like 56-3

Check: Many are Auto Breccia?

23 × D.S.
4 × D.S. – O.S.
7 × O.S.
2 × S.S.

exp™

Checked against partial computer log saved on Flash Drive used to construct Thesis Figures. 12/08.

NOTEPAD 2

ML 28-32

0-420'	No Return
420' views/	flow banded glassy andesite flow bands filled with calcite + qtz dip ~10° [photo]
456.5' – 472'	obsidian breccia [photo]
457.5'	fracture dip ~21° w/ oblique slip obsidian breccia
460'	fracture dip ~29° no slip direction obsidian breccia
463'	fracture dip ~44° no slip direction obsidian breccia
464'	fracture dip ~58° dip slip or slightly oblique ~~slip direction~~ obsidian breccia

28-88

TTS

18-34

474' fracture strike slip
dip 64° obsidian breccia
can't determin mineralogy

485'-834' cinder and ash
pumice shards

834' Andesite

834' fracture dip 45°

↓ andesite flow highly fractured

1055' flow banded
fracturing along flow foliations

892' [photo] andesite. fractured along bands of quartz, ~~calcite~~ along fracs

1055'-1066' obsidian

1066'-1076 mud flow - lahar

88-28 T25 18-37

1076'–1158'	Andesite flow – dense not vesicular
1087'	fracture andesite chlorite dip 23°
1089'	frac andesite dip 26°
1091'	" " dip 40°
1096'	" " dip 43°
1096.5'	frac andesite dip 43°
1103'	" " dip 39°
1158	Red cinder + ash
1193	Welded grey ash fall tuff
1219	frac – welded ash fall tuff dip 87°
1221'–1257	mud-cinders-ash glass
1257'	flow banded andesite flow A.A. top 4 feet rugy and vesicular NO filling

27-28

1308' cinders

1361' andesite AA no filling

1383' cinders AA

1424' andesite AA

1458' fracture ~22° no slip indicators

1463' fracture ~58° no slip indicators

1465 fracture ~22° no slip indicators

1424'- dense andesite flow

1580' no mineralization flow foliated ~10°

1548' fracture dip 66°

1552' " " dip 55°

1580'-1596' Cinders

1596'-

1616'

1630'-1818' Debris flow

1616' - Cinder + Ash → debris flow

1672' Ash + debris flow fracture dip 72°

1808' debris flow
presence of sulfur apearent

1817' Andesite flow, sparley vesicular
vesicles 50% filled
sulfur apearent [photo]

1832' debris flow – sulfur
pumice shards

1912' fracture – debris flow
dip 40° dip slip

1914' " " dip 56° no slip indicator

1949 fracuture – debris flow – sulfur
and clay surface
dip 63° dip slip

1956' Andesite flow – bottom foot vesicular
50% mystery tan colored mineral
filling

1964	Andesite flow Vein no slip indicators dip 55° [Sample]
1974- ~~1989~~ 1996	basaltic ash fall tuff
1991 -	fracture dip 50° clay w/ hematite staining on surface
1996 - 2043 1999	Andesite flow - highly fractured clay - hematite stained fracture dip 71°
2026- 2029 2030' 2007' 2004'	fracture dip 73° " " 75° 73 " " 77° " " 37°

2043'-2066' basaltic welded ash fall tuff

2057.5' tuff, clay dip 38'
2058.5' " " 35'

2066' brittle flow banded andesite
flow foliation ~ 45°

2071' fracture dip 40°
chlorite, clay oblique slip

2093' clay dip 53°

2094' fracture clay dip 69°
2074.5 " clay chlorite, hematite
dip 85°
2074' " " dip 40°

2084'-2090' flow banded andesite fracturing along foliation
flow foliation ~ 19° surfaces covered in clay

2081' flow banded andesite fracture clay hematite
stained dip ~70°

2093'-	lahar no fractures
2102'	
2102'	clay altered andesite flow
	mineral filling 50% - clay
2127.5'	lahar
2130.5'-	top of andesite flow - highly
2146'	vesicular - banded
2135'	fracture -clay - 42° dip
[redacted]	
2146'-	dense flow bnd andesite
2157.5'	
2137	vesicular and- dip 21° -clay surface
2157.5'-	sediments [redacted] @ 2158'
2159'	
2159'-	debris flow - poorly sorted
2190'	angular clasts of obsidian and
	glass from 1cm to 15cm

2159'- CONTINUED
2190' matrix of fine ash or clay
2190'- light flow banded
2292' andesite flow
denser with depth
bands more parallel w/ depth
2201' sample
2231' sample

2267' ande- hematite dip 16° along foliation plane
foliation ~6°
2262' fracture hematite ~10°

2293'- obsidian - black + red
2298'

2298' calcarious mud
2304' big fiz!

2304' - basaltic ash tuff
2322' -

2322 - andesite flow - flow banded
top vesicalar

mineral filling inconsistant
vein @ 2342' layer of vesicles
90% filled.
2348' vesicles 10% filled

2355' sample
fracture with mystery mineral
crystals resembling garnet
dip 54°

~~2370'~~

2370' - dense - non vesicular andesite flow
2508' fracture 47° dip hematite surface

2381' dense andesite dip 60°
clay - hematite

2412'	fracture andesite flow dip 81° clay, quartz
2432'- 2493'	andesite flow - banded flow foliation ~15° mostly rubblized
2493'- 2508'	dense glassy andesite
2508'- 2532'-	debris flow, calcarious mud glass, clay
2532'- 2609'	andesite welded tuff? glassy strands
2563'	sample
2560'	fracture - glassy welded tuff dip 54° doligue slip, nearly dip slip

2565	fracture - glassy tuff dip 28° no mineral, no slip ind.
2578' - 2585'	calcite mud
2585' - 2609'	glassy tuff
2609' - 2641	breccia - calcite mud, chlorite present black glassy rhyolite flow top
2641 - 2649	breccia, glassy chlorite present devitrification texture
2649' -	clay altered ~~andesite~~ ? photo rhyolite
2826' - 2828'	vesicles 100% filled, calcite
also 2792' - 2797'	" "

2688' fracture dip ~ 50°

2645.5 Photo flow top - fragmented starting devitrifica

2651.6 Photo devitrification texture

3179' Hydro frac hydro thermal breccia

3193' bottom of rhyolite flow

3193' top of debris flow

2874'	flow banded rhyolite
2976.0	fracture dip ~ 78° clay altered rhyolite dip-slip clay surface
3045'	fracture dip 65° clay altered rhyolite dip-slip hematite, K-spar
3048'	fracture dip 67° clay alt rhyolite dipslip - slightly oblique Kspar chlorite, clay
3068'	fracture dip 88° rhyolite flow dip slip hematite
3134' - 3194'	chlorite / smectite altered rhyolite Sample 3134'
3180'	Photo hydro fractured rhyolite hydro thermal breccia

3193' debris flow, volcaniclastic

fracture cluster

3387' fracture dip 60° debris flow

3387.5' fracture dip 58° clay surface

3431' fracture dip 53° debris flow

~~3439'~~ 3439.5' fracture dip 07° glassy and breccia
dip slip ~~chlorite~~

3440' " dip 46° " "
oblique slip

3441' " dip slip " "

dip 17°

3446' fracture dip 71° basalt/andesite
dip slip, slightly oblique - chlorite

basalt flow / debris flow

3459' – 3465' vesicular andesite flow
100% filled with calcite

3471' fracture dense andesite flow/chlorite
dip 59° no slip indicators

3486'	fracture - dense andesite flow dip 83° - dip slip chlorite
3505' - 3520'	dense andesite flow, highly fractured - rubblized
3558'	Andesite AA frac. dip 58°
3588'	debris flow
3600'	andesite top - auto breccia
3613'	AA chlorite dip slip 45°
3614'	vesicular andesite top - 100% filled Sample
3596'	Andesite auto breccia hematite clay chlorite dip 05° dip slip
3599'	Andesite auto chlorite dip 75° dip
3597'	Andesite auto chlorite dip 47° strike slip

3604'	Andesite auto breccia - chlorite dip 47° dip slip/off of oblique
3606'	Andesite AA - chlorite dip 82° oblique dip 89° oblique
3607'	AA - AA dip 36° oblique
3608'	AA - AA dip 10° dip slip
3613'	AA - AA dip 67° dip slip
3628	AA - AA dip 57° oblique
3638'	andesite chlorite dip 61° dip slip

3633'	andesite top vesicular flow 100% filled w/ calcite
3655'	andesite flow - chlorite, calcite dip 68° dip slip
3673'	AA - calcite dip 15° no indicators
3698'	AA - chlorite dip 68° no indicators
3699	AA - chlorite dip 54 no ind.
3703'	calcarious clay aA. and
3715'	clay AA oblique slip
3733'	end of clay andesite flow

3735½'	andesite flow		– chlorite
	dip 42°		no indicators
3770'– 3850'	hydrofrac andesite flow, calcite veins		
3786'	andesite flow		– chlorite/calcite
		dip 81°	no indicators
3801'	AA		– AA
		dip 08°	– AA
3819'	AA		– AA
		dip 10°	– AA=no ind.
3832'	AA	dip 60°	– dip-slip chlorite/calcite
3836'	AA	dip 24°	– chlorite/calcite, no slip
3865'	AA	dip 21°	– AA
3875'	Andesite flow		chlorite
	dip 48°		dip slip

3878'	Andesite – chlorite dip 07° no indicators
3882'	Andesite – AA dip 43° – dip slip
3908'	hydro thermal dialation breccia 53° dip
3909'	fracture andsite chlorite dip 65° no indicators
3910'	Sample Hydrothermal dilation breccia
3927'	Fracture rhyolite flow dip 61° calcite chlorite hematite
3953'	Fracture rhyolite flow dip 66° calcite dip slip

3974	rhyolite dip 49	- chlorite / calcite dip slip
4026'	AA dip 43°	- chlorite - dip slip
4044'	fracture AA dip 71°	- chlorite / calcite - no indicators
4046'	AA dip 85°	- AA - AA
4051'	AA dip 46°	- AA - AA
4090°	AA dip 56°	- AA - no
4096°	AA dip 43°	- AA - dip slip

4145 - Andesite
4240 - Andesite (thin section)

4114' hydrothermal dialation breccia
4185-4230' andesite auto breccia
4210' fracture dip 78° calcite / chlorite
4224' [sample] "andesite" auto breccia

4258 hydro frac calcite veins in "and." flow
4261' rhyolite auto breccia
4262' fracture ~~and~~ rhyolite auto breccia
dip — dip slip clay

4271' rhyolite auto ~~and~~ clay
dip 55° — no ind.
4316' AA — AA
dip 45° — dip slip
4340' rhyolite flow, vesicular
100% filled w/ calcite/chlorite

4370' calcite vien dip 84°
rhydile flow

4434' rhyolite auto breccia

4441½' rhyolite, clay altered + rubblized

4500' TD

4496 Sample