

At least some of this was done by M.N. (?) or S.C.?, or —. Probably by M.N. There are references to observations by J.H. and some computer logs have Jeff's name on them.

∴ Logging on 88-28 was done by several people.

D.S. = ~~20~~ 18
O.S. = 21
S.S. = 12

This section probably done by M.N.

Well — 88-28 NOTEPAD 1

332 — 438 ft — Rhyolite flow (large amounts of light (partially sealed) cracks — not really showing any shear or mesoscale — recognizable idiomorphic minerals to document tension either



some of these cracks contain clusters of Q_1 calcite, maybe albite

438 — 459.5 ft — some of light fractures contain "pockets" — flower white

Conc lens
top 20 ft
to the flow
475.8 — 494.5 ft — associated pattern
These are flats where each vesicle would be lined with scoria other spots just with few minerals in and then with scoria

Some vesicles organized along fractures

498.5 - 520.5 ft - transition from
vesiculated upper part of flow
into rather tight rhyolite

553.5 - top of other flow -
- 553.5 - 7 ft thick
vesicular basalt

561 - 565 - altered pyroclastics

565 - 577 - rel. fresh vesiculated
basalt

577 - 652 - epulchric - highly altered
652 - 840.5 welded tuff with
clasts, then epic,
then (from 775 ft)
basalt flow -
- everything highly
altered

840.5 - 849 ft - highly
altered small
epulchric

849 - 859 ft - - -

859 - 888.5 -||-

868.5 - 878.0 -||-

then less altered

878.0 - 886.5 -||- epidemics

886.5 - 897 dip-slip - altered epidemics
N fault - 45° dip (i.e. patches of alteration)

71 cm down from 878.0 ft
waxy clay + hematite

40 cm above 886.5 ft

reverse dip dip 75° -
dip ca 15°
(hematite + KCl
of white clay)

dip 27° - 886.5 ft ca 2 cm
thin clay/hematite (stripped)
fill

91 cm below 886.5 ft

3.5 cm thick 68° dip - rotated
clay/hem (slipped) fill oblique structures -

3° dip rather N than oblique slip -
direction defined by lamella/day

113cm down from
886.5

897 - 906.5 barrel

906.5 - 917.0 ft

71 to 79 cm down from 906.5 ft

cluster of fractures in
incomplete def. zone in
altered pyroclastics

257/66° dip - N fault dip-slip -

295/10° - oblique slip / sin - 47° pitch

128/20° - sin - 218/05

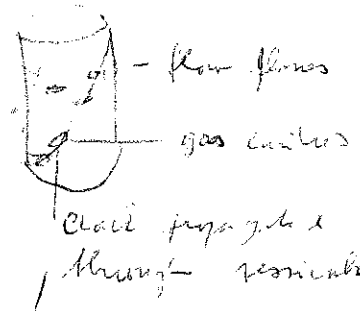
~~906.5 - 917~~

917 - 926 ft altered pyroclastics

926 - 934 ft -||-

934 - 938 ft -||-

938-942 ft Basalt - highly vesicular
 942-951.9 ft - " - less ves.
 951.9-961 ft - " - less ves.
 961-970 ft - " - "
 970-979 ft - " - part, without
 vesicles
 crack location



it also can be
 a combination of
 vesicles & textures

979-988 ft basalt clastic:
 dip 55° 980 ft, striation in hemichone, oblique
 dip 57° 981.75 ft, oblique - strip
 dip 52° 982 ft, dip - strip
 dip 60° 982.5 ft, strike - strip

988 - 997 ft Basalt

142 cm down from 988 ft

strike-slip fault, str. in hematite
dip. 42°

40 cm above 997 ft - strike-slip
fault, in chlorite, 65°

997 - 1006 ft Basalt

998.6 ft - fault, with 2 cm thick
alteration zone (whitening)

22° dip, oblique-slip with N faulting
dominant (chlorite + gray clay)

1006 - ~~1010.6~~ - Basalt

1010.6 - 1015.5 - highly vesicular basalt
(top of another flow)

1015.5 - 1024.5 altered ves. bas.

1029.5 - 1033 altered buff 2,
1033 - 1051 altered small
1051 - 1060 altered -||-
1060 - 1071.5 almost not altered small

1071.5 - 1080.5 -||-
dip 76°, obl. - up, hemilitic -

1080.5 - 1090 altered pyroclastics

1090 - 1092 -||-

1092 - 1098 - basalt

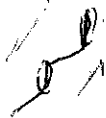
2.9 ft from 1098, 5° dip Tfract.,
very light lining
by Q

1098 - 1109 - basalt
no fractures

18 April 2005

1109 - 1117.5 ft basalt flow
dip 43° - tight, cemented

1117.5 - 1128.5 ft - 1 -



1128.5 - 1135.5 from 1130.5 to 1132.5 ft

- 87° dip - strike-slip, chlorite + fluid near
last 2 ft (335-35.5) * basal with
large feldspars ⇒ Sme alteration

1135.5 - 1145 altered

feldspars dissolved, holes filled
with clay, Jeff described calcite
(has sample)

1145 - 1153.5 unaltered basalt flow
(this one doesn't have large
feldspars)

1153.5 - 1163 ft basalt flow

1154 ft - south side

1155 ft - (1 - (5° dip) chlorite)

1163 - 1172 ft bas. flow

starting at 1167.5 - alteration (not)

1172 - 1180.5 ft bas. flow

and all. changes to non alteration
from 1172 to 1188 in the
well log

~~1180.5~~ 1180.5 ft see previous descr. of well

last 2 ft - system of isoclinal
(diam. = 0.5 cm) small cavities in the rock

1183.5 - 1195 ft basalt flow

70° dip - oblique slip, chlorite, -
- depth of 1194 ft -

1195 - 1206.5 basalt flow
from 1202.5 - w. alteration


1200 ft - 44° dip, chlorite, obl. slip (N-dominant)

1200.5 ft - 35° dip, chlorite, hematite
obl. slip (looks like
unspinning strike-slip)

1206.5 - 1216 - altered bas. flow

1208 - 1216 - chaotic hydraulic fracturing
fine Ca

photo - 1213 ft -

 photo
- 128, 127 exposures
2 more photos on
another hydrant

1216 - 1225 ft slightly altered bas. flow
- 1219 - strike-slip 80°, hematite, unknown white mica,

1225-1233.5 ft basalt unaltered
isolated cavities filled with
Ca or unknown white min.

1233.5-1242.5 ft basalt flow

1234.5 ft - ^{strike} sh. slip, hem, chlns
57° dip

1241 ft, 72° dip, ^{some} hem, chln,
fincl. clay sh. slip

1238.5 - top of another basalt
flow, vesiculated basalt
vesicles partially filled
with clay, top upper flow part
altered

1251.5-1261.5 ft vesiculated basalt flow
first 2 ft altered
then "fresh"

1260 ft - probably hydrof. filled with
tuffite, max. aperture 0.5 cm

(this is the highest tuffite-filled
58° dip - hydrof. - 6 ft above the tuffite layer

1261.5 - 1271

1261.5 - 1265.5 - basal flow
less porphyries

~~thin~~ - buff le

contains flow textures, altered

~~1261.5 - 1265.5~~ photo 1266 ft - buff le

photo 1261.5 - 1262.5 ft - buff le
filled fracture in basal
30" dip, looks
like hydrofract.

1271 - 1280.5 ft

white - very light green
epichlorites

altered, with buff le

matrix, mostly to

matrix-dominated sediments

1280.5 - 1290 ft

~~matrix~~ matrix dominated sed.

1290 - 1300 ft

-12-

1300 - 1309.5 ft

-11-

1309.5 - 1319.5 ft

-11-

1319.5 - 1318.5 ft

red epichlorites

1318.5 - 1326.5 ft

-11-

1326.5 - 1470 ft white - light green
altered epidolites;
changes between matrix & clast-
dominated facies

1470 - 1647.5 - It, more towards
clasts at larger proportion
clasts: tuffs dominate over
other rock types

1647.5 - 1720 clast supported tuffs

1720-31 Rhyolite autobreccia

hydrofractured

bladed calcite crystals

1731 - 1741 Rhyolite

hydrofractured

bladed calcite crystals

1745.5' / Photo hydrofractured rhyolite

large bladed calcite crystals

Sampled

1752 - hydro-frac rhyolite

photo

1754 - clay altered Rhyolite breccia
fracture: 50° dip, obli. slip ✓
slices in clay minerals

1754 - hydro frac rhyolite
bladed calcite in frags + vugs

1780 - healed frac dip 80°

-1968 - hydro frac rhyolite
large bladed calcite crystals
photo sample

1811 - Jeff has a fracture tagged with
a dip of 75°. I studied the
fracture and believe it's drilling
related.

The was no mineralization on
the fracture plane, no slickenlines,
no gouge, and the surface is
rough and angular

1821 - Vesicles partially filled w/ green mineral Sample

1831 - Jett has a fracture logged w/ dip of 70'. I believe this is drilling related. The surface is not mineralized, no slicks, no gouge
Disagreement from J.H. by M.N.?

1837 - Jigsaw hydrofracture
blebbed calcite + green mineral
Sample

1890-1872 - Rubblized - hydro frac,
Stockwork veins

1902 - fracture: dip 53° oblique slip ✓
Rhyolite, Calcite on frac. plane

1945 - fracture: dip 73° oblique slip ✓
green mineral - Rhyolite

1966 - Hydrofractured Rhyolite - bladed
calcite + calcite veins

1994 - fracture = dip slip, 53° , green mineral
step over opens cavity - filled with
bladed calcite

2034 - fracture: 42° strike slip ✓
calcite with hematite staining
rhyolite

~~2052~~ - Hydrofractured rhyolite w/
2056 bladed calcite and calcite veins
main fracture dip of 78°

photo # 323 Olympus

2058 ^{hydrofrac.}
Dissolution vugs altered rhyolite
bladed calcite - calcite

2068' hydrofractured zone facilitating
the form of dissolution vugs
bladed calcite - alt rhyolite

2080' ^{2082'} Fracture cluster in rhyolite
2081' - dip slip - chlorite, 20° ✓
2081' - oblique slip - chlorite, 51°, rake 46° ✓

2084 hydrofrac rhyolite
fracture 50° dip

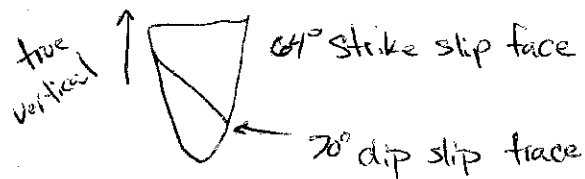
2135.5 fracture - in andesite clast of chlorite alt.
98° dip sense of slip → dip slip

2142 fracture in vesicular rhyolite
strike slip in alt clay w/ red
hematite staining dip of 65° ✓

2156 fractured rhyolites - strike slip
hematite - dip of 69°
pyrite apparent on fault surface

2157 frac rhyolite - hematite/pyrite
surface dip of 38°
dip slip

2173.5 frac rhyolite - hematite surface
strike slip fault $64^\circ \perp$ to dip
slip frac dip = 70°



2208 flow banded rhyolite - fracture
hematite - quartz 65° dip

2258 Clay altered pyroclastic lithic breccia
fracture surface chlorite
dip 49° - dip slip

2258.5 dip 27° - dip slip

2261 Same rock type + mineral surface as
above

dip 35° - oblique dip slip -

2455 Pyroclastic lithic breccia
fracture surface chlorite
dip 59° - oblique -

2503 same rock type - chlorite, calcite
dip 75° - sense of slip?

2794 pyroclastic lithic tuff - basaltic
fault mineral surface = hematite ??
purple colored surface
dip slip, dip = 70° —

2774.5 dip = 16° minerals - clay alteration
chlorite? dip slip
rock type = stratified pyroclastic
lithic tuff

~~2863~~

2863 dip 50° mineral = hematite
rock type = vitric lapilli tuff - basaltic
dip-slip

2889.5 dip = 25° mineral surface - hematite
dip slip
rock type = vitric lapilli tuff - basaltic

2870 dip = 53° - mineral surface = hematite
rock type = vitric lapilli tuff - basaltic
oblique slip calcification on fault surface

2873

dip = 74° - mineral surf = hematite
rock type = vitric lapilli tuff - basaltic
oblique slip

2911
Sample, need to
Rephotograph

2875 dip = 63° mineral surf = hematite
rock type = vitric lapilli tuff-basaltic
oblique slip

2892.5 dip = 54° oblique
Chlorite altered tuff, matrix supplied
mineral surface = chlorite

2905.5 dip 42° mineral = chlorite & calcite
rock type = chlorite altered tuff, matrix spt.
dip slip

2911 dip 70° hydro fracture - calcite
veins - fractured rock in jig saw
texture - open vugs with
~~bladed~~ calcite + needles of zircon?
Photo Sample

2922.5 dip 43° mineral surface = clay
rock type = clay altered tuff
oblique slip

2952 vertical vein ~~rock~~ / And breccia [Photo]

2943 BASALT / ANDESITE BRECCIA

3187 - Basalt Andesite flow -

3188.5 hematite mineral surface.

dip 29° oblique slip

30° strike slip

32° oblique

3277 fault breccia no clear fault plane
heavily clay altered rebrecciated ~~subson~~
layers lithic tuff and basalt / And
auto breccia

3491 basalt / Andesite flow

dip = 45° oblique slip

mineral surface chlorite

3498 same rock A.A

dip 55° ~~dip~~ slip chlorite

3502.5 same rock as above

dip 54° dip slip chlorite

ensure if these are true slip or just natural
mineral texture (preferred orientation)

3499.5 same rock/mineral AA
dip 32 dip slip —
3499.8 same rock/mineral AA
dip 23 dip slip —
unsure
see note on previous page

3532 dip 56° mineral: chlorite
dip slip —
andesitic basalt

3566.5 dip 61° mineral: chlorite
oblique slip
andesite basalt

3604' NOT THE
END OF CORE

Continued in notepad 2

3606' — 4417.5'

88-28

DEEPENING

3606' - 4417.7'

3606 - Basalt/Andesite with calcite veins

3608'

3608' - Debris flow = flow top

3668

3668 - Basalt/Andesite, vesicular flow top

3705'

3705'

100% filled calcite + chlorite

dense basalt/And flow

3726'

Basalt/Andesite flow, chlorite dip 58°

3731½'

AA

AA

48°

3732½'

AA

AA

46°

3734'

58°

3750' -

Andesite, vesicular

3820'

70% filled w/ calcite

3820'

Andesite dense

3959' sample contact @ 61°
3959' - 4006' clay - chlorite, pyrite present

4026' - 4050' rhyolite
andesite flow, possibly dike

4050' - clay AA = clay altered rhyolite

4159' - 4204 1/2' ~~to~~ andesite flow top
auto breccia

4204 1/2' 4127' - zeolites → 100%
vesicular andesite 80% fill

4204 1/2' - ~~4350'~~ 4417.7' TD calcite chlorite
4175' fracture Andesite albite / chlorite
dip 50°

4315' Andesite chloritic dip 42°

4325' sample vug filled with ~~calcite~~
zeolite?

4417.5' TD