

GRAPHIC LOGS

Mineral fill 80%

Flow or flow ash 1-10% calc. a

20%

50% dacite? #flow

30%

80%

50% tuff breccia

80%

70%

DEPTH	ALTERATION										# of per	fractures box mils	GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG	VEINLETS	DESCRIPTIONS
	calcite	chlorite	hematite	quartz	sericite	clay?	low	mod	high	mils						
	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3						
2330'																2333' 70° chlor'
																2335' 43° chlor' hem <sup>2</sup> calcite <sup>3</sup>
																2338' 65° chlor' hem <sup>2</sup> calcite <sup>3</sup>
																2340' 58° chlor' hem <sup>2</sup> calcite <sup>3</sup>
2340'																
																2349' ash
2350'																
2360'																
																2364' 75° chlor' hemat
2370'																2369' 38° chlor' hem <sup>2</sup>
2380'																2379' 58° chlor'
																2381' 71° chlor'
2390'																
																2394' 35° chlor'
2400'																
																2405' 37° hem' rake 75°
2410'																
																2415' 25° chlor' rake 72°
2420'																
																2423' 71° chlor' hem <sup>2</sup> calcite <sup>3</sup>
2430'																

DRILL HOLE 45-36  
 LOCATION Medicine Lake

LOGGED BY e. jackson

# GRAPHIC LOGS

Mineral fill 70%

70%

80%

50%

70%

80%

hydrothermal breccia

dacite flow

andesite

DEPTH	ALTERATION							# of Per	fractures box	GRAPHIC GEOLOGY	T: TRACE 1. WEAK 2. MOD. 3. STRONG	VEINLETS	DESCRIPTIONS
	calcite	chlorite	epidote	quartz	sericite	clay?							
	100	100	100	100	100	100							
2430													
2440													2443.35° chlor <sup>1</sup> hem <sup>2</sup>
													2443.5' 31° chlor <sup>1</sup> hem <sup>2</sup>
													2445' 30° chlor <sup>1</sup> hem <sup>2</sup> calcite <sup>3</sup>
													2446.25 34° hem <sup>1</sup> calcite <sup>2</sup>
2450													2446.5 28° chlor <sup>1</sup> hem <sup>2</sup> calcite <sup>3</sup>
													2447 35° hem <sup>1</sup>
													2447.25 32° hem <sup>1</sup>
													2448 35° chlor <sup>1</sup> hem <sup>2</sup> calc <sup>3</sup>
													2448.25 35° chlor <sup>1</sup> hem <sup>2</sup> calcite <sup>3</sup>
													2448.4 35° chlor <sup>1</sup> hem <sup>2</sup> calcite <sup>3</sup>
2460													2450 30° chlor <sup>1</sup> hem <sup>2</sup> calcite <sup>3</sup>
													2465 21° hem <sup>1</sup> calc <sup>2</sup>
													2466 27° chlor <sup>1</sup>
													2466.25 37° chlor <sup>1</sup> calcite <sup>2</sup>
2470													2467 35° chlor <sup>1</sup> calcite <sup>2</sup> hem <sup>3</sup>
2480													
2490													
2500													2501.09° calcite <sup>1</sup>
2510													
2520													2525.104° calcite <sup>1</sup>
2530													

DRILL HOLE 45-36  
 LOCATION medicine lake

LOGGED BY e. jackson

GRAPHIC LOGS

DEPTH	ALTERATION						# of per box	Trac. box	GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG	VEINLETS
	calcite	chlorite	hem.	qtz.	sericite						

DESCRIPTIONS

mineral fill 86%

andosite

pyrite flow or dome

none

tuff / ~~pyrite~~ / ~~pyrite~~ / tuff

2530											
2540											
2550											
2560											
2570											
2580											
2590											
2600											
2610											
2620											
2630											

2549'41" calcite'

no fractures

DRILL HOLE 45-36  
LOCATION medicine lake

LOGGED BY e. jackson

GRAPHIC LOGS

mineral fill  
 none  
 hydrothermally precipitated  
 90%  
 qtz in vugs

DEPTH	ALTERATION							# of per cent high	frac. box number	GRAPHIC GEOLOGY	T: TRACE 1. WEAK 2. MOD. 3. STRONG VEINLETS	DESCRIPTIONS
	1. WEAK		2. MOD.		3. STRONG							
	chlor.	calcite	hem.	qtz.	zeolite							
2630												
2640												
2650												
2660												
2670												
2680												
2690												
2700												
2710												
2720												
2730												

tuff breccia?

trypolite

none

hydrothermally precipitated

90%

qtz in vugs

no fractures

no fractures

DRILL HOLE 45-310  
 LOCATION medicine lake

LOGGED BY e. jackson

GRAPHIC LOGS

DEPTH	ALTERATION							# of frac. per box	GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG VEINLETS
	chlor	calcite	hem	gtz	zeolite	I. WEAK 2. MOD. 3. STRONG				
						1	2			
2730	100	100	100	100	100	100	100			
2740										
2750										
2760										
2770										
2780										
2790										
2800	100									
2810		100								
2826										
2830										

DESCRIPTIONS	
2732'43"	chlor <sup>1</sup> calcite <sup>2</sup>
2732.25'36"	chlor <sup>1</sup> calcite <sup>2</sup>
2733'43"	chlor <sup>1</sup> calcite <sup>2</sup>
2734.25'44"	calcite <sup>2</sup> chlor <sup>1</sup>
2753'74"	chlor <sup>1</sup>
2801'35"	chlor <sup>1</sup>
2814'51"	calcite <sup>1</sup>
2815'12"	calcite <sup>1</sup>

mineral fill 90%  
gtz in vugs hydro-thermal breccia  
rhyolite 90%  
40%

DRILL HOLE 45-316  
LOCATION medicine lake

LOGGED BY e. jackson

GRAPHIC LOGS

DEPTH	ALTERATION							# of per	frac box	GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG	VEINLETS	DESCRIPTIONS
	chlor.	calcite	hem.	qtz.	zeo	illite							
	1.23	1.23	1.23	1.23	1.23	1.23	1.23						
2830													
2840													
2850													
2860													
2870													
2880													
2890													
2900													
2910													
2920													
2930													

mineral fill 40%

50%

60%

50%

40%

2855-2861 chlor' calcite<sup>a</sup>

no fractures

DRILL HOLE 45-36  
 LOCATION medicine lake

LOGGED BY e. jackson

GRAPHIC LOGS

DEPTH

ALTERATION

1. WEAK  
2. MOD.  
3. STRONG

chlor. calcite hem. qtz zeolite

# of per.

frac. box

GRAPHIC GEOLOGY

7. TRACE  
1. WEAK  
2. MOD.  
3. STRONG  
VEINLETS

DESCRIPTIONS

mineral fill 30%  
40%  
40%  
45%

DEPTH	ALTERATION						# of per.	frac. box	GRAPHIC GEOLOGY	VEINLETS	DESCRIPTIONS
	chlor.	calcite	hem.	qtz	zeolite						
3730											<p>no fractures</p>
3740											
3750											
3760											
3770											
3780											
3790											
3800											
3810											
3820											
3830											

DRILL HOLE 45-36  
 LOCATION medicine lake

LOGGED BY e. jackson

GRAPHIC LOGS

DEPTH	ALTERATION							# of per box	frac. box	GRAPHIC GEOLOGY	7. TRACE 1. WEAK 2. MOD. 3. STRONG  VEINLETS	DESCRIPTIONS
	ALTERATION											
	chlor.	calcite	hem.	gtz.	zeolite	1. WEAK	2. MOD.					
3030												
3037' 13"												rate, 88° chlor' calcite, 2
3037' 35"												rate, 78° chlor' calcite, 2
3038' 35"												rate, 72° calcite
3041' 34"												rate, 54° chlor'
3044' 20"												rate, 53° gtz?
3050												
3060												
3061' 55"												heated frac. filled w/ gtz.
3068' 39"												chlor' calcite <sup>2</sup>
3070												
3073' 11"												gtz' chlorite <sup>2</sup>
3080												
3090												
3100												
3110												
3112' 30"												sugary mineral?
3120												
3130												

mineral fill 50%

30%

45%

30%

35%

DRILL HOLE 45-36  
 LOCATION medicine lake.

LOGGED BY e. jackson



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DEPTH	GRAPHIC LOGS											DESCRIPTIONS
	ALTERATION						# of per box	free box	GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG	VEINLETS	
	unlor.	calcite	hem	qtz	zeolite	1. WEAK 2. MOD. 3. STRONG						
3130												
3140												
3150												no fractures
3160												
3170												
3180												
3190												chlorite altered
3200												
3210												
3220												
3230												
3240												
3250												

mineral fill 35%  
 25%  
 30%  
 30%  
 80%  
 80%

DRILL HOLE 45-36  
 LOCATION medicine lake

LOGGED BY e. jackson

GRAPHIC LOGS

DEPTH	ALTERATION						# of per box	frac. box surface	GRAPHIC GEOLOGY	TH. TRACE 1. WEAK 2. MOD. 3. STRONG VEINLETS	DESCRIPTIONS
	chlor.	calcite	hem.	qtz.	zeolite	1. WEAK 2. MOD. 3. STRONG					
3230	[shaded area]						[shaded area]	[shaded area]	[shaded area]	[shaded area]	[shaded area]
3240											
3250											
3260											
3270											
3280											
3290											
3300											
3310											
3320											
3330											

mineral  
fill  
80%

chlorite altered

no fractures

CONT.  
ON NEXT  
PAGE

DRILL HOLE 45-36  
LOCATION medicine lake

LOGGED BY e. jackson

GRAPHIC LOGS

DEPTH	ALTERATION							# of frac. per box	GRAPHIC GEOLOGY	TH. TRACE 1. WEAK 2. MOD. 3. STRONG VEINLETS	DESCRIPTIONS
	chlor.	calcite	hem.	qtz.	zeolite	1. WEAK 2. MOD. 3. STRONG					
						low	high				
3380											
3390											chlorite altered
3300											
3310											3307' 44° chlor <sup>1</sup> calcite <sup>2</sup> frac. @ contact
											3308' 76° chlor <sup>1</sup> calcite <sup>2</sup>
											3308' 1' 63° chlor <sup>2</sup> calcite <sup>1</sup> broken healed frac
											3308.2' 76° chlor <sup>2</sup> calcite <sup>1</sup>
											3311' 75° calcite <sup>1</sup> chlor <sup>2</sup>
											3312' 44° calcite <sup>1</sup> chlor <sup>2</sup>
											3313' 13° chlor <sup>1</sup> calcite <sup>2</sup> blocky calcite and broken healed frac.
											3315' 65° chlor <sup>2</sup> calcite <sup>1</sup>
											3315.5' 75° chlor <sup>2</sup> calcite <sup>1</sup>
											3318' 50° calcite <sup>1</sup> chlor <sup>2</sup>
											3319' 03° calcite <sup>1</sup> chlor <sup>2</sup>
											3322 45° litho. change
											chlorite altered
3340											
3350											
3360											
3370											
3380											

mineral fill  
pyroclastic ash flow  
litho. change  
andesite / dacite flow  
litho. change  
pyroclastic ash flow

DRILL HOLE 45-310  
LOCATION medicine lake

LOGGED BY e. jackson  
m. gwynn

DEPTH	GRAPHIC LOGS											DESCRIPTIONS
	ALTERATION						# of Per	frac. box	GRAPHIC GEOLOGY	7: TRACE 1. WEAK 2. MOD. 3. STRONG	VEINLETS	
	chlor.	calcite	nem.	qtz.	zeolite	1. WEAK 2. MOD. 3. STRONG						
3380							low high					
3390												3391' 47" calcite <sup>1</sup> chlorite <sup>2</sup> 3395' brown rutile? 3399' 55" chlorite <sup>1</sup>
3400												
3410												3407' 48" chlorite <sup>1</sup> calcite <sup>2</sup>
3420												3419' bleached zeolite, euhedral calcite?
3430												3427' 15" calcite <sup>2</sup> chlorite <sup>1</sup>
3440												<del>3428' 18"</del> 3428' 18" calcite <sup>2</sup> chlorite <sup>1</sup> 3430' 33" chlorite <sup>2</sup> calcite <sup>1</sup> 3432' 35" chlorite <sup>2</sup> calcite <sup>1</sup>
3450												3450' 20" chlorite 3451' 35" chlorite <sup>1</sup> zeo. <sup>2</sup> 3451.5' 40" chlor <sup>1</sup> zeo <sup>2</sup> 3454' 32" chlor <sup>1</sup> zeo <sup>2</sup> calcite <sup>3</sup> 3456' 48" chlor <sup>1</sup> zeo <sup>2</sup>
3460												3463' 28" chlor <sup>1</sup> zeo <sup>2</sup>
3470												3465' 45" chlor <sup>1</sup> zeo <sup>2</sup> qtz <sup>2</sup> calcite <sup>3</sup> qtz. in healed fracture 3467' 45" chlor <sup>1</sup> zeo <sup>2</sup> qtz <sup>3</sup> 3467.1' 56" chlor <sup>1</sup> zeo <sup>2</sup> qtz <sup>3</sup> 3468' 46" chlor <sup>1</sup> zeo <sup>2</sup> qtz <sup>3</sup> 3468.5' 43" chlor <sup>2</sup> nem <sup>3</sup> calcite <sup>1</sup> 3469' 43" chlor <sup>1</sup> 3469.5' 34" chlor <sup>1</sup> calcite <sup>2</sup> zeo <sup>3</sup> 3470' 35" chlor <sup>1</sup> calcite <sup>2</sup> zeo <sup>3</sup> 3470.5' 65" chlor <sup>1</sup> qtz <sup>2</sup> healed 3471' 58" chlor <sup>1</sup> zeo <sup>2</sup>
3480												

mineral fill  
 ash flow  
 granite  
 andesite w/ hydrothermal alteration

DRILL HOLE 45-36  
 LOCATION medicine lake

LOGGED BY e. jackson  
m. gwynn

DEPTH	GRAPHIC LOGS										GRAPHIC GEOLOGY	7: TRACE 1. WEAK 2. MOD. 3. STRONG	VEINLETS	DESCRIPTIONS
	ALTERATION						# of per fract high	frac. box minerals						
	chlor. 157	calcite 157	hem. 157	qtz. 157	zeolite 157	157 157								
3480													3481' 51° chlor' calcite <sup>2</sup> 3481.5' 48° chlor' calcite <sup>2</sup> 3487' 36° healed frac. w/chlorite 3488' irregular frags w/chlorite fill	
3490													3493' 71° chlor' calcite <sup>2</sup> 3495' 70° chlor' calcite <sup>2</sup>	
3500														
3510													3510' 36° chlor' calcite <sup>2</sup> 3512' 83° healed frac. 3514' 48° healed frac. w/chlor. 3516' 40° healed frac. w/chlor. 3518' 55° healed frac. w/chlor. 3519' 53° healed frac - hydro frac? 3523' 65° chlor' 3524' 71° chlor' 3526' 85° healed frac w/chlor. fill 3528' 43° chlor'	
3530													3530' 63° chlor' 3531' 42° healed frac. w/chlor. 3532' 42° chlor' calcite <sup>2</sup> 3536' 52° chlor' 3537' 65° chlor' 3537.5' 64° healed frac. w/chlor 3538' 64° healed frac w/chlor 3540' 57° chlor' 3541' 36° chlor' 3543' 60° zone of high amt of healed frac. ↓ 3543' chlor' calcite <sup>2</sup> 3544' 37° chlor' 3546' 73° chlor' 3549' 65° chlor' 3552' 56° chlor' 3560' 35° chlor' 3561' 20° chlor' 3568' 60° chlor' 3570' 53° chlor' 3573' 30° chlor' 3575' 50° chlor' 3577' 35° chlor' 3579' 35° chlor' 3583' 65° chlor'	
3550														
3560														
3570														
3580														

mineral fill

andesite w/ hydrothermal breccia

100%

mod. to extreme  
hydro. frags.  
heavy mod  
hydro. frags.

DRILL HOLE 45-36  
LOCATION medicine lake

LOGGED BY e. jackson  
m. gwynn

GRAPHIC LOGS

mineral fill 100%  
 dacite flow w/ hydrothermal breccia  
 andesite  
 90% dacite flow  
 70% dacite flow  
 90% dacite flow

DEPTH	ALTERATION							# of per	frac. box	GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG	VEINLETS	DESCRIPTIONS
	chlor.	calcite	hem.	qtz.	zeolite	pyrite							
	100	100	100	100	100	100	low mod. high						
3580'													3580' 50° chlor <sup>1</sup>
													3588' 40° chlor <sup>1</sup>
													3589' 42° chlor <sup>1</sup>
3590'													3593' 50° chlor <sup>1</sup>
3600'													3603' 40° chlor <sup>1</sup>
													3604' 45° chlor <sup>1</sup>
													3606' 45° chlor <sup>1</sup>
													3608' 40° chlor <sup>1</sup>
													3611' 45° chlor <sup>1</sup>
													3612' 40° chlor <sup>1</sup>
													3614' 45° chlor <sup>1</sup>
													3615' 45° chlor <sup>1</sup>
													3618' 40° chlor <sup>1</sup>
													3622' 40° chlor <sup>1</sup>
													3631' 48° calcite <sup>1</sup> pyrite <sup>2</sup>
													3637' 50° calcite <sup>1</sup>
													3639' 50° calcite <sup>1</sup> pyrite <sup>2</sup> [example]
3640'													3642' zeo? pyrite <sup>2</sup> hydro frac
													3646' 35° chlor <sup>1</sup> calcite <sup>2</sup>
													3647' 45° calcite <sup>1</sup>
3650'													3661' 34° chlor <sup>1</sup> calcite <sup>2</sup>
													3663' 34° chlor <sup>1</sup> calcite <sup>2</sup>
													3665' 45° chlor <sup>1</sup>
3660'													
3670'													3671' 40° chlor <sup>1</sup>
													3678' 38° chlor <sup>1</sup>
3680'													3680' 38° chlor <sup>1</sup>

DRILL HOLE 45-3e  
 LOCATION medicine lake

LOGGED BY e. jackson  
m. gwynn

GRAPHIC LOGS

mineral  
fill  
90%

85%  
basalt or  
andesite  
+ dacite flow

80%  
hyaloclastite  
+ dike of dacite w/ flow folding

DEPTH	ALTERATION							# of per mud frag	frac box ratio	GRAPHIC GEOLOGY	7: TRACE 1: WEAK 2: MOD. 3: STRONG	VEINLETS	DESCRIPTIONS
	chlor.	calcite	hem.	qtz.	zeol.	serpentine	silica						
	100	100	100	100	100	100	100						
3080													
3087.5'												chlor'	
3088.5'												chlor'	
3100													
3110													
3112.5'												chlor'	
3114'												calcite <sup>2</sup>	epidote <sup>2</sup> chlor <sup>3</sup>
3120													
3130													
3140													
3150													
3160													
3170													
3172.5'													
3174'													
3176'													
3178'													
3180													
3182.5'													
3184'													
3186'													
3188'													
3190													
3192.5'													
3194'													
3196'													
3198'													
3200													
3202.5'													
3204'													
3206'													
3208'													
3210													
3212.5'													
3214'													
3216'													
3218'													
3220													
3222.5'													
3224'													
3226'													
3228'													
3230													
3232.5'													
3234'													
3236'													
3238'													
3240													
3242.5'													
3244'													
3246'													
3248'													
3250													
3252.5'													
3254'													
3256'													
3258'													
3260													
3262.5'													
3264'													
3266'													
3268'													
3270													
3272.5'													
3274'													
3276'													
3278'													
3280													
3282.5'													
3284'													
3286'													
3288'													
3290													
3292.5'													
3294'													
3296'													
3298'													
3300													
3302.5'													
3304'													
3306'													
3308'													
3310													
3312.5'													
3314'													
3316'													
3318'													
3320													
3322.5'													
3324'													
3326'													
3328'													
3330													
3332.5'													
3334'													
3336'													
3338'													
3340													
3342.5'													
3344'													
3346'													
3348'													
3350													
3352.5'													
3354'													
3356'													
3358'													
3360													
3362.5'													
3364'													
3366'													
3368'													
3370													
3372.5'													
3374'													
3376'													
3378'													
3380													
3382.5'													
3384'													
3386'													
3388'													
3390													
3392.5'													
3394'													
3396'													
3398'													
3400													

DRILL HOLE 45-31e  
 LOCATION medicine lake

LOGGED BY m. gwynn

GRAPHIC LOGS

DEPTH	ALTERATION										# of Per inches	frac. loos in place	GRAPHIC GEOLOGY	TH. TRACE 1. WEAK 2. MOD. 3. STRONG  VEINLETS	DESCRIPTIONS	
	ALTERATION															
	chlor.	calcite	hem.	qtz.	002	100	100	100	100	100						
3780																
3790																
3800																3798' 21" chlor'
3810																3808' 30" chlor' 3811' 52" chlor'
3820																
3830																3835' 21" chlor'
3840																3841' 30" chlor' 3842' 45" chlor'
3850																
3860																
3870																3875' 40" chlor'
3880																

Mineral  
Fill  
80%  
90%  
95%  
90%  
95%  
100%  
95%

hydrochloric  
dactite flow

DRILL HOLE 45-30  
LOCATION medicine lake

LOGGED BY M. Gwynn



GRAPHIC LOGS

Mineral fill 95%  
 dacite flow  
 85%  
 sed. cond.  
 100%  
 dacite or andesite flow  
 90%  
 tanar flow  
 95%  
 dacite flow

DEPTH	ALTERATION							# of Per	frac. box	GRAPHIC GEOLOGY	TRACE 1. WEAK 2. MOD. 3. STRONG	VEINLETS	DESCRIPTIONS
	chlor.	calcite	hem.	quartz	zeol.	epidote	pyrite						
	100	100	100	100	100	100	100						
3880													
3890													3892' 58" chlor <sup>1</sup> 3894' 38" chlor <sup>1</sup>
3900													3898' 25" chlor <sup>1</sup> hem <sup>2</sup> 3899' 30" hem <sup>2</sup> epidote <sup>3</sup> chlor <sup>1</sup>
3910													3912' 35" chlor <sup>1</sup> 3913' 35" chlor <sup>1</sup> 3916' 30" chlor <sup>1</sup>
3920													
3930													
3940													
3950													3953' 40" chlor <sup>1</sup> pyrite <sup>2</sup>
3960													
3970													3974' 40" chlor <sup>1</sup>
3980													

DRILL HOLE 45-36  
 LOCATION medicine lake

LOGGED BY M. Gwynn

