HOLE No. MD 2

PASMINCO EXPLORATION
DIAMOND DRILL CORE RECORD

LOCATION	TASMANIA
PROJECT	TULLAH EL 22/90
PROSPECT	MACKINTOSH DAM
DESIGNED BY	J.G. PURVIS
LOGGED BY	J.G. PURVIS
RELOGGED	
COMMENCED	15·11·93
COMPLETED	23·11·93
DRILLED BY	W. HOU
DRILL RIG	LONGYEAR 38

OBJECTIVE

TO TEST BILLITON IP ANOMALY CENTERED AT 2280N/1037SE, AND MASSIVE SULPHIDE POSITION ALONG-STRIKE OF OCCURRENCE IN TULLABARDINE CREEK.

RESULT

NO OBVIOUS SOURCE FOR IP ANOMALY DETECTED.
NO SIGNIFICANT MINERALIZATION ENCOUNTERED.

LOCATION/SURVEY DATA (AMG)

Grid	AMG		RL Collar m	205·5
Northing m	5382566·2		Bearing Collar	088°54'
Easting m	386937·1		Dip Collar	−45°
DH Survey Type	SINGLE SHOT EASTMAN CAMERA		Length Hole m	193·3

Depth m	Bearing	Dip	Depth m	Bearing	Dip
COLLAR	088·9°	−45°			
31	091°	−44°			
61	092°	−43·5°			
91	093°	−41·25°			
121	094°	−41°			
151	094°	−40°			
181	093·5°	−38°			

SIGNIFICANT INTERSECTIONS

From m	To m	Interval m						Comments

SIGNIFICANT CORE LOSS

From m	To m	% Lost
0	3·8	82

POOR GROUND CONDITION ZONES

From m	To m	Condition
73	81	MODERATELY BROKEN
97	101	BADLY BROKEN BY MAJOR FAULT. ASSOCIATED SHEARING, FRACTURING AND BRECCIATION EXTENDS 91·9 — 103m.
147·1	149	BROKEN BY SHEARS // CLEAVAGE

HOLE SIZE

Size	Depth m
HQ	3m
NQ	193·3m

HOLE CONDITIONS AFTER COMPLETION

Collar	HQ ROD CEMENTED IN, WITH STEEL CAP.
Steel Casing	HQ TO 3m.
PVC Casing	40mm UNSLOTTED PVC CASING PLACED TO BASE.
Ground Water	
Wedge	
Drill Pad	

PASMINCO EXPLORATION
SUMMARY DIAMOND DRILL CORE LOG

HOLE No. MD 2

PROJECT: TULLAH EL 22/90

Graphic Scale 1:

From m	Interval m	Code	Description	Depth	Graphic

MD2 - SUMMARY LOG

Collar: 5382566mN / 386937mE, 205.5mRL. Dip -45°. Azimuth 088.9° AMG.

0 - 52.8m: AMYGDALOIDAL FELSIC LAVA. Abundantly microfractured.

52.8 - 64.3m: MAFIC DYKES IN VITRIC SILTSTONE. Minor py.

64.3 - 91.9m: VITRIC SILTSTONE & SHALE. Locally 3-5% py above 71.4m, otherwise minor sulphides.

91.9 - 114.0m: BRECCIA. Mixture of sed breccia and fault breccia (probable Henty Fault zone). Minor py.

114.0 - 135.5m: FINE BRECCIA, SANDSTONE & SILTSTONE. 1-2% py 126- 131m, otherwise minor sulphides.

135.5 - 156.0m: RHYODACITE LAVA & LAVA BRECCIA. Minor py.

156.0 - 171.3m: CRYSTAL SANDSTONE. 1-2% py below 165m, otherwise minor py.

171.3 - 180.7m: STRONGLY DEFORMED & ALTERED FELSIC VOLCANIC. No sulphides.

180.7 - 193.3m: SANDSTONE, SILTSTONE & BLACK SHALE. 1-2% py, 5% above 183.2m.

END OF HOLE

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. MD 2

PROJECT: TULLAH EL 22/90

Graphic Scale 1: 200

CORE RECOVERY

From m	Interval m	%	RQD

DESCRIPTION

From m	Interval m	(Incl. LITHOLOGY, STRUCTURE & ALTERATION)

0 – 52.75m: AMYGDALOIDAL FELSIC LAVA

Lithology: Grey-green & pink. Med gr. Massive. V hard.

Comprises autobrecciated feldspar-phyric lava & clastic lava breccia interflow zones (latter @ 0–3.5m, & 6.9–8.9m).

Amygdales of calcite or qtz, typically 2mm.

Alteration: Weak oxidation to 20m.

Strong sil-alb alt, weak chlor>ser (locally mod).

Strong to intense sil-alb-chlor±mag alt 34–49m.

Veining: Abund veins & tiny veinlets of calcite. Some chlor veinlets.

Scattered qtz-carb±chlor±alb veins to 100mm.

Structure: Minor breaking along fracts at low angle to LCA.

Abund microfractures (calcite or chlor filled).

Mod cleaved in & around breccia zones & at depth.

Cleav: 50° LCA @ 8m, 22.5m (dips 89° to 109° MG), & 32m (dips 89° to 098° MG); 55 °LCA @ 43.2m.

Basal contact abrupt & sl irreg, with strong foliation 72 ° LCA. Lava is microfractured adjacent to contact.

Mineralization: Minor dissem py. Minor dissem mag 34–49m.

52.75 – 64.25m: MAFIC DYKES IN VITRIC SILTSTONE

Lithology: Green-grey.

Siltst: fi gr, massive, hard, siliceous, composed of fine volc glass.

Mafics: basalt & dolerite, green, fi-med gr, massive, uniform.

Mafics: 53.9–57.9m (dolerite, uncleaved, with fi gr selvages), 58.05–58.7m (contacts 45° & 60° LCA //cleav), 61.95–64.25m (contacts 38° & 80° LCA).

Alteration: Siltst: strong sil-alb or sil-chlor-ser alt.

Mafics: mod chlor, weak carb-epidote alt.

Veining: 56.6–57.2m: 10–20mm fibrous actinolite/tremolite vein //LCA.

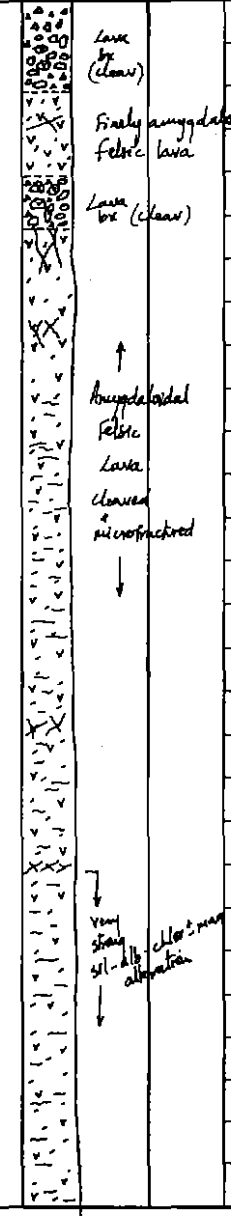
Structure: Mafic/siltst contacts gen sharp but irreg & commonly marked by contorted bedding in adjacent siltst. Some contacts faulted.

Siltst partly fract & broken, mafics unbroken.

All rocks weakly cleav (70° LCA @ 53m), except uncleaved dolerite @ 53.9–57.9m.

Bedding: 61° LCA @ 59.5m (dips 80° to 282° MG).

Mineralization: Minor dissem py in both siltst & mafics, except:



CODES

LITHO	STRUCT	ALTN	MIN

MINERALISATION

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. MD2

PROJECT: TULLAH EL 22/90 Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION				CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	MINERALISATION	LITHO	STRUCT	ALTN	MIN

58.9–59.5m: 1% dissem & stringer py, minor stringer sp.

64.25 – 91.9m: VITRIC SILTSTONE & SHALE

Lithology: Buff & grey.

Rocks largely composed of fine volc glass.

Dark grey to black sl carbonaceous siltst/shale 68.8–71.4m.

Minor fine qtz–feld sst.

Thin beds of xyl–lithic breccia with strong stretching lineation & wispy texture, @ 70.45–70.6m & 71.4–71.55m (latter fines downhole).

Alteration: Mod carb alt (some small stretched nodules of carb in cleav). Restricted patches of strong sil±alb–bleaching.

Weak sericitisation, strongest in bleached zone 72–81m.

Sl chlor alt, esp in uppermost 3m.

Veining: Numerous carb veinlets. Minor qtz±carb veins that cut & post-date the carb veinlets.

Structure: Bedding: 70° LCA @ 65.7m & 71.3m; 72° LCA @ 79.7m.

Mod slatey cleav (rock fissile & mod broken 73–81m).

Cleav @ 91.2m: 70° LCA (dips 70° to 284° MG).

80.85–81.8m: strong zone of anastomosing cleav // bedding, 73° LCA.

Basal contact abrupt, 20° LCA (same sense as cleav).

Mineralization: 64.25–68.8m: 1% dissem & stringer py. Minor cp–po in carb veinlets.

68.8–70.6m: 1–2% dissem & veinlet py, trace cp.

70.6–71.4m: 3–5% dissem py in black shale & in carb veinlets.

71.4–91.9m: V minor dissem py. Minor sp–gn–cp in qtz–carb veins 84–86m.

91.9 – 114.0m: BRECCIA

Lithology: Pale grey–green with pink patches.

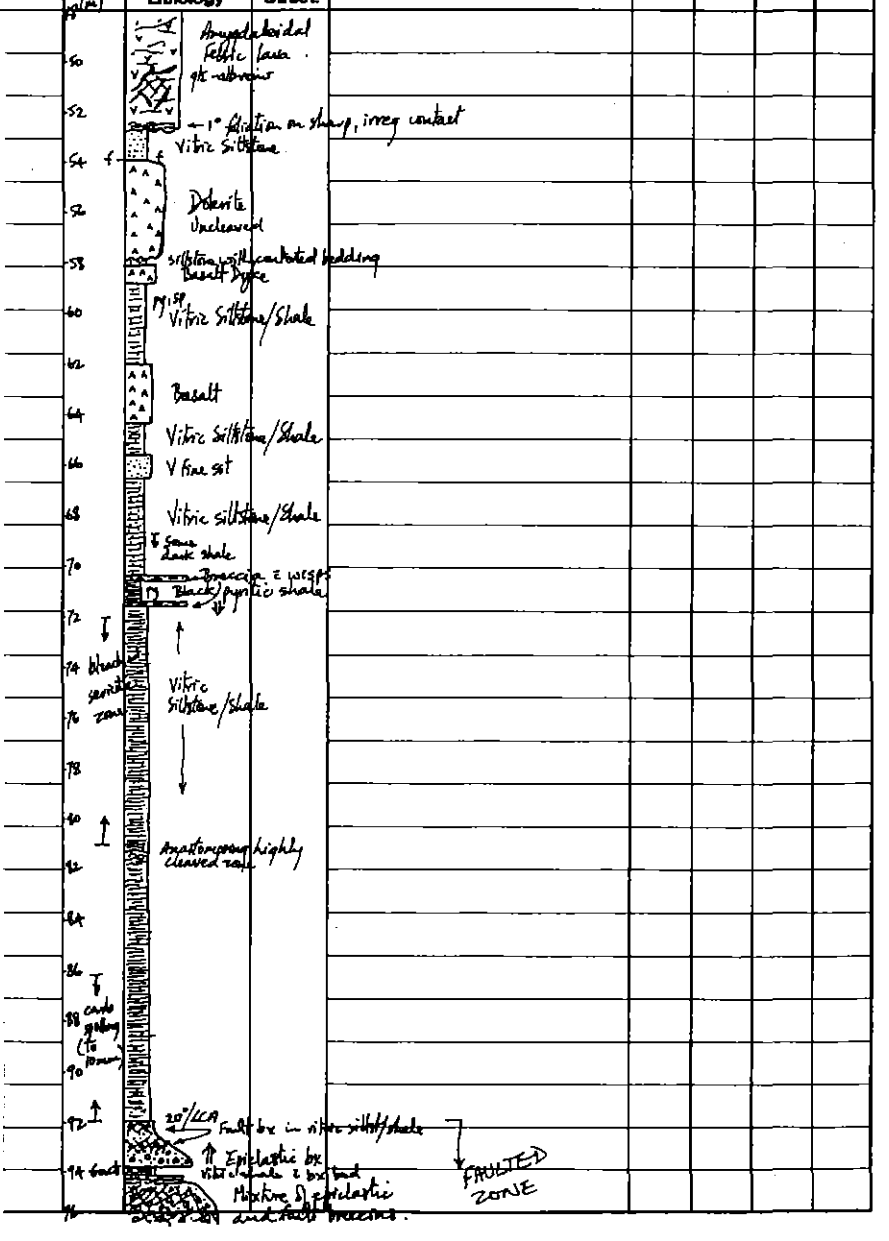
To 103m: mixture of sed bx & annealed fault bx, with intercalated highly fractured grey cherty vitric shale (largest 97.15–98.4m & 98.8–100.15m).

Below 103m: sed bx.

Sed bx frags angular to subangular, max 50mm, av 5–10mm, incl: sil–alb alt feld–phyric lavas, amygdaloidal lava, qtz–feld porph lava, black shale, & fi gr unidentified volc types.

All in granular matrix of fractured feld>qtz xyls, lithic grains, chlor & qtz.

Alteration: Strong chlor alt, weakening below 103m.



PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. MD2

PROJECT: TULLAH EL 22/90

Graphic Scale 1:

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(Incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth (m)	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN

Patchy sil-alb alt.

Mod carb alt as tiny veinlets & in bx matrix (esp in fault zone above 103m).

Veining: Irreg qtz±carb±chlor veins throughout (common in faulted zone, where some have been brecciated & broken up).

Structure: Uphole-fining in uppermost 2.5m of unit (siltst/shale passing down into fine bx), & in bx bed 98.4-98.8m.

Bedding: 72° LCA @ 99.1m;

Large brittle fault 97-101m (badly broken), with assoc shearing, fracturing & brecciation extending 91.9-103m. Most shears 45-75° LCA. Unit largely unbroken below 103m.

Mod cleaved, locally strong below 103m (eg: 107-108m, 60° LCA).

Basal contact gradational – bx fines down to sst.

Mineralization: V minor py. Trace gn in carb veinlets.

114.0 – 121.0m: CRYSTAL-LITHIC SANDSTONE

Lithology: Grey-green, med gr, massive, hard.

Packed feld & qtz xyl grains & xyl frags, to 2mm (av 1mm).

Subord lithic grains, occasionally as small clasts to +5mm.

Some variation in grainsize indicative of layering.

Alteration: Mod pervasive carb-sil alt, weak ser-chlor-alb.

Veining:

Structure: Sl broken & fractured.

Mod cleaved (60° LCA @ 117m).

Basal contact abrupt, 60° LCA (// cleav).

Mineralization: V minor dissem py. Trace sp-gn in stringers.

121.0 – 133.05m: FINE BRECCIA

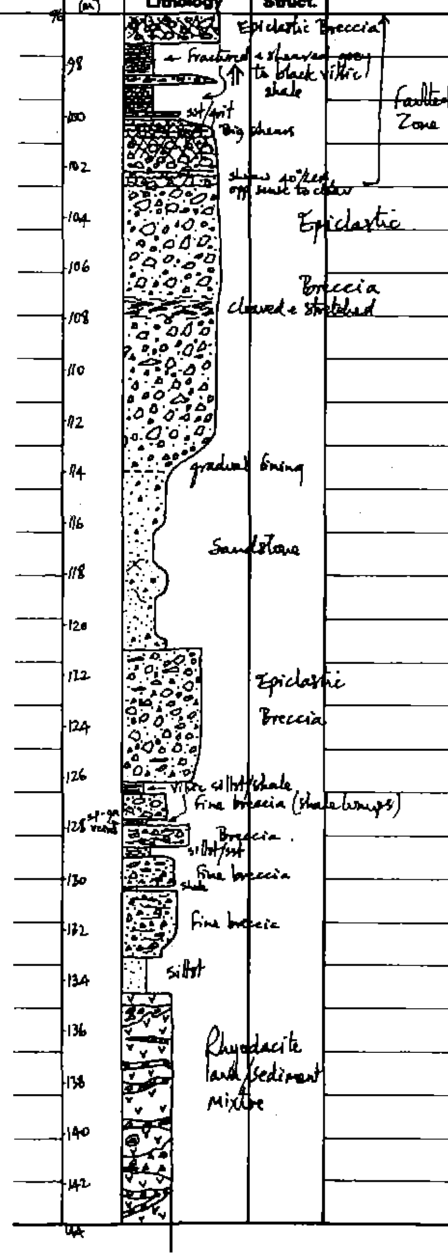
Lithology: Grey & pale grey-green.

To 126.15m: bx the same as unit above 114m.

Below vitric shale band @ 126.15-126.45m, bx is finer with cherty grey shaley matrix & several beds of grey vitric siltst (largest 128.7-129.15m).

Most bx frags below 126.5m comprise unlith vitric siltst, av <5mm, max 40mm. Ripped-up lumps of black shale @ 126.5-127.1m.

Alteration: Mod pervasive carb alt. Mod chlor-ser, decreasing with depth. Patchy weak sil-alb-bleaching (esp of some bx frags).



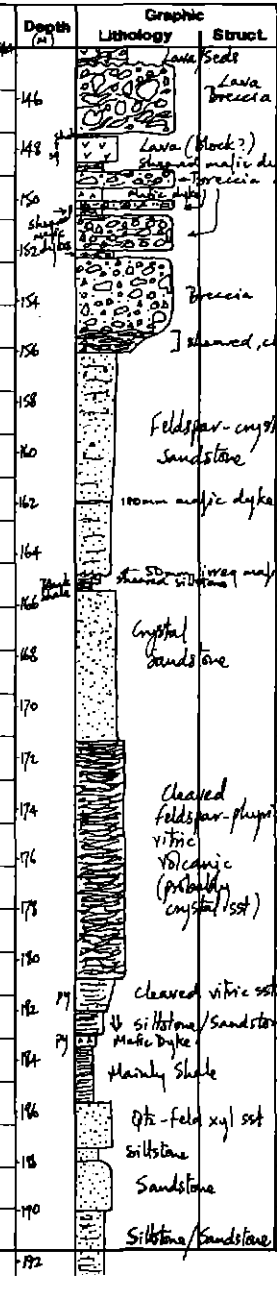
PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. MD 2

PROJECT: TULLAH EL 22/90

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION				CODES			
From m	Interval m	%	RQD	From m	Interval m	(Incl. LITHOLOGY, STRUCTURE & ALTERATION)	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						Veining:					
						Structure: Largely unbroken.					
						Mod–strongly cleaved with stretching of frags.					
						Cleav: 57° LCA @ 121.5m (dips 84° to 292° MG).					
						Bedding: 71° LCA @ 126.3m & 130.25m.					
						Basal contact abrupt, 75° LCA.					
						Mineralization: 121–126m: V minor py. Trace sp–gn in carb veinlets.					
						126–131m: 1–2% dissem py. Minor sp–gn–py±cp in carb veinlets (very common 127.7–127.9m).					
						131–133.05m: Minor py, trace gn.					
						133.05 – 135.5m: SILTSTONE					
						Lithology: Pale grey. Vitric & quartzose.					
						Alteration:					
						Veining: Abund carb veinlets.					
						Structure: Bedding 70° LCA @ 134.3m.					
						Basal contact abrupt, 65° LCA.					
						Mineralization: Minor dissem py. Trace sp in carb veinlets.					
						135.5 – 144.7m: RHYODACITE LAVA INTRUDING SEDIMENTS					
						Lithology: 60% lava, 40% seds.					
						Pale grey–green. Hard.					
						Lava & seds gen complexly intermingled. Some quench–fracturing of lava on contacts with seds & some peperitic bx in places.					
						Lava massive, med gr, vitric, with abund feld phenos and lesser fine qtz phenos. Rare qtz amygdales.					
						Seds incl grey siltst/shale, xyl sst, & pumiceous bx.					
						Alteration: Lava strongly silif. Weak ser–chlor alt.					
						Veining: Abund carb microveinlets. Scattered qtz–carb±chlor veins.					
						Structure: Lava highly microfractured with no obvious cleav.					
						Some cleav developed in sed zones.					
						Basal contact abrupt & irreg.					
						Mineralization: Minor dissem py.					



PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. MD2

PROJECT: TULLAH EL 22/90

Graphic Scale 1:

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(Incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						144.7 – 156.0m: FELSIC LAVA BRECCIA								
						Lithology: Pink & pale green. Hard.								
						Monomict bx, made up of quench-fractured frags (to 100mm) of felsic lava (identical to unit above), in strongly-foliated vitric matrix containing feld & qtz xyls, pumice & minor grey silty to shaley material.								
						Evident most lava frags were hot when they contacted the sed material.								
						Some lava frags highly qtz-amygdaloidal.								
						147.4–148.35m: fractured lava (large block?).								
						Several mafic dykes to 600mm.								
						120mm band of grey vitric shale @ 147.35m, 75° LCA.								
						Alteration: Strong sil-alb alt (esp of lava frags). Mod ser & weak chlor-carb alt.								
						Mafic dykes strongly co-ser±fuchsite alt.								
						Veining: Abund carb microveinlets. Several qtz-carb veins.								
						Structure: Broken 147.1–149m by shears //cleav. Otherwise unbroken.								
						Bx matrix and mafic dykes (but not lava frags) affected by very strong cleavage/shearing fabric (both qtz & feld xyls stretched & deformed, and some mafic dykes dismembered).								
						Zones of microfracturing.								
						Cleav: 55°LCA @ 151.1m (dips 85° to 292° MG).								
						Basal contact difficult to distinguish - poss structure (strong shearing).								
						Mineralization: Minor dissem py. Trace sp-gn-aspy in qtz veins.								
						5% py & 1% sp-gn in 120mm grey shale band @ 147.35m.								
						156.0 – 164.8m: FELDSPAR-CRYSTAL SANDSTONE								
						Lithology: Pale pink. Granular.								
						Abund feld xyls, often fragmented or stretched into augen shapes.								
						Minor small qtz phenos. Rare small frags of felsic lava above 161m.								
						All in silty siliceous & sericitic matrix.								
						At 161.9m, 100mm carb-fuc alt mafic dyke 60° LCA (// cleav).								
						Alteration: Mod alb-ser(±sil) alt (strong at top, decreasing with depth).								
						Veining: Common qtz-dolomite veinlets at high angle to cleav, with some veinlets fractured & broken up.								
						Structure: Grainsize decreasing with depth.								
						Strongly cleaved (sl weaker at depth). Unbroken.								
						Cleav: 60°LCA @ 158m; 65° LCA @ 164m.								
						Basal contact abrupt - marked by irreg 50mm carb-fuc alt mafic dyke & strong shearing.								

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. MD 2

PROJECT: TULLAH EL 22/90

Graphic Scale 1:

CORE RECOVERY				DESCRIPTION						MINERALISATION	CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.		LITHO	STRUCT	ALTN	MIN

Mineralization: Minor py, gn, sp, aspy, mainly in qtz–dol veinlets.

__164.8 – 171.3m: FELDSPAR–QUARTZ CRYSTAL SANDSTONE__

Lithology: Grey. Med gr. Massive. Hard. V even–grained.
Densely–packed abraded feld & qtz xyl grains (av 1mm), in subord (washed) sericite–chlorite–silica matrix that incl small amount of carbonaceous shaley material. Rare small frags of black shale.
Sheared vitric siltstone 164.8–165.1m, & black shale 165.1–165.4m.
Alteration: Weak sil–ser–chlor alt (locally mod).
Veining: Qtz–carb (some dolomite) veins throughout.
Structure: Largely unbroken.
Bedding @ 165.3m, 70° LCA (dips 75° to 285° MG).
Mod cleaved // bedding. Cleav much weaker than in units above (& below).
Basal contact abrupt, 65° LCA (// cleav).
Mineralization: 164.8–165.4m: 2% dissem py. Trace gn–sp.
165.4–171.3m: 1% py. Minor sp–gn in qtz–carb veins. 35x8mm nodule of massive py @ 167.6m.
Minor leucoxene throughout.

__171.3 – 180.7m: DEFORMED & ALTERED ZONE IN FELDSPAR–PHYRIC VITRIC VOLCANIC__

Lithology: Pale pink & khaki. Med gr. Massive. Hard.
Unidentifiable, strongly sheared volc with deformed feldspars (commonly augen–shaped), in vitric matrix.
At base deformation decreases & evident here rock is vitric feld–xyl sst.
150mm carb–fuchsite alt mafic dyke @ 171.5m, 70° LCA (// cleav).
Alteration: Mod sil–alb–ser–bleaching alt. Weak chlor alt.
Veining: Qtz–carb–chlor veins.
Structure: Unbroken.
V strong cleavage/shearing fabric (70° LCA), decreasing markedly at base.
Basal contact abrupt, along cleav @ 68° LCA.
Mineralization: Minor py.

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. MD2

PROJECT: TULLAH EL 22/90

Graphic Scale 1:

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						180.7 – 193.3m: SANDSTONE, SILTSTONE & BLACK SHALE							
						Lithology: Dark grey to black.							
						Seds incl: fine volcaniclastic sst; vitric feld–qtz xyl sst; grey siltstone & grey to black carbonaceous shale.							
						To 183.2m sst is vitric (pumiceous?), with deformed feld>>qtz xyls & minor lithic frags.							
						Below 183.2m sst more washed & granular, with feld=qtz xyl grains, lithic grains, carbonaceous threads & little vitric component.							
						Alteration: Mod ser–bleaching above 183.5m, below this essentially unalt except for mod pervasive carb alt (esp sst).							
						Veining: Common carb veins. Veins of pink calcite @ 180.7m.							
						Structure: Regularly bedded. Mod cleaved above 183.5m, decreasing markedly with depth to v weakly cleav at base.							
						Bedding: 76° LCA @ 182m; 75° LCA @ 185m.							
						Downhole fining in sst/siltst band @ 182.5m.							
						Mineralization: 180.7–182m: 5% py, trace sp–gn, dissem // bedding– cleav, commonly as augen of massive sooty py to 30x5mm.							
						182–182.9m: 1% py.							
						182.9–183.2m: 10% dissem sooty py, trace sp–gn, in cleav sericitic siltst with 100–150mm bleached mafic dykes on either contact.							
						183.2–185.6m: 2% dissem & stringer py.							
						185.6–193.3m: 1% py.							
						END OF HOLE							