HOLE No. MD3

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	29TH APRIL 1994
COMPLETED	12TH MAY 1994
DRILLED BY	W. HOW
DRILL RIG	LONGYEAR 38

OBJECTIVE

TO FOLLOW-UP SULPHIDE INTERSECTION IN HOLE MD1, TAKING ACCOUNT OF INDICATIONS OF SOUTHERLY PLUNGE FROM MALM SURVEY.

RESULT

NO SIGNIFICANT MINERALIZATION INTERSECTED.

LOCATION/SURVEY DATA (AMG)

Grid	AMG	RL Collar m	209.1
Northing m	5382670.2	Bearing Collar	090°
Easting m	386956.6	Dip Collar	-74°
DH Survey Type	SINGLE SHOT EASTMAN CAMERA	Length Hole m	239.0

Depth m	Bearing	Dip	Depth m	Bearing	Dip
COLLAR	090°	-74°			
30	088°	-72°			
60	087°	-70.75°			
90	084.5°	-67.5°			
120	083°	-64.5°			
150	082°	-61.75°			
180	082°	-60°			
210	082°	-59°			
239	083°	-58°			

SIGNIFICANT INTERSECTIONS (PPM)

From m	To m	Interval m	Cu	Au				Comments
139	140.3	1.3	1673	0.016				lo-py-cp in carbonate veinlets in siltstone/sandstone breccia.

SIGNIFICANT CORE LOSS

From m	To m	% Lost
5	20	18

POOR GROUND CONDITION ZONES

From m	To m	Condition
0	5	LOOSE ROAD FILL
5	20	FRACTURED & BROKEN

HOLE SIZE

Size	Depth m
HW	3
HQ	21
NQ	239

HOLE CONDITIONS AFTER COMPLETION

Collar	STEEL SCREW-ON CAP ON TOP OF HQ CASING.
Steel Casing	21m OF HQ (SHOE BIT AT BASE).
PVC Casing	PLACED TO 239m (40mm OD).
Ground Water	–
Wedge	–
Drill Pad	

PASMINCO EXPLORATION
SUMMARY DIAMOND DRILL CORE LOG

HOLE No. MD 3

PROJECT: MACKINTOSH DAM, TULLAH EL 22/90

Graphic Scale 1:

From m	Interval m	Code	Description	Depth	Graphic	From m	Interval m	Code	Description	Depth	Graphic

SUMMARY LOG - MD3

0 - 52.0m: AMYGDALOIDAL FELSIC LAVA
Basalt dyke 25-31m with 1-2% py. Elsewhere, minor py.

52.0 - 93.6m: VITRIC SILTSTONE/SHALE & MAFIC DYKES
Minor py. Locally 3% py in black shale.

93.6 - 109.15m: FOLIATED EPICLASTIC BRECCIAS
Minor py.

109.15 - 146.2m: FOLIATED SILTSTONE/SANDSTONE & MAFIC DYKES
Dykes fuchsite altered. To 2% py-po. Trace cp, rare sp.

146.2 - 156m: FOLIATED VITRIC EPICLASTIC BRECCIAS
1-2% py.

156 - 160m: ALTERED SHEAR ZONE IN RHYODACITE BRECCIAS
Strong silica-albite alteration. Trace py.

160 - 181.3m: FOLIATED PUMICE BRECCIA
Trace py.

181.3 - 192.6m: BASALT DYKE
No sulphides.

192.6 - 229.6m: FELSIC LAVA & BASALT DYKES
Trace py. Minor gn in qtz veins.

229.6 - 239.0m: VITRIC TUFF & VOLCANOMICT SANDSTONE
Trace py.

END OF HOLE

Comments:

a) Much of sequence strongly foliated and sediments commonly display evidence of pre-lithification deformation. Some of the fuchsitic mafic dykes were injected into unlithified sediments and subsequently disrupted.

b) Henty Fault not logged in the hole. Lithologically, its position (the contact between Mt Block Volcanics and Farrell Slates), is between 52-94m.

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PASMINCO EXPLORATION
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PROJECT : MACKINTOSH DAM, TULLAH EL 22/90

Graphic Scale 1:

CORE RECOVERY				DESCRIPTION		
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)

LOG OF HOLE MD3

0 – 5m: ROAD FILL

5 – 25.35m: AMYGDALOIDAL FELSIC LAVA

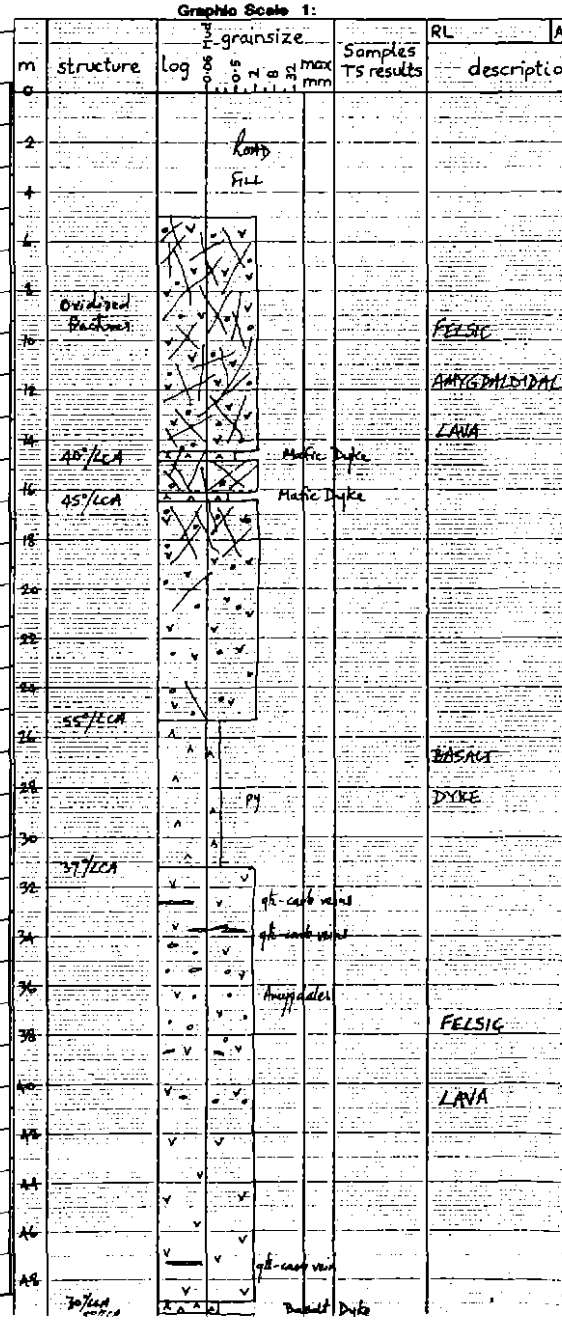
Lithology: Grey-green (pinkish at base). Med gr. Massive. Hard.
Feld-phyric lava (felds albitized, av 1-2mm).
Abund carb & chlor amygdales, av 2-4mm.
Fi gr green foliated mafic dykes @ 14.45-14.85m (40°/LCA) & 16.05-16.4m (45°/LCA), both //fol.
Alteration: Mod-strong sil-alb>chlor, v strong below 23m.
Ox on fracts to 18m. Carb leached to 18m.
Dykes strongly carbonatized.
Veining: Reg qtz-carb (±chlor or alb) veins. Minor tiny chlor veinlets.
Structure: Weakly foliated, 40°/LCA @ 5.5m, 45°/LCA @ 17m.
Fractured & broken.
Basal contact abrupt & irreg, 55°/LCA (//fol), dips 40° to 312°AMG.
Mineralization: Limonite on fracts to 18m. Minor dissem py (lava & dykes).

25.35 – 31.2m: BASALT DYKE

Lithology: Dk green. Fi gr. Massive. Uniform.
Alteration: Mod chlorite-carbonate.
Veining: Minor qtz-carb veins & carb veinlets.
Structure: Weakly foliated (35°/LCA @ 27m). Unbroken.
Basal contact sharp, 37°/LCA, //fol.
Mineralization: 1-2% py, dissem & in stringers.
Magnetic due to v fi gr mag.

31.2 – 52.0m: FELSIC LAVA

Lithology: Greenish-grey with pink zones. Uniform. Hard.
Fi-med gr sandy-text volc with indistinct feld phenos av 1mm.
Similar to lava above 25m but finer gr & less amygdaloidal (patchy calcite or chlorite amygdales av 2-4mm, to 15mm).
Chlor-carb alt fi gr basalt dyke @ 48.9-49.45m (15-30°/LCA, //fol).
Alteration: Mod sil-alb-chlor. Patches to 1m of strong sil-alb-bleaching assoc with qtz-carb veining.
Veining: Qtz-carb(>chlor±alb) veins to 200mm.
Structure: Weakly foliated (stronger than in lava above 25m).
Fol: 35°/LCA @ 36m, 45°/LCA @ 44m).
Sl fract & broken.
Basal contact abrupt, 50°/LCA (//fol) dips 47° to 347°AMG. A 1° depositional surface with tiny apophyses of lava into seds.
Mineralization: V minor dissem py.



CODES			
LITHO	STRUCT	ALTN	MIN

PASMINCO EXPLORATION
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From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth

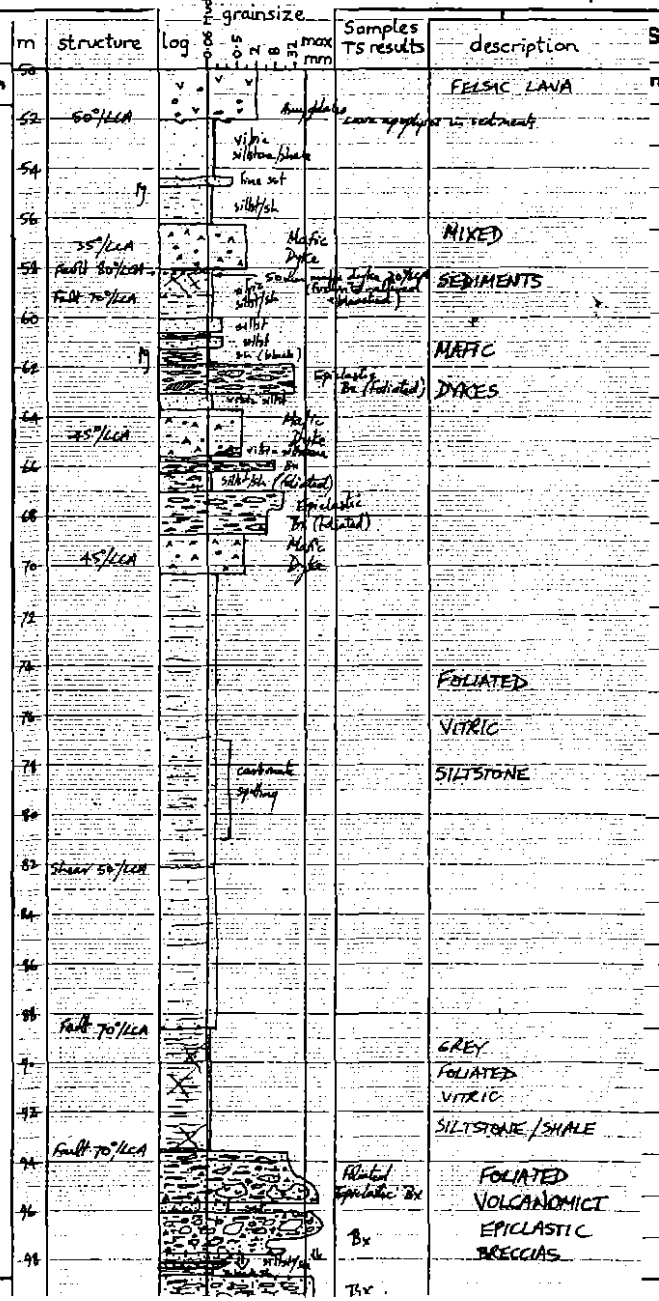
52.0 – 70.3m: MIXED SEDIMENTS & MAFIC DYKES

Lithology: Interbedded creamy–grey vitric (silic & sericitic) siltst/shale, grey–black carbonaceous shale, & grey–green strongly foliated epiclastic breccia (stretched volc>sed frags in fine silty matrix).
Black shale & bx only present below 58.7m.
Bx frags incl felsic volcs & glass (some pumice), also lumps of shale.
Dykes (all grey–green, amygdaloidal, foliated, non–mag, sub–//fol):
56.3–58.05m, intermed–mafic, 35°/LCA, 100mm qtz vein at base.
63.7–65.6m, 45°/LCA (fault at base), lump of included siltst @ 65.4m.
68.75–70.3m, 45°/LCA (fault at top contact).
58.3m: 50mm mafic dyke unlike above: creamy (highly bleach), hornblende–phyric, minor fuchsite & dissem py, 30°/LCA (sub–//fol).
Alteration: Patchy. Mod ser–chlor–carb (incl carb spotting in vitric siltst/shale).
Dykes strongly carb. Local silf (eg: upper 2m of unit).
Veining: Scattered carb>qtz veins & veinlets. Common chlor veinlets.
Structure: Bedding: 50°/LCA @ 54.3m (dips 65° to 257°AMG), 45°/LCA @ 63m.

Mod bedding–// foliation, strong below 62m (esp in bx bands).
Some soft–sed deformation.
Several thin cataclasite bands 70–80°/LCA @ 58.2–59.2m, annealed by vein qtz or containing frags of vein qtz. Mod fract & broken here also.
Basal contact abrupt, 45°/LCA (base of dyke).
Mineralization: 52–60.6m: Minor to 1% py>>po, dissem & stringers (2% dissem py>po 54.3–55.05m).
60.6–61.75m: 2–3% fi gr dissem py in black shale.
61.75–70.3m: Minor to 1% dissem py.

70.3 – 88.6m: VITRIC SILTSTONE

Lithology: Fawn. Fi gr. Sl broken.
Massive, fairly uniform sericitic rock with thin pale grey shaley beds.
Alteration: Mod sericitized & bleached, lesser patchy sil–alb.
Weak carb spotting 77–81m.
Veining: Common irreg veins & veinlets of (Fe/Mn) calcite (±qtz–chlor).
Some pink calcite in basal 1m.
Structure: Bedding: 45°/LCA @ 74.7m (dips 65°/LCA to 267°AMG).
Bedding gen deformed by strong bedding–// foliation (47°/LCA @ 87.5m).
Shear @ 82.1m, 50°/LCA (//fol).
Basal contact 10mm annealed cataclasite, 70°/LCA (opposite sense to fol).
Mineralization: To 74m, & 82–83m: Minor to 1% dissem & veinlet py.
74–82m & 83–88.6m: Trace py.



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PROJECT : MACKINTOSH DAM, TULLAH EL 22/90

Graphic Scale 1:

CORE RECOVERY				DESCRIPTION			
From m	Interval m	%	RQD	From m	Interval m	(Incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth

88.6 – 93.6m: GREY VITRIC SILTSTONE / SHALE

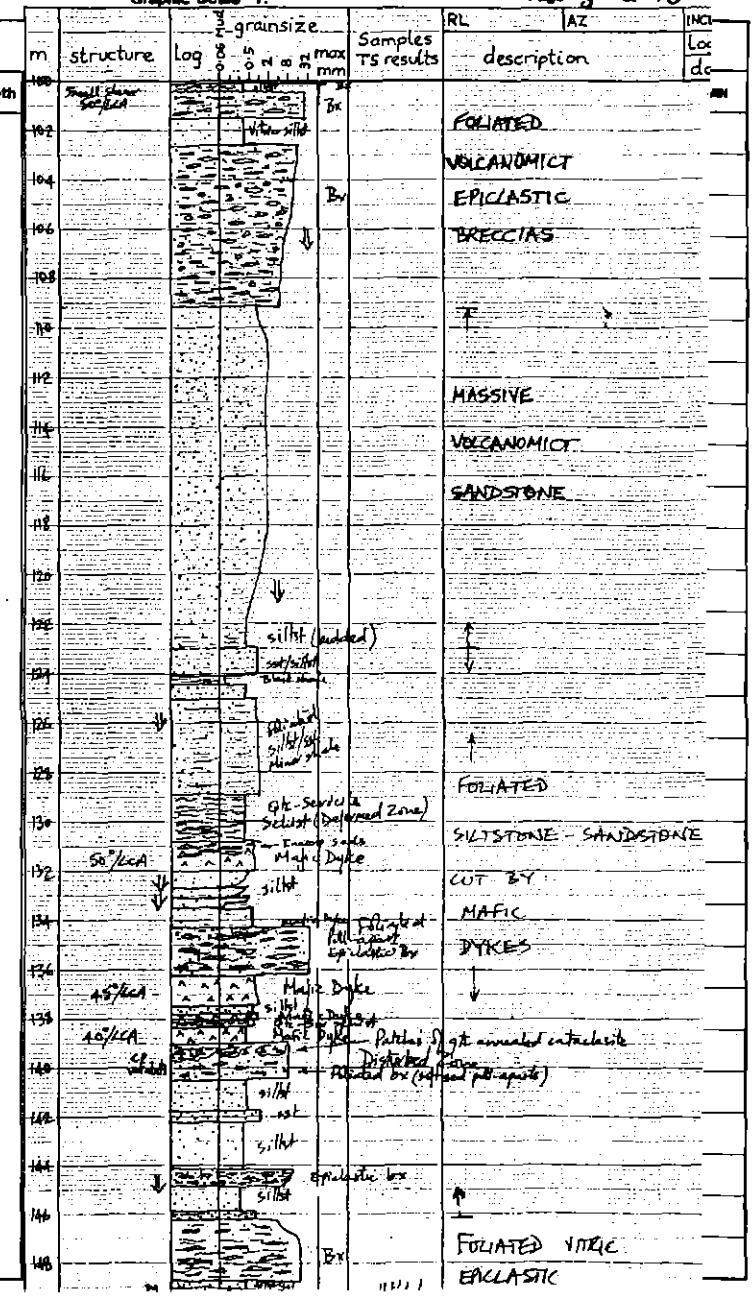
Lithology: Similar to above unit except for colour & sl finer grainsize.
Alteration: Mod sericitized.
Veining: Common qtz–carb veinlets, irreg & at all angles. Rare pink calcite in these veins.
Structure: Bedding 45°/LCA @ 91m.
Bedding gen obscured by the strong bedding–// fol. Sl broken.
Basal contact abrupt, brittle fault (70mm cataclasite) 70°/LCA, sub//fol.
Mineralization: V minor dissem py. Rare gn.

93.6 – 109.15m: FOLIATED VOLCANOMICT EPICLASTIC BRECCIAS

Lithology: Grey. Pale pink in upper 5m.
Variable unit, deformed by combination of soft–sed & post–lith tectonics.
Several open framework bx pulses, with altered, stretched, wispy, deformed frags in sandy qtz–sericite matrix.
Fine interpulse zones @ 95.8–96.3m (sst), 97.75–98.85m (siltst & black shale), 100.1–100.45m, 101.45–102.6m (siltst).
Bx frags incl: sil–alb alt felsic lavas, sericitic felsic volc glass (incl prob pumice), ble–ser–carb alt vitric siltst/sst, & minor black shale.
Frags (coarsest & most abund at top of unit), av +15mm, rarely to 80mm. Below 102.6m frags av <10mm (to 25mm).
Alteration: Weak–mod carb–ser.
Mod sil–ser–alb in uppermost 5m.
Veining: Veins & veinlets of carb (Fe/Mn calcite).
Structure: Downhole fining in sst/siltst @ 97.75–98.15m & 98.2–98.45m, & in bx pulse below 102.6m.
Bedding: 43°/LCA @ 100.3m.
Bedforms commonly disrupted (eg: lumps of interflow seds in bx).
Strong bedding–// foliation: 50°/LCA @ 101m (dips 70° to 282°AMG).
Sl broken 98–100.5m by weak shears //fol.
Basal contact, abrupt (bedding), 48°/LCA.
Mineralization: Minor dissem & veinlet py.

109.15 – 122.9m: MASSIVE VOLCANOMICT SANDSTONE

Lithology: Grey. Massive. Uniform & even–grained. Unbroken.
Fine vitric sst, comprising volc glass, feld xyl grains (max 2mm, gen <1mm), & lesser volc qtz.
Alteration: Weak sericite–carbonate.
Veining: Veins & veinlets of carb (Fe/Mn calcite) ± qtz.
Structure: Single massive sst pulse, fining downhole. Only bedded below 122m (43°/LCA).
Mod foliated (48°/LCA).
Basal contact gradational.
Mineralization: V minor dissem py>po.



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Graphic Scale 1:

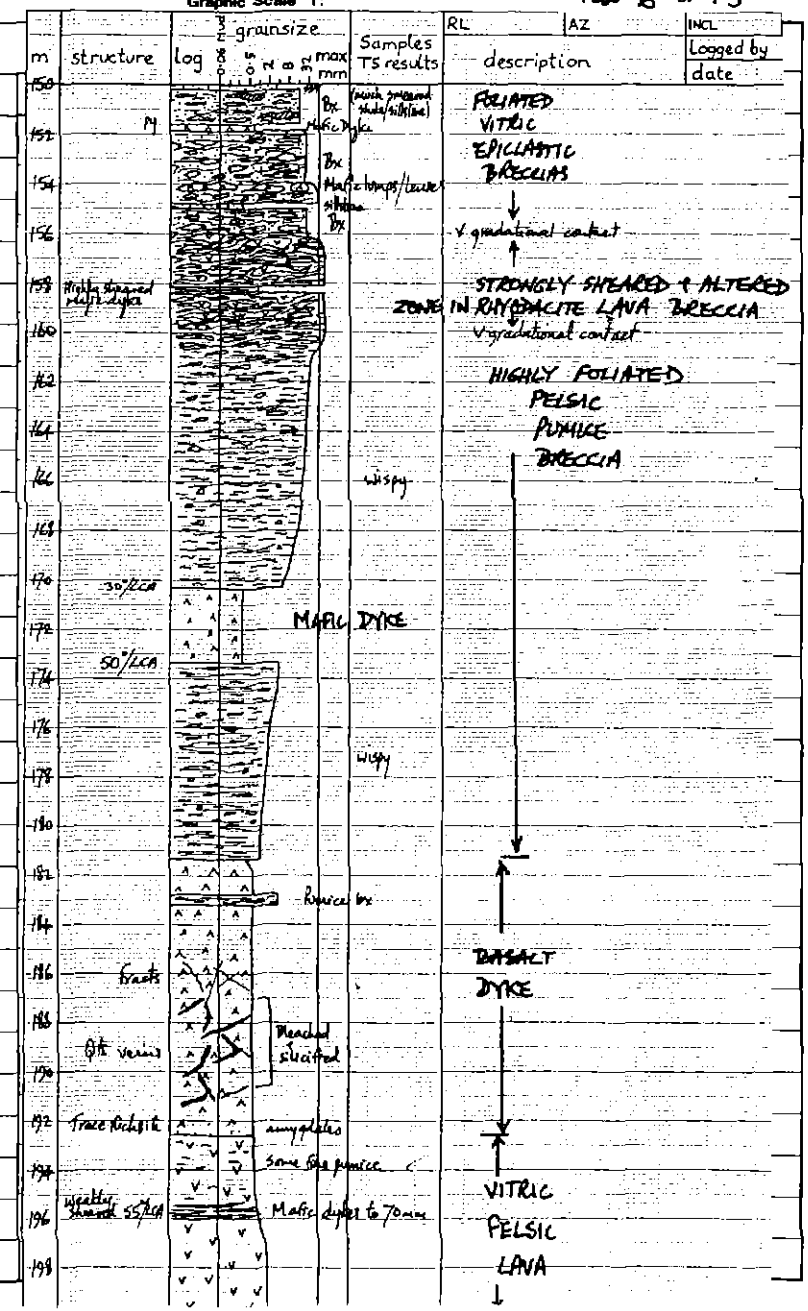
CORE RECOVERY				DESCRIPTION
From m	Interval m	%	RQD	

122.9 –146.2m: FOLIATED SILTSTONE/SANDSTONE & MAFIC DYKES

Lithology: Grey. Dykes lime green. Largely unbroken.
Disturbed & deformed fine sediments cut by fuchsite-altered mafic dykes.
Mainly interbedded vitric siltstone & fine volcanomict (feld>qtz) sst.
Minor grey/black shale & epiclastic breccia (largely comprising frags of dismembered fine sed beds).
Fi-med gr foliated mafic dykes often complexly intermixed with host seds & poss emplaced while seds unlithified.
Largest dykes (all //fol): 130.8–132m (50°/LCA, 50% included seds), 136.3–137.6m & 137.9–138.25m (45°/LCA), 138.5–139m (40°/LCA).
Alteration: Weak–mod sericite>sil–carb.
Carb conc in coarser sst & bx. Sil conc in deformed zones around dykes & below 142m.
Mafic dykes strongly bleach–carbonate–fuchsite altered.
Veining: Carb (±qtz) veins & veinlets (carb Fe/Mn rich in & around dykes).
Structure: Bedding: 48°/LCA @ 126m (downhole-fining), 43°/LCA @ 132.6m (downhole-fining, dips 75° to 287°AMG), 43°/LCA @ 143.5m. Downhole fining @ 144.7m.
Bedding deformed by both soft–sed disturbance (eg: pull–aparts), & locally–strong bedding–// foliation.
Both deformation types strongest around mafic dykes @ 129–140.6m, incl: qtz–ser schist zones, annealed cataclasite & foliated pull–apart bx zones.
Basal contact abrupt (bedding), 43°/LCA.
Mineralization: 122.9–132m: Minor dissem py>po.
132–136.3m: 2% dissem & veinlet po>py, minor cp. Rare sp in qtz veins.
136.3–139m: Minor dissem & veinlet py–po. Rare sp in veinlets.
139–140.3m: 2% po–py–cp, mainly in carb veinlets.
140.3–146.2m: Minor to 1% dissem & veinlet po–py. Rare sp in veinlets.

146.2 – 156m: FOLIATED VITRIC EPICLASTIC BRECCIAS

Lithology: Greenish–grey with pinkish zones.
Strongly foliated & deformed epiclastic breccias with thin intercalations of vitric sst, siltst & shale, some of which are small rafts.
Wispy stretched frags of feld–phyric volc glass (poss pumice), av 5–20mm.
Minor more–equant felsic volc & sed lithics av 5–10mm.
Fine sst matrix of granular qtz–sericite containing 1–3mm felds.
In places unit comprises complex of smeared small lumps & lenses of siltst/shale in sst, suggesting seds highly disturbed while unlith.
Strongly foliated carb–bleached mafic dyke @ 151.65–151.85m, 50°/LCA (// fol).
10mm sheared mafic dyke @ 150.65m.
Irreg lumps and bands of amygdaloidal mafic (dyke?) @ 154–154.5m.
Alteration: Mod sericite–sil–alb–carb–chlor.
Veining: Irreg carb (±qtz) veinlets.
Structure: Bedding 50°/LCA @ 148.8m (dips 67° to 287°AMG).
Strong bedding–// foliation, 50°/LCA.
Largely unbroken.
V gradational (rather arbitrary) contact at base – felsic lava frags appear around 155m.
Mineralization: 1–2% (varies) fine dissem py>po, often in small patches //fol.
50mm interval @ 151.45m with 2–5mm bands of sooty py //fol.



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From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	MIN

156–160m: ALTERED SHEAR ZONE IN RHYODACITE LAVA BRECCIA

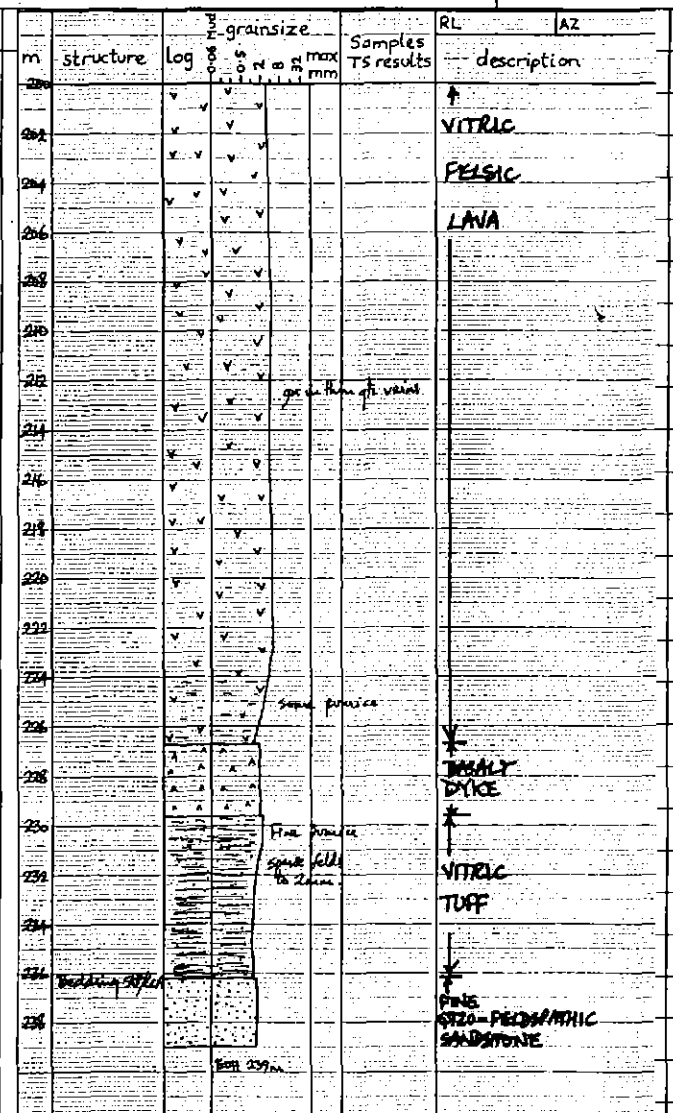
Lithology: Pink. Med gr.
Elongate lumps, augen, & tiny frags of microbrecciated qtz–feld–phyric lava, in highly foliated qtz–sericite containing threads & bands of sheared mafic dyke material. Largest mafic dyke @ 158.15–158.45m.
Alteration: Strong sil–alb>ser–carb (carb is Fe/Mn type).
Mafic dykes strongly bleach–carb±chlor.
Veining: Minor lensy veinlets of qtz–carb. Abund microfracts filled with carb.
Structure: Strongly sheared (60°/LCA) and microbrecciated. Shearing intensity decreases towards top and bottom of zone.
Sl fract & broken 157.7–158.5m (foliation sl contorted 157.7–158m).
Basal contact v gradational & rather arbitrary.
Mineralization: Trace dissem py.

160 – 181.3m: FOLIATED FINE FELSIC PUMICE BRECCIA

Lithology: Pale grey with pink tinge above 170m.
Strongly foliated massive & uniform fragmental felsic volc.
Composed largely of fine pumice frags, with fractured & augen–shaped feldspars scattered throughout (av 2mm).
Minor felsic lava & other volc lithics, most common & larger (to 30mm) at top, rare & smaller (5mm) towards lower contact.
Dk green fi gr amygdaloidal basalt dyke 170.35–173.4m, 50°/LCA (//fol).
Alteration: Mod–strong ser–sil>alb–carb.
Basalt dyke strongly chlor–carb.
Veining: V minor qtz–carb veins & carb veinlets.
Structure: Unit fines gradually downhole.
V strong foliation (gives rock flecked & wispy appearance).
Fol 45°/LCA @ 164m, 50°/LCA @ 181.2m (dips 75° to 292°AMG).
Unbroken.
Basalt dyke foliated, but much less than host rock.
Basal contact abrupt, 47°/LCA (//fol).
Mineralization: Trace dissem py.

181.3 – 192.6m: BASALT DYKE

Lithology: Dk green, bleached fawn 187–190m.
Massive. Fi–med gr, with ferromags av 1mm.
Finely amygdaloidal, esp lower margin.
Small interval of pumice breccia (as above) @ 182.8–183.2m.
Alteration: Strongly chloritised, except in bleached silif zone assoc with qtz veining @ 187–190m.
Strongly carb for 1–1.5m on dyke margins (trace fuchsite on lower margin).
Veining: Common comb–structured qtz>carb±chlor veins to 50mm, 187–191.5m.
Calcite veinlets elsewhere.
Structure: Weakly foliated 50°/LCA. Sl fract & broken 185.5–189m.
Basal contact abrupt, 50°/LCA (//fol).
Mineralization: None.



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Graphic Scale 1:

CORE RECOVERY				DESCRIPTION					CODES			
From m	Interval m	%	RQD		Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				192.6 – 226.7m: VITRIC FELSIC LAVA **Lithology:** Greenish-grey. Med gr. Massive. Uniform. Hard. Abund evenly-distributed feldspars, av 2mm, to 3-4mm, in qtz-sericite groundmass. In zones of strongest foliation felds augen-shaped & often fract. Rare small qtz xyls. Above 195m & below 224m grainsize sl finer & rock contains some fine pumice (prob marginal lava phases). **Alteration:** Mod-strongly silif-ser. Patchy bleach, trace chlor & alb. **Veining:** Common regular qtz>carb(±chlor) veins to 50mm. **Structure:** Mod-strongly foliated (tends to be strongest towards upper & lower margins of unit). Fol: 50°/LCA @ 202m, 55°/LCA @ 214m & 223m. Largely unbroken. Broken weakly-sheared zone 195.5-196m, 55°/LCA (//fol), assoc with several mafic dykes 20-70mm thick, all //fol. Basal contact abrupt, 50°/LCA (//fol). **Mineralization:** Minor gn(±cp) in some qtz veins, esp around 212m. Trace dissem py.								
				226.7 – 229.6m: BASALT DYKE **Lithology:** Green. Med gr. Unbroken. Ferromags to 2mm. Sparse calcite amygdales. **Alteration:** Strong chlorite-carbonate. **Veining:** Calcite veins & veinlets. Minor epidote veinlets. **Structure:** Mod foliated. Basal contact abrupt, 40°/LCA, sub-// fol. **Mineralization:** None.								
				229.6 – 236.2m: VITRIC TUFF **Lithology:** Grey & fawn. Fi-med gr. Hard. Unbroken. Foliated vitric tuffaceous volc, possibly epiclastic. Relatively sparse felds, av 1-2mm (often drawn out by fol), & minor smaller qtz xyls, scattered through sericitic matrix composed of finely comminuted glass (fine pumice in upper 1-2m, similar to above 226.7m). **Alteration:** Mod-strong ser>sil. Weak carb & alb below 234m. **Veining:** Minor qtz-carb veinlets. **Structure:** Mod-strongly foliated 50°/LCA. Basal contact abrupt (bedding, // fol), 50°/LCA. **Mineralization:** Trace dissem py.								
				236.2 – 239.0m: FINE VOLCANOMICT SANDSTONE **Lithology:** Fawny-grey. Massive. Even-grained. Hard. Unbroken. Fine, well-sorted qtzo-feldspathic sst, with abraded grains av 1mm. **Alteration:** Weak ser. Felds carbonatized. **Veining:** Irreg carb veinlets. **Structure:** Unbedded. Mod foliation, 50°/LCA. **Mineralization:** Minor dissem & veinlet py>>po.								
				END OF HOLE								