

GRAPHIC LOGS										GRAPHIC GEOLOGY	Fractures/VEINLETS	DESCRIPTIONS
DEPTH	ALTERATION					# Fractures per box	low med high	nubble	TR. TRACE 1. WEAK 2. MOD. 3. STRONG			
	Calcite	Clayite	Clay?	Zeolite	Quartz							
486.5												Rhyolite flow
501												492' - 494' vesicular and rubblized - drilling induced
511												New rhyolite flow top highly vesicular 501' - 507' - vesicular - rubblized
521												rhyolite flow top AA - vesicles still high - moderate but decreasing
530												vesicles restricted to bands
540												dense rhyolite flow
550												AA 447-550 - vesicles in bands drill frac. along these planes
560												AA
570												565' - vesicular rhyolite? flow top grading to more dense flow 520' cinder/ash Cinder Ash scoria Lithic Lapilli Tuff
580												
690												27° oblique 696' - frac - slix - clay? chlor-smectite? vesicular andesite flow top 5% fill pyrite?

DRILL HOLE 62-21  
 LOCATION MEDICINE LAKE, CA



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GRAPHIC LOGS

DEPTH	ALTERATION					# Fractures per box			GRAPHIC GEOLOGY	FRAC. TRACE 1. WEAK 2. MOD. 3. STRONG	FRACTURES/VEINLETS	DESCRIPTIONS
	Calcite	Chlorite	Hematite	Quartz	Clay?	low	moderate	high				
698'											50°-598'	vesicular andesite 15% filled - Qz - black mineral? White " " ?
709'											27°-709'	709' - [Sample]
710'												Vesicular andesite 712' clay altered andesite chlorite 15% fill
720'											69°-719'	dip slip - good slix highly clay altered andesite mostly clay - chlorite
730'											45°-725'	dip slip - good slix 35% fill AA 70% fill soft clays fracture looks drifting induced
740'												dense andesite flow lots of healed fractures resealed with calcite, chlorite? and quartz dips ranging from 20°-75° (60%)
750'												vesicular andesite - clay altered 71° 754' - oblique slip good slix 60° 756' - no slip indicators 60° 758.5' - oblique - chlorite calcite 30% fill 758°-760'
760'												50° 757.2' and-clay alt. AA 25% fill 760°-770' 58° 758' oblique - nearly dip slip (757°) 70° 760' Compound, sub perpendicular, good slix - chlorite 38° 760' 1st oblique 42° rake / 2nd (dip 38°) dip slip 764' - Sample missing - labeled "ESC therm. anal."
770'												46° 774' vesicular grading to dense and. flow vesicular part is altered AA, dense matt
780'												dense Andesite flow AA - chlorite + hematite - chl + hem + calcite
790'												62° 796' chlorite
800'												797' - altered vesicular ande AA 30% fill
810'												67° 805' 805' vesicles are smaller grading to dense andesite AA 30% fill

Fracture zone for paleomag cluster.

Chlorite and clay

more on back of this page

samples 806 + 809

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also mystery minerals - green  
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805-810'

mystery minerals

one looks like epidote

one looks like oxidized copper in color

one may be a mica? dark color - black to purple

DEPTH (ft.)	GRAPHIC LOGS						# fractures per box low / mid / high rubble	GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG Fractures / VEINLETS	DESCRIPTIONS
	ALTERATION									
	Calcite	Chlorite	Clays?	Hematite	Quartz					
810'									Sparsely vesiculated Andesite 50% fill 817' - dense mottled andesite flow ↓	
820'								55° 821' chl + Cal hematite 61° 822' " " "		
830'								83° 825' Chlorite + Calcite - dip slip - 75° 827' " " - no slip indicators 55° 829' " " - dip slip 77° 832' Chl, Cal, hem - no slip 50° 833' 834' - altered vesicular andesite 55% fill red/pink oxidized brecciated flow bottom		
840'								839' 27° hem - chl - dip slip 56° 841' " " - oblique - good slip 56° 841' - subperpendicular compound w/ above no slip ind. hem, chl, calcite		
850'							drilling indicates rubble		853' dense andesite flow 854' 38° Calcite Chlorite 2 sub 854' 60° " " 3 [photo] dendrites indicate open fracture?	
860'								858' 63° Calcite - oblique 858.5' 59° Calcite 859' 67° Calcite - fracture propped open 863' 19° Chl, hem, Cal 865' 60° chl, cal, hem 867' 59° chl, cal 869' 65° chl, cal		
870'									870' - 887' and auto breccia flow bottom some chunks vesiculated fill 30%.	
880'									887' - 909 dense Andesite	
890'										
900'										
910'									910' dense Andesite flow fine 912' @ 11° Calcite, Chlorite	

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DEPTH (ft)	ALTERATION							# Fractures per box	GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG Fractures VEINLETS	DESCRIPTIONS	Mineral Fill
	1. WEAK	2. MOD.	3. STRONG	Clays?	Homelite	Quartz	Epidote					
	Calcite	Chlorite	low									
910'										Dense Andesite Flow		
912'										912' 11° Frac calcite/Chlorite	10%	
914'										914' 48° fault Core [photos]		
918'										918' 80° Frac calcite/Chlorite/Quartz		
920'										915-920 series of heated fractures @ 65°		
920.5'										920.5' 25° Frac Calcite/Chlorite/hornblende		
920'										920' 73° Frac " / " / "		
930'										928 Vesicular Andesite		
936'										936 Cinder/Ash/Scoria		
940'												
950'										Andesite flow 950'		
951'										951' 45° Frac → Chlorite/Calcite/Quartz		
951.5'										951.5' 55° Frac → Chlorite/Calcite		
953'										953' 38° Cinder/Ash/Scoria 955'		
960'												
965'										Andesite flow Vesicular fill = calcite, chlorite 960' 965'	10%	
970'										Clay altered Andesite		
976'										976' Air fall tuff / Ash Calcite Fill	10%	
980'												
985'										985' Cinder/Ash/Scoria		
990'												
1000'										Vesicular Andesite flow top grading to Dense And. flow	15%	
1010'										1010' bladdered Calcite Crystals ≈ 1cm		

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DEPTH (ft.)	GRAPHIC LOGS										GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG Fractures VEINLETS	DESCRIPTIONS
	ALTERATION						# FRACTURES						
	Calcite	Chlorite	Clays?	Hematite	Quartz	Epidote	low	mod	high	box			
1010'													Vesicular Andesite
1020'													1017' 71° frac calcite / chlorite - Strike slip, rake 03°
													1023' <u>Sample</u> mineral ID sent for X-ray confirmed to be chlorite / Smectite
													1026'-1043' poorly welded / non-welded lithic ash flow tuff
1030'													
1040'													
1050'													
1060'													1044'-1052.5' Welded Ashflow tuff
													1046' <u>SAMPLE</u> densely welded + lithic
													1052.5' - 1067.5 Air fall ash tuff
1070'													1067.5' - 1107 Basalt / Andesite Flow
													Flow banded top is highly vesiculated grading into dense banded flow
													1071' 20° frac Chlor / Cal / Qtz <u>SAMPLE</u> 1072'
													1071.5' 53° frac chlor / cal / Qtz
													1073' 79° frac " / " / "
													1075' 55° frac " / " / "
1080'													1081' 53° <u>FRAC</u> Qtz / Chlorite / Calcite
													1083' 33° frac " / " / " hematite
													1084' 49° frac chlorite - Strike Slip, rake 03°
													1086' 56° frac Chlorite
1090'													
													1094' 84° Calcite, Chlorite, hematite
1100'													
													1107' - Debris Flow
													1107' 56° frac
1110'													
													1114' Cinder / Ash / Scoria

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Mineral  
 Fill  
 15%  
 10%

# GRAPHIC LOGS

Fracture cluster  
Continued on back

Fracture cluster  
Continued on back

tensile fractures?

Mineral Fill  
20%  
20%  
20%  
35%

DEPTH (ft)	ALTERATION							FRACTURE	DENSITY	GRAPHIC GEOLOGY	VEINLETS	DESCRIPTIONS
	1. WEAK 2. MOD. 3. STRONG											
	Quartz	Hematite	Chlorite	Epidote	Calcite	Zoelite	Talc					
1120'												1124'-1145' Andesite / Basalt flow
												[SAMPLE] 1134.5'
												1125' 65° cat/chlorite frac 1130.5', 78° strike slip
												1128' 73° " / " frac 1129.5' Chlorite / hematite
1130'												Andesite - competent lava flow
												Quartz vein [SAMPLE] @ 1134.5' for mineral ID, Epidote
												1137' Qtz. vein possibly hydrofracture
												mineral fill mostly confined to fractures
												1138.5' frac - 29° Chrl. Qtz no slix
												1139.5' frac - 67° Epidote?, hematite - Strike Slip
1140'												1140' -65° " " - no slix
												1143'-1145' mineralize rubble - fault breccia
												1145'-1154' clay altered andesite
1150'												1154'-1182' Andesite Flow - dense/competent
												1156.5' 1st zeolites also present are calcite and chlorite
1160'												1165' 1st presence of Talc
												Fractures along flow foliation
												1167' -55°, 1167.5' -53°, 1168.5' -47°
												1168.75' -47°, 1168.75' has oblique slip
												others no slix, all epidote, hem, zeolite
1170'												1169' -67° - oblique slip, rake = 35°
												1169.5' 75° oblique slip, rake 50°
												1169.8' 63°
												1170' 73° oblique slip, rake ≈ 25° chlor/hem/Cal/zeo
1180'												local flow foliation is strong ≈ 60-65°
												Copper oxide staining? + pyrite
												[SAMPLE] 1181'
												1181' 80°
1190'												1183'-1185' Hydrothermal breccia possibly flow bottom breccia
												1185.5' 43° 1191' - 1198' Andesite flow bottom breccia, red/purple color, lithic fragments including andesite and
												1198' Andesite Flow top, vesicular sparsley
1200'												1198.5' 42°
												1202' - 1225' dense Andesite flow
												1207' 84°
												1208' 45°
												1209' 80°
1210'												1212' 74° tensile frac?
												1213' 36°
1220'												

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	depth	dip angle	slip direction	
(A)	1130.5'	20°	dip slip	
(B)	1130.5'	78°	strike slip	sub // to (A)
(C)	1130.8'	12°	dip slip	sub // to (A)
(D)	1131.5'	46°	-	
(E)	1132.0'	53°	-	

(F)	1171.0'	64°	oblique	rake 63°	great slix
(G)	1171.25'	64°	oblique		<u>photo</u>
(H)	1171.4'	67°	oblique	rake 74°	
(I)	1172.0'	50°	oblique	rake ≈ 60°	
(J)	1172.5'	14°	oblique	rake ≈ 70°	great slix
(K)	1174.5'	60°			
(L)	1174.8	57°	oblique	rake 55°	
(M)	1176.0	84°	Tensile frac?		
(N)	1177.0	73°			

Fraes F, G, H, I are all sub // to foliation  
 X' slix on F, G in opposite directions  
 slix on G, H same direction  
 slix on I same direction as F  
 slix on J same direction as G, H  
 open fracture some breccia no slix  
 frac against foliation 117°



DEPTH (ft)	GRAPHIC LOGS										DESCRIPTIONS	
	ALTERATION							Fracture	Density	GRAPHIC GEOLOGY		TR. TRACE 1. WEAK 2. MOD. 3. STRONG
	Quartz	Hemite	Chlorite	Epidote	Calcite	Zoelite	Talc					
							low moderate high	subtle			VEINLETS	
1220'												
1230'												
1240'												
1250'												
1260'												
1270'												
1280'												
1285'												
1287'												
1288'												
1290'												
1300'												
1301.5'												
1303.5'												
1305'												
1310'												
1310.5'												
1314'												
1320'												

1225' Andesite flow base  
 auto-brecciated and heavily clay  
 altered, red/purple color

1285' 85° 1284' - 1287' sparsely vesiculated and  
 1287' 86° flow top  
 1288' 84° 1287' - 1368' Dense Andesite flow

1301.5' 55°  
 1303.5' 28°  
 1305' 11°

1310.5' 24°  
 1314' 32°

Mineral  
Fill

1225'  
25%

25%

35%

1317'  
20%

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DEPTH (ft)	GRAPHIC LOGS										VEINLETS	DESCRIPTIONS
	ALTERATION						Fracture	Density	GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG		
	Quartz	Hematite	Chlorite	Epidote	Calcite	Zeolite						
1320'							low					Dense Andesite flow mineralization is confined to fractures
1328' 85°												no slix
1330'												
1340'												
1342' 69°												no slix
1344.5' 77°												
1348' 70°												
1350'												
1360'												
1362' 60°												slix dip slip
1368' - 1393'												auto brecciated flow base
1370'												
1380'												
1390'												
1393' 25°												Fate → zeolite
1393' - 1411'												vesicular andesite flow top
1394' 54°												Chlorite / Fate Zeolite
1395' 80°												Chlorite / Zeolite
1398' 46°												zeolite
1403' 46°												zeolite
1405' 25°												Fate Zeolite
1407' 60°												Chlorite, Calcite, Fate, hematite zeolite
1413' 73°												Chlorite, Calcite
1414' 57°												Fate, Chlor, Cal
1415' 66°												zeolite veins
1419' 70°												

Mineral Fill  
20%  
↓

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Mineral Fill  
 30%  
 ↓  
 50%  
 ↓  
 70%  
 ↓  
 80%  
 ↓  
 80%

DEPTH	ALTERATION							# fractures per box low med high	GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG	DESCRIPTIONS
	Calcite	Chlorite	Clay?	Hem. sil.	Qz	Zeolite	Sph				
1420'										1420' 72° frac. no slx - flow brkd. Andesite	
1425'										1425' 60° frac - good slx - oblique slip - rake 46°	
1426'										1426' 58° frac oblique slip - rake 30°	
1425.5'										1425.5' 60° frac oblique slip - rake 30°	
1430'										1430' 44° frac	
1434'										1434' 37° frac - good slx - dip slip rake ≈ 70°	
1438'										1438' Vugs 30% filled with clear euhedral quartz crystals [photo]	
1441'										1441' 71°	
1445'										1445' 72°	
1449'										1449' 74° frac - cal/chlor/talc	
1451'										1451' 86° frac - slx - rake 42° - oblique slip	
1456'										1456' 49° frac - slx - dip slip -	
1462'										1462' 75° frac - no slx / contact highly clay alt. [photo]	
1463'										1463' [SAMPLE] flow base breccia, possibly debris flow - red + oxidized welded tuff	
1469'										1469' And. [photo]	
1471.5'										1471.5' hydrofractured andesite - bladed calcite, zeolite + calcined clay present	
1476'										1476' 69° frac - no slx chlorite zeolite	
1476.5'										1476.5' 67° frac - no slx " "	
1477.5'										1477.5' 56° " " " "	
1478'										1478' 77° " " " "	
1483.5'										1483.5' 78° frac - no slx - well mineralized - 1st chlor	
1485'										1485' 66° 2nd calcite - 3rd zeolites	
1485.5'										1485.5' 24° frac chlorite no slx	
1486.5'										1486.5' 40° frac chlor no slx	
1488.5'										1488.5' 61° 1st quartz - 2nd chlor - 3rd zeolite	
1488.7'										1488.7' 81° frac. zeolite no slx [photo]	
1490.0'										1490.0' 70° concoidal fract. zeolite filling? 1st quartz - 2nd chlor.	
1490.5'										1490.5' 1st quartz - 2nd chlor. - 3rd zeolite?	
1491.0'										1491.0' 32° 1st cal. - 2nd zeolite, no slx	
1491.5'										1491.5' 35° frac chlor no slx	
1491.7'										1491.7' 78° calcined gtz 1st - 2nd chlor. - 3rd zeolite. chlor 1st - gtz 2nd	
1491.6'										1491.6' 26° chlor 1st - gtz calco. 2nd - chlor 3rd - zco. 4th frac. no slx	
1492.5'										1492.5' gtz 1st - cal. 2nd - chlor 3rd - zeolite 4th tensile crack form in calcite [photo]	
1493.5'										1493.5' band of healed fract. clipping ~100° Calcite 1st - zeolite 2nd. no slx.	
1493.7'										1493.7' wiggly frac Qz, chl	

DRILL HOLE 62-21  
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DEPTH	ALTERATION							# fractures per box low med high rubble	GRAPHIC GEOLOGY	T <sub>1</sub> TRACE 1. WEAK 2. MOD. 3. STRONG	DESCRIPTIONS	
	Calcite	Chalcite	Clay?	Hematite	Qz	Zeolite	Talc					Fractures/ VEINLETS
1490'									1495.60 no slix	frac 1 <sup>st</sup> Qz 2 <sup>nd</sup> chlor 3 <sup>rd</sup> zeo 4 <sup>th</sup> hem		
									1496.5' 33°	frac " " " " no hem		
									1499' 65°	frac 4 <sup>th</sup> chlor, 2 <sup>nd</sup> zeo		
									1499.5' 15°	frac 2 <sup>nd</sup> zeo, chlor 1 <sup>st</sup>		
1500'									1500' 35°	frac 2 <sup>nd</sup> zeo, chlor 1 <sup>st</sup>		
									1501.5' 45°	frac 3 <sup>rd</sup> cal., 2 <sup>nd</sup> zeo, chlor 1 <sup>st</sup>		
									1502.5' 24°	frac		
									1503.5' 81°	2 <sup>nd</sup> hem, 1 <sup>st</sup> chlor, 3 <sup>rd</sup> zeo.		
1510'										tensile fracture photo		
									1505' 20°	frac 1 <sup>st</sup> chlor, 2 <sup>nd</sup> zeo.		
									1505.5' 210°	frac		
									1507.5' 84°	tensile frac. 1 <sup>st</sup> chlor, 2 <sup>nd</sup> gtz, 3 <sup>rd</sup> zeo.		
									1509.5' 21°			
1520'									1511' 37°	frac 1 <sup>st</sup> chlor, 2 <sup>nd</sup> gtz		
									1514.5' 72°	tensile frac. chlorite		
									1516.5' 30°	tensile frac. 1 <sup>st</sup> chlor, 2 <sup>nd</sup> zeo. extremely rough surface, well mineralized euhedral zeo., no slix		
1530'									1521.5' 85°	shear plane chlor. only, polished surface		
									1523' 78°	frac., chlor. only,		
									1523.5' 23°	frac., chlor. only		
									1524.5'	two subperpendicular frac. with clips of 85° & 85°. one slickensides dip/slip, both chlor. mineralization only.		
1540'									1526' 37°	frac. 1 <sup>st</sup> chlor., 2 <sup>nd</sup> zeo.		
									1527'	hematite present		
									1528' 180°	1 <sup>st</sup> chlor, calcite and frac		
1550'									1529.5' 29°	frac. chlor 1 <sup>st</sup> , calcite and hematite only		
									1530' 55°	hematite only		
									1531.5' 44°	frac. chlor 1 <sup>st</sup> , hem. 2 <sup>nd</sup> , zeo. 3 <sup>rd</sup>		
									1533.5' 34°	frac. <del>hematite</del> , zeo 2 <sup>nd</sup> chlor 1 <sup>st</sup> no slix		
1560'									1534' 180°	frac. heavily mineralized with zeo. chlor 1 <sup>st</sup> , zeo 2 <sup>nd</sup> with euhedral xtals		
									1540' 52°	frac. chlor 1 <sup>st</sup> , hem. 2 <sup>nd</sup> , zeo 3 <sup>rd</sup>		
									1541.5' 59°	frac. chlor 1 <sup>st</sup> , hem. 2 <sup>nd</sup> , zeo 3 <sup>rd</sup>		
									1542' 75°	frac. (tensile) no slix, chlor 1 <sup>st</sup> , hem 2 <sup>nd</sup>		
1570'									1544.5-1547'	veec. andesite, mineral fill 50%, chlor 1 <sup>st</sup> , zeo 2 <sup>nd</sup> , cal 3 <sup>rd</sup> , gtz? blue mineral?, hematite. <u>sample</u>		
									1549' 100°	frac. chlor, hematite		
									1551' 47°	frac. chlor, hematite		
1580'									1553' 39°	frac. chlor, hematite		
									1566' 57°	frac. chlor 1 <sup>st</sup> , hem 2 <sup>nd</sup> ,		
									1575' 45°	frac. chlor 1 <sup>st</sup> , hem 2 <sup>nd</sup> , tensile frac.		
									1585' 60°	frac. calcite, gtz 2 <sup>nd</sup> , hem. 3 <sup>rd</sup> , chlor		
1590'									1585.5' 76°	frac. calcite 1 <sup>st</sup> , hem. 2 <sup>nd</sup> , calcite 1 <sup>st</sup>		

Mineral Fill  
70%  
70%  
65%  
75%

DRILL HOLE 62-21  
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Mineral Fill  
75%

DEPTH	ALTERATION							# fractures per box	GRAPHIC GEOLOGY	7. TRACE 1. WEAK 2. MOD. 3. STRONG Fractures/ VEINLETS	DESCRIPTIONS
	Calcite	Chlorite	Clay?	Hematite	QZ	Zeolite	Talc				
	1E3	1E3	1E3	1E3	1E3	1E3	1E3				
1590'									"	1591' 30° Chlorite <sup>1</sup> Zeolite <sup>2</sup> Hematite <sup>3</sup> Calcite <sup>3</sup>	
									"	1591.5 51° Chlorite <sup>1</sup> Hematite <sup>2</sup>	
1600'									"	1600.5' 79° frac Chlorite <sup>1</sup> Hematite <sup>2</sup> Calcite <sup>3</sup>	
									"	1603' 85° frac Chlorite <sup>1</sup> Calcite <sup>3</sup>	
									"	Small healded frac // to foliation ≈ 20°	
									"	1607' 25° frac Chlorite <sup>1</sup> Hem <sup>2</sup> Zeo <sup>3</sup> ?	
1610'									"	1607.5' 11° frac " " "	
									"	1607.8' 14° frac " " " Calcite <sup>3</sup>	
									"	1608.5' 70° frac chlorite <sup>1</sup> Hem <sup>2</sup>	
									"	1612.5' 69° frac chlor <sup>1</sup> Cal <sup>2</sup>	
									"	1618' 86° frac chlor <sup>1</sup> Hem <sup>2</sup> Cal <sup>3</sup>	
1620'									"	1618.5' 80° two fraes sub + no slix	
									"	1618.16' 45° chlor <sup>1</sup> Hem <sup>2</sup> Cal <sup>3</sup>	
									"	1621' 72° " " "	
									"	1621.5' Hydrofractures bladed calcite	
1630'									"	1623.5' Contact - cinder/ash/scoria	
									"	1634.5' Contact - clay altered debris flow angular little clasts in red muddy matrix	
									"	1635.5' Contact - heavily clay altered andesite	
1640'									"	1639.5 40° frac - good slix - dip slip	
									"	1644.5' [SARPEK] Clay alt. andesite	
1650'									"		
									"	1655.5' 26° frac - 1st chlor 2nd Hem 3rd Calcite 4th Zeo <sup>5</sup>	
									"	1656' 83° frac - polished surface - poor slix min AA	
									"	1656.5 74° frac - no slix - no zeolite min AA	
1660'									"	1658' 33° " - no slix - no zeo " "	
									"	1660' 17° " AA AA	
									"	1661' 79° AA AA AA	
									"	1662' 17° frac - oblique slip, rake 42° min AA	
									"	1663.5' 35° frac - oblique slip - good slix - rake 64° min AA	
1670'									"	1666' 42° frac - no slix 1st chlor 2nd Hem 3rd Qz 4th Calcite	
									"	1666.5' 57° frac	
									"	1667' 53° frac	
									"	1668' 80° frac - slix are 50/50 rake - 30°	
									"	1668' hydrothermal breccia / photo /	
1680'									"	1668.5' 45° frac no slix / 1668.7' - 60° / 1668.8' - 54° min AA	
									"	1670.5' 41° frac / 1671' - 40° - / 1672' - polished shear plane slix??	
									"	1671.5' 86° frac - slix, rake 60° / 1672' - 33° - shear - slix??	
									"	1672.5' 49° frac - shear / 1674' - shear frac - 72° - slix??	
									"	1674.5' 63° " " / 1675' - 80° shear / 1675.2 sub + 61°	
									"	1676' 64° frac - strike slip - rake 21° / 1677' - 56° - oblique rake 52°	
									"	1676.5' 63° frac - shear / frac 1676.7 - 60° - strike slip	
									"	1679' 31° frac 1 chlor 2 Hem 3 Calcite	
1690'									"	1679.5' 65° frac - shear / strike slip - rake 27°	

75%

75%

Fracture cluster

DRILL HOLE 102-21  
LOCATION medicine Lake, CA

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# GRAPHIC LOGS

pore filling  
80%

Fracture cluster  
fault

DEPTH	ALTERATION							# fractures per box	GRAPHIC GEOLOGY	TR. TRACES 1. WEAK 2. MOD. 3. STRONG  Fractures/ VEINLETS	DESCRIPTIONS
	Calcite	Chlorite	Clay??	Hematite	Quartz	Zeolite	Talc				
	187	188	189	190	191	192	193				
1080'								low		1080' 185° Breccia (iron formation) Dense Andesite flow	
1085'								low		1085' 53° chlor 1st, hem 2nd, cal 3rd	
1085.5'								low		1085.5' 55° shear plane - no slx chlor 1st, hem 2nd, cal 3rd	
1085.5'								low		1085.5' 41° frac - dip/slip chlor 1st, hem 2nd, cal 3rd	
1090'								low		1090' 41° frac. rake - 40° oblique	
1095'								low		1095' 100° frac. chlor 1st, hem 2nd, cal 3rd no slx	
1095.5'								low		1095.5' 65° frac chlor 1st, hem 2nd, cal 3rd	
1095.5'								low		1095.5' 35° frac chlor 1st, hem 2nd, cal 3rd dip/slip	
1095.5'								low		1095.5' 44° frac chlor 1st, hem 2nd, cal 3rd	
1095'								low		1095' 104° frac chlor 1st, hem 2nd, cal 3rd	
1097.5'								low		1097.5' hydrothermal breccia (sample) chlor 1st, hem 2nd, cal 3rd	
1099'								low		1099' 05° frac - shear plane dip/slip chlor 1st, hem 2nd, cal 3rd	
1710'								low		1710' 47° frac - chlor 1st, hem 2nd, cal 3rd	
1701.5'								low		1701.5' healed frac. chalcedony gtz, cal.	
1702'								low		1702' frac - dip/slip chlor 1st, hem 2nd, cal 3rd rare - 87°	
1704'								low		1704' chlor 1st, hem 2nd, cal 3rd, cal gtz 4th	
1704.5'								low		1704.5' 15° shear plane, polished, slx, dip/slip chlor 1st, hem 2nd, cal 3rd, cal. gtz, 4th, 2005th rake - 80°	
1705'								low		1705' 31° frac slx dip/slip chlor 1st, hem 2nd, cal 3rd	
1705.5'								low		1705.5' 80° frac chlor 1st, hem 2nd, cal 3rd, gtz 4th, 2005th slx shear frac, dip/slip rake - 85°	
1705.8'								low		1705.8' 66° slx - oblique slip rake 46° - mineral AA - no zeolite	
1706'								low		1706' 45° shear plane - no slx mineral AA	
1706.5'								low		1706.5' 03° good slx in phreatic clay - rake 48° - oblique	
1706.8'								low		1706.8' 41° SAMPLE 1706.8' - multi slx - rake 74° 09° 05°	
1707'								low		1707' 85° chlor 2 Hem 3 Calcite oblique slx - rake 58°	
1711.3'								low		1711.3' 35° slx - oblique rake 35° - 'chlor 2 Hem	
1709'								low		1709' debris flow Andesite flow breccia, clay altered	
1729'								low		1729' 37° 'chlor 2 Calcite 3 Zeolite	
1744'								low		1744' 85° 'chlor 2 Calcite 3 Zeolite	
1750'								low			
1760'								low		1760' 20° 'chlor 2 Quartz 3 Zeolite	
1770'								low			
1780'								low		1780' 75° 'chlor 2 Qtz 3 Zeolite	

DRILL HOLE ML 62-21  
 LOCATION MEDICINE LAKE, CA

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GRAPHIC LOGS

DEPTH	ALTERATION							# Fractures in box	GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG	VEINLETS	DESCRIPTIONS
	Calcite	Chlorite	Clay?	Hornblende	Quartz	Zeolite	Talc					
	121	122	123	124	125	126	127					
1790'												Andesite flow breccia <del>Debris flow</del> Clay altered full of healed fractures filled w/ zeolite
1800'										1799.5' 20		'Chlor 2Hem 3Zeo
1810'												
1820'												
1830'										1831'		'Chlor 3Zeo 2Hem
1840'												Debris flow AA healed fracs
1850'												
1860'										1860' 87°		'Chlor 2Zeo
1870'										1864.5' 65°		'Chlor 3Calcite 3Hem
1880'												
1890'												

pore filling  
80

DRILL HOLE ML 62-21  
LOCATION MEDICINE LAKE CA

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# GRAPHIC LOGS

Mineral fill  
 60%  
 50%  
 75%

DEPTH	ALTERATION							# fractures per foot	GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG Fractures/VEINLETS	DESCRIPTIONS	
	1. WEAK 2. MOD. 3. STRONG			Zeolite	Talc	low	mod					high
	Calcite	Chlorite	Clay??									
1890'										0	Debris flow AA Andesite flow breccia Clay altered in places sub angular to sub rounded clasts of andesite in andesite lava matrix	
1900'										0		
1910'										0	1910.5' 21° 'Chlor 2Hem 3Zeo	
1920'										0	1924' Contact Andesite flow, dense 1925' 87° 'Chlor 2Zeo	
1930'										0	1928.5' 66° 'Chlor 2Hem 3Quartz 1929.5' 69° 'Chlor 2Hem 3Zeolite	
1940'										0	1945' 90° 'Chlor 2Hem 3Zeolite 1953.5' 100° frac-shear plane polished noslix 'Chlor 2Hem 3Zeolite	
1950'										0	1955.5' 54° frac-shear plane polished noslix 'Chlor 2Hem 3Zeolite 1959' 62° 'Chlor 2Hem 3Zeolite	
1960'										0	1994' 80° 'Chlor 2Hem 3Zeolite 1997' 73° 'Calcite 2Zeolite	
1970'										0		
1980'										0		
1990'										0		

DRILL HOLE ML02-21  
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# GRAPHIC LOGS

DEPTH	ALTERATION							# fractures per box	GRAPHIC GEOLOGY	T: TRACE 1. WEAK 2. MOD. 3. STRONG Fractures/ VEINLETS	DESCRIPTIONS
	Calcite	Chlorite	Chalcopyrite?	Hematite	Quartz	Zeolite	Talc				
	123	123	123	123	123	123	123				
1990'								0		Andesite, Flow BRECCIA AA	
2000'								0	2000.35'	evidence of hydrofracture, filled with 'chlorite, 'zeolite	
								0	2003' 70°	'chlorite 'hematite	
								0	2004' 55°	'chlorite, 'hematite	
								0	2005' 58.5°	'chlorite, 'hematite, 'zeolite	
								0	2005' 33°	<del>'chlorite, 'hematite</del> 'chlorite, 'zeolite	
								"	2006' 57°	'chlorite 'hem 'zeolite	
								"	2006' 10°	'chlorite, 'hem 'zeolite	
								"	2007' 55°	'chlorite 'hem 'zeolite	
								"	2010' 55°	'chlorite, 'hem 'zeolite	
								"	2010.5' 80°	'chlorite, 'hem 'zeolite	
								"	2017' 44°	'chlorite, 'hem 'calcite	
								"	2019' 40°	'chlorite, 'hem 'calcite	
								"	2021' 70°	'chlorite, 'hem 'calcite	
								"	2023' 63°	'chlorite, 'hem 'calcite	
								"	2028.5' 50°	'chlorite 'hem 'zeolite	
								"	2030' 70°	'chlorite, 'hem 'calcite	
								"	2030.5' 107°	'chlorite, 'hem 'calcite	
								"	2032' 50°	'chlorite, 'hem 'calcite	
								"	2037.5' 72°	'chlorite, 'calcite, 'zeolite	
								"	2037' 48°	'chlorite, 'calcite, 'hem	
								"	2039' 70°	'chlor 'calcite	
								"	2040' 79°	'chlorite, 'calcite, 'zeolite	
								"	2042' 107°	'chlorite, 'hem	
								"	2042.5' 104°	'chlorite, 'hem 'calcite	
								"	2049.5' 105°	'chlorite	
								"	2050.5' 45°	'chlor 'hem 'calcite	
								"	2051.5' 61°	'chlor 'hem 'calcite	
								"	2052' 12°	minerals AA	
								"	2057.5' 86°	'chlor 'hem 'calcite 'zeolite	
									2056.5' 60°	'chlor 'hem 'calcite	
									2057.5' 13°	'chlor 'hem 'calcite 'zeo	
									2059' 84°	'chlor 'calcite 'hem 'zeo	
									2068.5' 91°	'chlor 'calcite	
									2069.5' 21°	'chlor 'hem 'calcite	
									2071' 86°	'chlor 'hem 'calcite - Shear plane - no slick	
									2072' 61°	minerals AA - shear plane - no slick	
									2073' 20°	min AA	
									2074' 79°	min AA	
									2076.5' 86°	min AA	
									2081.5' 17°	'chlor 'hematite - shear plane - no slick	
									2085' 72°	'chlor 'hem 'calcite - shear plane - no slick	
									2086.5' 39°	hydrofracture, 'chlor 'hem 'calcite	
									2088' 571°	frac - <del>8mm</del> oblique slip rake - 41° min AA	
									2089.5' 105°	frac - oblique slip rake 35° min AA	
									2090' 104°	frac - oblique slip rake 39° min AA	
									2090.5' 71°	frac - shear plane, poor slick no vectors min AA	
									2092' 41°	frac - shear plane, polished no slick min AA	

75%  
↓  
60%  
↓  
50%  
↓  
75%

hydraulic fractured zone

DRILL HOLE M 102-21  
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# GRAPHIC LOGS

mineral fill 70%

DEPTH	ALTERATION						# fractures		GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG	DESCRIPTIONS	
	Calcite	Chlorite	Clay?	Illmenite	Quartz	Zeolite	per	box				Fractures/ VEINLETS
300'										2095' 41° frag-strike-slip rake -2° min AA		
										2090' 107° 'chlor 'hem		
										2091' 39° shear plane no slix 'chlor 'hem		
										2100' 510° shear plane 'chlor 'hem 'cal, slix oblique slip rake -48°		
3100'										2103' 410° 'chlor 'hem 'qtz chal 'calcite shear plane no slix		
										2105' 'chlor 'hem 'calcite 'zeolite pore filled vug filled interstitial calcite xtal		
										2107' 49° 'chlor 'calcite 'hem		
										2108' 490° min AA		
3110'										2108.5' 102° min AA shear frac no slix		
										2113' 102° tensile crack euhedral calcite xtal		
										2114' 79° 'chlor 'hem 'calcite 'chlorite 'hem 'zeolite 'calcite		
3120'										2122' 104° tensile frac. euhedral zeolite xtal 'chlor 'calcite 'zeolite		
										2122.25' 39° min AA		
										2123' 47° 'chlor 'calcite 'zeolite		
										2124' 51° shear plane no slix min AA hydro frac		
3130'										2126.5' 107° min AA		
										2129' 19° 'chlor 'hem 'cal 'zeolite		
										2133.5' 24° 'chlor 'hem		
										2134' 85° healed hydrofracture 'chlor 'hem 'cal		
3140'										2134.5' 55° hydrofracture 'chlor 'hem		
TD												

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