

**Analysis of Continuous Core Samples
from the Awi 1-2 Corehole, Awibengkok Geothermal Field
West Java, Indonesia**

Unocal Geothermal and Power Operations

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December 31, 1996

**APPENDIX 3 - DETAILED CORE DESCRIPTION NOTES
(REPORT VOLUME 3)**

DEPTH	GRAPHIC LOGS													Interpretive Graphic Geologic Log	NOTES & DESCRIPTIONS		
	Alteration Type and Intensity						Vein Minerals										
	PISS. HEM.	PISS. PYRITE		ARGILLK	CHL (CLAY?)	CHL-EP.	VEIN ABUNP.	QUARTZ	CALCITE	ANHYD.	WARRANTITE	EPIDOTE	HEM			PYRITE	CLAY
2500																	<p>2500 - 2580: LAHAR — Tuffaceous andesite bx — clasts dom. pyrite and, but other lithologies present — some pum. & andesitic scoria (?) present — tuffaceous matrix — scatt. thin tufts or reworked tufts (fine)</p> <p>2580 - 2642: FELSIC (?) TUFF, poss. ash-flow tuff — crumbly — may contain biotite — intensely argillized & pyritized — waxy text.</p> <p>2642 - 2692: PORPHYRITIC ANDESITE BRECCIA (AUTOBX) — some clasts have crenulated borders (poss. plastic-text. when engulfed)</p> <p>highly altered (fallout?) TUFF</p> <p>2692 - 2736: LAHAR (?) — Apparently tuffaceous andesite bx — becomes chloritic — 40-50% clasts</p> <p>2736 - 2740: ANDESITIC ASH-FLOW (?) TUFF</p> <p>2740 - 2942: LAHAR — Tuffaceous andesite breccia, as above; lt-med. grayish-gray (chl) mottled w/ purplish-gray (hem)</p> <p>2942 - 2949: TUFFACEOUS MUDSTONE or ARGILL. TUFF, conformed locally; some mafic pumice lapilli</p>
2600																	
2700																	
2800																	
2900																	
2950																	<p>END OF THIS SECTION — GO TO SIDETRACK</p>

✓ VUGS IN & ALONG VEINS

* POSS. W/ SAPONITE (VERY WAXY TEXTURE)
POSS. ALSO VFXLN. SERICITE

Borehole No. Awibengkok 1 - 2

Depth Interval 2500 — 3000 FIELD GEOLOGIC LOG

Logged By J. HULEN
D. NIELSON

Date NOV. 1995

DEPTH	GRAPHIC LOGS													Interpretive Graphic Geologic Log	NOTES & DESCRIPTIONS				
	Alteration Type and Intensity						Vein Minerals												
	PISS-HEM	PISS-PY	WMS	WMS	WMS	WMS	CHL-CLAY	CHL-EP	VEIN INTENS.	WMS	WMS	WMS	WMS			WMS	WMS	WMS	WMS
2950																			<p>2950-2996': BASALTIC or BASALTIC ANDESITIC BRECCIA — poss. an agglutinate deposit — locally obvious bedding, dip 30-40° — hem. common; rx is maroon-purple-pink-gray</p>
3000																		<p>2996-3010': BASALT or BASALTIC ANDESITE FLOW (?) ROCK; prominent flow foliation; comm. vert. 3-5 cm wide hydroth. bk. dip 50°</p>	
3100																			<p>3010-3050': BASALTIC or BASALTIC ANDESITE BK, same as 2990-96'</p> <p>3050-3080': BASALT or BASALTIC ANDESITE FLOW (?) ROCK, ss</p> <p>3085-3110': PYRIC ANDESITIC BK of UNKNOWN ORIGIN</p> <p>3110'-3180': same as above, but poss. interstratified locally w/ thin laharic bxs</p>
3200																			<p>3180-3186B: Interbedded lahar breccias & tuffaceous ss, the latter subordinate</p> <p>3186B-3214': ANDESITIC or DACTIC ASH-FLOW TUFF, pale greenish-gray, w/ chloritized pumice; poss ash-cloud surge above 3190.</p> <p>3214-3299': sequence of normally-graded tuffaceous cal - mdst; load casts common; subaqueous deposition; turbidites organic-rich, 1' mdst/silt. at base</p>
3300																			<p>3299-3472': PORPHYRITIC-ANDESITE BRECCIA</p>
3400																			<p>bagged rubble w/obvious hydroth. bk</p>

∇ = HYDRO-THERMAL BRECCIA OCCURRENCES
 ◇ = VUGS IN AND ALONG VEINS

Borehole No. Awibengkok 1 - 2 (SIDETRACK)

Depth Interval 2950-3400'
 FIELD GEOLOGIC LOG

NOTE: OPEN SPACES THROUGHOUT THIS INTERVAL ARE CONCENTRATED IN & ALONG HYDROTHERMAL VEINS, MOST OF WHICH ARE STEEPLY-DIPPING (>70°) RELATIVE TO PLANES NORMAL TO THE CORE AXIS.

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 Date NOV. 1995

DEPTH	GRAPHIC LOGS													Interpretive Graphic Geologic Log	NOTES & DESCRIPTIONS	
	Alteration Type and Intensity							Vein Minerals								
	PISS. HEM.	PISS. PYRITE	SILIC. FICATION	ARFELLK	CHLOR. (CLAY)	CHLOR. EPIDOTE	VEIN. ADULPH.	QUARTZ	CALCITE	ANHYD.	WALL.	EPIDOTE	HEM.			PYRITE
3400																<p>PRO-THERMAL BX OCCURRENCES ▲ = VUGS IN # ALONG VEINLETS</p> <p>AND. BRECCIA, as above</p> <p>3472 - 3474': TUFFACEOUS MUDST. OR FINE-ASH TUFF, dk. gray, finely laminated</p> <p>3474 - 3515': PYRIC AND. BX, as above; celadonite bel. 3490'</p> <p>3515' - 3570.5': HYDROTHERMAL BX, PTZ-DU-ROCK FLOUR MATRIX</p> <p>3570.5' - 3578': AND. BX as above, invaded by hydrothermal bx stringers</p> <p>3578' - 3580': TUFFACEOUS SS (?)</p> <p>3580' - 3580': same as 3578'</p> <p>3588' - 3599': LAHAR; Tuffaceous andesite breccia; possibly grading downward into andesite (flow?) breccia</p> <p>3599' - 3613': HYDROTHERMAL BX, as above - could also be subaerially deposited hydrothermal explosion breccia (vague bedding)</p> <p>3613' - 3618': Interstratified HYDROTHERMAL BX, as above, & TUFFACEOUS PYRITIC MUDSTONE OR TUFF finely laminated, w/ prominent soft-sediment deformation</p> <p>3618' - 3663': LAHAR, as above</p> <p>3663' - 36708': TUFF prob. fallout</p> <p>36708' - 36743': HYDROTH. BX as above</p> <p>36743' - n 3720': AND. BX, "</p> <p>3720' - 3762': BASALTIC AND. dense, amygdaloidal (calcite), locally autobrecciated</p> <p>3762' - 3774': BASALTIC AND. BX</p> <p>3774' - 3816': Intensely altered VITRIC TUFF, dom. fine ash w/ scatt. coarse ash to pumice lapilli; very fragile, waxy texture - breaks into 10-20 mm-dia "knobby" chunks abund talcose vms. w/ chl. & pyrite</p> <p>3816' - 19': PILLOW BASALTIC AND. in matrix of tuff, as above</p> <p>3819' - 3842': VITRIC TUFF, as above, except coarser; lacking the waxy argillic alteration.</p> <p>3842' - 3886': Tuffaceous BASALTIC AND. BX w/ local < 50 cm vitric tuff beds.</p>
3500															<p>* POSS. SAPONITIC; POSS. SERICITIC</p>	
3600																
3700																
3800																
3900																

Borehole No. Awibengkok 1 - 2 (SIDE TRACK)

Depth Interval 3400 - 3900'

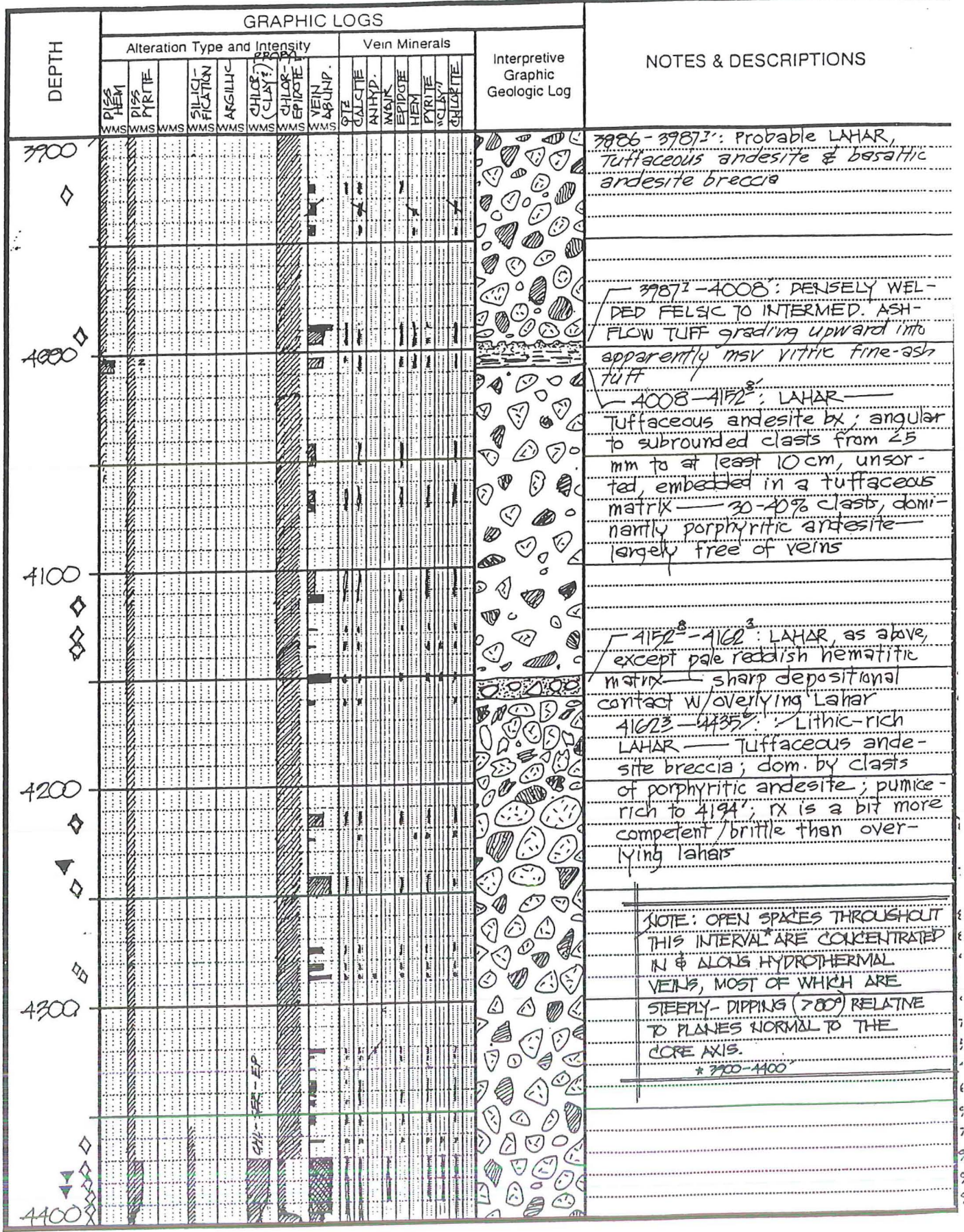
FIELD GEOLOGIC LOG

NOTE: OPEN SPACES THROUGHOUT THIS INTERVAL ARE CONCENTRATED IN # ALONG HYDROTHERMAL VEINS, MOST OF WHICH ARE STEEPLY-DIPPING (>70°) RELATIVE TO PLANES NORMAL TO THE CORE AXIS

PLEASE GO TO NEXT PAGE =

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1 = HYDROTHERMAL VEIN
 ◇ = VEIN IN AND ALONG VEINS

Borehole No. Awibengkok 1 - 2 (SIDETRACK)

Depth Interval 3900-4400' ~ FIELD GEOLOGIC LOG

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D. NIELSON
 Date NOV. 1995

DEPTH	GRAPHIC LOGS														Interpretive Graphic Geologic Log	NOTES & DESCRIPTIONS
	Alteration Type and Intensity							Vein Minerals								
	DISS. HEM	PISS. PYRITE	SILIC. FLEATION	ARGILLIC	CHLOR. (CLAY)	CHLOR. EPIDOTE	VEIN ABUND.	QTZ	CALCITE	ANHYD.	WASIR.	EPIDOTE	HEM	PYRITE		
4400																<p>LAHAR, as above</p> <p>tuff grades downward into probable hydrothermal breccia; possible subvertical streak of explosion bx. ZONE OF TUFF.</p> <p>4435[±] - 4450[±]: HYDROTHERMAL BX, complex, multi-stage, invaded by Qtz-py cement. hydrothermal bx silca</p> <p>4450[±] - 4462[±]: PORPHYRITIC ANDESITE</p> <p>4462 - 4478[±]: LAHAR</p> <p>EXTREMELY VUGGY QTZ-CEMENTED HYDROTHERMAL BRECCIA</p> <p>4493[±] - 4524[±]: PORPHYRITIC ANDESITE, dense, med.-dk. gray green; intense propylitic alteration</p> <p>4524[±] - 4544[±]: LAHAR, as above</p> <p>4544[±] - 4605[±]: PORPHYRITIC ANDESITE, as above, but locally + autobrecciated</p> <p>> note coincidence of vuggy zones with autobrecciation (intercalated voids enhanced by hydrothermal dissolution)</p> <p>4605 - 4608[±]: LAHAR, as above</p> <p>conglomerate (?) bed</p> <p>interbedded fine-ash fallout tuff, ferruginous sandstone & cal. non-welded ash-flow tuff</p> <p>porphyritic andesite</p> <p>lahar</p> <p>4644 - 4659[±]: PORPHYRITIC ANDESITE, dense dk. gray-green, diminished propylitic alteration</p> <p>4659[±] - 4673[±]: PUMICE & LITHIC LAFILLI TUFF, fallout, well sorted & bold</p> <p>4673[±] - 4707[±]: PORPHYRITIC ANDESITE, as above</p> <p>4707[±] - 4741[±]: LAHAR, as above</p> <p>2, 2-12 mm-wide hydrothermal bx veins w/ epidote & silica-rich rx floor matrix</p> <p>4741[±] - 4842[±]: PORPHYRITIC ANDESITE, strong propylitic alteration</p> <p>complex zone w/ hydrothermal bx stringers</p> <p>same as above</p> <p>4842[±] - 4900[±]: LAHAR, as above, med. grayish-green, str. propylitic alteration, locally invaded by small stringers of hydrothermal bx.</p>

Borehole No. Awibengkok 1 - 2 (SIDETRACK)

Depth Interval 4400 - 4900'

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D. NIELSEN

Date NOV. 1995

FIELD GEOLOGIC LOG

BY HYDROTHERMAL DISSOLUTION STRONG (>10% ϕ)

HYDROTHERMAL ALTERATION OCCURS ALONG VEINS
ZONES 2-3 US
US

DEPTH	GRAPHIC LOGS													Interpretive Graphic Geologic Log	NOTES & DESCRIPTIONS			
	Alteration Type and Intensity						Vein Minerals											
	DISS. HEM.	DISS. PIRITE	SILICIFICATION	ARGILLIC	CHLOR. (CLAY?)	CHLOR. EPIDOTE	VEIN ABUND.	QUARTZ	CALCITE	ANHYD.	WAIK.	EPIDOTE	HEMATITE			PIRITE	VCLAY	CHLORITE
5400'					*													<p>NON-WELDED ASH-FLOW TUFF</p> <p>5414'-5417': HYDROTHERMAL EX. SOME QTZ. VN.</p> <p>DOM. FALLOUT VITRIC ASH/PUMICE LAPILLI TUFF</p> <p>5420.5'-5447': PORPHYRIC ANDESITE, locally amygdaloidal; locally altered.</p> <p>5447'-5480.6': NON-WELDED ASH-FLOW TUFF or PUMICE-RICH LAHAR</p> <p>Vitric fine-ash to lapilli tuff with soapy to waxy airtm. texture.</p> <p>5485.9'-5496.2': LAHAR</p> <p>euhedral cpx xls. in vein - up to 3mm dia.</p> <p>5497'-5507': LAHAR - clasts up to 95 cm in dia.</p> <p>5508'-5541': NON-TO WEAKLY WELDED ASH-FLOW TUFF</p> <p>5541'-5582': INTERSTRATIFIED VITRIC ASH & LAPILLI TUFF</p> <p>5546'-5577': PORPHYRIC PYROXENE ANDESITE; see description below</p> <p>5577'-5582': 80-90°-dipping HYDROTHERMAL BRECCIA, silicified, polymict, including qtz. vein frags.; vuggy, sulfide-bearing.</p> <p>5582'-5685.2': PORPHYRIC PYROXENE ANDESITE, dense, med-dk. grayish gray; locally conspicuous pyrox. phenocrysts up to 15 x 10 mm - many still largely fresh; unit could be thick flow but more likely is intrusive; unaltered</p> <p>5685.2'-5696': PORPHYRIC 70° ANDESITE AUTOBRECCIA</p> <p>5696'-5704': PORPHYRIC ANDESITE</p> <p>5704'-5723.8': PORPHYRIC-ANDESITE AUTOBRECCIA</p> <p>5723.8'-5741': PORPHYRIC ANDESITE</p> <p>5741'-5751': FALLOUT VITRIC ASH TO PUM. LAPILLI TUFF; GRADINGS DOWNWARD INTO NON-WELDED ASH-FLOW TUFF</p> <p>5751'-5771': PORPHYRIC ANDESITE</p> <p>5771'-5783.8': WEAKLY WELDED ASH-FLOW TUFF; LOWER 1/2 lithic-rich & possible lahar</p> <p>Fine-ash fallout tuff.</p> <p>WEAKLY WELDED ASH-FLOW TUFF, & INTERSTRATIFIED VITRIC ASH FALLOUT & NON-WELDED ASH-FLOW TUFF</p> <p>PORPH. ANDESITE AUTOBRECCIA</p> <p>5800.2'-5824.8': PORPHYRIC ANDESITE</p> <p>well-silicified pumice & lithic ash in tuff - probable fallout deposit</p> <p>HYDROTHERMAL BY silicified vesicular & possible gas vesicles up to 1.5 x 10 mm. very vuggy</p> <p>5824.8'-5836': PORPHYRIC ANDESITE, auto-brecciated & amygdaloidal in upper portion</p> <p>Fallout ash & pumice-lapilli tuffs</p> <p>PORPHYRIC-ANDESITE AUTOBRECCIA</p> <p>"</p> <p>"</p>
5500'					*													
5600'					*													
5700'					*													
5800'					*													
5900'					*													

* SERPENTINE OR SAPONITE? "WAXY, SOAPY"

Borehole No. Awibengkok 1 - 2 (FIELD GEOLOGIC LOG)
Depth Interval 5400-5900'

Logged By J. HULEN
D. NIELSON
Date 11/95

HYDROTHERMAL BRECCIA
 CLUSTER RECKES
 = VUGS IN ALONG VEINS

CREATED OR ENHANCED BY HYDROTHERMAL DISSOLUTION

DEPTH	GRAPHIC LOGS														Interpretive Graphic Geologic Log	NOTES & DESCRIPTIONS	
	Alteration Type and Intensity							Vein Minerals									
	DISS. HEM.	DISS. PYRITE	SILICIFICATION	ARGILLIC	CHL. (CLAY?)	CHL. EP.	VEIN ABUND.	QUARTZ	CALCITE	ANHYD.	WAIKAKITE	EPIDOTE	HEMATITE	PYRITE			CLAY
5900																	2 FT TUFF BED - ANDESITE BRECCIA 5913.3' - 5917.0' - VITRIC LITHIC TUFF INVADDED BY HYDROTHERMAL BRECCIA 5923.0' TO 5951.2': PORPHYRYTIC ANDESITE (?), 5951.2': INTERSTRATIFIED FALLOUT FINE-ASH VITRIC TUFF - LITHIC LAPILLI TUFF & MINOR NON-WELDED ASH-FLOW TUFF. 5960' ← VITRIC FINE-ASH FALLOUT TUFF. 5989' ← SAME AS 5951.2' - 5960' 5989 - 6003.2': PORPHYRYTIC ANDESITE 6003.2' - 6005': NO CORE RETRIEVED.
6000																	TOTAL DEPTH
6005																	

Borehole No. Awibengkok 1 - 2
 Depth Interval 5900 - 6005'

FIELD GEOLOGIC LOG

Logged By J. HULEN
D. NIELSON
 Date NOV. 1995

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Notes		
2510		Veins	Entries	
11				
12				
13				
14				- 13.71- Lahar deposit: med. grayish-green subx-subind. clasts up to 87 1st 1 cm dia. (avg. 4 1-1.5 cm); 20-40% clasts; some pum. - also many clasts crenulated margins - 41.9% diss. py. many clasts have 1-5 mm reaction rims - clasts mostly and. & and. py. - some vesicles
15				
16				
17				- <1 mm cal-chl-py units; bdt and. tuff
18				41 mm. vns - sparsely sc. trd., overall < 1% of TRV
19				
20				Lahar: sl. lrg. clasts - up to 5C



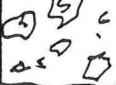


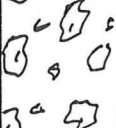


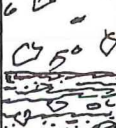



Borehole Awibengkok 1 - 2 - Field Notes

Logged By JPH/PLK

Depth Interval 2510-20

Date 11/5/95

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DEPTH	FRX/VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF DIP ANGLES 	ORIENTATIONS			
		Veins			Entries
2520		65°		Lahar - cists suspect much pum	
21		77°		41 mm - has refr. along strike col & 1st pily blade.	
22			bdd. tuff	VERY FRAGILE	
23		115°		Lahar - AA	
24					
25					
26					
27					
27				v. pyritic - v. dk. gray - clay-rich dist. bedding.	
29				pum abund. (?) - score 3	
29				≠ suspect this is remob. and. pyrocl. flow - much pum punky - clay-rich no veins	
2530					

Borehole Awibengkok 1 - 2 — Field Notes

Logged By JBH/DLN

Depth Interval 2520-30

Date 11/5/95

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES (mm)	ORIENTATIONS			
		Veins			Notes
2530				siltst., ss, chl. - clay (?) altn., pinky - no veins.	
1					
2					
3					
4					
5				bedding contact	
6					
7					
8					
9					
2540					

Borehole Awibengkok 1-2 — Field Notes
 Depth Interval 2530 - 40'

Logged By JH/DN
 Date 11/5/95

DEPTH	FOL / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
		ORIENTATIONS			
		Veins			Notes
25 40				Lahar, f.p. m-dk, grayish-grn. clasts up to 7.5 cm dia * to well v. com. - pum. common	
42					
44					
46					
48					
50					
52					
54					
56					
58					
25 60					

Borehole Awibengkok 1 - 2 - Field Notes
 Depth Interval 2540-60'

Logged By JH/DA
 Date 11/5/95

DEPTH	FRS/VEINS/ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF IDENTIFIERS 	ORIENTATIONS			
		Veins			Fractures
25 60				Lahar, AA	
2				vn up to 2 mm - has vetix - may have had open space - no shearing ext - "pull apart" - mostly equant cal. x's - up to 1.5 mm. - poss. minor anhydrite (tabular)	
4		85°			
6		20°			
8		85°	v. vuggy vn with 54 stem	vugs up to 8 cm x 1 m - crs. block. cal. - poss. some only	
70			20°	bedding. break	
				Lahar, AA - clasts up to 5 cm	
				looks like all orig. material intensely argillized & pyritized fallout? tuff - lumpy - 10-15% diss. py - mat. dk. gray	
* 76			45°	crude silt - lumpy ABUND. PLUMICE BIOTITE-BEFRAX waxy u/9% diss. BTE	
				alt. AA but texture preserved looks like alt. Lahar - poss are ash-flow tuff	
			20°	crude silt	
25 80				same as in 76 waxy, totally argill - poss some silic. 5-7% diss. & unit - pyrite suspect alt. * felsic PF (AA)	


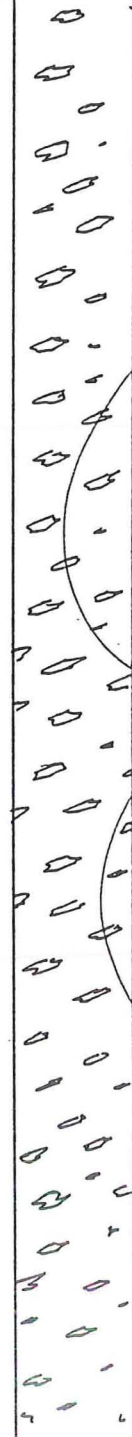
Borehole Awibengkok 1 - 2 - Field Notes

Depth Interval 2560-80

Logged By JH/DW

Date 11/5/95

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Notes		
2500		Veins		
90				<p>prob. an altered AFT</p> <p>same as above - int arg & pyritized bre-bearing felsic tuff streak py units & diss. py - also suggest tr. units of other sulfides (cpy & sp.)</p> <p>most has been turned to cm(-) sized rubble</p>
2600				

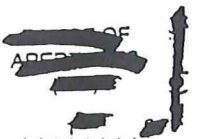

Borehole Awibengkok 1 - 2

Depth Interval 2500 - 2600

Logged By JH/DN

Date 11/5/98

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DEPTH	EPX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Veins		
2600'				
		25° 90°		
		61°		prob. a felsic AFT intms. comp this portion - avg. clast size, plum & lithics, abt. 15 mm.
2610'				
		70°		
		145°		RX is intensely alt. to cal- clay-py
		120°		 1/2 mm corner distinctly lith-shaped phenocrysts dytic andesite or dacite coherent bx - some clasts have crenulated - appearing borders - clsts. up to 7-8 cm in dia - intense cal-clay-py altu - "auto-bx"
2620'				

Borehole Awibengkok 1 - 2

Logged By JH, DN

Depth Interval 2600-20'

Date 11/5/75

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Veins		
2620		<p>60° \swarrow anas. pp. vnlts.</p> <p>65° \swarrow irreg. upto.</p>		<p>Jags up to 4cm L, 1cm wide along cal-py on system - anast. irreg, but in gen. dip 85-90° L, vein "pull-apart" no fix</p>
80				<p>crenulated, "plastic" appearing partings on clasts - still cognate porphyric dacite or andesite - in</p>
2640				

cal
alt
no
chc

DEPTH	FR / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES	ORIENTATIONS			
		Veins			Notes
2640				<p>pyritic</p> <p>- andesite or dacite cognate bx A.P. - apparent, sect of chlorite still abundant, diss. py - semi-punky texture - prob. pty. largillized</p> <p>- CONSPIC. aspect is ONE RX TYPE</p>	
50' 60'		60°			
		70°			
		85°			
60' 2680'		170°			

Borehole Awibengkok 1 - 2

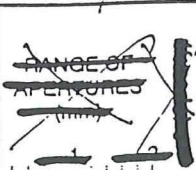
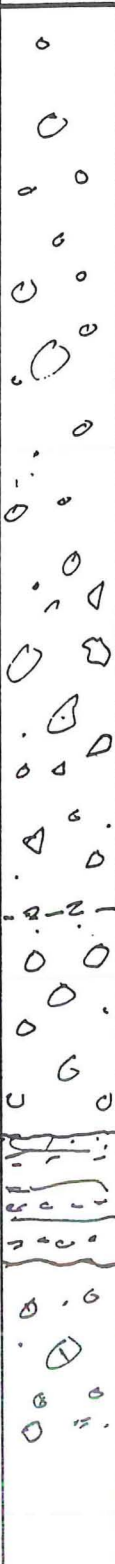
Depth Interval 2640-60'

Logged By JH, DN

Date 11/5/95

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DEPTH	PY VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE	ORIENTATIONS		
		Notes		
	Veins			
2660				cognate bx as above
				- incr. in argill. alt. stkwk cal-py-clay vns.
				- mottled more clay - sub-vert. frx network.
				vns. still < 3% of TRV
				abund. diss. py
70				
268+				

DEPTH	FRY / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Notes		
	Veins	Entries		
2680				<p>pptrc cognate bx AA</p> <p>ext. - pull apart veins</p> <p>vnits. gen. < 1 mm. wide</p> <p>rock poss. becoming more poly/rholog/c</p> <p>badly washed-out zone</p> <p>3.4% diss py argill/c sh - waxy, bec. more competent</p>
90				
2700				<p>highly alt. toff. (abund. st. rock) def. contact py vnits.</p> <p>lahar (?) - actually trans. befw. "cognate bx" (shar) - diff. to make call</p>

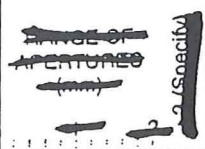
Borehole Awibengkok 1 - 2

Logged By JH/DN

Depth Interval 2680-2700

Date _____

Page 11 of _____

DEPTH	FR ²⁰ VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	 <small>RANGE OF APERTURES</small> <small>(Scale)</small>	ORIENTATIONS			
		Veins			Notes
2700			○	Lahar (?) by becoming app. more chloritic. Colored - dr. gray-green w/ depth - still looks like hybrid between lahar bx & "autobx" or cognate bx.	
			○		
			○		
			○		
			○		
			○		
2710			○	abund. 4-4 mm. dissem. dissol'n cavities - still abund. diss. py	
			○	badly broken up 1-2% cal units.	
			○		
			○		
			○		
			○		
			○		
2720			○		

DEPTH	FRX/VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES (mm)	ORIENTATIONS			
		Veins			Entries
2720'				Lahar AP, med. gray-gyn. 46-80% clasts, rudd- 4	
22					
24		65°			
26					
28		65°			
30		65°			
2740'		65°			
32		65°			
34				in 2733' abundant chl. interstitial to clasts	
36		70°			
38			dip 25°	consid. pum., poss. PF, wk. mod. finely divided mafic horn in matrix - "reaction rims" on some clasts	
2740'					

Borehole Awibengkok 1 - 2

Logged By JH/DN

Depth Interval 2720-40'

Date _____

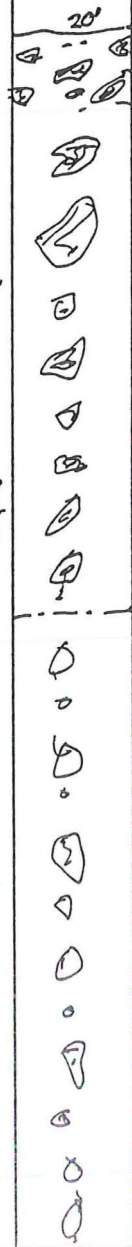
DEPTH	FRG/VEINS/ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES (mm)	ORIENTATIONS			
		Veins			Entries
2740					
42				Lahar, AA	
44				conspic., numerous, hem. sterd conc. in matrix	
46					
48		160°			
2750					
		160°		locally patch maroon hem. sterd	
				Lahar, AA	
		160/160°			
2760'					

Borehole Awibengkok 1 - 2 Logged By JH/TN

Depth Interval 2740-60' Date _____

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	VEINS		
2760				
70				
72				
74				
76				
78				
2780				

cal. strike, down. 70-90° but also many fault down oriented



New unit, still later, but only 25-30% clasts of heavily cherted, sparsely pyrite and. (dk. gray-green) in H. purplish-gray, presumably ashy matrix. apparently no pyrite, by contrast w/ above

gradational

Later, propylitized - some hem (v. scatt.)

py consp. absent

DEPTH	FDO / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)	ORIENTATIONS Notes		
	Veins	Notes		
2780			○	Lahang, A.P.
82			○	
84			○	
86			○	rubbed, but up to, perhaps, 2 cm. wide - very wiggly - vugs up to 1 cm. dia.
90			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
2800			○	

Borehole Awibengkok 1 - 2

Logged By JH/DN

Depth Interval 2780 - 2800'

Date _____

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	FRX VEINS ENTRIES	ORIENTATIONS		
		Notes		
2800'	FRX VEINS ENTRIES	Veins		
2810'				Lahar, ss, exc. abund. vfg. deep marl m. - stud matrix - also clasts tend to be more monolithic no py in evidence
2820'		78° 70°		1-cm. wide zone of zos

Borehole Awibengkok 1 - 2

Logged By JH/DN

Depth Interval 2800-2820'

Date 11/5/95

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DEPTH	FRX/VEINS/ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)	ORIENTATIONS		
		Notes		
		Veins	Entries	
2820				Lahar, AA
22		85-90°	◊	2-3 cm wide zone of anastomosing open, subvert. frx - apertures up to 3 mm wide - little or no mineralization along these.
			◊	fine bladed calcite present
			◊	vns. highly variable dip, but high- γ
		85-90°	◊	
		slx rake 90°	◊	
28			○	Lahar, AA
30		90°	○	bladd. cal-py
		v. irreg. slx rake 60°	○	may not be apparent on FMS
		irreg. but	○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
			○	
2840			○	

Borehole Awibengkok 1 - 2

Logged By JH/DN

Depth Interval 2820-40

Date 11/5/95

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF THICKNESSES (mm)	ORIENTATIONS Notes		
		Veins	Entries	
2840				Lahar AA - chloritic, minor hem - no pyrite - seems like predominance of pyritic andesite clasts but still polymictic
				no veins
2850				high- z fix zone w/ little or no zr mineral. - original degree of openness uncertain
				no veins
2860				

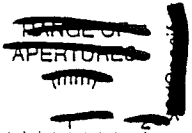

Borehole Awibengkok 1 - 2

Depth Interval 2840-2860

Logged By JBA/DLN

Date 11/5/95 (SUNDAY)

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DEPTH	F20 / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Veins Entries <i>Notes</i>		
2860				Layer. Lt. med. gray-grn mottled w/ purplish-green. Tr. diss. py, best diss. hem. dolomite prop. alt.
70		85-90 85-90		vert. frx - etc. w/ mud - indig. non-mineral.
2880		5-10 5-10 1750 50/100 50/100		

Borehole Awibengkok 1 - 2

Logged By JH/DN

Depth Interval 2860-2880'

Date _____

Page 20 of _____

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF FEATURES (mm)	ORIENTATIONS			
		Veins			Notes
2880				Layer, flt, prop., mt. hor disc. pg	
2890				"bichd. zone" / abund. clay subvert, in 4 cm. wide; cut off at top; control uncertain	
92				int. frxd zone - prob. frx in hanging wall	
94					
96				⊕ - slip rate 80° - bounding flt. zone	
98					
2900					



Borehole Awibengkok 1 - 2

Logged By JH, DN

Depth Interval 2880 - 2900

Date _____

Page 2/ of _____

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	Notes		
2900'		<p>145 465/11</p>		<p>Lah., AA, prop. minor driss. py</p> <p>prom. xh. cal. rn units</p> <p>mottled. meg. grnsh gray & lt.- med. maroon gray</p> <p>hem still pred. stab. but tr-o. py.</p> <p>conc. cal. unit</p> <p>bed of tuff or tuffac. cal. hematitic.</p> <p>clasts in talar up to at 1st 10cm dia, avg 3-7cm, subrd to 4. matrix tends to be hematitic. rock has a "semi-punky" texture i.e. competent but still slightly soft</p> <p>little or no py</p> <p>vugs up to 0.5-1 mm. dia along unit.</p>
2910'				
2920'		<p>0/65°</p>		

E of box 110

Borehole Awibengkok 1 - 2

Logged By JH, DN

Depth Interval 2900 - 2920'

Date 11/6/95

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DEPTH	PPX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURE	ORIENTATIONS		
		Notes		
Veins	Entries			
2920				Lahar, HP - tuff(?) bed, maroon, soft-sed. deformation and(?)
30				
2940				

Borehole Awibengkok 1 - 2

Logged By JH, DN

Depth Interval 2920-40

Date _____

DEPTH	FRV / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF ENTRIES	ORIENTATIONS		
		Notes		
		Veins		
2948				Laharic bx AA 40-50% clasts plinky; prop., 914-917.
42				
44		80°		tuff. matst., hem-stud., sparse clast becomes clast-rich
46				tuffing dip ~ 30°
18		30°		rubble = abund. slx 30° contorted ash bed, hem, 2 mm. thick soft-sed. dep. conc. of mafic pumice lapilli up to 1.7-10 mm. long
50			Rubble	End of original hole - Did not log overlapped section of side track Red basaltic (?) pyroclastic to 2970
				80-90° Extensional cracks in core: no h/t minerals.
2960				

Borehole Awibengkok 1 - 2

Logged By JH/DN

Depth Interval 2940 - 2960'

Date 11

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE	ORIENTATIONS		
		Notes		
		Veins	Entries	
2960				porphyritic 20-30% phenocrysts Basaltic or basaltic andesitic pyroclastic bx — poss Strombolian agglutinate deposit — bldng. locally obvious — dips 30-40° (think \neq of repose) — rx has much less chl is matton — purplish-grey — no obvious pyrite
2970		90° 40-50°		Smectite (?) alt. along fract. — bleaching of rock to gray
		dip 2/0 →		Brick red clay — rich zone
				basaltic andesitic pyroclastic bx — rx type & alteration AA comp but "semi-punky"
2980				

Borehole Awibengkok 1 - 2

Logged By JH/DU

Depth Interval 2960-2980

Date _____

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DEPTH	FOL / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	Notes		
2980		Veins		pyrite basaltic pyroclastic ash
90				sparse high-z units
3000-3000				prob. pyrite bs/t or bs/tc and flow rock - prom. flow-torrida clasts of and ppq up to 15 cm. diaz. bot < 15.7% clast.


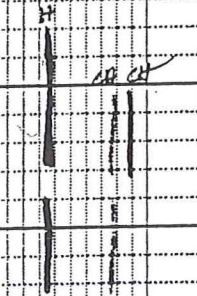
Borehole Awibengkok 1 - 2

Depth Interval 2980-3000

Logged By JH/DN



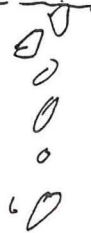


Date _____

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DEPTH	FRN / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	Notes		
3000		<p>Veins</p>	<p>ppytic</p> <p>bstt or bsttic and flow rich AA med - dk. maroon - purplish - grey abund hem diss — abund matrix, app. all chltzd.</p>	
3010		<p>80° / 90° ?</p> <p>90° / 90°</p> <p>80° / 90°</p> <p>110° / 70°</p>	<p>ppytic</p> <p>bsttic and. or bsttic pyroclastic same as next to last quarrying unit — some alth. & matrix.</p>	
3020				

Borehole Awibengkok 1 - 2 Logged By JH, DN

Depth Interval 3000 - 3020' Date _____

DEPTH	FA / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES	ORIENTATIONS		
		Notes		
	Veins	Entries		
3020				<p>ppytic blt. and or blt. pyroclastic by FA same alt., same mineral.</p>
				
			Rubble same as above	no vults
30				<p>FA incl. alt. & mineral - dk. grayish-maroon local flow-banding - prob. alternating thin flows & strombolian agglutinates - "spatter cone" type deposits.</p>
				
3040				

Borehole Awibengkok 1 - 2

Logged By JH/DN

Depth Interval 3020-40

Date _____

DEPTH	FRS / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES	ORIENTATIONS		
		Veins		
3040'				ppyte. alt. basite, andesitic agglutinate; flow rock - prep. alts. - chl - hem. but no epidote - tr. diss. py.
				(@3043' def. gtz. phenocrysts. (217.)
				ix may be more felsic than it looks, or gtz could be xenocrystic.
				0-2 cm wide chalcedony-cal. vntf. at upper contact.
				vntf w/ scatt. py clibes up to 2 mm. dia. - 0.5-2 mm wide vntf.
3050'				3-3.5 cm wide hyd. bx dikelet dipping @ 50° - & clasts of ppyte basite and up to 2 cm dia. embedded in pyritic rx felsic matrix.
				py vntf w/ 3-7 mm. bleached selvage
3060'				Flow-fall dips 70-90°



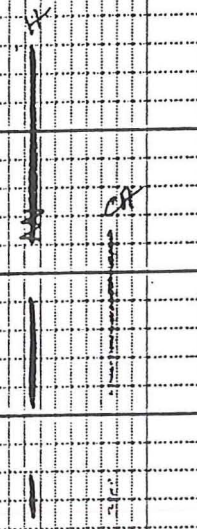



Borehole Awibengkok 1-2 - field notes

Logged By JH/DN

Depth Interval 3040-3060

Date _____

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DEPTH	FRN / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	Notes		
3060		Veins 		flow-banded pyritic ls/lc. and? AA some a bit.
70				scatt. irreg. "mud lenses" & "fingers" flow picked up unconsol. mat. ("ruffaceous") consider poss. that this is intrusive vert. flow banding 50° flow banding enigmatic contact - relationships unclear LAHAR
3080		gashes 		

Borehole Awibengkok 1 - 2 - field notes Logged By JH/DN

Depth Interval 3060-80 Date _____

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Notes		
3080		80° 80°		msv, vfg, fallout tuff - fine size fragments, lt. greenish-gray post-vult slippage on flt poss. fallout tuff bx - poss. tephra bx (ambiguus) lt. grayish-green abundant med. gray-green pumice (?) or scoria (?) clasts - now intensely chert.
3090		15-20 / 50°		Andesite bx of unknown origin lt. grayish-green chert - py. alt. - apparently no epidote.
3100				

Borehole Awibengkok 1 - 2
 Depth Interval 3080-3100'

Logged By JH/DN
 Date _____

DEPTH	Fix / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	Notes		
3100'				<p>to 3110' - bx of unknown origin either laharic, piss fallout - def. tuffaceous - pale grnsh-gray</p> <p>(chl-py) sltn. - no apparent epidote</p> <p>10-15 mm. wide hyd. bx - py/chl/qtz. rock flour matrix - & clasts - rounded clasts</p> <p>- dissoln vugs up to 13 mm. wide</p> <p>(vugs) along vult. up to 4 x 1 cm.</p> <p>VULTS/VNS CLEARLY HIGH- & FEATURES EXTREMELY SLIPSY</p> <p>0.5" L vult. segment - vug 1cm W dies out abruptly @ top & bot</p> <p>matrix - lined w/ qtz, w/ calcite & py, chl</p> <p>comd. texture dies, cut abruptly</p> <p>Ø 10-13 cm W</p>
3110'				<p>Laharic bx/cgl, 20-30% clasts up to 7 cm. diameter - rx 15 light grayish-green - much plunzier than above - chlorite-py - (cgl?) altu hem. has basically disappeared</p> <p>17-22% diss. vixtn. pyrite.</p> <p>VNS. NON-EXISTENT</p>
3120'				

v. " re. be
 ens. - Al₂SiO₅
 of vug walls, but open
 space was already
 there.

intense veining

3100'

3110'

3120'

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	Notes		
3120'		Notes		<p>2 ages hyd. bx, but both contain clasts of gtz vns or silicified ix</p> <p>vns very vuggy - have 2-7 mm. wide selvages of diss. vtn. pyrite w/ chl. open sp. along vnti up to 2 mm. wide (10)</p> <p><u>bx of unknown origin</u></p> <p>highly irreg. 1 mm-wide cal ±? vnti - clearly a result of "pull-apart"</p> <p>clots of py up to 15 mm ix diameter</p> <p>vn has chl-py selvage AA</p> <p>"box-like" end</p> <p>even veining also</p> <p>irreg. hyd. bx zone</p>
3130'		Notes		<p>NOTE - The veining & large assoc. vugs appear closely related to hydrothermal bxtn. - investigate the connection.</p> <p>hyd. bx - width v 1 cm avg up to 15 mm dom. mineralized w/ vtn gtz & py</p> <p>open gtz - cal. - anh - py vn up to 15 mm wide, msu. pyrite in footwall - hyd. bx both to along footwall of vein & at strike 60° to vein (but same dip)</p>
3140'		Notes		

* NOTE: HYDROTHERMAL BXs HERE CONTAIN CLASTS OF QTE-RICH VNS OF SILICIFIED MATERIAL.

intense veining

9 g/vn w/ax to hyd. bx of the side of core

Borehole Awibengkok 1 - 2

Logged By JH/DN

Depth Interval 3120-40'

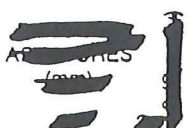

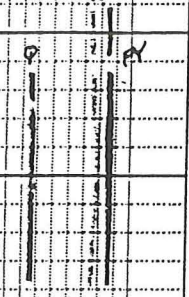

Date _____

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
		ORIENTATIONS			
		Veins			Notes
3160		$\frac{X}{80}$ $\frac{X}{60}$		positive sand. bx.	
3170					
3180		$\frac{1}{80}$			Lathes w/ intbed lapilli tuft. & tuftaceous frags.

Borehole Awibengkok 1 - 2 Logged By JH/DN

Depth Interval 3160-3180' Date _____

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	Notes		
3180		<p>ORIENTATIONS</p> <p>Notes</p> <p>Veins</p>		<p>bedded int bed w/ tuffe, tuffaceous sands lt. grayish green ch. - cal = clay alt.</p> <p>soft - sed - det</p> <p>dk gray pyritic tuff or tuffaceous mudstone</p> <p>TUFF (XL tuff?) pale grayish gray w/ 30% xls of pum - avg. clst / xl size 2-3 mm - a few "flame"-like pum up to 3.5 x 1 cm - could be pyro- clastic (surge) deposit</p> <p>DEP ASH-FLOW TUFF abund. chilled. pum - pty flattened, welded.</p> <p>clst w/ reaction rim.</p>
3190		<p>ORIENTATIONS</p> <p>Notes</p> <p>Veins</p> <p>55° 10° 90° 80°</p> <p>bedding or fol. dip 5-10°</p>		<p>75°</p> <p>45°</p> <p>160°</p> <p>45°</p> <p>slit rake 90°</p> <p>slit rake 90°</p>
3200				

Borehole Awibengkok 1 - 2 — field notes

Logged By JH, DN

Depth Interval 3180 - 3200

Date _____

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	Notes		
3200'				AFT pum. bec. much coarser. altm. chite (± clay, sel?) w/ 1% diss. v. iron. pyrite
		16°		
		75-90°		
		16°	striae v. fine	
		16°	rake 90°	
		16°	control unclea	about vugs, irreg., up to 2 cm. dia, lined w/ qtz. warrarite
3210'		16°	huge vug	huge vug up to 13 mm. wide 10 cm in length
		70°		
		90°		vugs up to 40x3 mm
		5-10°		lithic-rich poss. turbidite distinct gyschug from 3 cm to 1 mm. clasts upward
				surge (?) poss. subaqueous mudflow by fining upward (turbidite)
				ex. cycles downward fr. sltst. to ch. 35
3220'				vugs along v. n, up to 1 cm wide, at 1st 7 cm long

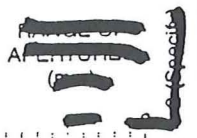


Borehole Awibengkok 1 - 2

Depth Interval 3200-20'

Logged By JH/DN

Date 11/95

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Notes		
	Veins			
3220				<p>dip 20°</p> <p>7-18 mm quartzite to med. ss</p> <p>AA</p> <p>med. ss</p> <p>5-7 cm dia</p>
30				<p>sequence of graded beds 0.9-1.5' thick normal grading from lithic & pumice/scoria clasts up to 3 cm. dia upward to med. sand. poss. turbiditic deposits, poss. fallout tufts but in any case quite rich in lithics</p>
40				<p>dip 35°</p> <p>dip 5°</p> <p>organic-rich tuffaceous silt/mudst or silty tuff - from soft sand. deformation - spring cone?</p> <p>basal 1cm layer over which remaining material has slumped</p>

Borehole Awibengkok 1 - 2 — field notes

Depth Interval 3220-40

Logged By JH/DN

Date 11/1/95

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Notes		
	Veins	Entries		
3240				Andesitic flow / flow breccia, porphyritic No apparent veins / fractures that would have been present in reservoir
3250				
3260				


Borehole Awibengkok 1-2 — field notes

Logged By JH/DN

Depth Interval 7240-60

Date 11 / 1995

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
		ORIENTATIONS			
		Veins			Entries
3260				Andesite flow/flow bx as above. - does not support facies	
3270					
3280					


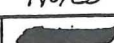

Borehole Awibengkok 1 - 2 - field notes

Depth Interval 3260-83



Logged By JH/DW

Date 11/7/95

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	Notes		
3280		Veins 		SCALE CHANGE ppvtc andesite bx - f clasts of A up to 5 cm dia embedded in slightly less ppvtc matrix; rock is pale-med. grayish-green - chloritic alteration - no veins ± calcite
3300				
3320				
3300				

SCALE CHANGE

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Notes		
3320		Veins		<p>phytic andesite dx. AP chloritic alteration ≠ calcite. med. grayish-green little or no hem.</p>
30		<p>90°</p> <p>1/8</p> <p>1/35</p> <p>1/30</p> <p>1/5 — "90°" 15mm</p>		<p>fix, sparsely mineral</p>
40				







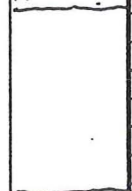

Borehole Awibengkok 1 - 2 (field notes)
Depth Interval 3310-40'





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Date 11/95
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DEPTH	FRX/VEINS/ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF 	ORIENTATIONS		
		Notes		
3340		Veins		ppytic and bx, AA, same alt'n.
		80° ⊕		
		70° ⊕		
		120°		
50		75°		
		80° ⊕		
		85° ⊕		
3360				

Borehole Awibengkok 1 - 2 — field notes
 Depth Interval 3340-60

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURE ()	ORIENTATIONS		
		Notes		
3360'		Veins		pyrite, andesite in AA - same chloritic stain lt. - med. gray green coloration 1-2% diss. pyrite
3370'		135° 		min. w/ dramatic open sp. - 1 X 7 cm to vein - dissoln cavities & diss - enhanced cavities
*				barred rubble w/ some obvious hydroth. by - also intense vein mineral
3380'				

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Veins		
3380				<p>Porphyritic and bx. AA, lt-med gray-green; chl. cat. alt.</p>
3390		<p>irreg. filled w/ chalc.</p>		<p>avg. 1x2 cm. max - irreg. 2 types chalc.</p> <p>some veining (sparse) in clast- ing. stops @ clast boundaries</p>
3400				

Borehole Awibengkok 1 - 2

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Depth Interval _____

Date _____

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF ALTITUDE (meters) 2 (Specify)	ORIENTATIONS		
		Veins		
3400'				<p>phytic andesite bx, AA, lt.-med gray-green, chl ± 1% drs py alteration; msk, competent, but does not have a "flinty texture.</p>
3410'				
3420'				<p>minor hyd. bxtu. along same east course as with pyritic-gtz selvages along vein course</p>

Borehole Awibengkok 1 - 2

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DEPTH	VEINS / ENTRIES		ORIENTATIONS	GRAPHIC	DESCRIPTIONS
	1	2			
3920			90° \diamond		open veinlet - aperture up to 1 mm - older qtz-py (px/rt) unit, pinch & swell, up to 2 mm wide.
			70° \diamond		minor hkd. bxtn. along vein course
			75° \oplus		
			\diamond / 75 \diamond / 90 \diamond / 85		THINK "BOX-END"
70			\diamond / 75		1-15 mm qtz-py 7 mm rd. andesite by AA lt - med. gray-green chite. altn.
			\diamond / 70°		VEN TEXTURE qtz-py
			75°		no offset of rx across vein
70					

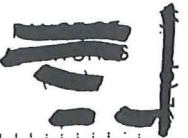









Borehole Awibengkok 1 - 2

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Date _____

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Veins 		
3440		   		<p>pyritic andesite bx. pp. H.-med. greyish-green; chloritic atm.</p> <p>hyd. bx vein, 4 mm wide, sharp contacts; matrix mostly dk. gray v. tln py + qtz + cal</p> <p>15 mm wide; obvious foreign clasts these vnlts. intimately related to bx</p> <p>truncates hyd. bx</p> <p>4 cm wide — contains obvious foreign clasts incl. dk. gray pyritic mudstone — many platy to 4 clasts up to 25 mm. max. dimension</p>
50				
3460				

Borehole Awibengkok 1 - 2

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Depth Interval _____

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES (mm)	ORIENTATIONS			
		Veins			Entries
3460				andesite bx, AA, lt.-med. gray, tending toward punky texture chloritic alteration — local hydrothermal breccia dikes & stringers w/ qtz-cal(?) dkln. matrix	
				hyd. bx stringer 2.5 mm wide; wispy.	
				pyrite margins qtz-cal-anh(?) interiors pyrite seems to be early in these veins — scattered ANHYDRITE xls up to 8 mm dia — blocky tablets — these rest on substrate of qtz plus pyrite — qtz locally gives vugs as druses.	
70	intense veining			dom. mudst, fcs. finely lam, dk. gray — strongly veined rubble	
72					
74					
76					
78					
3480					

vnt up to 12 mm. wide — very wiggly

pyrite band base clastic squarish

ix.

poss. vug here up to 7x3 cm but can't tell for sure

slix rake 7 mm sc. mudst. dip 10°

stknk for vnts. 160

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Veins		
3480'		70°		PPYIC. ANDESITE PX. AA. lt. graysh-gray to grayish-green; chlorite = calc. alth. local patchy silicification. "semi-punky" texture.
		70°		
		70°		
		60° 70°	SiO ₂	"braided" anast. qtz. vnits "frozen" to matrix 1-3 mm. wide
	celad. →	140°		vnit upper boundary of celadonic altn. this zone strong celad. altn. - diffuse & as vein selvages. bright med. grayish-grn - abund. vague qtz. stringers in addition to those recorded at left 1-2% diss. pg.
3490'	celad. →	80°	celad. nitic altn.	bright gray-green celadonite
		3 mm	term. qtz	
		15°		
		5 mm	interbx	
		130°	stknk qtz vnits	
		15°		
3500'				

Borehole Awibengkok 1 - 2

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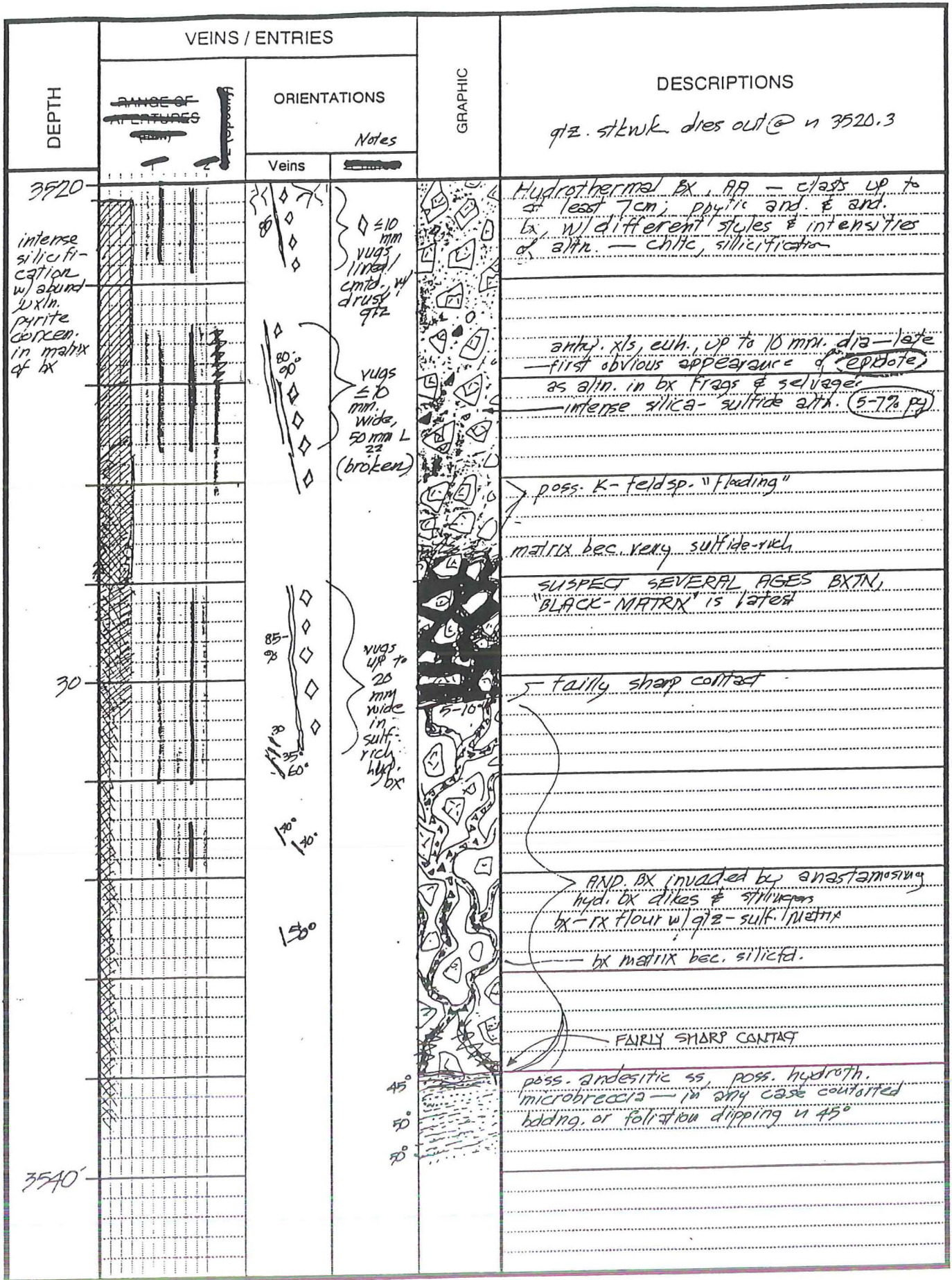
DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	NOTES		
3500'		<p>7mm \diamond - 1/2 wt qtz. vint</p> <p>\diamond 4mm \rightarrow \diamond 3mm</p> <p>\diamond 5mm</p>		pyritic and. bx, chlc. sph., PA
3510'		<p>scatt. minor hyd. bx stringer</p> <p>qtz-sulf</p> <p>(crude) silx talc 450</p> <p>sheared fex bch 5cm. wide</p> <p>10mm</p> <p>5mm \diamond 2mm \diamond</p>		
3520'		<p>250'</p> <p>HYDROTHERMAL BX, msu, pale gysht - gray rock - fluor matrix in which are embedded 3 to 5</p>		

Borehole Awibengkok 1 - 2

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Depth Interval _____

Date 11/08



chltc
alt

I

Borehole Awibengkok 1 - 2

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	1	2		
3540				<p>sulf-rich, mdst-stst, dk. gray alt. w/ lt. gray concretionary laminae, poss. sed, poss. hyd. vbx - later</p> <p>45-50 dip 60° (seals) - v. dip 70° hyd. bx w/ black qtz-sulf. matrix</p> <p>and. bx invaded by hyd. bx dikes & stringers - anastomosing</p>
50			<p>5-10 cm veins 70° 2 mm up to 2x13 mm up to 13x4 mm & 10x10 mm</p>	<p>HYD. BX, RA, qtz-sulf. matrix - pre dates open qtz-py-col-wal. v. lit</p> <p>dip 35° SS(?)</p> <p>HYD. BX invading, as irreg. stringers, AND. BX, RA LAHAR</p>
60			<p>75 15 80° up to 3x16 mm // to vn strike</p>	<p>LAHAR AND. BX, RA w/ sparse stringers of qtz-sulf. matrix. HYD. BX</p>

alt. ch. lt. pale gray gray AA

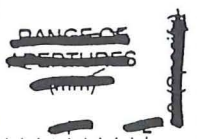






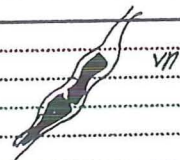
Borehole Awibengkok 1 - 2

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF VEIN THICKNESSES 	ORIENTATIONS		
		Veins		
3560				Lahar, AA, pale grayish-gray chite. alt. = tr-0.57. pyrite
70				
				
				
3580				

Borehole Awibengkok 1 - 2 — field notes Logged By JH, DN
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 Depth Interval _____ Page _____ of _____

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS			
	Veins	Entries		
3580				<p>no! and. (flow) BX</p> <p>dark, pale green-gray, prop. silty.</p> <p>prob <u>illite</u> in vms. & matrix</p>
3590				
3600				<p>upper contact app. controlled by large clast in end. ppy.</p> <p>hydroth. bx. f. to mid clasts of pyritic andesite, up to 2 at 1st 5 cm. dia. embedded in med grey pyrite-gtz-rock flour matrix</p>

Borehole Awibengkok 1 - 2

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF DIPS	ORIENTATIONS		
3600				<p>sulfidic "mudst" or rock flour fairly flat but contorted laminar</p> <p>HYDROTH. BX - rhd to 4 clasts & mostly opytic andesite w/ scattered laminated dk. gray sulfidic mudst. avg. clast 10-13 cm, dip up to 20 mm - matrix dk. gray py-grt - rock flour</p> <p>dip of flow foln is 20°</p> <p>contorted fol'n in lam. sulfidic mudst. clasts - incorporated while plastic</p>
3610				
12				
14				<p>black sulfidic lam. mudst. (tuffaceous?) pass fall back tuff within conduit med. gray, msu. tuff or mudst.</p>
16				<p>irrbad lt. & dk gray mudst. or tuff - prom. soft-snd. def.</p> <p>black sulfidic mudst (?) or tuff</p> <p>lam. tuff. or mudst. ppt</p>
18				<p>contact is 20° - extends downward into 1-2 mm wide stringers</p>
3620				

Borehole Awibengkok 1 - 2

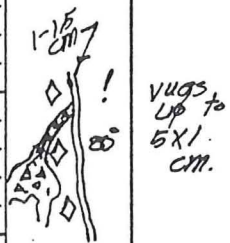
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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES 1 2 > 2 (Scale)	ORIENTATIONS		
		Veins Entries		
3600			(1-2)	(laharic bx) Lahar clasts up to at lst 20 cm, chtr. attr. / pale-med. grnsh-gray "semi-punky" texture rx is quite competent, however.
3622			(3-5)	
			(6)	
			(7)	
			(8)	
			(9)	
			(10)	
			(11)	
			(12)	
3630			(13)	hyd. bx, AA, truncated by veinlet
			(14)	
			(15)	
			(16)	
			(17)	
			(18)	
			(19)	
			(20)	
			(21)	
			(22)	
			(23)	
			(24)	
			(25)	
			(26)	
			(27)	
			(28)	
			(29)	
			(30)	
3640			(31)	



DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	Veins		
3640				LAHAR (12h20N bx) AA; chl. admn to 3660 irreg. hyd. bx stringers AA
3650				v. yuggy vn., composite, up to 25 mm wide
3660				

Borehole Awibengkok 1 - 2

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Depth Interval _____

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
		ORIENTATIONS			
		Veins			Entries
3660		<p>vugs up to 35 x 3mm // to unit.</p> <p>vugs up to 50-70 x 10-15 mm</p>		<p>Lahar (laharic bx) andesitic, AA chite. altn — pale gr greenish-gray</p> <p>irregularly invaded by hyd. bx w/ qtz - sulf. matrix, AA</p>	
also * cpv / sp (2)		45°		<p>Tuff prob. fallout. lt. gray - seemingly msx., minor pum. upper 20 cm</p>	
		<p>< 1mm x 3 mm</p>		<p>HYD. BX — qtz - sulf. matrix AA</p>	
3670		<p>msx. max. cal. v. 5cm thick</p>		<p>hyd. bx - lt. gray - sulf. matrix, AA</p> <p>and. pyro, msx. dip 20° HYD. BX, AA</p> <p>Highly sheared andesitic bx of unknown origin — has a chloritic talcose aspect — laced w/ v. xln. py units & younger qtz - cal unit</p> <p>← Merges downward into and. bx</p>	
	badly broken stkwk vnd sheared	<p>stkwk: dilational</p> <p>◇ ≈ 3 mm</p>		<p>cherty unit</p> <p>and bx</p> <p>hyd. bx</p>	

Borehole Awibengkok 1 - 2

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Depth Interval _____

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DEPTH	VEINS / ENTRIES		ORIENTATIONS Vugs to 15 x 1 mm	GRAPHIC hyd. bx	DESCRIPTIONS
	1	2			
3680			85-90° 90° 85° 90° 47 dom. by v. lxm chalc. or cherty gtz		and. bx, punky, chite. sph + cal ± tr. minor diss. pyrite.
3700			60° 145° ext. brecciated 20.5-1 mm cal. vns		minor diss & vntt-controlled hem. beaut., large, wair.-lined vug.

Borehole Awibengkok 1 - 2

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Depth Interval _____

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF ATTITUDES	ORIENTATIONS			
		Veins			Entries
3720				bsite. andesite? dense, dk. grns. gray, conspicuously vesicular (3749) — a few unfilled vesicles. — poss. some local autobxn (diff. to discern)	
38		<p>65° ≤ 1 mm</p> <p>85-95°</p> <p>100°</p> <p>bx cmt</p>			

Borehole Awibengkok 1 - 2 Logged By _____

Depth Interval _____ Date _____

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)	ORIENTATIONS		
		Veins		
3740		55°		amygdular basaltic and.
		abund. bx-fill cal. ch. hem		} basaltic and. bx
		1 mm vugs		
50		70°		} abund cal. bx-fill, AA
		1.5 x 50 mm // vnt		
		20°		AA

Borehole Awibengkok 1 - 2

Logged By _____

Depth Interval _____

Date _____

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DEPTH	VEINS / ENERGIES FRX		ORIENTATIONS	GRAPHIC	DESCRIPTIONS
	1	2			
3760			90 / 70		<p>med-dk. gray-green</p> <p>pphr. bsth. and... amygdaloidal chlt. aln. — "semi-punky"</p> <p>gradational contact</p> <p>bsth. andesite bx (flow bx med-dk gray green — abund. interstitial calcite (5-6%)</p> <p>could be a tuffaceous component to the matrix</p>
3770					<p>abund (3-6%) interstitial calcite ≠ chl</p>
3780					<p>vtln. ferruginous clasts appear.</p>

Borehole Awibengkok 1 - 2

Depth Interval 3760-80'

Logged By AH, DN

Date 11/9/95 & 11/8/95

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DEPTH	FR / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES	ORIENTATIONS			
		Veins			Notes Entries
3760'					
3770'					
3780'					
3780'	<p>* talc? sep.</p>	170		<p>78.3-78.6: "chert" or silicified vitric fine-ash tuff; dense, hard subhoriz. bedded.</p> <p>bed vitric ash tuff, int. clay silt. waxy/soapy text. mod. lt. gray gm & lt. maroonish gray — crumbly! (73-73.3)</p>	
3780'					

Borehole Awibengkok 1 - 2

Depth Interval 3760-80

Logged By JH, DN

Date 11/8-9/95

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DEPTH	VEINS, ENTRIES PRX		GRAPHIC	DESCRIPTIONS
	NO OF ENTRIES	ORIENTATIONS		
	1	2		
3780				ALL EXTREMELY INTENSE ARGILLIC ALTERATION
				TUFF completely argillized waxy texture has fallen apart / crumbled to rubble abund. di
tak or sap				
tak or sap				
90				60° app. dip (basaltic tuff horizon?)
				msv. of med. grayish-gray tuff w/ 10-12 % plerocryst-like plinthe shards(?) not as crumbly as above
				60° app. dip (AF)
				0.2' tuff-bx bed contorted foliation
				LAHAR, polymict bx incl. basaltic (?) ash - squeeze ups of soft-sed. claf common
				— Laharic tuff bx
				— Laharic tuff bx
tak or sap				— TUFF, vitric, compl. alt., rubblized waxy, poss. sap & talc — abund. dis. near. but erratically distrib. —
				— INTENSE Veining locally apparent — ch1-talc — curv'd shad. breakage into pcs. avg 2-3' ch1. dia. RELICT SHARD TEXTURE READILY APPARENT
3800				

Borehole Awibengkok 1 - 2

Logged By JH, DRI

Depth Interval 3780 - 800'

Date 11/9/95

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DEPTH	VEINS + ENTRIES FRX		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES	ORIENTATIONS			
		Veins			Entries
7800				alt. mafic(?) vuggy tuff AB ARGILLIC ALL INTENSE ALTN!	
10				MAFIC BED, (7% bx) grayish-green (db) w/ diss. cpq & py (0.05% cpq)	
		70° 65° 120°		chilled margin rounded clasts of pyritic basalt w/ 5-10 mm aphanitic borders in matrix of tuff, AA SUSPECT PILLOW LAVA EXTRUDED OUT INTO TUFF tuff bed, lam, 10-15 mm thick - reverse-graded	
20		160° 150°			

WAXY INTENSE ARG

mod. chl-clay alt.

Borehole Awibengkok 1 - 2

Logged By JH, DK

Depth Interval _____

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	Notes		
3820		Veins		<p>polymict tuff. bx. w/ pum. & lithics (40%) up to 3cm. dia., embedded in punky med. gray-gyn. argillized tuffaceous matrix</p> <p>alt. vitric tuff, AA</p> <p>pyroclaste bx, AA</p>
30		<p>qtz vit. stewk.</p> <p>1mm vugs</p> <p>≤ 10mm</p> <p>90° vug 50x5mm</p>		<p>MSV</p> <p>0-5° dip bdd tuff</p>
40		<p>170°</p> <p>70°</p> <p>stewk. int. vng.</p>		

also
ch 10
ALL
RL 185
LT 77
MSV
AA
MSV
AA
FL

Borehole Awibengkok 1 - 2

Logged By JH, DKJ

Depth Interval _____

Date 11/9/95

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF VEIN SPACING	ORIENTATIONS			
		Veins			Entries
3840		70°-41°		alt. vitric tuff, poss. bsfc. some pum. ≤ 10 mm. d.w. punky but not waxy AA — chlorited str.	
		80°/80°	discon- tinuous		
		20°/90°			
		180°			
		75°			
		10°			
50		90°		30° dip	
		5mm		bdd. vitric tuff, AA	
		75°		10° dip	
		10°		TUFF BX, 25 above punky chl to chl-ep. altho. has submarine aspect	
		10x2 mm		loading, epidote appears in vns.	
		10x1 mm		PROP- ALTN.	
		65°	"pull- apart"		
		20°		10-20° dip	
				loading-	
				3-4% diss. pyrite	
60				BASALTIC w BASALTIC ANDESITIC TUFF BX (SUBAQUEOUS PYROCLASTIC)	

Borehole Awibengkok 1 - 2

Depth Interval _____

Logged By JH, DXI

Date 11/9/95

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm) 	ORIENTATIONS		
		Notes		
3880		Veins		BASALTIC AND. TUFFS BX, AA SAME ALTU, MINER.
3890				15-20° dip poly mixt tuffaceous bx — basltc and or andesite comp. 30% clast many rdd — poly mixt, some clsts up to 9 cm dia.
3900'				10° dip monomict tuff-bx strong hem. altit. load casts (?).

Borehole Awibengkok 1 - 2 field notes
 Depth Interval _____

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES 	ORIENTATIONS		
		Notes		
Veins	Entries			
3900'				<p>volcanic tuff br mostly unsorted pulky texture - ell-hem minor diss. py - abund. diss. epicrite - no unts.</p>
				<p>poss. tuff bed; poss. clast</p>
3910				<p>AA; poss. just a large clast</p>
				<p>def. volcanic - think submarine layer clasts 4 to subrounded - up to at least 12 cm. dia.; at least 5 different rx types, all of which, how- ever, are inferred to basic comp. - predominance of pyric. andesite clasts</p>
				<p>Re drilled rubble - presumably same AA</p>
3920				

nd
diss.
hem.

CHL-
EP-
HEM

Borehole Awibengkok 1 - 2 — field notes

Logged By JH, DN

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS			
	Veins	Entries		
3920				Redrilled rubble
				POLYMIT TUFFACEOUS BASALTIC AND. OR PROBABLE LAHAR; "semi-punky" texture - clasts up to at least 7 cm. dia
3930				
				load structure discrete tuff bed; contorted bedding
				load structure discrete tuff bed - abund. mafic pum up to 15-20 mm
				into-pass. load casts
3940				

STR. PROF. 1927

Borehole Awibengkok 1-2 *field notes*

Logged By JH/DKJ

Depth Interval _____

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS			
	Veins	Entries		
3940		<p>⊙ 68°</p> <p>vague strike - 5780°</p>		<p>EX — 85.0 m. prev. page</p> <p>pos. truncated tuff bed.</p>
3950				
3960				

STR. PROP. ALJN.

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES	ORIENTATIONS		
3960		Veins		Lahar, AA
				vitric tuff, puffy could be clast
				Lahar, AA, abund. epidote, both diss. & no reaction rims on clasts
3970				
3980				

ad.
4.55.
hem.

57.1.
Dr. 40.
2/1/11

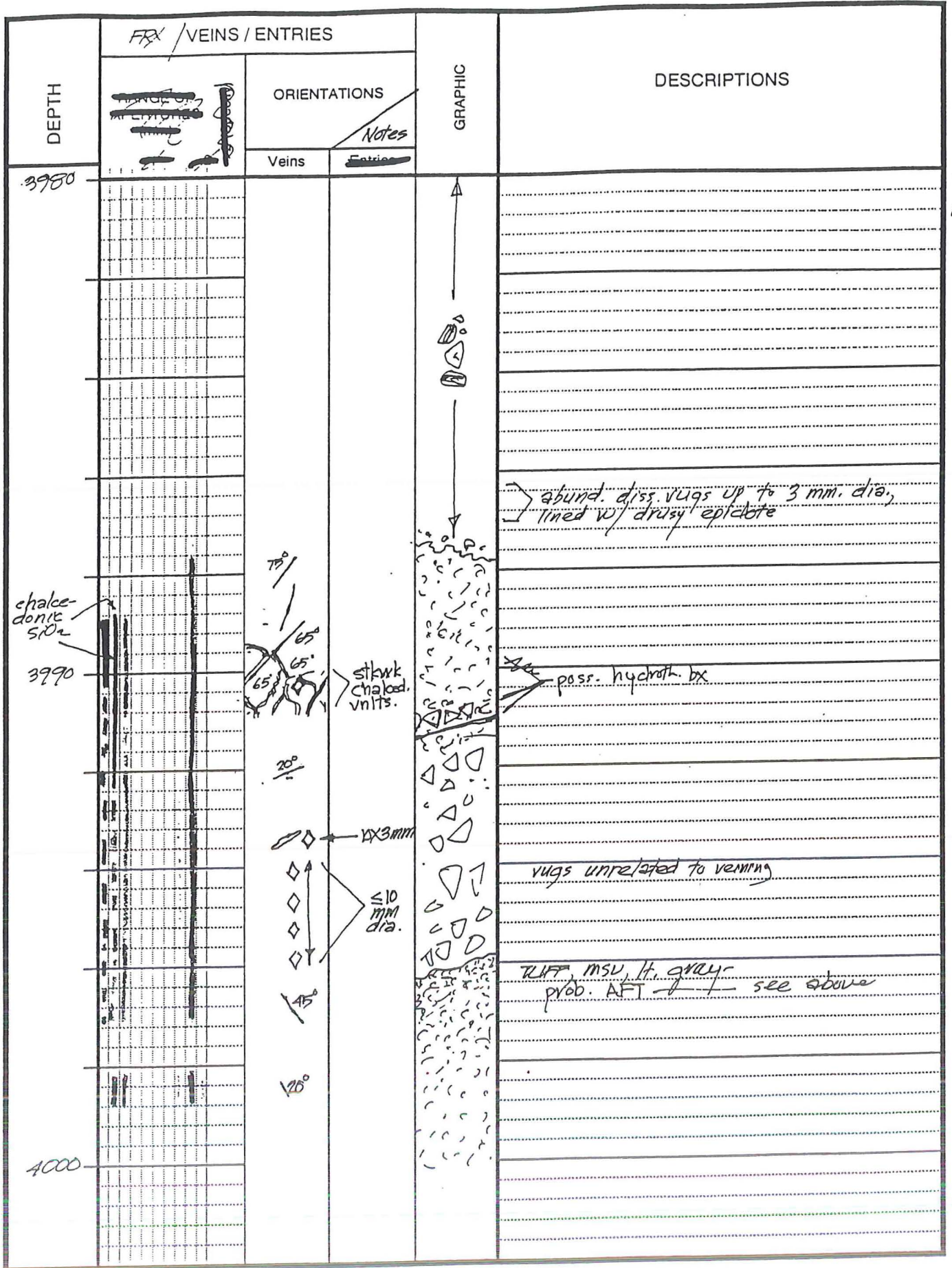
Borehole Awibengkok 1 - 2 *field notes*

Logged By JH/DN

Depth Interval _____

Date 11/9/95

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ms hem

RW hem

STX
PROP
2.274

DEPTH	FR / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS	Notes		
	Veins	Entries		
7000				msv. tuff / m
		7/10		
		10		<p>del. highly flattened pumice lapilli tw/ up to 15/1 aspect ratios poss. extremely densely welded AFT looks like flow rock; obs. shards present - rock is dense & very dark gray - green</p>
		8/10		
		9/10		
		10/10		
		11/10		
		12/10		
		13/10		
		14/10		
		15/10		
4010		16/10		<p>LAHAR - tuffaceous andesite breccia - clasts up to at least 100 mm. dia - 4 to 6 rock wt. cross pyrite. - rx. is med. greenish-gray - "semi-punky"</p> <p>reaction rims on some clasts - hot lahars?</p> <p>conspicuous absence of veins</p>
4020				

N rem. str.
 1-5 new str.
 vik. em. str.

str. pres. alt.

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES	ORIENTATIONS		
		Notes		
		Veins	Entries	
4045' 0.5-1% py	py cal chl	90°		Lahar, same as previous page med. gray-green ls.
4055'	py cal chl	90°		
4060'				

NK.
11.2M
-2.2M

570.
p. 50P
a. 17r

Borehole Awibengkok 1 - 2 — field notes

Logged By JH, DN

Depth Interval 4040-60'

Date 11/9/95

Page _____ of _____

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES	ORIENTATIONS		
		Veins	Notes	
4060				LAHAR, same as previous pass some texture & alteration
4070				NW AFT -- abundant cherted. pyrox &/or scoria, but still lithic-vein -- may grade into
4080				

Borehole Awibengkok 1 - 2

Depth Interval 4060-80

Logged By JH, DK

Date 11/9/95

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES	ORIENTATIONS			
		Veins			Entries
4080				NW-AFT, 23	
				just rubble	
4090				bx of uncertain origin - seems to be possibly AFT as above, if not, is a LAHAR	
				"mud stringer"	
				Layer	
4100					

1-29
155

ST. PJO

Borehole Awibengkok 1 - 2

Logged By JH, DV

Depth Interval 4080 - 4100'

Date 11/9/95

Page _____ of _____

DEPTH	FRX / VEINS / ENTRIES		ORIENTATIONS	GRAPHIC	DESCRIPTIONS
			Veins		
4100'			160°		Lahar, AA, lt - med. grayish gray, "sandy-pumice" texture, sand. diss. pg.
4110'			160°		
4120'					

2-3%
diss.

str.
par.
alt.

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)	ORIENTATIONS		
	Veins	Entries		
4120'				
4130'				<p>* 1-12 mm "spots" — looks like "porphyroblastic" texture — some nearly spherical, all equiaxed — some appear to have crude concentric rings or shells, but def. an alteration feature — poss. rich in gray FeOx</p>
4140'				

Borehole Awibengkok 1 - 2

Logged By JH, DN

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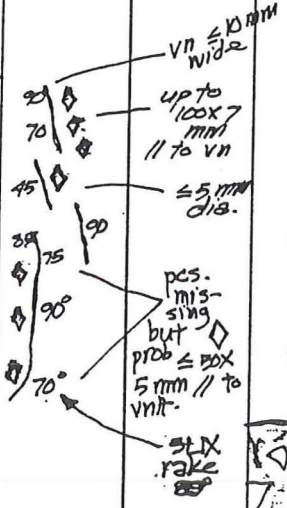
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20ft
100ft
50ft

5ft
10ft
15ft

57' to
27'

DEPTH	FRX / VEINS / ENTRIES		ORIENTATIONS	Notes	GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES	Veins				
4140	1 2					quite msu. LAHAR, AA, fuffaceous and. bx, H-med. grayish to yellowish-green — up to at 1st 5% diss. epidote — abs. prob. diss. magnetite — "semi-punky" texture.
4150						veins wo/ assoc. slx — hyd. fix?
						cal. xls. in vnits. are the "blocky" variety — up to 5 mm. dia — could be finer- λ m. wairakite present, but can't say for sure
4160						LAHAR, fuffaceous-matrix poly-med. pyritic andesite bx, but clearly a separate unit from above — in general more clast-pow, many more clasts are λ — 1 mm pale grnsh-gray reaction rims on med. grayish-green and. clasts think "hot lahar" — DLN



Borehole Awibengkok 1 - 2

Logged By JH, DN

Depth Interval

Date 11/10/95

Page of

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES (mm)	ORIENTATIONS			
		Veins			Entries
4160 2-3% dist py		65°		hematitic LAHAR, M	
				<p>contact obscure - in rubblized material</p> <p>Rubble = drilling problems</p> <p>55-65% clasts ("crowded" appearance)</p> <p>LITHIC-RICH LAHAR - polyminic unsorted - clasts up to 15 cm avg = 10 cm - some "reaction rims" - abund pale greenish-gray pumice - also andesite prob. felsic ash-flow tuff - distinctly different from overlying lahars.</p>	
4170					
		← 1 cm. choked clot interstitial to clasts			
4180					

57 vs prop @ 17.

Borehole Awibengkok 1 - 2

Logged By JH, DN

Depth Interval _____

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES	ORIENTATIONS		
4180'		Veins		LITHIC & PUM-RICH LAHAR, as (see previous page) H. - med. grish-gray, mottled w/ H. brownish-gray
4190'				
4200'				pumice becomes scarce

5101
P10
2H

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RAVINE OR ENTRIES (mm)	ORIENTATIONS			
		Veins			Entries
4220 1-29% py				LAHAR, P.P. - 17% clst	
40		70°	50°	- dip 50° : 10-13 mm. wide hyp. gr dte/vn dom. med sand-size rx flour.	

S
P
R
T
H


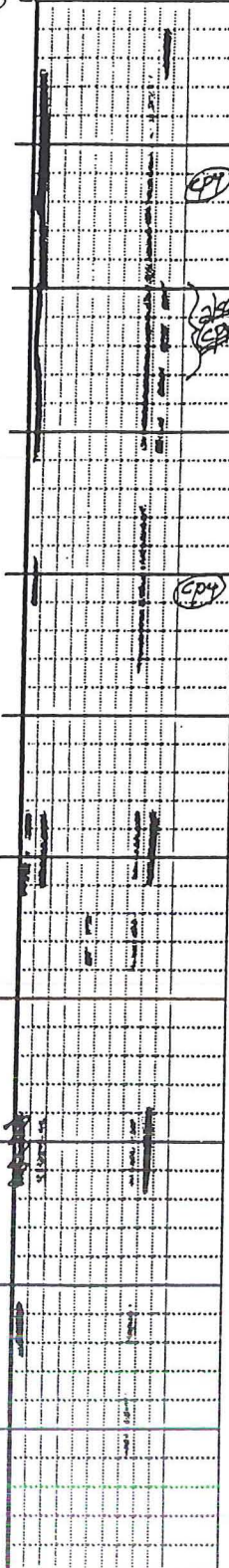

Borehole Awibengkok 1 - 2

Logged By JH/DK

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Veins		
4240		<p>160°</p> <p>2x 5 mm</p> <p>slix rate in 80°</p> <p>70° 75° 80°</p> <p>70° 65°</p> <p>≤ 15x3 mm</p> <p>70° 90° 75°</p> <p>up to 1st 125x5 mm</p> <p>70°</p> <p>disc. of cal. w/ botry. choked</p> <p>50°</p> <p>70° 90°</p> <p>≤ 13 2 mm</p> <p>85°</p> <p>slix rate 90° (normal)</p> <p>165°</p> <p>180°</p> <p>155°</p> <p>170°</p>		<p>LAHAR AA, lt-med grayish-gray - "semi-punky" texture.</p> <p>3x70 mm // to vnt</p> <p>vn up to 7 mm wide - mostly open space</p> <p>v. irreg. cal - cfd. frx.</p> <p>BOTRYOIDAL CHALCEDONY IN DISCONT. VN.</p>

5 prep
8/7/95

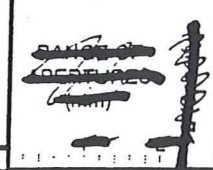

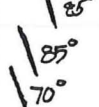


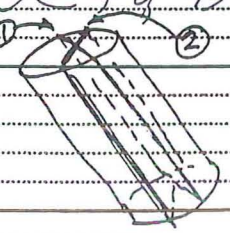
Borehole Awibengkok 1 - 2

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Depth Interval _____

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Notes		
4260 1-2% dist. py.		Veins	ENTRIES	LAHAR, AA, H-med. grayish-gm; "semi-pumky" texture 15-20 mm. Vuff. nodul. dip 5-10°
4270		 70°	 85°	
		135°		
4280		 30°	 45°	v. irregular - undulos vn w/ up to 15 cm relief vn (2) @ 45° w/ vn (1) 

547c
p. 274

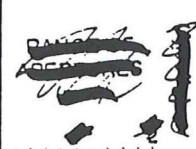
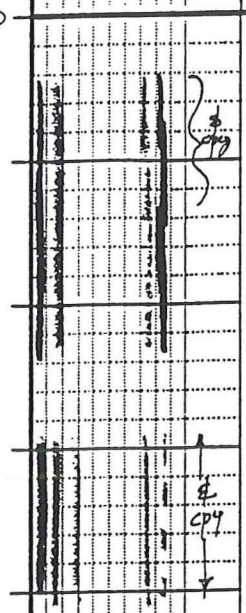

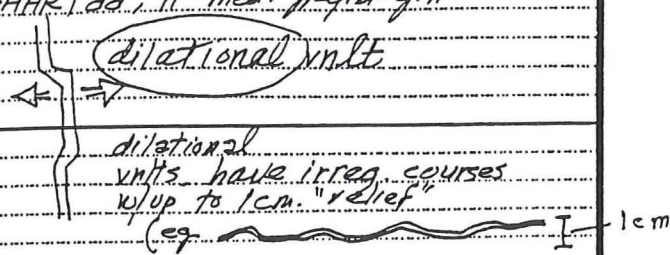
Borehole Awibengkok 1 - 2

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Depth Interval _____

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Veins Entries		
4280		Notes $\leq 7 \times 1$ mm 85-90 up to 2 mm length not meas. (broken rx) up to 20 x 10 mm to vnt. $50/20$ 55 $\leq 10 \times 1$ mm		LAHAR, aa, lt-med. gray dr-gm. dilational vnt. dilational vnts. have irreg. courses w/ up to 1 cm. "relief"  1 cm very vuggy vnt. up to 10 mm. wide; irreg. course — extensional — ANHYDRITE APPEARS IN VNT.
4290				
4300				

Borehole Awibengkok 1 - 2
 Depth Interval _____

Logged By JH/DNJ
 Date 11/10/95

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	FRX / VEINS / ENTRIES	ORIENTATIONS		
	FRX / VEINS / ENTRIES	Veins	Entries	
4300				LAHAR, aa. RX becoming more competent w/ depth - clasts up to 5 th 1st 30 cm. in dia; avg 3-7 cm dia. clasts dom. by pyrite. andesite.
1-29. dis. p4.				
		85-90	1 mm. apert.	
10				
		see left margin		
12				
14				RX becomes darker grayish-grn, richer in pumice - poss. remobilized. N.W. AFT. RX quite brittle. euh. calcite xls. 3 mm. dia, rhombic, on chloritic substrate.
16				
4320				

Borehole Awibengkok 1 - 2
 Depth Interval _____

Logged By JH/DN
 Date 11/10/80

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF ACCOMMODATION	ORIENTATIONS			
		Veins			Entries
4340		165		LAHAR, AP, fairly competent; H-med. grayish/yellowish-green; poly. mict.	
19% diss P7		160			
		90°			
	24 1347	160			sericit. dissolution vugs ≤ 2 mm. dia. adjacent to veins/entries
		175			
		90°			@ in 5550 ix becomes both lighter & greener — suspect increase in sericitization 2/50 — concomitant increase in disseminated pyrite
		701			
		85°			
		84			
		84			

S
PR
AL

Borehole Awibengkok 1 - 2

Logged By _____

Depth Interval _____

Date _____

Page _____ of _____

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES (mm)	ORIENTATIONS			
		Veins			Entries
4360				<p>LAHAR, AA — prob. increase in sericitization of matrix</p>	
4370	<p>5-7% diss. sulfide</p>	<p>vugs up to at least 10x5 cm // to vmt</p> <p>70x15 mm</p> <p>70x20 mm</p> <p>vugs up to at least 5x20 m</p>		<p>HYDROTHERMAL BX, CEMENTED BY QTZ-WARR. CHANGES DOWNWARD INTO YUGGY QTZ. SILICIFIN. VEIN</p> <p>4372.6'</p> <p>4375.2'</p> <p>to 4376.1'</p> <p>hyd. bx merging downward into v. large qtz-warrakite vein</p> <p>— vuggy qtz-warr. vein w/ holes up to qtz xls, euh, up to 10 mm L, 5 mm W</p> <p>MASTER VEIN IS UP TO 40 mm. wide</p> <p>vugs up to 120x30 mm // to vein core on one side of vein is obvious.</p> <p>hydrothermal bx w/ rounded to angular clasts, very polyminetic — clasts include intensely sericitized and qtz-sulfide-veined (? tuff — ? AFT) also laminated sulfide rich siltst. or rock flour</p> <p>vein plus hyd. bx seldom takes up 1/2 the core diameter.</p>	

CHISEL

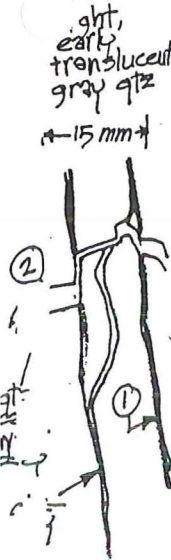
UP A

3% diss. py

5-7% diss. sulfide

DISS. re-do this

DEPTH	GRAPHIC LOGS										Interpretive Graphic Geologic Log	NOTES & DESCRIPTIONS
	Alteration Type and Intensity					Vein Minerals						
	WMS	WMS	WMS	WMS	WMS	Di ₂ O	qtz	vein	vein	vein		
4380												<p>veins 10x70 mm</p> <p>vugs up to 15x20 mm</p> <p>50x20 mm</p> <p>100x20-30 mm</p> <p>cut. rhombic cal. xls. up to 25 mm dia.</p> <p>Hydroth. bx dies out</p> <p>*one master vn but numerous sub-// vnlt's up to 2 mm in width - these dom. by qtz.</p> <p>vnlt has quite tortuous configuration w/ up to 30 per mch a "relief" relative to the core axis</p> <p>15x3 mm</p> <p>15x3 mm</p> <p>qtz-py vnlt's</p> <p>qtz-wair fill w/</p> <p>2 gen. of vns. - early qtz-py & later qtz-cal-wair ≠ ep.</p> <p>5-10 mm wide hyd. bx dike - fix at 20° to dike - abt vert. - others @ 60</p> <p>8x4 mm</p> <p>10x5 mm</p> <p>seems to be exclusively the early qtz-sulf. vng. up to 10 mm. wide - has a "sheared" appearance.</p>
82												
84												
4390												
4400												



Borehole No. Awibengkok 1 - 2

Depth Interval

Logged By

Date

DEPTH	GRAPHIC LOGS										Interpretive Graphic Geologic Log	NOTES & DESCRIPTIONS	
	Alteration Type and Intensity						Vein Minerals						
	WMS	WMS	WMS	WMS	WMS	WMS	prop.	ch. ker.	VT	MT			
4400												7 7 7 90°	
4410												75°	5x5 mm
												75°	
												90°	5x1 mm
4420												70°	

Borehole No. Awibengkok 1 - 2

Logged By _____

Depth Interval _____

Date _____

DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2	Veins		
960			80°/60°		and. ppv, AA ??
970			90°	≤ 10x3 mm	highly
980			90°	Rubble	mod veining
990			90°	Rubble	
1000			70°	Rubble	
1010			90°	vii	
1020			90°	vugs ≤ 10x3 mm	90 mm. wide, intensely veined extremely vuggy, assoc. w/ dissol'n of matrix to form "moth-eaten" cavities within 2 cm of vein — cavities up to 30x5 mm in size
1030			90°	vugs ≤ 10x5 mm (broken core)	
1040			90°	inter-clast vugs	Nature of contact obscured (ps. prob. missing) Extremely vuggy grt-cemented hydro- thermal breccia — prob. 15% φ — vugs up to at least 15x10 mm in size
1050					

vein
ad un

4
9870

4
9930

Borehole Awibengkok 1 - 2 Logged By _____

Depth Interval _____ Date _____

Page _____ of _____

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGES OF ENTRIES	ORIENTATIONS			
		Veins			Entries
511 4480 5-7% diss. py ch. 40-20%		Notes Veins: 85, 80, 75, 70, 60, 50, 40, 30, 20, 10, 5, 0 Entries: 70, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, 290, 295, 300, 305, 310, 315, 320, 325, 330, 335, 340, 345, 350, 355, 360, 365, 370, 375, 380, 385, 390, 395, 400, 405, 410, 415, 420, 425, 430, 435, 440, 445, 450, 455, 460, 465, 470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875, 880, 885, 890, 895, 900, 905, 910, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995, 1000	4480 4490 4500	QTZ-CMTD. HYD. BX, AA RX type a little ambruous, but probably a lehar - frags. up to at least 7 cm, dia. 1 1/2 to rmd. - rx is mottled: lt purplish to (mostly) greenish gray } poss. mirror PORPHYRITIC ANDESITE, 20-25% 1-3 mm phenocrysts	
4500		Veins: 70, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, 290, 295, 300, 305, 310, 315, 320, 325, 330, 335, 340, 345, 350, 355, 360, 365, 370, 375, 380, 385, 390, 395, 400, 405, 410, 415, 420, 425, 430, 435, 440, 445, 450, 455, 460, 465, 470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875, 880, 885, 890, 895, 900, 905, 910, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995, 1000	4500	15x3 mm 5x3 mm 1x3 mm 50x5 mm ≤ 20x 3 mm ≤ 10x2 mm	

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES	ORIENTATIONS			
		Veins			Entries
4500		<p>Notes</p> <p>Veins: 70°, 70°, 90°</p> <p>Entries: $\leq 20 \times 5 \text{ mm}$</p>		<p>Andesite ppv, AA, dense, med-dk. gray, gln cen., int. prop. alt.</p> <p>hyd. bx, dikes / vns. gtz - sulf - rx / flow</p>	
		<p>Veins: 85°, 85°, 90°, 85°</p> <p>Entries: 10×5, 16×3</p> <p>Rubble</p>		<p>bladed calcite present in vnit.</p>	
4510		<p>SLIX RAKE 90° - REVERSE</p> <p>SLIX RAKE 90° NORMAL</p> <p>SLIX RAKE 90° NORMAL</p> <p>Entries: 80°, 80°, 80°</p>		<p>Hyd. bx. abund frxn & vugs $\leq 2 \times 10 \text{ mm}$</p> <p>this bx is @ 90° to one mined above</p> <p>both bxs have gtz - pu - rock flour matrix as do those higher in the hole</p>	
4520		<p>Entries: 85°, 85°, 90°, 70°</p> <p>$\leq 8 \times 2 \text{ mm}$</p>			

str. prop. alt.

Borehole Awibengkok 1-2 - field notes

Logged By _____

Depth Interval _____

Date _____

Page _____ of _____

DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2	Veins		
4540					<p>- 4cm. wide silicified hydroth. bx. has epidote selv.</p> <p>NW. AFT, pum-rich</p>
4550				<p>> cgl. andesite pp. AFT intense ep-rich prop. sltn.</p>	
				<p>10x1 mm</p> <p>2x1 mm</p>	
				<p>ep + vlt sltn</p>	
					<p>Rx bec. v. dense, dk. gray-green</p>
60					

Borehole Awibengkok 1 - 2

Logged By _____

Depth Interval _____

Date _____

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DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2	Veins		
4580					<i>and ppv auto bxd so</i>
4590					<i>rx bec. extr. dense, AA dk. gray green</i>
4600					

Borehole Awibengkok 1 - 2 Logged By _____

Depth Interval _____ Date _____

Page _____ of _____

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF SPITCHES (min.)	ORIENTATIONS		
		Notes		
Veins	Entries			
4620				<p>epl. or basal tuff</p> <p>tuff. ss & epl bedding 10°</p> <p>fine-ash tuff</p> <p>N.W.R.F.T.</p> <p>60° subtle contact</p> <p>ANDESITE PRY, ss</p>
4630				<p>diss. dissol. 1/5 cm</p> <p>sl. dx 3mm</p> <p>qtz-sulf. streak</p>
4640				<p>str. vein</p> <p>qtz-sulf. streak</p>

S
Prof
3 Hr

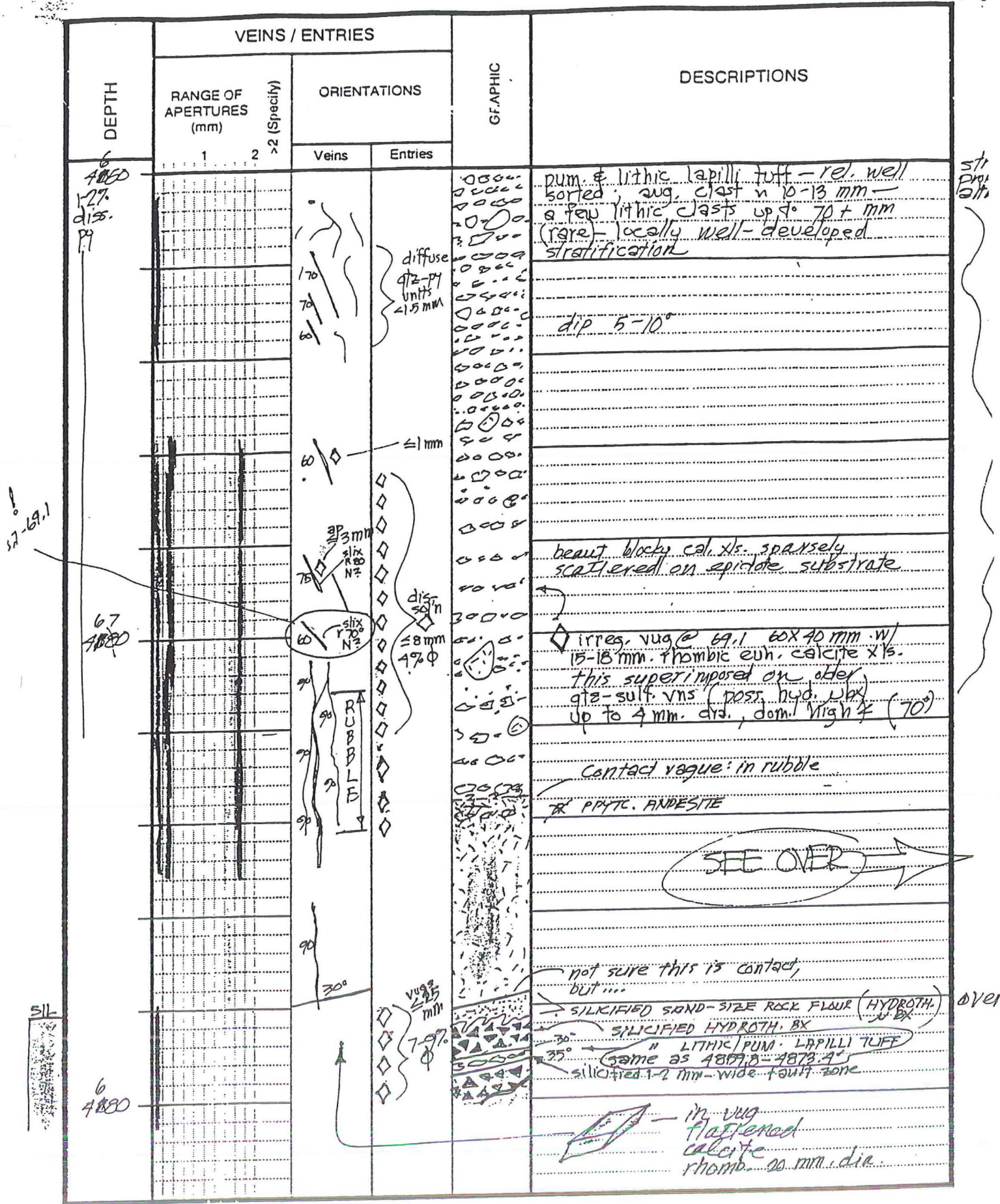
Borehole Awibengkok 1 - 2
 Depth Interval 4620-40'

Logged By JH/DN
 Date 11/13/95

Page _____ of _____

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS		
	RANGE OF APERTURES (mm)				ORIENTATIONS	
	1	2 >2 (Specify)			Veins	Entries
4640				<p>ADD PPY PHYTIC ANDESITE, AA</p> <p>prob. just dense less bleached phytic and. aa</p> <p>phytic basaltic andesite, dense, dk. greenish gray</p> <p>hyd. bx w/ chalcedonic frags.</p> <p>dense ↑ ↓</p>		
70						
6 4660				<p>Rubble > fault zone, little gauge but slix</p> <p>pumice / lap. tuff - see next</p>		

sty. prof.
w/ ep





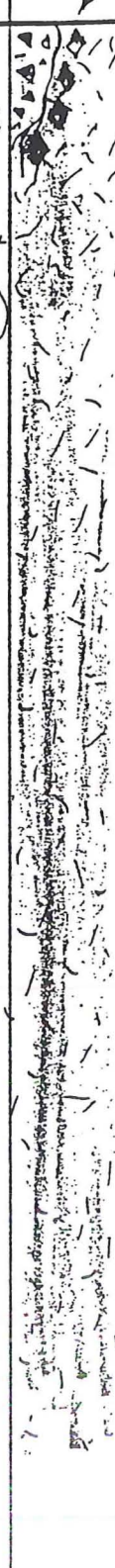
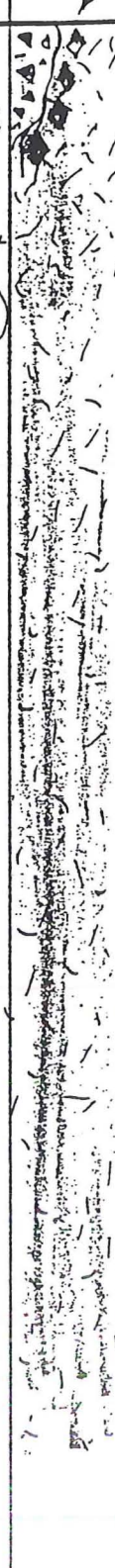
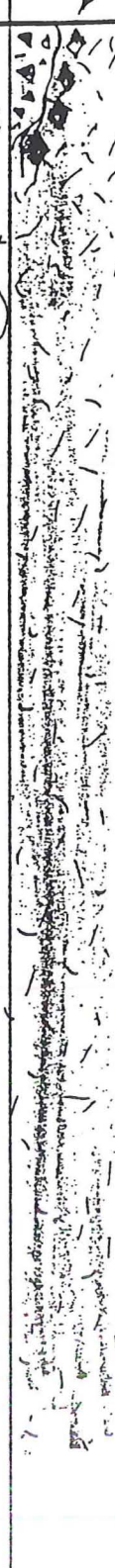
Borehole Awibengkok 1 - 2

Depth Interval 4860-80

Logged By JH, DN

Date 11/12/95

Page _____ of _____

DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2	Notes		
4880			Veins:  Entries:  Notes: $\leq 50 \times 5$ mm // to w/lt $\leq 50 \times 5$ $\leq 20 \times 2$ mm VII.		Diss. hyd. ≤ 20 mm in bx; aa - 7% ϕ HYDROTHER. BX - contains clasts of silicified pyritized rx - also rare epidotized rx. very complex - local silicified rx flour beaucoup open space: beaut. calcite - chl - qtz ep. vn. studded studded w/ 3-6 mm blocky euh. calcite xls.
4690			Notes: $\leq 1 \times 2$ $\leq 1 \times 0 \phi$ ep. v/lt streak		mat. v. thinning much by weathering rx bec. dense, dk grayish-grn prop. altn. dim. w/ streak
7400			Notes: $1/2$ $1/2$		

Borehole Awibengkok 1 - 2

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DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2	Veins		
4100' 7			70° w/ sp. calcite-chl. stknk		ppytic. andesite, AA
			70°		
			70°		< 1 ft pale reddish-gray matrix lithic tuff bx?
7 4110'			70°		LAHAR, aa
			70°	1cm x 1cm dissolution 3mm x 1cm - calcite filling	2 cm. high bx. v. w/ strongly epidotized rx-flour matrix
					"moth-eaten" - spec. dissoln. ϕ
7 4120'				5-10% irreg. 3-4% pos. 5% ϕ	

stn
prc
an

Borehole Awibengkok 1 - 2

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS		
	RANGE OF APERTURES (mm)				ORIENTATIONS	
	1	2			Veins	Entries
4760				<p>Rnd. pp4 AA curious lacy texture</p> <p>3-4% ϕ</p> <p>vert. Hyd. bx vein & // hydrate qtz-ep-cal veins 3-12 cm. wide</p>		
70				<p>Rubble</p> <p>and. pp4, 27</p>		
7 4760				<p>100 dom. ep.</p> <p>diss. ∇</p> <p>7x5 mm</p>		

Borehole Awibengkok 1 - 2

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Depth Interval _____

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES (mm)	ORIENTATIONS			
		Veins			Entries
4780'		80		AND. ppy, aa - scattered, but prominent highly irregular dissolution vugs - most $\le 10 \times 3 \text{ mm}$, but some up to $40 \times 30 \text{ mm}</math> dia - lined w/ drusy epidote & qtz ± py - locally late. calcite - gen. blocky xls. 2-4 mm in dia., but up to 40 \times 30 \text{ mm}</math>.$	
4795'		70		n 70% irreg. anastomosing, hematite-matrix hydrothermal bx - mostly grayish-red rock flour w/ a crust of the wallrock andesite ppy. - extreme dissol'n ϕ w/ep. hyd. bx scoured lower contact OVER! PLEASE	
4800'		70			

str. ppy
2/2

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES (mm)				ORIENTATIONS
	1	2 >2 (Specify)			Veins
4800			<p>DISSOLN VUGS ≤ 10x4 mm</p>	<p>AND. ppt grading downward into phytic andesite bx — strong prop. abtn w/ 4-5% dissoln φ — vugs up to 35x20 mm, lined w/ drusy fine xln epidote ± qtz, calcite</p>	
			<p>≤ 10x2</p>	<p>grading downward into andesite bx</p>	
4810			<p>5-7 3-5 mm wide yn. lined both sides w/ euh. blocky 2-3 mm calcite xls</p> <p>85-90</p> <p>dissoln vugs up 35x 20 mm</p>	<p>trace late stage drusy epidote xls as crusts, scabs on calcite xls</p> <p>ANDESITE BX. IS INVADDED by network of diffuse stringers of hydrothermal breccia, with matrix of rock lower moderately to intensely silicified.</p>	
4820					

STY
PRO
2/19

Borehole Awibengkok 1 - 2

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Depth Interval _____

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DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2	Veins		
4820					<p>ppytic - AND. bx invaded by hydroth. bx as above.</p> <p>dissoln ϕ up to 35x15 m v. irregular</p> <p>hem-bearing pt - flour-matrix qtz - cmt. hydroth. bx, 22</p> <p>ppytic andesite rhy. by hydroth. bx stringers, 22</p> <p>calcite - cmt. bx of unknown origin prob. very late - dissoln ϕ, but no clasts only - mostly rubble</p> <p>dense ppytic basaltic andesite rhy - etc. grayish-green</p>
30					
4840					

~1%
diss.
py.

5
pr
21

~15%
porosity

5%
in
clasts
only

mo

DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2	Veins		
4840					polyfr. and.
					LA?
					"spotted" appearance
605					14. gray-gm. pumice - rich - could also be pum. - rich. <u>clastic</u> prob. LAHAR
4850					
WK.					
					cal ep Lcal
					mpd. bx
4860					

DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS		
	RANGE OF APERTURES (mm)					ORIENTATIONS	
	1	2	>2 (Specify)			Veins	Entries
4880'							
2-3% diss. hem 2					diss. hem. & silica in matrix - "pseudo-hydrothermal breccia"		
4890'					$vug \phi \leq 10 \text{ mm}$		
4900'							

DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2 >2 (Specify)	Veins		
4900					<p>meth-eaten ϕ conc. in matrix of lahar</p> <p>ppfc and, as</p>
4910				<p>intermittent \bar{N} ep. unit. stkwk</p>	
4920					

Borehole Awibengkok 1 - 2

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Depth Interval _____

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DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2	Veins		
4920					<p>AND. ppy. aa, dense med - dr. greenish-gray</p> <p>(M) ep. vult. stkwk</p> <p>honey to or. - red transp. sp. xls at edge of vult. - 7mm. wide</p> <p>(M) ep. stkwk.</p>
4930			<p>abund. sp.</p> <p>10x7mm</p> <p>3x2mm</p>		
4940			<p>20</p> <p>20 1-2 mm 5-7x5 mm</p>		<p>LAHAR, aa, "moth-eth"</p>

V.S.
9/20/07

Borehole Awibengkok 1 - 2 Logged By _____

Depth Interval _____ Date _____

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES	ORIENTATIONS		
		Notes		
4940		Veins	disg/h	lahar, AP
4950		75/	1-2% scat. $\leq 2-3$ mm	
		25/	2x4 mm	
		5/	st. wk. p. vntc	
		8/		- 3-4 cm hyd. h.
		5/ cal		
		8/		
		3x2 mm		
4960				

Borehole Awibengkok 1 - 2

Logged By _____

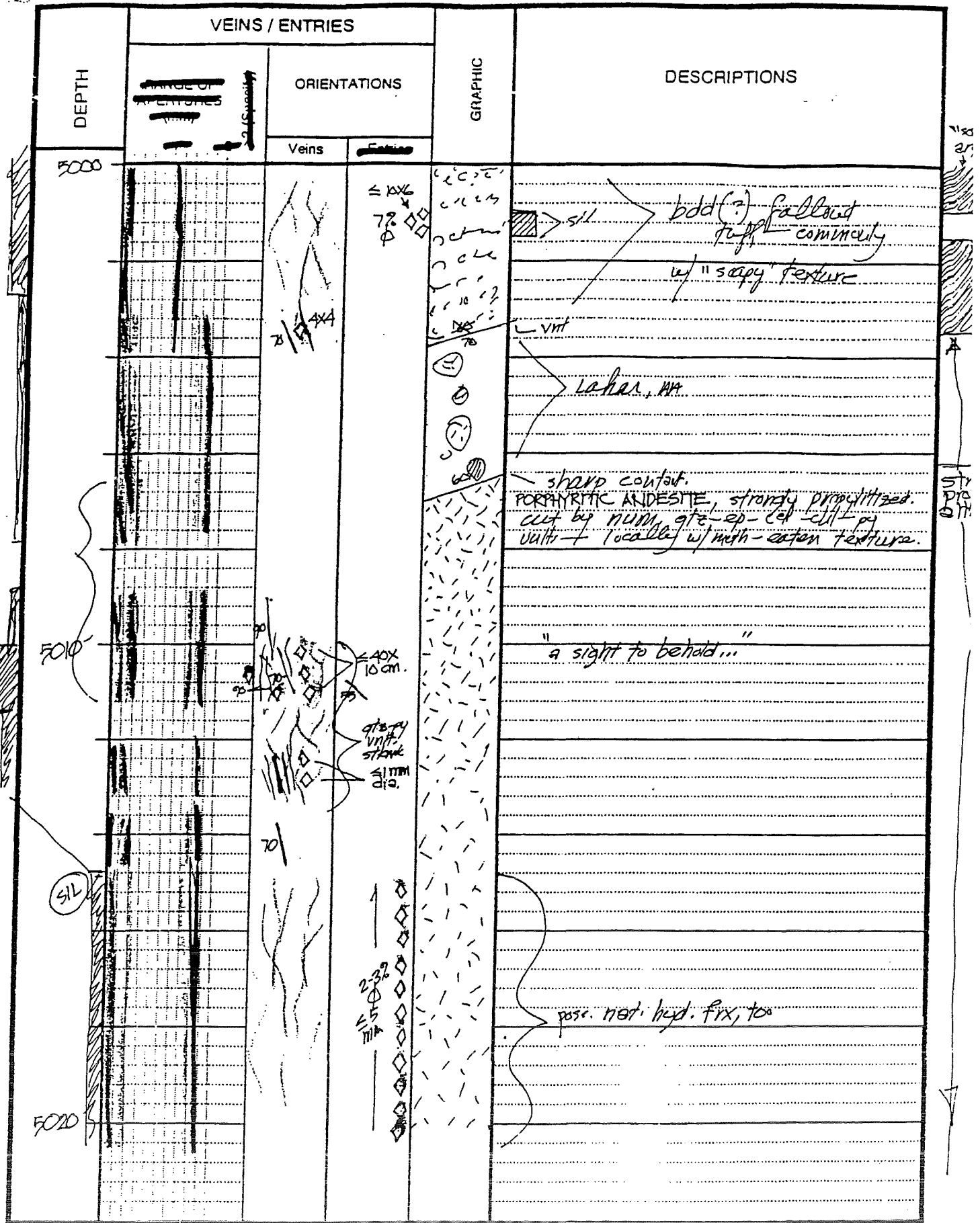
Depth Interval _____

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DEPTH	FRX / VEINS / ENTRIES		ORIENTATIONS		GRAPHIC	DESCRIPTIONS
	FRX	VEINS	Notes	Veins		
4980			no cal. = 10x 5mm diesel up to 20x 20 mm			TUFF, 23 intense veining - 5-10" prob. MUAFT (?) waxy-texture, maroon, mottled w/ gray-green - obvious chipped shards & pumice TUFF prob. fallout, but could include some thin AFT units. Hydroth. bx invading tuff
4990			streak of 0.5- 1 mm wide qtz chips units dom dip 70°			
5000						

51
74
87
SK
2
Chl
SK



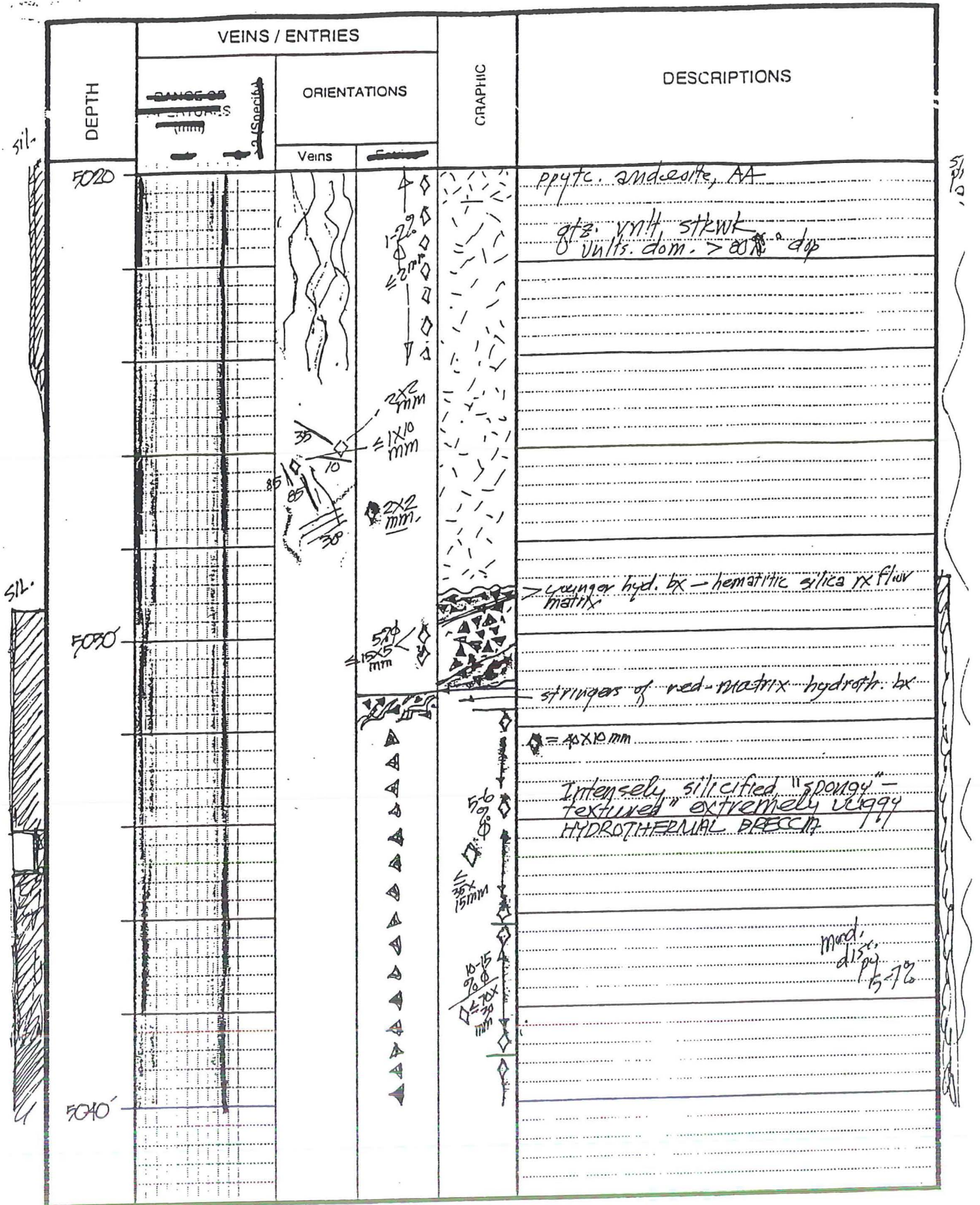
Borehole Awibengkok 1 - 2

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Borehole Awibengkok 1 - 2

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF FEATURES	ORIENTATIONS			
		Veins			Entries
5040				<p>Vugs, silicified hydroth. br., amazing porous rock</p>	
				<p>huge vug 100x20 mm // to vnt.</p>	
5050				<p>sharp contact @ 70°</p> <p>foliation of vnt. origin for at 1st 5 cm. away from the contact</p>	
				<p>dense "flow center"</p>	
5060					

Borehole Awibengkok 1 - 2 Logged By _____

Depth Interval _____ Date _____

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS			
	Veins	Entries		
5060				but along vn. solution ≤ 3 mm. wide
5070				vague contact LAHAR - patchy hem. matrix conspicuous dissol'n ϕ
5080				AA

Borehole Awibengkok 1 - 2 - Field Notes

Logged By JH/DN

Depth Interval _____

Date 11/13/95

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS			
	RANGE OF APERTURES (mm)	ORIENTATIONS					
		Veins			Entries		
5088				Laheh, AA			
5090							
5100							

5088
0.1-0.5% dist. Fy

5090

5100

3-4%
2-3%
1-2%
uniformly dist.

100%

Borehole Awibengkok 1 - 2

Depth Interval _____

Logged By JH, DN

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DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2	Veins		
5100			85° / 15x / mm		laka, AA
5110			49° / 12 mm / 15x / mm		
			70-90°		ppytic = and bx, AA
			vn n 30 mm wide 10x5 mm		vn. w/ scattered late calcite rhombs up to 10 mm dia
5120					

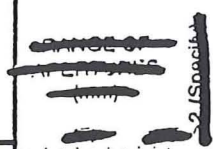
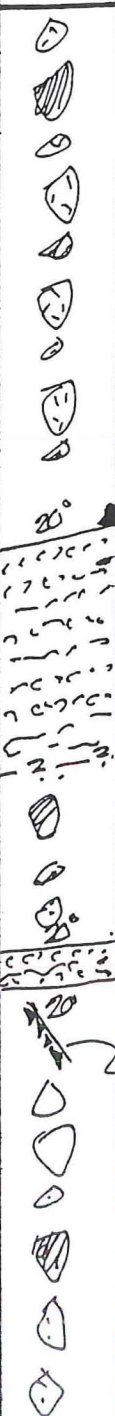
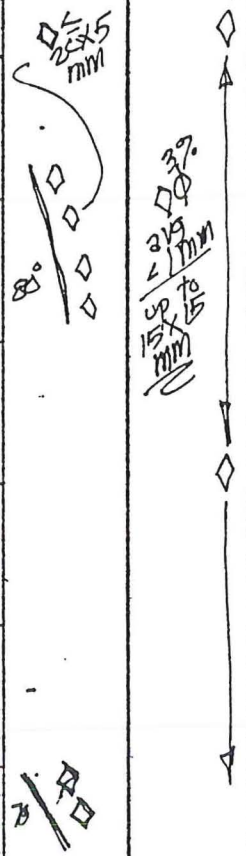
Borehole Awibengkok 1 - 2

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Depth Interval _____

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
		ORIENTATIONS		
		Veins Notes		
5120'				Laker, 1A
				bdd (?) fallout tuff dom. v. fine but w/ also coars. 2/0 mm. plm. lapilli.
30'				postkey silicification Laker, 25
				dense bdd v. fine tuff
				15x15 mm. vulg. 114
5140'				

W-mod
silicified

S.
silic.

51
25

Borehole Awibengkok 1 - 2

Logged By JH/DJ

Depth Interval: 5120-40'

Date 11/13/95

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DEPTH	FRX/ VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF FEATURES ↓ spacing ↑	ORIENTATIONS		
		Notes		
5140		Veins		
				<p>TUFF prob. NUAFZ, but could also be ash & pluvico-rich LAHAR</p> <p>hydrox dike</p> <p>ft. zone</p>
60				

km abund.

50

60

Borehole Awibengkok 1 - 2
 Depth Interval 5140-60

Logged By JH, DKJ
 Date 11/13/95

very
ragged
2016

54
pt
21

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	HANDLE OF FRX / VEINS (mm)	ORIENTATIONS 10 mm bleached selvage NOTES		
5160		<p>bladed breast</p> <p>50X10 mm</p> <p>30X10 mm</p> <p>scat tered 50 % 55%</p> <p>5X1 mm</p> <p>30X75 mm in fact wall of hydratn. bc</p> <p>40X 10</p>	<p>dissol'n</p>	<p>NWAFT H. gray green somewhat punky textured - very pumice & shard-rich</p> <p>5 mm wide hyd. bx stringer</p> <p>bx clearly assoc. w/ open-sp. development (dissol'n) voids.</p> <p>60.6-60.9: black, highly irreg. vfo. mass - possibly carbonized vegetation</p>
5170		<p>15 mm wide vnt 6-7 mm aperture</p>		<p>strikes of these 2 units differ by 40°</p>
5180				<p>sharp contact dense, bdd. vitre. fine-ash tuff "soapy" aspect</p>

Borehole Awibengkok 1 - 2

Depth Interval 5160 - 80'

Logged By JH/DN

Date 11/13/75

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF FEATURES	ORIENTATIONS			
		Veins			Entries
5180		60			
			10°		
			20°	interbed chilled fallout fine-ash & pumice lapilli tuff.	
			10°	Normal grading	
5190		90		MWAFT, mottled maroon-purple-gray & greenish-gray - strong with argill. alt. below 5191.7 - pum. are chloritized.	
				"sap" alt. possible saponite remotely possible talc.	
		90		chl-ser, ± hem.	
5200					

M ad.
prop.
mod
arg.
alt.

met.
hem.
arg.
chl
little
ep.

Borehole Awibengkok 1 - 2

Depth Interval _____

Logged By JH/DN

Date 11/13/95

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
		ORIENTATIONS			
		Veins			Entries
5220				20° beds. dip. is 20-25°	
				Inbd. fine-ash vitric, & small-lapilli tuft both prob. fallout origin mottled granitic-grn & purplish & malcon-gray	
30				LITTLE OR NO EPIDOTE	
				N- MALLET	
				N- MALLET (??) AVA	
40				15°	

100% - 100% - intense
 - ser
 - nek
 - m.
 - ai.
 - uk.
 - pale
 - trace
 - absent

Borehole Awibengkok 1 - 2

Logged By _____

Depth Interval 5220 - 40'

Date 11/14/15

Page _____ of _____

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF ENTRIES	ORIENTATIONS			
		Notes			Notes
		Veins	Entries		
5280			<p>Notes: 5% φ PA</p>	<p>thin pale grayish-red fallout tuff</p> <p>PHYCIC - ANDESITE BX, PA</p>	
5300			<p>Notes: 1mm ap., 5% φ 15m, 5% φ 10m, 2% φ 2mm</p>	<p>HYDROTHERMAL BX - 2 clogs up to 7cm. dia; str. silicif. & vug φ</p> <p>and. ppy</p>	

mod silicif

SIL

5300

str. pr. sil

Borehole Awibengkok 1 - 2

Logged By _____

Depth Interval _____

Date _____

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF VEIN WIDTHS (mm)	ORIENTATIONS			
		Veins			Entries
5300		 7-5% most primary vesicles		<p>* pyritic andesite, amygdales, vesicular w/ abundant primary mag ϕ - cut by spectacular v. int. vein w/ calc & epidote & qtz, etc.</p> <p>Rubble</p> <p>veins have 1-3 mm wide, bleached - appearing selvages</p>	
5310		 9/10 calc/py v. int. streak most veins 70-90		<p>pyritic ANDESITE EX. with some as above</p>	
5320		 10% ϕ = 5x3 mm		<p>> 20 mm. irreg band of dissolved ϕ</p>	
5320		 7-8 9% ϕ = 10x7 mm			

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES	ORIENTATIONS		
	Veins	Entries		
5320'				
		ep. STKWK		
		20x/mm		
		strong ep. with STKWK		rx. becr. dense med. gr. green (flow center?)
30		70		pass. dila. (see steep)
		70		70 dip hyd. bx vm/dila. // to contact 70°
		sp. Hy 2-3%		
		5% v. g.		
5340'				

5
p. 2/11

Borehole Awibengkok 1 - 2 , 1 Logged By JH, DR

Depth Interval 5320-40' Date _____

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DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2	Veins		
5360			10°		vitric ash/lapilli tuff, AA: one interbedded strongly / exp. oxidized hyd. bx dike
			70°		
			70°		70° dip vitric ash - fine lapilli tuff lg. scoria frag. w/ abund ϕ
					prob. scoriaeous agglutinate bed this un
					PYRITIC ANDESITE, intensely chitad - looks like sharp texture but actually small, chlorite lined amygdules EPIDOTE UNCOMMON
					autoxtal. HEM. appears in vults.
5380					

str. dry at

chil. w/ very little ep.

offed hem AA

wk. diss. hem

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF VEIN THICKNESSES (mm)	ORIENTATIONS			
		Veins			Fractures
5380		10-150 vert. vein offset 12mm		dyke end, A prob. thin tuft (slurry?) @ top of LARAR	
5390				prob. basalt flow dx ALBITE dx	
5400				gradational BEGIN SEENS ABUND. SUBJECT. induced FOX STRESS RELEASE prob. a NWAPT, v. plum. & ash-rich; material upward into plum-rich (LARAR)	

E 115°
nem

str.
prop
to top

Borehole Awibengkok 1 - 2 Logged By _____

Depth Interval _____ Date _____

Page _____ of _____

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF ABERTHOSES (mm)	ORIENTATIONS		
		Veins	Entries	
5420				<p>Tuff. ss ppytic andesite, sparsely autobrecciated</p>
5430				<p>abund. chl. amygdules</p>
5440				

Borehole Awibengkok 1 - 2 - Field notes

Depth Interval 5420-40

Logged By J. Huler / D. Nielson

Date 11/14/95

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)	ORIENTATIONS		
5480				<p>$K = 2000 \rightarrow 5480.7 - 5486$</p> <p>25° intbed. vitric fine-ash tuffs & fine pum. lapilli tuffs - dist. rhyolite MUAFT - has mottled green & purple-gray "soapy" alth. - prob. chl-sch. w/ little or no epidote.</p> <p>Highly magnetic + 2000 Above & Below only + 200</p> <p>probably welded.</p> <p>30°</p> <p>thin bed - supports talus of stuff origin →</p> <p>15°</p> <p>HUGE VLIGS - LARGE Euhedral XLS</p> <p>Lahar or poss. MUAFT, can't say for sure, but loaded w/ shards & pumice.</p> <p>977 - 5505 High K 582.5 (VITRIC TUFF)</p> <p>euh. sulfide xls - py, cp, ?</p> <p>in rubblized veins.</p> <p>large, euh. rhombic calcite XLS also up to 2-3 mm dia. chalcopyrite crystals</p> <p>vitric tuff or tuffaceous mdst. "soapy" alth. as high as in hole</p>
5499	UNKNOWN MINERAL			
5500	ALSO ABUND. 1 CM & PEACOCK TARNISHED			

Borehole Awibengkok 1 - 2 Field Note
 Depth Interval 5480 - 5500

Logged By JH/DX
 Date 11/14/95

DEPTH	FRY/ VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES (mm)	ORIENTATIONS			
		Veins			Entries
5500				<p>Layer - dists up to at least 10 cm. dia. some appear to have been engulfed while still plastic. bleached appearance ch. 7 <u>sericite</u> probable</p> <p>strong sericite</p> <p>Magnetic layer foot</p>	
10	G05	S1	<p>$\phi 20\% \approx 5mm$</p> <p>$\phi 5\% \approx 2 \times 2 mm$</p>	<p>34% fine, plastic, diss. cubes 5-15 mm on a side</p>	
20					

Borehole Awibengkok 1 - 2
 Depth Interval 5500 - 20

Logged By JH/DN
 Date 11/14/95

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES (mm)	ORIENTATIONS			
		Veins			Entries
5520			$\phi 5-7\%$ $\leq 10 \times 7$ mm		huge clast in later
			$\phi 10\%$ $\leq 25 \times 15$ mm		vesicular w/ 5% ϕ
5530			$\phi 5\%$ $\leq 3 \times 2$ mm		scapy
	G05		$\leq 2 \times 2$ mm		"scapy"
	(do)	70	$\leq 15 \times 3$ mm ² (broken)		
5540					
5541'					

Borehole Awibengkok 1 - 2

Depth Interval 5520-5540'

Logged By JH/DN

Date 11/14/95

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF ENTRIES	ORIENTATIONS		
		Veins	Entries	
5540				MWAFT, AA Intruded fine-grained ash- & fine lapilli tuff, well stratified - fallout origin - by contrast w/ above, rx is very dense & cut by numerous veinlets - also patchy but moderate silicification
				very dense - spotted - suspected pluvite, but some could be porphyroblasts NO DISCERNIBLE CHILLED MARGIN
				silica + ep diss. py, qtz & ? CUS? SKETCH OF VNLT
5560				ANDESITE, ophytic, H-med, gray-green - bec. dense corroded, bleached calcite matrix is VNLT granular, perhaps verging on microdiorite
				loc. dense - also: pxn. appears - euh. - sub. squarish phen up to 11x7 mm avg. 5x3 mm still abund. epidote, drs, but fsp & portions of pyroxenes remain fresh!
5580				

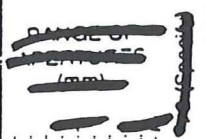
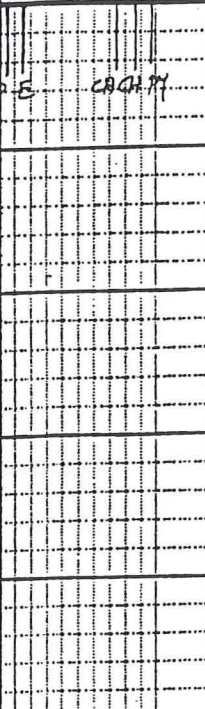
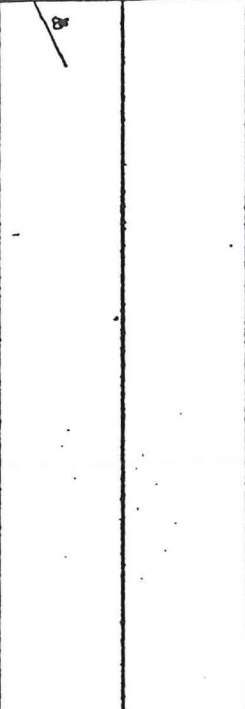

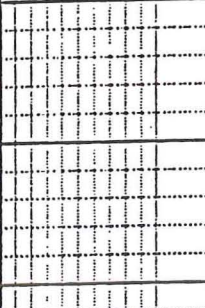
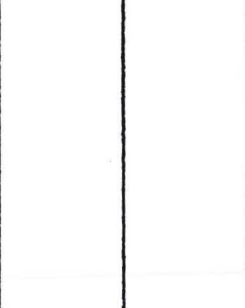

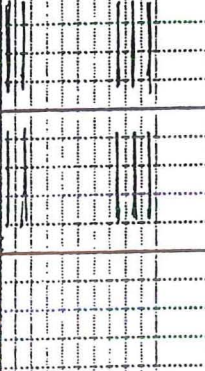
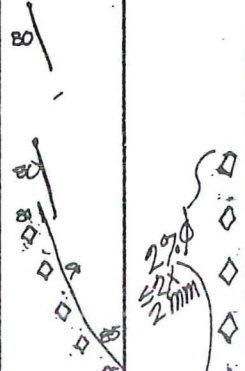



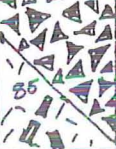
Borehole Awibengkok 1 - 2

Depth Interval 5540 - 5560

Logged By JH/DN

Date 11/15/95

Page of

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
		ORIENTATIONS			
		Veins			Entries
5560				<p>PHYC. PXN. ANDESITE, dense, med - at grayish-green - mod prop. a fine plag. still ptly fresh - also (ortho?) pyroxenes.</p>	
5570					
5580				<p>Incredible hydroth. bx - matrix - sup- ported - 40% clasts - These submd to & polymict incl. black mdst. or to ff, reddish AFT; gtz. un frags, prop. andesite; felsic volc.</p>	
5582				<p>PHYC. PXN. ANDESITE, 32</p>	

m
0.75
1.0

sil.
↓

mod.
prop.
2/11

Borehole Awibengkok 1 - 2
Depth Interval 5560 - 80

Logged By JH/DN
Date 11/15/95

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DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES (mm)	ORIENTATIONS			
5580		Veins	SEE PRIOR PAGE 2		
				ppyte, pxn. andesite, BA - v. dense, dk. grayish-green - some fresh (sp. some fresh pxn (ptly chld. hornbl.)	
5590					msu mostly unfrx & unind.
5600					

17
200
24

Borehole Awibengkok 1 - 2
 Depth Interval 5580 - 5600

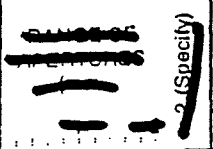

Logged By JH, DN
 Date 11/15/95

DEPTH	FEM / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)	ORIENTATIONS		
		Notes		
Veins	Entries			
5600				<p>ppyc. andesite \rightarrow micro-diorite</p> <p>ill. & ep. - no recognizable phen. phenocrysts.</p> <p>post more</p>
				<p>vert stress fix</p> <p>\rightarrow becoming equigranular with depth - andesite to microdiorite transition</p>
		$\frac{10}{10} \rightarrow \leq 1mm$		msv - app. univert
5610				vert stress fix
5620				

m -> ppx abt.

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	ORIENTATIONS			
	1	2		
FL20 0.1-0.3% diss. PT				<p>pxroxene microdiorite, aa, dense msy, featureless; mod. prep. alth. — flag, commonly, fibrous or nearly so — scattered larger pxn. xls $\leq 12 \times 9$ mm — spherical</p>

Borehole Awibengkok 1 - 2 Logged By JH/DW
 Depth Interval FL20-40 Date 11/15/95
 Page _____ of _____

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
		ORIENTATIONS			
		Notes			
	Veins	Entries			
5640				<p>PYROXENE MICRODIORITE or ANDESITIC msu., unvaried,</p> <p>pxn phenos. appear again ≤ 15x10 mm</p> <p>subvent. stress frx common</p>	
5650					
5660					<p>± 1 cm. wide, hyd. bx dike/vein - exotic clasts ≤ 1 cm. - to rounded including frags. of hydroth. vns. qtz - epidote matrix - has distinct pale post-dike</p>

Micro
prop
etc

Borehole Awibengkok 1 - 2

Logged By JH/DH

Depth Interval 5640-60'

Date 11/15/95

Page _____ of _____

DEPTH	VEINS / ENTRIES		GEOGRAPHIC	DESCRIPTIONS
	RANGE OF TEMPERATURE SPECIES	ORIENTATIONS		
		Veins		
5660				abund. subvolat stress frx PYROXENE ANDESITE or MICRODIORITE PP, aa, hyd. br dikes/veins, aa
5670				
5680				

Med. prop.

Borehole Awibengkok 1 - 2

Logged By JH/DN

Depth Interval 5660-80

Date 11/15/95

Page _____ of _____

DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2	Veins		
5700					<p>DIKE</p> <p>dense, med-dk greenish-gray</p>
5710				<p>Probably LARVAE, but mammoid - mostly to entirely pyritic andesite, pumice, "moth-eaten" texture.</p>	
5720				<p>pyritic ANDESITE BX - ALSTDBX local "M-E" texture but minimal - "dead", "humid"; "featureless", devoid of character"</p>	

STP
prep
off.

Borehole Awibengkok 1 - 2

Logged By _____

Depth Interval 5700 - 20

Date 11/15/95

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DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)	ORIENTATIONS		
5740	0 EP 1 2 >2 (Specify)			porph. andesite autobxt. loaded contact dips avg 5°
		qtz- slit. presumably hyd. bx		LAHAR? prob. remob. tuft, like below. dip 10° fallout vitric tuft bed 6-7° dip
				complex tuft unit poss AFT grading upward into fallout tuft
				NO Tuffaceous-rich horizon calc. pum.
		3 mm displ.		
5750		qtz- slit. vit. stk		"master vein": 2-12 mm wide: "pinch & swell" - sulfide-rich epidote-poor; dom. by qtz, s, & calcite
		prob. also galena		hyd. bx.
		"shear zone" 5-15 mm mineralized.		5 & DACTE PROPYLITIC ANDESITE, notably deficient in epidote but still showing propylitic
5760				NN-WNAFT - lithic-rich & w/ abund. chltzd. pum. lapilli

Borehole Awibengkok 1 - 2
 Depth Interval 5740-60

Logged By JH/PJ
 Date 11/16/95

DEPTH	GRAPHIC LOGS												Interpretive Graphic Geologic Log	NOTES & DESCRIPTIONS	
	Alteration Type and Intensity						Vein Minerals								
	SL	CH	PH				CH	SE	(?)	PH	EP	GR			MP
WMS	WMS	WMS	WMS	WMS	WMS	WMS	WMS	WMS	WMS	WMS	WMS	WMS	WMS		
5760'															WWAFT fine-ash top to another flow unit WW-MWAFT - chipped. pur. also diss. galena in vmt. ditto 0.3' shear zone, slicked - open space -
5770'															
5780'															



Borehole No. Awibengkok 1 - 2
 Depth Interval 5760 - 5780'

Logged By JH/DN
 Date 11/16/95

DEPTH	GRAPHIC LOGS												Interpretive Graphic Geologic Log	NOTES & DESCRIPTIONS		
	Alteration Type and Intensity						Vein Minerals									
	WMS	WMS	WMS	WMS	WMS	WMS	CHL	PLT	WMS	WMS	WMS	WMS			PEP	CA
5780																<p>WWAFT v. large lithic frags. epidote in clast probable ash & pum - rich tuff</p>
																<p>dip $\approx 10^\circ$ 20° tuff. ss - fine cgl. / gnt tuff. cgl. fine ss / gnt</p>
																<p>WWAFT, chloritized pumice fine ash at top (ash - cloud deposit)</p>
																<p>WWAFT, chloritized pumice</p>
																<p>interstratified tuffaceous ss, siltst., prob. fallout tuff. - beds clearly offset by hydrothermal veinlets.</p>
																<p>clast WWAFT contact $\approx 20^\circ$</p>
																<p>Interstratified fallout tuffs & poss. tuffaceous ss & mudstone.</p>
																<p>porphyritic - andesite (auto?) by matrix, however, appears somewhat tuffaceous.</p>
5800																

75

clast

65

80

10x2 mm

80

1/2 x 20 mm
5%

5800

Borehole No. Awibengkok 1 - 2

Depth Interval 5780 - 5800

Logged By JH/DN

Date 11/16/95

DEPTH	GRAPHIC LOGS												Interpretive Graphic Geologic Log	NOTES & DESCRIPTIONS
	Alteration Type and Intensity						Vein Minerals							
	WMS	WMS	WMS	WMS	WMS	WMS	CHL	CHL	EP	EP	CH	PT		
5800							CHL	CHL	EP	EP	CH	PT		<p>ppyte. andesite autobox.</p> <p>PORPHYRITIC ANDESITE: strong propylitic alteration again cut by numerous hairline qtz-sulfide vnlts & younger qtz-ep-cat-cl-py vnlts, the latter commonly w/ abund. open sp.</p>
85														
inc. qtz-sulf. vnlts.														
85														
1810														
aprt qtz ≈ 2mm.														
85														
90														
90														
5820														<p>dense, dk. grnsh-gray.</p>

Borehole No. Awibengkok 1 - 2

Depth Interval 5800-20

Logged By JH/DN

Date 11/16/95

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)	ORIENTATIONS		
PE	>2 (Specify)	Veins	Entries	
5820		90		PPYTC - ANDESITE
				dense, dk. grish-gray
		DTZ-SULF		5-10° lahar
		GN or SP		tuffaceous ss
		OS =		intbdd. ss, aa, & lahar
		75		HYDRATH. BX DIKE, silicified rx-fluor matrix
		75		silica-ser-alt. and ash clasts, als qtz.
		75		VII. Fragments - reddish porphyritic
		75		scoria - "moth-eaten" -
		75		some clasts appear to have been dissolved - at 1st 2 generations
5870		OS =		silicification
		OS =		PUMICE AND LITHIC LAPILLI TUFF med. gray-green,
		OS =		locally well-bdd
		OS =		mod. well-sorted
		OS =		SILICIFIED
		OS =		also mod. prep. lith.
		OS =		70°
		OS =		HYDRATH. BX -
		OS =		Very vesicular frothy texture
		OS =		rounded vesicles up to 15x15 mm. dia
		OS =		clast
		OS =		5-75°
		OS =		Lithic lapilli tuff, AP
5840		90		

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF VEIN THICKNESSES	ORIENTATIONS		
5840		Veins 		<p>Pumice # 1</p> <p>Lithic lapill. tuff w/ locally inter-stratified tuffaceous ss & grt. - silicified</p> <p>bedding 20°</p> <p>bedding 25°</p> <p>40°</p> <p>BLDD CAL. IN VUG. - CLSTS OF QTZ-SULF., QTZ-CHL-EP; HEM-STAINED PPT; SILICIFIED</p>
5850		 Primary vesicles $\phi 1/2$		<p>andesite andesite</p> <p>sparsely amyg. - these filled w/ qtz, hem, cal - some botryoidal texture</p> <p>v. dense dk. gray-green porph. and. - s. prop. altn.</p>
5860				

m
p.v.
24/11

Borehole Awibengkok 1 - 2

Logged By _____

Depth Interval _____

Date _____

Page _____ of _____

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)	ORIENTATIONS		
		Veins		
5860				
5870				
				auto bx - "moth-eaten"
				FALLOUT TUFFS, interstratified fine ash vitric & pumice lapilli tuff, well sorted, well bdd.
				"waxy" aspect
5880				

Borehole Awibengkok 1 - 2 Logged By _____

Depth Interval: _____ Date _____

DEPTH	FRX / VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)	ORIENTATIONS		
		Notes		
		Veins	Entries	
5885				bdd tuff (aa) 20° actobx.
5890				v. dense dk greenish grey
5900				vms. dom. by Qtz/sulfide.
5901				

Borehole Awibengkok 1 - 2
 Depth Interval 5880 - 90'

Logged By JH/DW
 Date 11/17/95

DEPTH	VEINS / ENTRIES		GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES (mm)	ORIENTATIONS			
		Veins			Entries
5900				<p>strong prop</p> <p>irreg. contact</p> <p>Tuff</p>	
10				<p>size 2 broken up</p> <p>φ 20% ≤ 10x5</p> <p>φ 10% ≤ 12x9 mm</p> <p>φ 2% ≤ 5 mm</p> <p>7-30°</p> <p>tuff-bx - lithic - rich mod. well-sorted.</p> <p>jigsaw-puzzle hyd. bx cont'd by narrow grs - 5" veins frag lets</p> <p>grades downward into tuff w/ 10-15% chitted. pumice & apill ≤ 10 mm. - possible ash-flow tuff</p>	

Borehole Awibengkok 1 - 2

Logged By JH/DJ

Depth Interval 5900 - 5920

Date 11/17/95

DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2			
5920			Veins:	Entries:	
					irreg. contact
			58/55 ← Gangue of 2 calcite		
					either porph. andesite or extremely well-sorted sulf (decid. fr. TS).
					at sulfide rockwork veins 80-90° - minor
5930			58/65 3mm x 4mm		
			70/60 3mm x 4mm		
					45° becomes denser, darker gray-green - little or no ep. TS! finer-grained
			165/165 ← Gangue of S		
					70° v. dense, dk. gray-green
5940					

Borehole Awibengkok 1 - 2

Logged By _____

Depth Interval _____

Date _____

Page _____ of _____

DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2 >2 (Specify)			
		Veins	Entries		
5920					tuff or andesite
5920-5940				10x2 5x4 mm	10x4 mm w/ bld calcite
5940-5960				9/8 w/ STKWK	SABELON
5960-5980				4x2 mm	
5980-6000				10x4 mm	and. (?) Tot. silicified tuff (?) early qtz. sulf. spher. - 100 qtz - ep - cal - py units.
6000-6020				10x4 mm	JIGSAW PUZZLE BX
6020-6040				10x4 mm	Tuff bx of unkn. origin - ill-shaped clasts ≈ 1.9 cm. dia. FFT w/ calcite. pum - in matrix of pmt ash - FFT - BX ?
6040-6060					water-reworked well bed. basalt ash to fine lapilli lithic-rich tuff
6060-6080					large clasts
6080-6100					30°
6100-6120					NWAF
6120-6140					35-40° vitre fine-ash flt. tuff

Borehole A:wibengkok 1 - 2

Logged By _____

Depth Interval _____

Date _____

Page _____ of _____

DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)		ORIENTATIONS		
	1	2	Veins		
5960					fine-ash fallout tuff
			$\phi 15\% \leq 20 \times 10$		fine-ash fallout
			$\phi 2-5\% \leq 10 \text{ mm}$		tuff bx, same as
GF			$\frac{1}{3} \times 10$		flattish
					very fine-ash msu to vaguely bdd (lam) v. lt. gray
5970					unusual tuff bx clasts of fine-ash tuff vitre in sparsely w/matrix
					tuffaceous matrix
					waxy clay-ser alt
			$\phi 10\% \leq 10 \times 15 \text{ mm}$		bdd. calcite in vug
5980					

Borehole Awibengkok 1 - 2

Logged By _____

Depth Interval _____

Date _____

Page _____ of _____

DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS	
	RANGE OF APERTURES (mm)		ORIENTATIONS			
	1	2	Veins			Entries
5980						
			80° ↘	$\frac{20 \times 3}{11mm}$ $\phi 22 \approx 7mm$		<p>high</p> <p>pumiceous tuff bx. ?</p> <p>cht</p>
			70-80° ↘			
5990						
			70° ↘			<p>well lam. fallow tuff med. gray - all with carbonaceous unit</p> <p>and. flow-bx</p>
			65° ↘			
			70° ↘			
				$\phi 102 \approx 30 \times 15$		<p>bidd. calcite</p> <p>bidd. calcite</p>
6000						

DEPTH	VEINS / ENTRIES			GRAPHIC	DESCRIPTIONS
	RANGE OF APERTURES (mm)	ORIENTATIONS			
		Veins	Entries		
6000					bldd. calcite ppvtc. andesite, dense, hard blk. grnsh-gray wk-med. prop. alt. btm. of core @ 60032
6005 (TD)					

Borehole Awibengkok 1 - 2

Depth Interval 6000-6004²

Logged By JH/DN

Date 11/18/95

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