Project : HOLLWAY
Logged by: M. SAXON
Date : 8/12/95

PASMINCO EXPLORATION DIAMOND DRILL LOG

328202
HOLE No. BPD87

m	VEINING and ALTERATION (1 = weak, 4 = intense)	STRUCTURE (b = bedding, c = cleavage, f = fault, Angles to LCA)	GRAPHIC LOG (0.06 mud, 0.5, 2, 8, 32, max mm)	LITHOLOGY	MINERALISATION
0				0-6m FERRUGINOUS RUBBLE No core.	
	7-7.5m Vuggy quartz vein			6-18.3 SILTSTONE Well bedded and laminated, pale grey siltstone; minor sandstone. Cm scale or thicker beds. No visible quartz or muscovite. Common folding, including refolded isoclinal fold. Minor fault at lower contact.	
10		10m FOLDING Refolded isoclinal fold; F2 parallel to LCA; chevron;			
	11-11.2 Vuggy quartz vein				
		13m FOLDING Hinge @ 5° LCA			
	15-15.2 Vuggy quartz vein	15m So 5° LCA			
	18.6-18.7 Vuggy quartz vein			18.3-23.3 QUARTZ-LITHIC SST Coarse sandstone; weakly bedded; shaky lithic clasts; increasing feldspar and lithic rich to base. Pyritic where unweathered; common folding throughout.	21.6-21.9 1% pyrite disseminated 22.4-23.0 1% pyrite disseminated + nodules in sst.
20		21.8m FOLDING			
		25.0m So 45° LCA S1 40° LCA So/S1 ~ 90°		23.3-28.0 SILTSTONE Grey-brn, vitric, fine grained siltstone; weakly bedded, minor crystal sst; common folding;	
		28.5m So 5° LCA		28.0-31.2 QUARTZ-LITHIC SST As above; pale grey where fresh; moderately bedded; lithic rich; quartz and feld. xl's;	
30		31.0-31.2 FAULT Brec, Rubble, Ferrug			
		32.0m So 30° LCA		31.2-40.5 QUARTZ SANDSTONE Medium grained qtz sst with minor f.b. siltstone; bedded and laminated; slight cleavage; pale horizons more feldspar-rich; minor muscovite. Pyrite in clay boudins, lenses and disseminated.	31.2-35.6 2-4% pyrite disseminated, on fractures and as nodules;
		34.0m So 35° LCA			
		38.0m So 40° LCA S1 45° LCA			37.6-40.8 1% pyrite as above
40		41.0m So 0° LCA		40.5-48.8 SILTSTONE Grey-brn, vitric, fine grained siltstone; massive to weakly bedded, rare interbeds of crystal sandstone; pale cloudy appearance; common microfaults.	41.7-41.9 1% py as above 48.4-48.5 carb-qtz vn + py-sph-chal
		48.5 So 35° LCA 48.8 FAULT with vein, 20° LCA		48.8-54.3 MID GREY SANDSTONE Bedded and laminated mid grey sst; feldspathic where coarse; mod clay;	48.8-48.8 qtz vn + sph-chal
50					

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PASMINCO EXPLORATION DIAMOND DRILL LOG

322203
HOLE No. BPD87

m	VEINING and ALTERATION (1 = weak, 4 = intense)	STRUCTURE b = bedding c = cleavage f = fault Angles to LCA	GRAPHIC LOG (0.06 mm, 0.5, 2, 8, 32, max mm)	LITHOLOGY	MINERALISATION
50		50.5m So 90°LCA Si 30°LCA 50.8m FOLDING So 0°LCA 51.0m FOLDING So 5° LCA		48.8-54.3 MID GREY SANDSTONE 54.3-65.2 SILTSTONE Green-grey, fine grained, vitric siltstone; rare crystal sandstone horizons; slightly siliceous, almost cherty in part; calcareous. Minor intercalated felsic/intermediate lava, with qtz+feldspar crystals.	48.8-54.3m 1% py as nodules
60		60.0m So 70°LCA			
		64.3m So 35°LCA		65.2-66.6 FELSIC LAVA Feldspar phyric, quartz phyric, mid grey-green; massive; evenly phenocrystic. Faulted lower contact.	63.6-63.7m mar silica bx with tr chalco. 65.5-68.5m tr diss sphal, assoc with Qz; 69.3-74.6m fine pyrite veinlets with pyrite as selvage; up to 3% py;
		66.4-66.6m FAULT Puggy, mar vng;			
70	70-71.2m Mar bleaching assoc. with pyrite vng; 74.6m Pnk-cream zone, hematitic in part; pyrite network;	71.7-72.4 BRECCIA Qtz-pink calcite bx zone; early calcite fractured by qtz; assoc. with bleaching 75.1-75.9m FAULT 5-10° LCA; puggy, mar hematite;		66.6-95.2 INTERMEDIATE LAVA Feldspar phyric, no quartz pheno; commonly aphyric; mid-dk green, massive; rare glassy/vitric zones; vesicular in part; occasional quench breccia texture; with shardy appearance. common carbonate veining and carbonate filled vesicles; Hollway Andesite.	
80		79.6-80.0m VEIN Fractured calcite veining, 25° LCA 85.3-87.4m Qtz-chl-fuch? veinlets; 87.5 VEIN Qtz-chlorite 20°LCA 88.3-88.6m Qtz-carb-chl vein, some bx			
90				95.2-99.8 SILTSTONE GRADING TO SANDSTONE Pale grey vitric siltstone, grading down hole to qtz, feldspar, lithic sandstone. Faulted lower contact.	95.2-97.9m tr py in sst as nodules and disseminated;
100					

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m	VEINING and ALTERATION (1 = weak, 4 = intense)	STRUCTURE b = bedding c = cleavage f = fault Angles to LCA	GRAPHIC LOG	LITHOLOGY	MINERALISATION
100				99.8-103.5 INTERMEDIATE LAVA Massive, mid green, feld-phyric lava; mar qtz veining.	
		104.5 FAULT pug, 60° LCA		103.5-107.1 INTERBEDDED SANDSTONE AND SILTSTONE Mid-grey qtz-musc. sandstone, mod pyritic; dark grey siltstone with weak cleavage; abrupt contacts; minor calcite veining throughout. Weakly faulted lwr contact.	102.5-103.6m Fine pyrite vnlets, dissem py in halo; sil. alt'n of wallrock; Py ↑ downhole;
		105m So 45° LCA			
		107m So 65° LCA			
110					103.5m Tr sph. in calcite vein;
		111.7-112.5m VEIN Calcite-chl-qtz bx;		107.1-125.5 INTERMEDIATE LAVA Massive mid green to pink lava; variably feldspar phyric, increasing downhole; local hydrodastic breccia texture; feldspars pale pink in colour; abundant pink carbonate-qtz-chl veining and brecciation;	
				local pink color is due to local carbonate/albite alteration;	
120				lower contact strongly brecciated, laminated calcite veining;	
	124.0-125.5m Mar spotted bleaching;				124-125.5 Tr sph, tr py; disseminated;
				125.5-134.8 INTERBEDDED SST AND SILTSTONE Interbedded mid grey qtz-musc. sst and dark grey siltstone; moderately bedded, no grading, contacts comm faulted; local carbonate veining and brecciation;	
130					
		133.2 FAULT Pug, tr pyrite;		134.8-136.5 INTERMEDIATE LAVA Mid grn aphyric, vesicular lava; carbonate veining and vesic-fill;	
		134.4m So 55° LCA			
				136.5-160.6 INTERBEDDED SANDSTONE AND SILTSTONE Interbedded mid grey quartz-musc-lithic sandstone, and fine grained dark grey siltstone. Lithics of grey shaley material; common internal lamination, rare cross bedding; minor erosional contacts; minor nodular pyrite and pyrite lenses.	
140					
		143.0m So 80° LCA			
		146.0m So 75° LCA			
				minor carbonate veining.	
150					

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m	VEINING and ALTERATION (1 = weak, 4 = intense)	STRUCTURE b = bedding c = cleavage f = fault Angles to LCA	GRAPHIC LOG	LITHOLOGY	MINERALISATION
150		152.0m ∫ 75° LCA		160.6-165.9 PUMICE BRECCIA Sericite green, feld-rich, pseudo-clastic txt; wispy pumice texture; intense and varied alteration - early ser-py-silica, overprinted by chl; pyrite nodules replace cleaved ser clots; chl uncleaved; feldspar typically carbonate altered; clay wraps feldspars;	
160	160.6-165.9m ser-py with patchy chl overpr; 164.0-164.1m pale grey sil alt'n; minz assoc, sharp fronts, overprints ser, chl; 165.3-165.7m pale grey, silica-chl clots;	160.0m ∫ 35° LCA		165.9-169.9 ALT'N AND MINZ ZONE Grades from overlying pumice bx; Pale grey-green rock, common post-feldspar phenos; intense silica alt'n overprints ser/chl; preserved chl clots assoc. with minz; irregular chlorite wisps; preserved ser zones unminzed; sphalerite intergrown with chlorite and as rare veinlets;	160.6m 2cm vein of py at contact; 160.6m-165.9m small py lenses; 163.9-164.3m diss sphal assoc with chlorite preserved in grey silica alt'n;
170	165.9-169.9m silicification, pale grey, overpr ser/chl; assoc with carbonate and sphal minz;	173.1-173.2m mar qtz sealed breccia;		169.9-184.3 VARIABLY ALTERED FELSICS Feldspar porphyritic unit of lava or volcaniclastic; similarly phyric to above unit, but feldspars pale pink; change in feld colour corresponds to reduction in alt'n and minz; clastic pseudoclastic txt of round silica/py clasts - vitric appearance) no included feldspars; rare ser wisps; less carbonate altered than above unit; pseudo bx in part;	165.3-165.7m tr diss sphal; 165.9-169.9m sph + py as chl-ser replacement + veining; pale-brn;
180	184.3-188.8m calcite ± hematite veins; late fractures	180.0m small sericitic shear zone; 25° LCA; 180.4m FAULT puggy, mar bx		184.3-188.8 BASALT DYKE Dark green aphyric, vesicular basalt dyke; bleached contacts, chl-hem-alt'n of wallrock; common calcite veins; hematite dusting;	172.5-174.0m mar dk brn sphal assoc. with qtz vng; 169.9-184.3m tr-1% pyrite dissem. 179.6m mar chalcopyrite
190	193.3-193.7 sericite veining/alteration; 193.5-195.9m hem-chl alt'n, assoc. with basalt; pervasive; 197.3-200.2m hem-chl as above			188.8-193.5 LAVA/LAVA BRECCIA Variably altered, minor flow banding; cream-pale pink, felsic, slightly hema-sil alt; ghosts of feldspars; chl altered by basalt; 193.5-195.9 LITHIC BRECCIA Pink-grey, rounded lava fragments, minor flow banding, sandy matrix, matrix chlorite-silica altered; 195.9-197.3 BASALT DYKE As above	189.8-191.1m tr chalco assoc. with qtz vng; 188.9-193.3m tr py, dissem and in veinlets; 191.3-191.4 mar sphal-py;
200					

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PASMINCO EXPLORATION DIAMOND DRILL LOG

3282U0

HOLE No. BPD87

m	VEINING and ALTERATION (1 = weak, 4 = intense)	STRUCTURE (b = bedding, c = cleavage, f = fault, Angles to LCA)	GRAPHIC LOG (0.06 mud, 0.5, 2, 8, 32, max mm)	LITHOLOGY	MINERALISATION
200	202·3-204·3 m mod to strong ser, mnr grey sil; predates hematite;	206·2 m FAULT mnr		197·3-206·7 RHYOLITE LAVA BRECCIA Cream, pnk, grn, flow banded, feld-phyric rhyolite lava; fragmented, angular clasts; mod ser alt'n in part; minor qtz-calcite veining; sil-hem-chl altered by bas dyke;	200·0m tr grey sphal;
	204·9-205·1 m int. sil, mnr hematite;	207·7 m FAULT crush, bx;		206·7-207·7 BASALT DYKE As above; faulted contacts;	201·8-201·9 m tr grey sphal;
210	207·7-210·2 m mod as above			207·7-222·7 RHYOLITE LAVA BRECCIA Variable pink, cream, green, variably altered; mis-orientated flow banded clasts, rhyolitic; feldspar-phyric; clasts commonly perlitic; clasts typically 1-3 cm size, in siliceous matrix; pale pink lava progressively altered down hole to sericite, including sericite veining; selective alteration of perlitic fractures; lower contact faulted;	202·7-202·9 m tr grey sphal, assoc with wk sil-hema; 207·7-222·7 tr pyrite
	212·6-215·6 m mod ser alt'n, fracture control;				
220	217·7-222·7 m mod-strong ser alt'n, fracture controlled;				
		222·7-222·9 m FAULT		222·7-228·4 ALTERED ZONE Strong-intense ser±sil: pyrite alt'n, possibly over lava bx as above; in part fracture/vein controlled, grading to msv sericite; pyrite as veinlets and dissemination; rare preserved perlite txt; cross cutting qtz-carbonate veining; minor grey silica alteration;	222·7-228·4 m tr pyrite dissem and vein; trace gal/sphal;
		225·3-225·6 m FAULT puggy, veined;	ALTERATION		
230		228·4-229·3 m FAULT, pug, mbdc contact;		228·4-229·3 FAULT ZONE	228·4-228·5 m mnr dk brn sphal;
	233·7-235·4 m msv carbonate-silica alt'n; carbonate dvd, silica post carb;	229·5 m FAULT puggy; S; 20° LCA	CARBONATE ALT'N	229·3-233·5 MASSIVE CARBONATE Rubbly zone of iron-rich carbonate, cleaved and bx in part, local intense silicification assoc. with fracturing; faulted margins;	229·3-235·4 tr galena, py;
	233·4-233·9 m ser+sil+py, mod	230·1 m S, 30° LCA		233·3-235·4 ALTERED ZONE Sericite-silica alt'n, mod pyrite, minor carbonate as above; no volc. txt visible; core of zone more sil alt'n, margins sericitic; common silica veinlets;	
240	233·9-234·8 m sil-py-vein qtz;	229·9-230·9 m Breccia of carb, silica;		235·4-241·5 BASALT DYKE Dark green, mod. vesic., slightly hematitic; included 'granitic' clots.	
	234·8-235·4 m ser-sil-chl vng	233·9-234·1 m FAULT, sericite		241·5-253·8 RHYOLITE LAVA / LAVA BRECCIA Variably pink and green, feld-phyric in part, indistinct upper contact; rare pumiceous txt; tr pyrite.	
	241·5-242·9 m hema-chl alt'n;	242·9-244·9 VEINS - sericite			
	242·9-244·5 m ser-sil-py±chl; ±hema;				
250					

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m	VEINING and ALTERATION (1 = weak, 4 = intense)	STRUCTURE b = bedding c = cleavage f = fault Angles to LCA	GRAPHIC LOG	LITHOLOGY	MINERALISATION
250	244.5-250.6m hema-sil + late chl overprint; irreg and in veins, calcite assoc. with carb; basalt assoc.;	253.5m FAULT contact, 10°LCA, puggy;		241.5-253.8 RHYOLITE LAVA/BRECCIA Faulted lwr contact	252.4m tr sph-chal in qtz vein;
	250.6-255.8m ser-sil, tr py, txt still visible; slight fract control;			253.8-267.9 BASALT DYKE Dark green, vesicular, aphyric basalt dyke; inclusions of qtz-feldspar-chlorite masses with granite appearance.	
260	267.9-269.5m mod hematite, mnr ser, carb, chl;				
	269.5-276.3m mod ser-sil-py, overprints basalt	269.5 FAULT mnr, qtz vng;		267.9-276.3 RHYOLITE LAVA BRECCIA Variable pnk-grn, mod sil-ser alt, perlitic, feld-phyric, cmn bx txt; ser alt'n pervasive and in veins; ser appears to post-date contact alt'n of basalt dyke; small included basalt dyke;	
270	alt'n;	272.7 FAULT puggy, carb vng, 45° LCA.			
	273.5-273.8m minor fuch alt'n;	272.9 FAULT puggy, carb vng;		276.3-277.1 PORPHYRITIC INTRUSIVE chl grn unit, low mag susc; qtz + post-feld phyric, richly phyric, dacite appearance, altered margins;	277.1-291.4 Trace pyrite
	277.1-277.3m mod ser;	273.5-273.8m BRECCIA, polymict clasts, some clvd; qtz/calcite vein clasts;			
280				277.1-291.4 RHYOLITE LAVA BRECCIA Pink to green feldspar phyric to feldspar poor; typically breccia/clastic appearance; occasional flow banding, controlling alteration; hematitic in part, minor local chlorite alteration; weak sericite alteration from 289m, predominantly fracture controlled - destructive; cream destructive alteration increases to base, with mnr pyrite veining; minor qtz-chl-carb vng throughout.	
	289.0-291.4m wk ser, bleaching; mnr sil-py	276.0 FAULT mnr, pug			289-291.4m Tr sphal;
	290-291.4m mod ser + py + crm mineral (?); Folds intact;	277.1m FAULT mnr, pug;			
		291.4-291.8 FAULT, pug;			290.5-292.5m 1% py as veinlets;
290	291.8-298.1m mod ser-sil; ser overprinted by sil; perlite control;	292.2 FAULT pug;		291.4-291.8 FAULT, puggy	293.6-293.8m tr diss py;
		293.0 FAULT pug, 40° LCA		291.8-294.8 ALTERED FELSIC LAVA Breccia/pseudo bx txted pink-sericite green; local perlitic fracture control alteration; minor flow banding; alt'n txt of ser wisps indicated in later silica, fracture controlled;	
	297.4-298.4m unusual crm vng, prob. feldspar; late wrt above;		ALTERATION		297.2-298.1m 1% diss + vnlet py
300					

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PASMINCO EXPLORATION DIAMOND DRILL LOG

520200

HOLE No. BPD 87

m	VEINING and ALTERATION (1 = weak, 4 = intense)	STRUCTURE b = bedding c = cleavage f = fault Angles to LCA	GRAPHIC LOG	LITHOLOGY	MINERALISATION
300	300·0 - 300·4m mod ser-py over Vpm;			294·8 - 299·3 ALTERED ZONE Green-grey ser-silica-pyrite zone, fracture controlled; early sericite alt'n overprinted by sil-py; ctt silica replaces out from fractures; feldspar replaced by crm mineral, ser grass; minor perlite tst;	300 - 301·1 m 2% py dissem.
	301·1 - 304·2m sil-py, mid grg silica with dusty py; flow banding or perlite contol;	304·0 - 304·2m FAULT 20° LCA		299·3 - 301·1 FINE GRAINED SEDIMENT Mid grey-brn vitric sediment, graded downhole to peperite; bedded in part, some coarse beds;	301·1 - 304·2m 3% py dissem.
	304·2 - 304·8 ser alt'n with later mid grey silica-pyrite as above; fracture controlled;			301·1 - 304·2 RHYOLITE LAVA BRECCIA Felsic lava, crm-grn clasts in matrix, in part peperitic; angular sharply clasts, slightly perlitic in part; matrix alteration enhanced; clasts sericitic, matrix siliceous; minor brown weathering carbonate;	304·2 - 304·8 m 3% py, assoc with silicification, vns, dissem;
320	304·8 - 305·3m pk pnk bleaching;				304·8 - 305·3 m 1% py with silc;
	305·3 - 306·9m wk ser-sil-py; py in fractures;			304·2 - 306·3 RHYOLITE LAVA Msv felsic lava, fell phyric, no signif. bx, crm disseminated pyrite;	307·8 - 310·7 m 1% py assoc with grg silica; vein + dissem;
	307·8 - 311·4m grg sil-py alt'n; fract control + replacement; py diss in silica;			306·7 - 307·8 FAULTZONE Rubble/pug fault gouge, with wallrock clasts.	312·1 - 320·9m 1% py, dissem, assoc. with grg silica;
	312·1 - 312·5m wk ser with mod sil-py overprint;	328·8 - 329·0m Calcite-silica BRECCIA; tr py		307·8 - 311·4 RHYOLITE LAVA Lava brecciated, but process not clear; perlitic, slight ser alt'n.	320·9 - 324·2m tr py assoc. with silica;
330	312·5 - 316·5m: sil-hema-alb, pnk alt'n of matrix + felds; ser pseudoclasts pres.			311·4 - 312·1 BASALT DYKE Dark green vesicular dyke; qtz vnlj;	
	316·5 - 319·4 m mod ser, fract controlled sil-py;			312·1 - 320·9 RHYOLITE LAVA/BRECCIA Pale pink-grn; bx text in part; typically massive; feldspar-phyric, slightly flow banded; variably altered, mixed pink-grn, sil-hematite-alb alt'n of matrix and feldspars; sequence of ser → sil-alb-hem → fract. chl → pyrite-silica;	
	319·4 - 320·9 unusual pale grn ser, assoc. with pink felds. crm fract pyrite;			320·7 - 324·2 PUMICE BRECCIA Wispy textured volcaniclastic, probable pumice breccia; abundant feldspar, typically fractured; ser/chl pseudoclasts in pale grey matrix; irregular silica nodules; minor late carb-chl vnlj;	
340	326·7 - 342·2m mixed chl-sil alt'n mar ser, tr py.	340·7 - 341·4m SHEAR ZONE, chl, 35° LCA, mod py, sl. ser, sl. hematitic;		324·2 - 324·6 BASALT DYKE	340·7 - 341·4m 2% py assoc. with shear zone;
		343·5 - 344·9m SHEAR ZONE, S1 20° LCA		324·6 - 326·7 ALTERED ZONE Hematite/chl zone adjacent to dyke.	342 - 343·5m tr pyrite
				326·7 - 342·2 FELDSPAR-RICH VOLCANICLASTIC	
350					

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350		346·3 FAULT calc-chl vng, 20° LCA		326·7 - 342·2 FELDSPAR-RICH VOLCANICLASTIC Green and grey, variably altered volcaniclastic; fractured to rounded feldspars; slight wispy texture; common alteration - irregular dk green chlorite hosts feldspars and wallrock clasts; - grey silica (chlorite?), featureless grey alt'n predates chlorite, preserves felds;	357·5 - 373·8m trace pyrite;
360	362·3 - 365·1m mod. silicification; slight detext; felds preserved, carbonate altd;			342·2 - 343·5 ALTERED ZONE Hematite/chl zone adjacent to dyke. 343·5 - 345·5 SHEAR ZONE Chl-hematite altered shear zone; diag control on alteration; some concentrically zoned sil-chl-py spotting; strong hem alt'n at base; 345·5 - 346·8 BASALT DYKE Dark green, carbonate vesicles	
370	370·3 - 378·5m sil-hema alt'n, felds carbonate altered;	373·3m VEINING sil-carb-py		346·8 - 357·5 BASALT DYKE PLUS ALTERED ZONE Mixed zone of basalt and chlorite-hematite alteration. 357·5 - 373·8 PUMICE-LITHIC VOLCANICLASTIC Richly feldspar phyric, common felds to 2mm; slight wispy to bedded texture, common rounded lithic fragments - typically mid grey siliceous fragment, about which wispy fabric wraps; feldspars commonly enveloped or replaced by silica; pale - mid grn when unaltered, grading to bleached pale grn-cream; alt'n predominantly silicification, detexturing, feldspar preserved; rare fracture controlled sil/ser zone;	
	← EOH			373·8 - 375·4 (EOH) BASALT DYKE Hematite about contact. Feldspar phyric.	