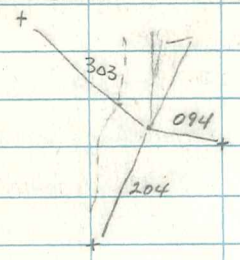
* [MAP] break out this facies to see spatial distribution still smoky, Qz ± bipyramidal + large sanidine.

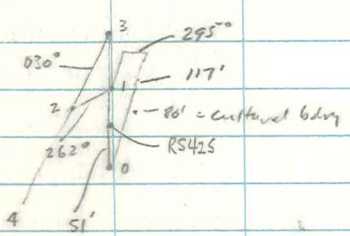
At old E?, platy = fb? Rl!!

In the Planar Lam Tc below, Near 2084N, 4804E
There is a trace to <1% (0.25 to 0.50) amount
of Sanidine phenos to 4 max 2mm. + the
plag & Hbn — I missed it before?, but no
glz phenos, smoky or clear. = different vx!

* Important Distraction
  * Chocolate Fm contains Sanidine!
    see if this holds up!

SATURDAY 22-8-98 DREAMLAND





0-3 = 148' 008°
0-2 = 97' 094°
3-o/c = Rd @ 33'
o/c - 4 007° 40'
4 to peg = 105°

18'
070° peg

0 - -1 350°, VA = -07, 120'
-1 to stope = 268° 25' - 50' Rd = 13' "stop" = 263, 85W
-1 to -2 007°, -03° 250' 1st stop = 070
76-82' dip = ±90
-2 to center Rd = 207° RS-443 = 138'
-3 to -4 350° VA = -09° 196' = 195'T = to maroon
-4 to -5 340° " 38' = Red brown Badger float

(128) maroon to blue-grey
greyish-red light brownish-grey
Arg Altn → very light grey → yellowish-grey
Strongly flow-banded, but sanidine are not
Subparallel to flow direction, rock chips
(tuff xenoliths are, however)
→ Need pts.

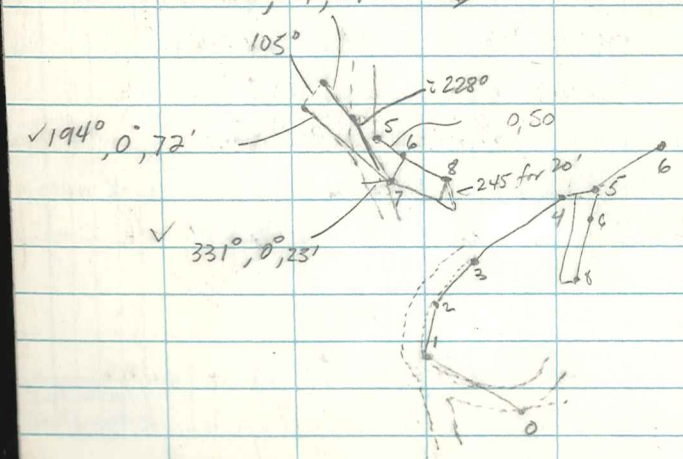
20cm wide fracture zone (75/M) w/ argillic
altn = 340, 85E (Southeved o/c)
fb = 015, 38W; ✓
J = 075, 77W ~ 4/m; 358, 75W, ~ 3/m;

NOTE (*) Dark-colored xenoliths are much more
⟹ Abundant + larger Here!

Start o/c @ 47' - 108'

Cult. peg = 062°, +03, 28' (289')
0-A 021°, +08°, 290' @ 65' = RD 1= all Qtbrown w/ abundant Badger float
A-B = 014°, +05°, 92' o/c to 7'
Cult = 095° A = (129)
B → peg = 066°
all =

STATION FROM	TO	DIR°	VA°	DIST'	NOTES
× 0	- 1	340	-01	93	0-28 = Rd, 28-93 o/c + Rd
✓ - 1	- 2	006	+05	48	0-2 = o/c, 2-25 Qt brown
✓ < 2	- 3	028	+06	74	0-74 = Badger o/c
✓ 3	- 4	045	+08	151	o/c 0-72 + 1/3 to 1/2
4	-5	090	+01		
✓ 5	-6	035	-03	50'	
✓ 6	-7	308	0	20'	
✓ 6	-8	035	-03	50'	
5	-9	065	+10	32'	
✓ 9	-10	068	+10	98 = 96.4	
✓ 10	-11	063	+10	85 = 83.7	
✓ 11	- 2080N 4788E	146°	= 326° -10	32	
11	-12	071	+06	44	
12	- Center Rd gravel	085	+04	~~81~~	0-40 = o/c + s/oc ~~0-40 = o/c + s/oc~~
		220°, +04, 74			



= basal Badger ~ 5-10' above ct

25-28 = o/c, 28-41 = Qt brown, 41-47 = o/c Badger

o/c = 1/2 Rd o/c = Rd rubly

Rd, then red/brown Badger float

No o/c = talus + Rd

all o/c

all road

all o/c

0-28 = badger float, 28-32 = o/c

0-2 = o/c 2-22 = Qt brown, 22-58 = dump 58-87 = Qt brown
87-98 = o/c

0-85 = o/c + s/oc

0-13 Rd, Qt brown topog

0-44 o/c + s/oc Badger

81 road bends south, 81 = center of road ±

(129) 2084N, 4792E = Badger volc. Bx / congl. s/oc

IN PROSPECT PIT - Badger tuff + volc. Bx / congl.

→ possible resedimented, syn- + post-eruption tuff bx = v. poorly sorted w/ ang + rounded clasts

sample taken for PTS

prospect pit / trench = 285° for 30' to Edge of dump

285° ~ 044
045°

to 2084/4792 = 044° ~ 40'

J = 075, 70E = sheared ~ 40/m OC ~ 10' across

possible ??? b = 284, 50E ???

Mod ang altn + weak leaching(?) force/nivar silicification = 5, !

(130) poorly sorted to graded (poor exposure) tuff bx = Volcanic conglomerate w/ dom. rounded clasts to 2cm across in a silty to sandy tuffaceous matrix

Argillic alt'n = mod/strong, silicification = 3 ($\bar{x}$) possibly 2

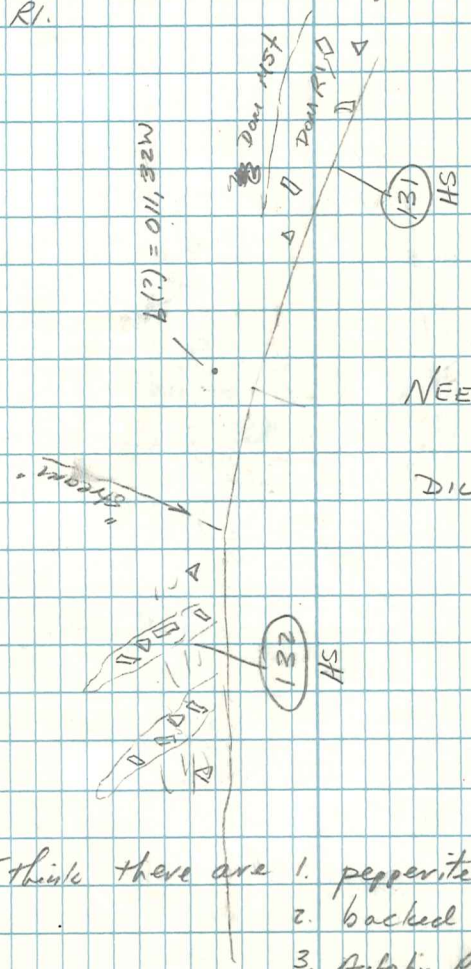
strong Hm stain, 2°5 = ? / the Badger is clearly mineralized.

J = 315, 54E 4-5/m ; 070, 62E ≈ 5-10/m

b = ?

(131) & (132) look like Badger / R1 contact

If so, I think R1 intruded Badger, but it is possible to interpret Badger as depositional clastic sequence resting on R1.



I think there are 1. pepperites
2. backed mudstone
3. Acto bx R1 which looks tuffaceous.

Need pts to check clast comp in R1.

27-8-98 ROSEBUD TOUR
TOM WESTERVELT, TRAVIS, PETER BELL
RON CLARKE

ALEX DAVIDSON

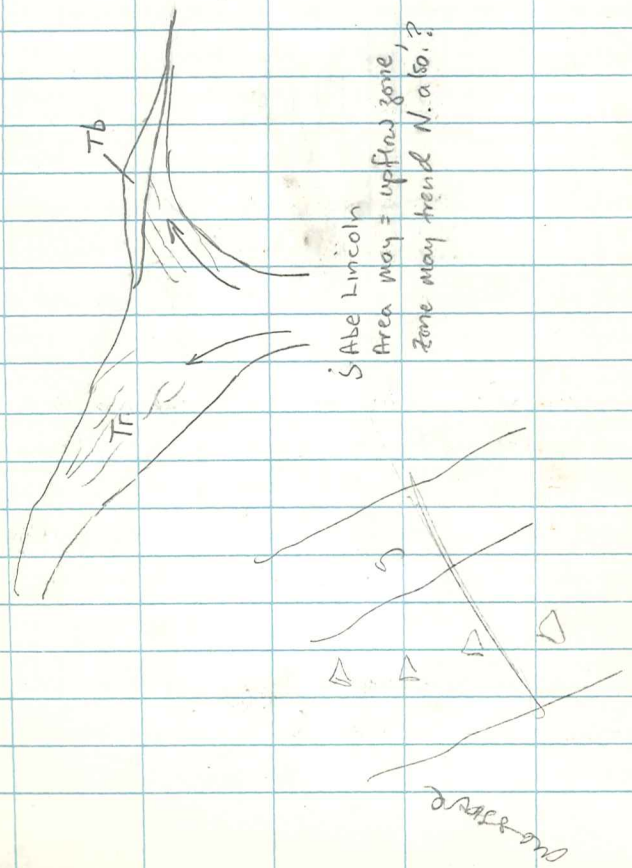
DOZER = MAIN HOST FOR EAST + NORTH ZONE
LBT = " SOUTH + " -

MASS AT
LSTWB
LST
PLT
PLBX
PLAT
MASS AT
Lower Pink Mx bx

TOS Grolo like Band = full of clay and didn't fracture well.

EAST ZONE Surf 55% mineralised mineralised
dG 116% "

28 Sept - 18 Oct
26 Oct - 20 Nov } Tom W.



FRIDAY 28-8-98

160 × 3 = 480 VA = +12° = 469.5

≃ 414' = 138 yrds

1988N
4792E } = QAL

28' = { 3 = 40' Road AZ =

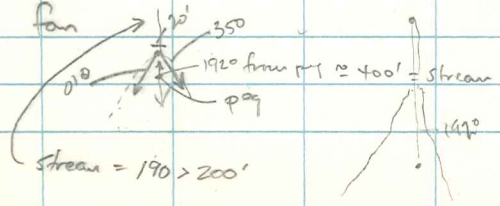
PTS 1984N
4784E } Qt probably = platy "micromonzonite"

peg = ~ 10' E of actual spot.

vfg hypabyssal intrusion (or lava flow)
No flow banding. All talus; Andesite
to monzonite = pinkish tint maybe Kf.

1984N
4788E } Qt, but = Qal in stream drainage

120' S stream ends in recent
fan



1988N
4788E } Qal at road (S. side) Rd = 30' wide N-S

1988N
4784E } Qal here to Rd = 72', Rd = 27' (E = 99'), all N-S

1992N
4784E } Qt active

72', 180°, VA = −23° (→ 66')

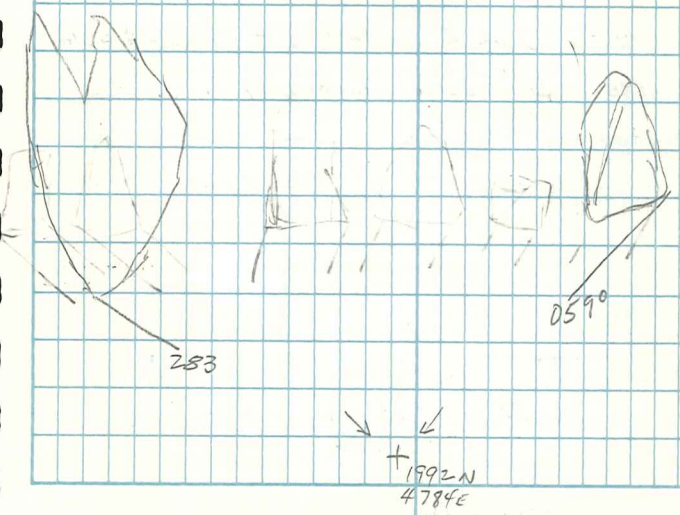
260° = 77 × 3 = 291'

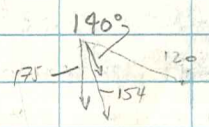
287° = 21 × 3 63'

050° = 27 × 3 81'

073° = 55 × 3 = 165'

140 × 3 = 420' (→ 360')
VA = +31°

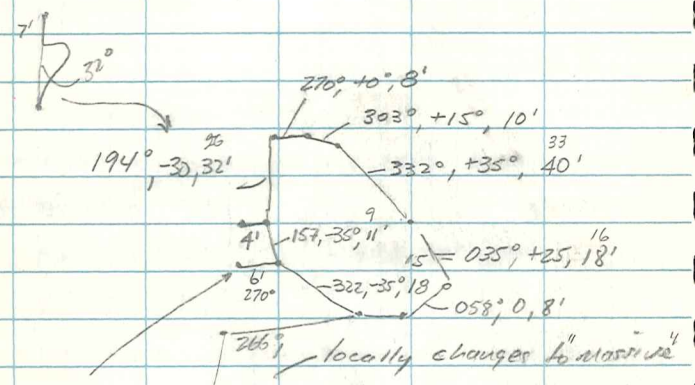




Fracturing = ?? Consol + which is which

(133) Aphyric ash tuff (fine) = Dozer

probably Argillic altn = pnut

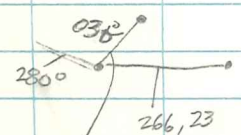


locally changes to "massive"

075, 56E = J or B, probably J ± parting ≥ 40/m

070, ±90 = J ≤ 50/m (localized)

317, 30E = J ~15/m



J = 030, 75W <1/m

(134)

b = 294, 70E = planar laminated, thin to v. thin bedded maroon to grey ash tuff (greyish red to light grey + medium dark grey to greyish red purple, minor dusky yellow to light olive grey)

o/c "trend" ≈ 275°/095°

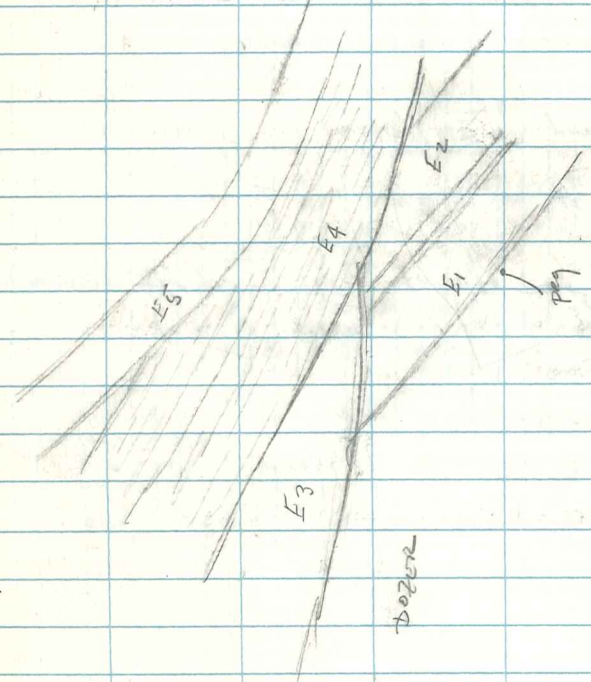
1992N
4788E > Qt w/ s/oc Aphyric ash tuff (Dozer)

to last station = 313°

From 1988N
4788E = 331°

SATURDAY 29-8-98

1984 N
4772 E } Qal = This bench looks to be Qal / Qf which is being eroded back, if so Qal = 100-150 thick above road level.



052° / 125 x 3 = 375' VA ≈ -03°
031° / 51 x 3 = 153' VA ≈ 15° = 148'

068° 118 x 3 = 54', VA = +34° = 45'

Stream = 166° Qf (22), o/c (22-46), Qf (46-130) = 127

bend = 75-85 / then old Qf to 40' N of pay
VA = 120

760°

010°, +18, 38'

X 042°, +06, 19' Edge o/c = 031°

o/c trend = 121° for ~ 25' then →

(13A) 20x10 cm / 24x20 cm; 1x0.5 / 3x3 cm

sb? = 355, 85W ?? 6x10 - 5x3 cm

V. poorly sorted volcanic breccia w/ angular clasts. Clasts = 3 main size ranges:

1. ≤ 1.0 x 0.5 to 3.0 x 3.0 cm
2. 3 x 5 to 6 x 10 cm
3. 10 x 20 to 20 x 24 cm.

tuffaceous matrix; locally clast-supported, but overall = mx-supported.

Monolithic = primary pyroclastic breccia

Rx = maroon (mx = greyish red (wx) to dark reddish brown, clasts = greyish red to v. light grey

fine (ash) tuff = aphyric (no hbn or pl obvious)

* liesegang banding = characteristic of clasts

* if eroded these fragments would look exactly like Bradger - particularly the volcanic bx!!

Check old o/c s.

> 60' @ 043°, VA = +45° = 42'

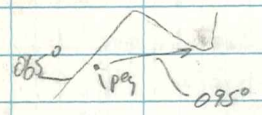
o/c below = -6' vert

J = 088, 67W = uncommon except zones w/ 30/m for 0.5m

J = 310, 42E = uncommon, possible fault plane
(to 330°) w/ 100% oblique slip = 310° rake

1992N
4792E } CT vbx/Qt (active)

to o/c = 1. 134° 33x3 VA - 04°
2. 100° 34x3 VA + 10°
3. 090° 26x3 74' ± CT VA + 18°
4. 041, ~20', ∴ 26x3 = 61' ± CT VA + 35°



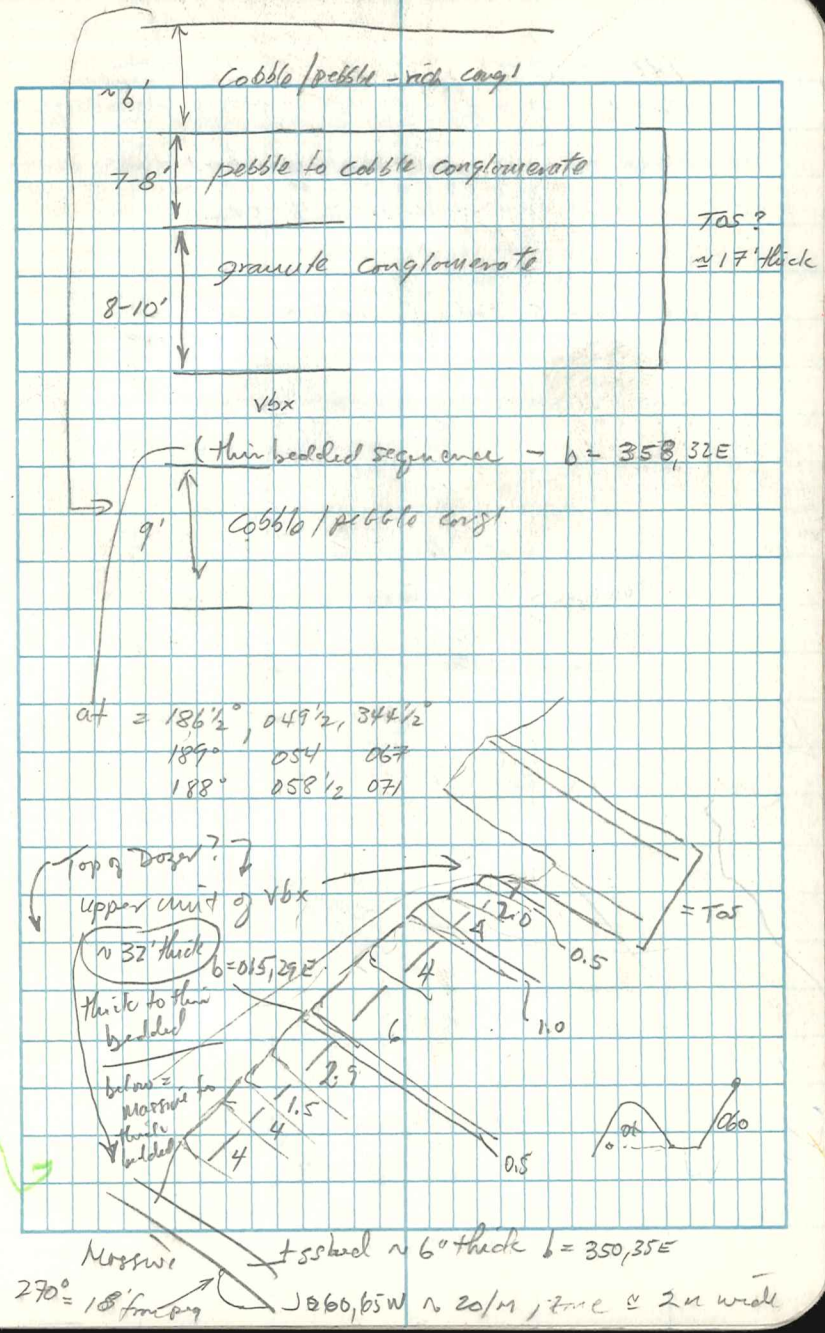
182°, 118°, 205° cf = 168° b = 001,38E
↳ Epiclastic interbed

OVER.

granule conglomerate w/ Als clst (Epiclastic) = TOS?

vbx (pink mxbx?)

~~184°, 048°, 243½°~~ (o/c)
185, 047, 064
187, 055, 069



w/ rxchip & coarse beds =

182, 204, 217

4' above stream join

038, -19 91' = tss bed (~1' thick to 18")

b = 354, 55E

bc bc Rd

p1 = 180, 205, 220 stream = 327°

b = 352, 48E near p2

bc bc

176, 211½ 200

Rd

b =

uncertainly here

p3 = 181½, 202½, 214

6 - 3 + 1 = 10

F = 288, 45W, slics = 108, 13° = strike slip

must be small displ. rx = continuous as far as I can tell.

@ CT w/ pebble conglomerate above + facies change to here from below

+ Andesite (?) dike = 4cm wide 008, 42W

181, 203, 214, 211

179, 201

CT + b = 020, 26E pebble congl overlying TOS @ CT

p congl b = 025, 29E — CT

TOS b = 030, 35E

176°, 198/305

1996W
4292E) pebble congl 8g (Epiclastic Facies)

J = 275, ±90; 295, 85W

b = 015, 35E

To ot = 089°, ±02, 129' p congl = 025, 30E

269° 023, 34E (TOS) = b

2000N
4792E) Epiclastic Facies

b = 015, 38E

J = 300, 80W, ≈ 3/m (3-4/m)

J = 058, 65W, ≈ 3-4/m

END OF DAY

9-2-98 | Southwest side, South Ridge

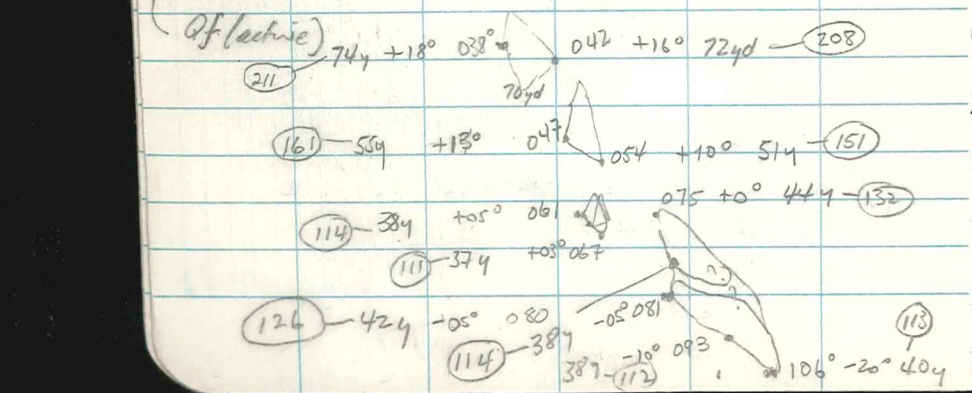
Qal/Qf ct ≈ 100' South

1988N
4780E) Qal to Rd = N,

1984N
4780E) Qf start, above: Qt + s/oc
fractures = 240° & 015°
Stream = 270° for 41' = 183° ~200' to Y
= 350° ~ 75' to Qf
Rd = N 142-168'

147°

1992N
4780E) 61' @ 087
Qf (active)



light gray in massive, aphyric, fine (ash) tuff

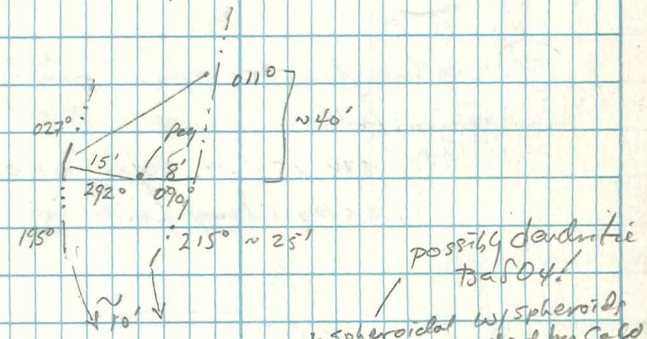
135

J = 071, 78W ≈ 100/m = platy rock

J = 322, 58E ≈ 20/m w/ some shearing w/ $CaCO_3$ + Hm filling open-space fractures.

Alt'n = Ep ± Cal ± Hm ± Kf = pink silicate (?) along fractures / joints

wx = pale yellowish orange to dark yellowish orange - minor pale red purple (Hm stain)



possibly derivative $BaSO_4$!

* spheroidal w/ spheroids surrounded by $CaCO_3$!

135 FLOAT = NWRA-096 / flow-banded, aphyric lava or intrusion = dacite - rhyolite w/ hackbut bx + Mn (brown/black) $CaCO_3$ w/ minor gtz
grab sample at peg.

* Rosebud Valley = ① major river drainage?
② filled w/ Qf / Qt = Qal
③ major river drainage
④ starting to fill again
Maybe NO significant fault!

O/C = 0220 trend ~ 10' wide

J = control = 038-025 @ 70W (measured) marginal dip.

(136) 285 to stream ≈ 40'

p = 125½°, 160°, 184½

p = 158, 180½°

poss = semi-dense

gtz latite to rhyolite

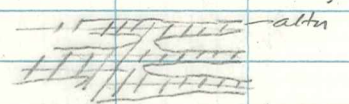
massive, fg intrusive (dike) = aphyric dacite?

v. poor joint bk(??) ≈ 320, 50E ??

=

(137) = either dike or aphyric tuff – most likely aphyric tuff.

J = 278, 75W ≈ 40/m w/ altn (ep) ± clay along fracture



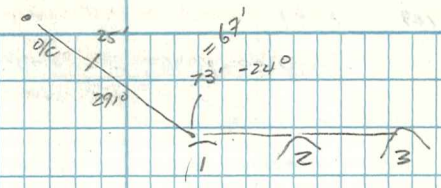
bold O/C prob = dike (Hbn)!

J = 344, 80W = 2/m = w/ Hbn, Cal & ± S =

333°, 132°, 028°

102° →

(138)



(1)

165° 120°, 10'

J = 080, 46E $\bar{x}$ 20/m (range 5-100)

J = 047, 57E $\bar{x}$ ~10/m w/ strong calcite altn/veins

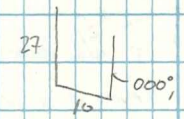
Calcite + Mn(?) = grayish red to blackish red.

rx = aphyric (almost) dacite? fine (ash) tuff w/ rare hbn(?) acicular microphenos (to 2mm long + pl phenos, 2×2mm. only 2 seen! Massive, but fractured – joints

(2) 275°, -10°, 61', 23'

180 → -30°, 27' ; 160° → 0°, 10' @ 22' = Another Λ !

J = 070, 63E ~40/m (≤20 to >80)



trend = 030°

J = 285, 53E

~25/m

J = 075, 47E = plaf

$\bar{x}$ = 100/m but localized.

(139)

149°, 035, 318

J = 068, 53W ≤8/m ; 070, 38E ≈40/m = ± platy

J = 275, 75E ≤3/m

rx = massive, aphanic fine (ash) tuff — possible small shale/mud chips?? (tr)

platy

from 138-139 = fine (~2x2 mm) dissem clots of calcite → SiO2 + weak op (?) altn of rock!

→ 3x4

* Calcite → Quartz

qtz "replaces" Calcite along cleavage planes — rather than replacing "leaves"!

116°, 394°, 158° 345° 063° 14', 33' → 113°
331° 37'

(140) top of "DOZER" = No bedded units — 100% "massive". Here = erosional surface

first sed unit = Vbx w/ Dozer clasts then into greenish epiclastic beds

Erosion Surface ≈ rolling w/ westerly dip

epiclastic ro b = 002, 13W (flat + rolling)

112°, 159°, 196°

314, 263 / 075° -10° 40' VA4 280°

(345 +33° '63'

F = 330, 88E = D5 slide = 330/85°

(141) great slide = 8.5' displacement

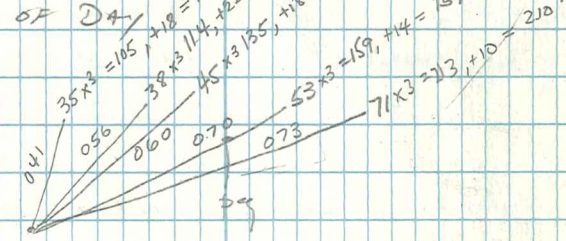
Contact = 305, 14E

035°, VA420 60' 61' & 90'

260° for 35' = CT

to flag = 42 x 3 = 126' @ 072°

END OF DAY



END!

S, 26×3 = 78' VA 18° = 74' = fan / Qal

40×3 = 120 @ 105° = fan / Qt

29×3 = 87' @ 242° = fan / Qt

N 3×15 = 45' = Qt / fan ct = 308° ~ 40'

60×3 = 180 @ 123°

1992N
4776E } Qt

38×3 114

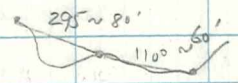
164' = Qt (active)

1988N
4776E } Qal

S = 42' = stream (20-42)

N = 59' = channel, 111, 191 = main

210 = Qal = 241



030° 164 149×3 = 447' / 337 139×3 = 417 / 264

15 = 45' South to 75' South

stream = 38×3 = 114' South

250P 100'
68° to 120
270 to 40' 135
105° to 140
46×3 138

56×3 = 168' South = Old gravel terrace

012/82 246 026/222 020/174 023/102

111/120 113 164

344//320 . 136°/108

015
035

055/390' 207

063/357/150

114/120/47

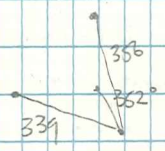
310°, +06,

055 to o/c

0-45 = o/c @ 50 = 035° to o/c ≈ 20' t

@ 80' = peg 1992N, 4788E.

peg to o/c = 055° ≈ 30' t.



20' t 35' @ ↑ 010° 25' t
@ 275°

(142) Autobrecciated (?) Dozer (?) tuff (?) rock appears to be a lithic tuff w/ clast composition = mx composition. bx varies from incipient (sw) to well developed (N, NE) There is a strong Hm stain to the mx of the bx.

* There is very strong/intense pervasive carbonate ($CaCO_3$) alt'n of the o/c, particularly most of the fragments. Because of the $CaCO_3$ alt'n some clasts have wx giving the rock a vesicular texture.

J = 310, 60W ⊥ X ∠1/m

J = 060, 65E, X ∠1/m

The rock is bx but massive.

(142) 210½, 101, 161 ← = mix supported bx = moderately well sorted

tuff bx w/ V. strong/Intense Hm stain to the mx

clast comp = mix comp, probably auto bx

possibly an ash-flow/fall that flowed & bx'ed near the top; possibly a primary pyroclastic also, ??

142'/064(-)°/-07° = o/c when o/c = 350° trend

0, +105, 0 @ 20 = 150' → 40'

35', 76', 110' @ 115' = stream 264° Az, -12° Vt

Dominantly clast supported bx = poorly sorted

Strong $CaCO_3$ + Hm alts

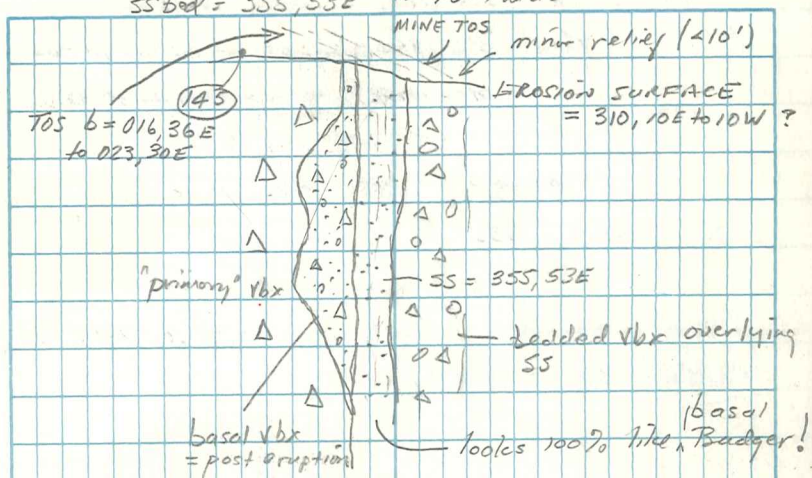
S. to I. Intense

(144) 108°/195/300 o/c/Qt still strong Hm + Cal alts rx = Mx supported bx

162½/203½/231

163½

55 bed = 355, 53E ~ 10" thick



(145) J = 271, 83E ~ 30/m over 2m (Narrow-Zone?)

TOS may not contain ALS fragments here - small black lithics may all be volc. Need pts.

170/207 CT = 088° ≈ 78°! 78'

(146) 157/195/224 looks like small % ALS?

TOS b = 015, 25E

CT ≈ flat minor dip to SW(?)

10-15% volc frags → pale green clay = Nont?

" "

TOS has ~ 3% Qtz grains ≈ 2 to 3mm across.

From CT loc 330 (150) 40' VA -02°

then 325 (145) to CT 61' VA -05°

O/C = 085° 15' = incipient bx

015 → 30'; 355 → 72' = bx

b = 017, 23E

1996N

4788E + 30 = 4818E

} Flow-banded Td (?)

1. Major tilting prior to deposition of TOS (mine) = post Dozer?

4-9-98

190/350/253/306 14

66 — 255 -18 289 -67 -20

63

55 — 257

5

263 -38 -22

35

293 -24

81

297 - 48 144

317 -66

325 - 45 337

135

32°

CT = 325 22' / 176° 75'

230°, 66' VA

(147) Fb Dozer tuff?

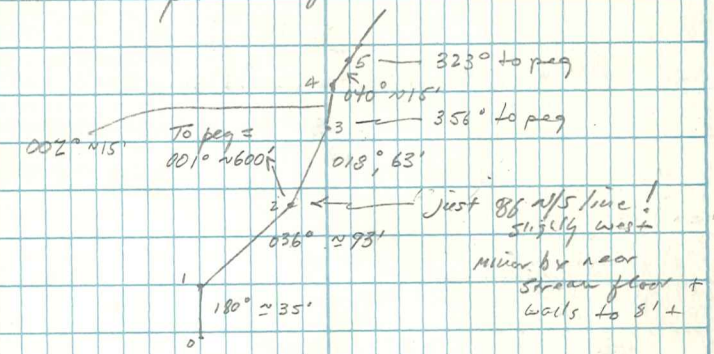
J = 283, 62W ~ 3/m

J = 011, 60W ~ 40/m

} O/C = broken/fractured but not a bx = fb. No reliable attitude

Note: breccia has irregular contact w/ massive/flow-banded/platy phase of tuff. It looks like autobx

Note: Hm = paleo surface oxidation



@ 2 + 10 = possible fault 349 ± 90

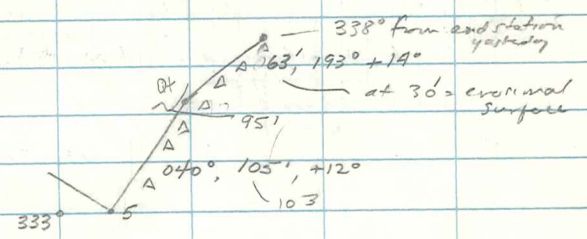
@ 3 = fault + bx rn = 002, ± 90° = major splay

(148) = over

(148) Fault Zone 1cm to 60cm wide. Vbx on East, flow-banded on west, displacement = ?? fault zone = bx w/ thin zones of thin altn along fault planes.

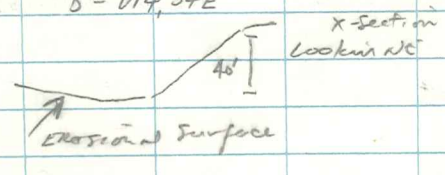
fb = 080, 78E

NWRA-97V = sample of fault bx w/ strong thin stain.



(149) = CT HS T05(?) = porous volcaniclastic bx = tuff bx

b = 014, 34E =



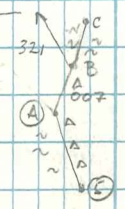
From (5) Stream traverse to CT

5-A	332	+23	64'	59
A-B	344	+19	33'	31
B-C	007	+30	37'	32
C-D	353	+28	43'	38
D-O/C	345	+24	32'	29

(150) b = 011, 34E

= Erosional Surface + CT

Erosion Surface = 333, 27E



ES trends 265°

@ (5) + 8' W J = 275, 53E w/ thin altn ~ 1/m Vbx

- 5-A Vbx N, fb ± Vbx 5

- @ 5 = fault bx w/ thin ≈ 007, 85W

CT = from A 321° +33° 36x3 = 108' → 91

@ (C) fb = 295, 85E

@ (D) = bx = minin to NE = (D)

064/188

(150) J = 278, 77W ~1/m J = 030, 59W ≈ 1/m

J = 046, 88W <1/m

(151)
E-W / 165 / 053 / 017

b = 058, 13E (?) No fault seen = filling paleo-low
I guess there is >250' relief on the Td paleo surface

(152) 051 / 087 / 157

b = 007, 17E

ES = 325, 23W = v. irregular altitude = ~x̄ for here, but rolls to NE.

ES = O/C trend = 260, Surface =

fb = 280, 78E

J = 278, 83E ~25/m over ~9m zone
x̄ ≥ 2/m

calcite veining + open space filling in Td

Hs Td + Tos?

(153) b = 085, 17W
084 / 141 / 193

030° 55x3 = too far + Qt

N 12' = stream

N ~18x3 = top fan + other side stream

275° 44x3 = too far

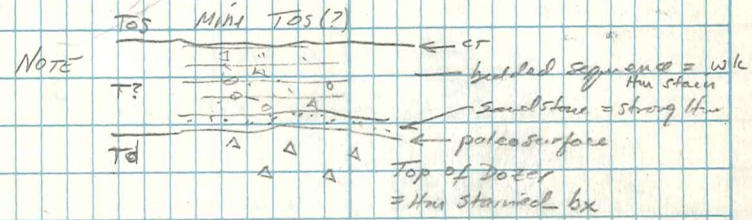
112x3 35x3 80x3
130 200 + 235° = paleo talus

5/9/98 Rosebud Canyon

1988N / 4796E / Qf (active)

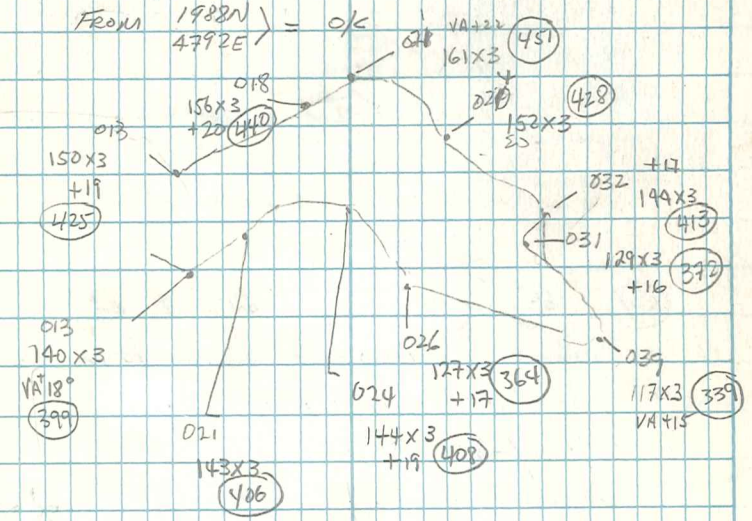
Edge fan ≡ W 60'
= N 40' = stream
stream = 069

Qt = N 28x3 84'



Major Hiatus = "sandstone" age! = red beds!

From 1988N / 4792E / = O/C



Qt (paleo) = 110 x 3 = ~~380~~ 365

Add = 271x3 @ 024°

2
271
3
813

1984N / 4796E / Qf (paleo)

1988N
4800E } Qf 186° 186-208' = Rd then 060°

043 ~ 30'
205° ≤ 50'

Due South
106-130' = road (2nd)

1984N
4800E } Qf @ 220' = Qt / Qf CT → 037° ≥ 100'
(040) ≥ 80'

Qt = Td

230 for 98x3 = 294

END Fan = 69' 279° → 125°
N = 14'

Edge fan = 136' @ 173° (then ~120' = 20'6)

"lwin" = 138'-166' = Qt
(125° → 42' then 152° ≥ 50'
305° → 62' = o/c 15x3'
= (154)

Qt =

then = 245°

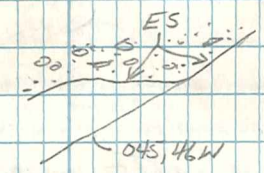
→ 070 ≈ 43x3 = 129'

(154) Qt / Td CT Qt ≈ 20' vent here.

Aphyric fine (ash) tuff w/ mod/strong Hm stain
bedded (flow-banded?) → platy fracturing
bed/fb = 033, 59E
possible Vn = No = erosional surface 045, 46W
→ yes = vn / fault? + ES
J = 286, 80W (variable) ≈ 20/m
J = 045, 46E ~10/m

NWRA-98V

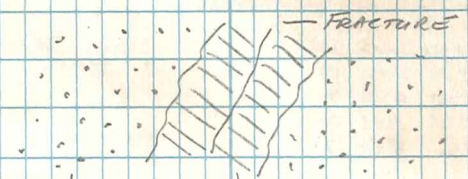
NWRA-98V = grab sample of "Vn" + wall rock
(possible fault plane) = 045, 46E, In part
= Erosional Surface, white clay (Kaol.?)
+ Strong/Intense Hm altn.
Any Au = Excellent sign here / also trace metals



Strong carbonate ($CaCO_3$) altn = pervasive

1992N
4800E } Td
Lower Prospect pit = (156) = NWRA-100V
upper Prospect pit = (156) = NWRA-99V

NOTE: ALTN ZONING (?) POSSIBLE!



Intense/Strong Hm = fract-cont. + disseminated

white clay ± S = (J+g nw)
Kaolinite(?)

(155) (215°) 035° ≈ 25'

massive to platy wx Dozer tuff(?) =

aphyric, fine (ash) tuff

Highly fractured ok w/ g/j 1m (~ 7/3 - 8/2)

on most fractures

"Major" mineralizing (?) fracture set

= 357, 85W and 050, 70E ~8/m

Hydrothermal ± tectonic bx VNS = 350, 40W ≈ 10/m to 015, 50W

J = 322, 60W ≈ 15/m ; 283, 80E ≤ 1/m

platy tx = Bedding / fb(?) = 272, 46E

NWRA-99V = 1m + wall rock adj veins

A = g/j limonite + weak SiO2, kaol? + ≤5% green clay (mm)?

B = 1km-dominant? HT bx vn/zone

possible fault/shear = 013 ± 90 = SS shots = 013 @ 04°

o/c - here to peg, peg-S 30', peg-W = 5', peg-N = +50'

(156) 046/167=347/045+225 ≈226

20	240	30x3	56
	270	27x3	81
15	305	31x3	90
25	314	78x3	212
	340	71x3	193

Fault + VN = NWRA-100V =

Next page

(156) massive to platy, aphyric, fine (ash) tuff = Td(?)

+ 035, 27E = platy jointing = 030, 33E w/ some voids.

J = 008, 56W ~ 5/m, but shearing w/ HT bx on some

J = 337, 70-90E ≈ 4/m (variable) USE

Fault = 0.1 to 0.2 m wide = 298, 72W to 290, 88E

strong 1m (g:J:H) ≈ (5:2:3) + strong

white clay (illite or kaolinite or both?)

+ weak silicification (quartz along

fractures (trace to ≤ 2% w/min vn)

possible trace CuCO3, but probably

nontronite or some other clay-like

mineral - probably not montmorillonite.

J = 068, 48W ~ 2/m

J = fault trend ≈ 5/m overall, 40/m on HW side of fault for ≈ 1m away from fault

1992N
8796E } Qt mixed

END OF DAY

SUNDAY 6-9-98

164/217/245

(157) thin - thick bedded volcaniclastic (aphyric)

b = 007, 36E

J = 305, 82W ≈ 3/m

J = 075, 72W ≈ 8/m = unit to unit above TOS

MOD → STRONGLY INDURATED w/ well developed olive "clay"

mineral = wx montmorillonite (?)

b = 023, 23E = unit + strongly indurated = granule to pebble conglomerate, mod sorted to poorly sorted, thin bedded (dom) some beds to 25 cm

168/214/241 o/c → 323°

166 /202/233 = b = 023, 27E = fine (≈ 0.8×1.0 cm) pebble conglomerate = strong induration

J = 285 - 080 ≠ 90 ≈ 8/m

J = 002, 85W ≈ 3/m

168/208/231

b = 357, 57E

168/202/229

b = 007, 50E

b = 025, 22E = platy Amb (?) (tuff?)

b = 006, 48E = "

b = 050, 43E b = 325, 58E

310/221/166

320/231/167 → b = 043, 45E

(159) = latite flow, dike or tuff → probably a flow. Some (rare) Sanidine phenos (≤Tr) to 5×4 mm, ≈ 2% Amphibole (Hbn?) phenos from occasional xls 1mm to 3mm long to rectangles 3×5 mm

Amph → chlorite, weak Q

NEED PTS → dessem, ep (?) in mx.

NOTE: I'm looking for a fault, but it appears that the top of the hill is breaking up into slump blocks.

1996N 4796E } 100% platy latite float = Qt from here to ridge top.

(160) → possible flow-top bx!

262°, 174', +12° = Vbx possibly sheared, poss. = slump

J/shear = 070, 75W ; 285, 80E ; 305, 70E

probably o/c

all Qt (platy latite) to here

1996N 4800E } Vbx float = v. near o/c = Volcaniclastic or pyroclastic - need more time - bedded + strong white clay alt'n

NOTE ⟹ Looks like Badger = thin mx!

2000N
4800E } s/oc

a few (<1%) clasts to 3cm = rounded.

lapilli-size

fine volcanic bx w/ Tuleuel (reddish-brown) mx

* pale grey fragments = angular to rounded

most = subrounded autoclastic? = mx supported

CT

20' W = CT w/ Qt 100% platy latite!

frags = ≤ 1cm, $\bar{x}$ ≤ 0.3mm

* strong altn ("white clay") x-cutting rx

one trend in float = 235, step (75) W.

NOTE: THIS AREA NEEDS TO BE MAPPED + SAMPLED

2000N
4796E } Qt = 100% platy latite

END OF FIELD DAY

MONDAY 7-9-98 LABOR DAY SOUTH SIDE SOUTH RIDGE

74347.4
74285.4 0735 → 0844 = 1:09
62.0 miles

1984N
4808E } +27' W = 345° Edge of paleo Qf1/Qal trend = 280 to rd, 105/100'

peg + 36-66 N = Rd

+ 176 = stream in Qal +20' Qt: 295°

+ 291 = stream " = 284°/30' → 245°/100'

+ 345 = Qf1 " = 067° ~100'

= 028° ~ 50' to stream

1988N
4808E } Qt active = Td

South = 10' = Qf1/Qal

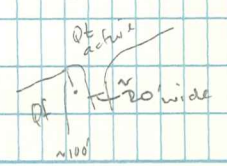
46 = stream = 058°

111 = " 098°

NOTE:
Above stations = E of map with ME - ADD TOMORROW!

1992N
4808E } Qt active, Down = Td

~350° 50' = o/c = Td



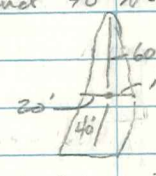
Td >> : latite (flow?)

1996N 4808E > Active Qt = Stream → 170 to Y ~100' Ng lost station
→ 348 to "top" g Ridge ~800'

2000N 4808E > o/c = Td 270° to Stream = 65'

(161) → F = 348, 40 W - good slicks = 348° plung = 10°
dom. ss motion - preponderence g info = reverse slip Hanging wall moved "South"

From here to peg = 027° = All qt o/c ≈ 35' wide and 40' N-S, ≈ 35' here to peg



≈ o/c plan

Strong jointing in Td ≈ 40/m 312, 63E
J = 358, 44 W ≈ sym to fault ≈ 20/m near fault

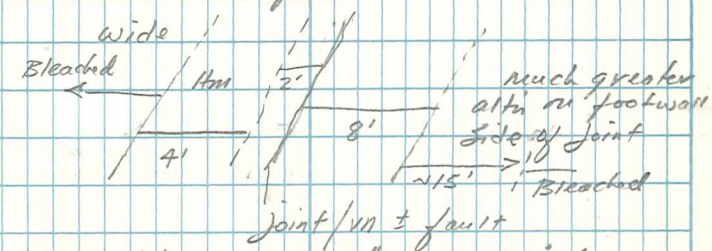
NOTE: From 1996N/4808E (350°) ~200' = v. strong argillic alt'n - rx = white, trace g 5°
From there to 2000N/4808E = strong/v. strong alt'n structurally - controlled w/ ~70% Hm stain remaining

From 2000N/4808E 286° for 28x3 = 84' = Small prospect

NWRA-3601V

(162) = Small prospect

= fracture (possible small fault, but no slicks seen = 085, 66E ; All Td bleached (argillic halo to Joint = 10' wide



Looks like a series g "mineralized" fractures
J = 295, 80E ≈ 25/m
J = 330, 78E ≈ 4/m

* CASTS After calcic py Adjacent structure in argillically altd rx $\bar{x}$ = ? guess = 1-2% ; also trace open space clear quartz "veins" (irreg., short stringers) w/ drusy qtz xls in voids.
vn = 1 mm to 2mm max w/ up to 1cm silicification g wall rx adj vn.
No Qv in sample = 100% Arg + MnO2 w/in Joint/shear (~2cm wide)

= NWRA - 3601V

2004N 4808E > Qt = Td Strong Argillic alt'n >95% float

WHERE THIS STREAM CROSSES Ridge =

E V. strong arg altered, W = V. strong Hm altered

* 10°/217° to ridge = ct / Epidotics / Latite frags

Storm - I'm going down!

* 223/176 = prospect pit / epidotic
280 = 30' from 2004N/4900E

WINNEMUCCA → ROSEBUD CANYON = 1:09/62.0
hr/mi via Imlay

Arrive	74404.0	15:37
Leave	74347.5	14:10
	56.5	1:27

62.0
56.5
5.5

VIA JUNGO Rd ↗

IMLAY = 5.5 miles longer & 18 minutes faster

WED = 8 to 10 positions to improve / all high

O/C = 3×0

Contacts = 2×0

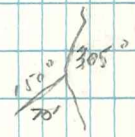
faults = 0

10-9-98 THURSDAY

1984N
4804E } Qt

335° for 225'
010° 50' = Qal
50' = Qal
N 102 = Rcl -182
Stream - 229' 125°/320°
" 279' 120°/305 ~ 30'
then 270° 25' = other stream

328' = Qf = Td
396' = fog



1988N
4804E } Qf = Td (better)

br + prim ?
hydrotherm ?

Hydrothermal? / SS over

Reverse notation on front

dike, 040, 43W

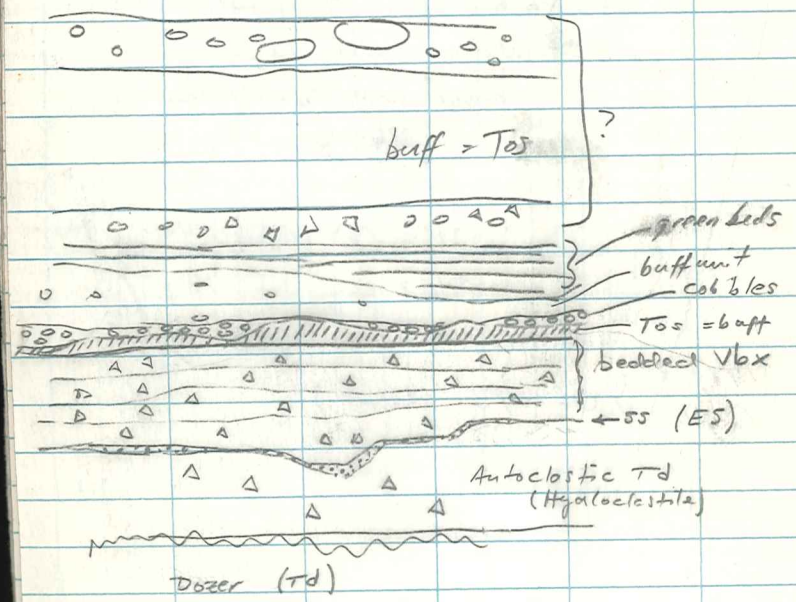
dike 2 = 342, 32W

053065 — Dike trend to E wall

2 1

* Tos = pinches out?

buff unit has some ACS frags



2004N
4800E > Bud float near "Bud" at o/c

305, 43E = bud / LST float

2004N
4796E > Bud float? s/oc

2008N
4796E > Bud float? s/oc

2008N
4800E > Bud float? s/oc

CHOCOLATE	LBT_2 = planar lam: chocolate w/ hlon + sour
	TBeD
	LBT
ROSEBUD CANYON FM (TOS)	TOS section
	TBed Dozer bx
DOZER	Dozer

200SN
450SE } Td (?) float = NOT chocolate

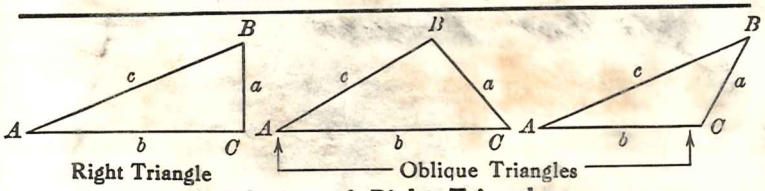
Fault = 55SE = N · 279,76W = in shaft

→ 000 → 34×3 = 102 + 20 = 122

BS. – Oct (early)

(303) 278-1574

TRIGONOMETRIC FORMULÆ



Solution of Right Triangles

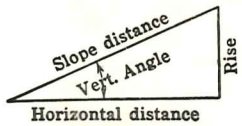
For Angle A. $\sin = \frac{a}{c}$, $\cos = \frac{b}{c}$, $\tan = \frac{a}{b}$, $\cot = \frac{b}{a}$, $\sec = \frac{c}{b}$, $\operatorname{cosec} = \frac{c}{a}$

Given	Required	
a, b	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	$B = 90° - A,\ b = a \cot A,\ c = \frac{a}{\sin A}.$
A, b	B, a, c	$B = 90° - A,\ a = b \tan A,\ c = \frac{b}{\cos A}.$
A, c	B, a, b	$B = 90° - A,\ a = c \sin A,\ b = c \cos A,$

Solution of Oblique Triangles

Given	Required	
A, B, a	b, c, C	$b = \frac{a \sin B}{\sin A},\ C = 180° - (A + B),\ c = \frac{a \sin C}{\sin A}$
A, a, b	B, c, C	$\sin B = \frac{b \sin A}{a},\ C = 180° - (A + B),\ c = \frac{a \sin C}{\sin A}$
a, b, C	A, B, c	$A + B = 180° - C,\ \tan \frac{1}{2}(A - B) = \frac{(a-b) \tan \frac{1}{2}(A+B)}{a + b},$ $c = \frac{a \sin C}{\sin A}$
a, b, c	A, B, C	$s = \frac{a+b+c}{2},\ \sin \frac{1}{2} A = \sqrt{\frac{(s-b)(s-c)}{b\,c}},$ $\sin \frac{1}{2} B = \sqrt{\frac{(s-a)(s-c)}{a\,c}},\ C = 180° - (A + B)$
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° 10′. From Table, Page IX. cos 5° 10′ = .9959. Horizontal distance = 319.4 × .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. Cosine 5° 10′ = .9959. 1 — .9959 = .0041. 319.4 × .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.

MADE IN U. S. A.