HOLE No. OP1

PASMINCO EXPLORATION
DIAMOND DRILL CORE RECORD

LOCATION	OCEANA
PROJECT	OCEANA
PROSPECT	SOUTH OCEANA
DESIGNED BY	P M QUAYLE
LOGGED BY	P M QUAYLE
RELOGGED	
COMMENCED	20 - 9 - 1992
COMPLETED	5 - 11 - 1992
DRILLED BY	East Coast Drilling
DRILL RIG	LM 38

OBJECTIVE

To test a gravity/magnetic anomaly, and the geological model of the Gordon Limestone continuing to the south overthrust by the Moina Sandstone. A secondary target is the down dip continuation of the South Oceana mineralisation intersected in the Crotty Quartzite from the costeans. The hole is designed to traverse the Gordon Limestone to the Moina Sandstone.

RESULT

The drill hole intersected the thrusted contact between the Gordon Limestone and the Moina Sandstone. This is consistant with the geological model however the thrust was steeper than expected. The Moina Sandstone was intersected before the target depth so the target still remains at a greater depth below surface. Decomposed & sheared Gordon Limestone at the contact assayed up to .315% Zn and 20.4% Fe.

LOCATION/SURVEY DATA (AMG)

Grid	AMG		RL Collar m	168m
Northing m	6,356,867.4		Bearing Collar	229.5° AMG
Easting m	362,819.9		Dip Collar	-50
DH Survey Type	EASTMAN SINGLE SHOT		Length Hole m	279.7m

Depth m	Bearing	Dip	Depth m	Bearing	Dip
30	232.5	-52			
60	232	-52			
90	231.5	-52.5			
120	230.5	-52.5			
150	229.5	-52			
180	229	-52.8			
230	- casing in hole	-53			
270		-54			
279.7 E.O.H					

SIGNIFICANT INTERSECTIONS

From m	To m	Interval m	Pb ppm	Zn ppm	Fe %	Mn ppm		Comments
220.2	232.1	11.9	200	2036			}	Within fault Zone.
211.2	225.3	14.1			18%	5964	}	

SIGNIFICANT CORE LOSS

From m	To m	% Lost
-	-	-
-	-	-
-	-	-

POOR GROUND CONDITION ZONES

From m	To m	Condition
0	200.9	Concistantly Broken Core.
200.9	232.1	Plastic decomposed limestone
232.1	279.4	Quartz sandstone rubble

HOLE SIZE

Size	Depth m
HW ream	0 - 10
HQ	0 - 99
NQ	99 - 260.8
BQ	260.8 - 279.7

HOLE CONDITIONS AFTER COMPLETION

Collar	Sealed steel pipe
Steel Casing	-
PVC Casing	0 - 260m
Ground Water	Surface
Wedge	-
Drill Pad	Site restored.

5 cm

PLUMINGO EXPLORA
DIAMOND DRILL CORE LOG

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Graphic Scale 1: 200

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
				0	9.8	Crotty Quartzite: bleached white to pale grey, well sorted, fine grained quartzose sandstone. Trace laminations in part, carbonaceous content increases towards 9.8m							
						Structure: core is broken and there are several zones of sandy pug to decomposed rock.							
						Contact: 90° to LCA, very sharp - faulted brittle shear.	9.8 / 11.6						
				9.8	1.8	Intercalated mudstone/carbonate: <10% mdst — cb = slt/sst - indistinct bioturbated txt — indistinct banding ~10 cms scale x's ~60° to LCA (bedding)			Mudstone to Carbonate ratio; <10%; 10–40%; >40%; Intercalated bands of mudstone and carbonate where: Mudstone = partly dolomitic carbonaceous siltstone with fine terrigenous component. (dark grey to black); Carbonate = generally calcite cemented silt to sand to gravel size bioclast shell and coral debris (pale grey); Finely laminated carbonate				
						Contact sharp at 60° to LCA.							
				11.6	13	Massive carbonate: fg sst with minor irregular mudst patches - trace laminations at 12m, at 50° to LCA.			Trace cg pyrite cubes in fractures, and infilling shell cavities				
						Abdnt insitu fractures developing to breccia at 24.6m	24.6						
						Sandy pug filled cavity at 22.7m	25						
						Minor fossil weathered pits							
						Contact: increased fracturing developed into breccia.	32.7 / 33		pyritic pug-shear 20° to LCA				
				24.6	3.4	Breccia Zone: insitu intense fracturing of above interval.							
				28	4.8	Intercalated mudstone/carbonate: >40% mdst — cb, slt - irregular sculpture mottling. core broken, indistinct banding at low angle to CA.	34.9		Coarse bioclast debris coral–stromatolite–bivalves; tm = tube mottled bioturbation; sc = sculpture mottled bioturbation; ss = slump shearing; wb = well bedd; lam = finely laminated; csb = coarse shell beds; sty = stylolites				
						Contact: shear pug							

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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
				32.8	.2	Shear - decomposed to pug : 20° to LCA with abdnt granulated aggregates of pyrite and lmn quartz grains in shear decomposed black carbonaceous pug.	32.8	pug					
							53.5	pug					
				33	6.4	Intercalated mudst/carbonate : <10% mudst - cb, sst - sculpture mottled bioturbation - minor coarse shell beds - trace stylolites.	57.4						
						core very broken, brecciated and puggy in part.	59.8						
						Contact : broken, obscured.	61.3	62 calc.					
				39.4	14	Intercalated mudst/carbonate <40% mudst - cb fg sst - well bedded to sculpture mottled. Indistinct bands at 45° to LCA, slump shear fabric at 30° to LCA (similar strike). Very broken brecciated to puggy core from 39.4 to 45m and from 48.8 to 50m.	65.5	calc.					
						Contact : gradational.	72.7						
				53.4	4	Intercalated mudst/carb >40% mdst - cb sst - indistinct bands tending to msv. Trace coarse shell bands	76.1	mud pug / pug / tr. calc veins					
						Contact : abrupt conformable.							
				57.4	1.9	Massive Carbonate, fg sst - trace indistinct sculpture mottled bioturbation. Minor irregular fine carbonate veinlets.	85.3						
						Contact : abrupt conformable.	86.4						
				59.3	2	Intercalated mudst/cb >40% mudst - cb, sst - indistinct banding to msv - trace stylolites - trace calcite	94.1	92 calc. / coal pug					

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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
						veinlets.								
						Contact : abrupt conformable.								
				61·3	11·4	Intercalated mudst/cb : <40% mdst – cb, sst – distinct								
						sculpture mottled bioturbation – bed thickness 3-10cms								
						banding ∠'s 60° to LCA – Abundant coarse shell beds –								
						Contact : gradational.								
				72·7	3·4	Intercalated mudst/cb – <40% mdst – cb sst, – bed thickness								
						5-10cms – sculpture mottled bioturbation – cb bands fine								
						upwards (uphole) from coarse shell beds to msv fg tops.								
						Abundant 1cm biogenic? calcite spots.								
						bedding ∠'s 40° to LCA. Minor carb veining								
						Contact : conformable abrupt								
				76·1	9·2	Intercalated mudst/cb – <40% mdst – cb fg sst – sculpture								
						mottled bioturbation – bed thickness 3-10 cms – minor								
						coarse shell beds – Minor calcite veining.								
						Contact : conformable abrupt.								
				85·3	3·2	Intercalated mudst/cb – <40% mdst – cb sst – well banded –								
						cb msv with stylolites – minor coarse shell beds –								
						minor calcite veining – bedding ∠'s 40° LCA.								
						Contact : conformable abrupt.								
				88·5	5·6	Intercalated mudst/cb : <40% mdst – cb fg sst – sculpture								
						mottled bioturbation with trace tube mottling. Minor coarse								
						shell beds – minor calcite veining – Msv calcite vein								

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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
						91.8 - 92.2m.	93							
						Contact: conformable abrupt.	99.5							
				94.1	5.4	Intercalated mudst/cb - <10% mudst - cb cg sst - sculpture mottled bioturbation - minor bioclasts - Minor bands of shear pug.								
						Contact: conformable abrupt.								
				99.5	20.2	Intercalated mudst/cb: <10% mudst - cb msv sst - sculpture mottled bioturbation - cb bands >10cms - msv, stylolites. Zone of intense irregular fine calcite veining from 99.5 - 109.5m.								
						Contact: conformable abrupt.	119.7							
				119.7	2.5	Intercalated mudst/cb: <40% mudst - cb sst - sculpture mottled bioturbation, irregular banding - abundant bioclasts, corals ± stromatolites.								
						Contact: gradational	122.2							
				122.2	3.0	Intercalated mudst/cb: <10% mudst - cb sst - sculpture mottled bioturbation - bed thickness 3-10cms. Minor irregular calcite veining.								
						Contact: gradational	125.2							
				125.2	9.3	Intercalated mudst/cb: <40% mdst - cb, slt - sculpture mottled bioturbation to well bedded - bed thickness 3-10 cms - Minor carbonate veinlets throughout - Core broken on joints at 132.5 - 134m.	150							

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Graphic Scale 1: 200

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
						bedding ∠'s 40° to LCA - trace stylolites	130						
						Contact: conformable - minor slump shearing.							
							134.5						
				134.5	1.2	Massive Carbonate: sst with stylolites + coarse shell	135.7						
						beds.	137.6						
						Contact: gradational.							
							141.9						
				135.7	1.9	Massive Carbonate: fg sst - trace stylolites,							
						Contact: gradational.							
				137.6	4.3	Intercalated mudst/carb: <40% mudst - cb, cg sst -							
						sculpture mottled biotwbation with stylolitized boundaries,							
						irregular mottling, early cementation feature?	151.6						
						Minor carbonate veining - minor coarse shell beds.							
						Contact: conformable abrupt.	154.0						
				141.9	9.3	Intercalated mudst/carb: < 40% mudst - cb, slt -							
						sculpture mottled biotwbation with stylotized boundaries -							
						bedding ∠'s 40° to LCA - minor bands of bleached							
						decomposed core at 146.6 + 148 m - Minor calcite							
						veining - broken core.							
						Contact: cavity.							
				151.2	.3	Cavity: water loss - no recovery.							
				151.5	3.1	Zone of intense calcite veining, fine irregular to							
						massive.							

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

5 cm

E-No. OP1

PROJECT: OCEANA

Graphic Scale 1: 200

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
				154.6	4	Intercalated mudst/carb : <40% mudst – cb slt – sculpture mottled bioturbation with stylolized contacts – minor stylolites in fg sst . Bleached pug breccia zone with minor calcite veining. Contact : abrupt .	154.6 159						
				158.6	.3	Coarse Shell Bed : aggregate of 1-10mm shell + coral fragments.	161						
				158.9	6	Massive mudstone : with minor intercalated carbonate sst with slump shear towards 164m . Minor fine calcit veining. Contact : gradational .	170.5 173						
				164.9	5.6	Intercalated mudst/carb : <40% mudst – cb sst – irregular mixing + broken core.	178.1						
				170.5	2.5	Intercalated mudst/carb : irregular laminations of mudst in carb - possibly slump shear effect (not true lam.) lam at ~30° to LCA Zone broken with fine calcite veining. Contact : not seen.							
				173	5.1	Intercalated mudst/carb : mudst >40% – cb fg sst – minor bands of massive mudst – trace lam at 178m at 40° to LCA . Very decomposed to pug in part brecciated in part. Contact : not seen.							

PASMINCO EXPLORATIO
DIAMOND DRILL CORE LO

5 cm

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PROJECT: OCEANA

Graphic Scale 1: 200

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
				178.1	6.1	Intercalated mudst/carb: ∠40% mudst – cb fg sst – sculpture mottled bioturbation to well bedded. – abundant bioclasts, 5-50mm coral + shell ± stromatolite fragments. Zone decomposed to puggy in part. Shear with angular 0.5–2mm quartz grains at 179.3m Contact: conformable abrupt.	178.1						
				184.2	.9	Massive laminated carbonate: abdnt slump sheared laminations in msv carb sst. Contact: shear	184.2						
				185.1	4.4	Intercalated mudst/carb: – ∠40% mudst – fg sst – zone is sheared in part with decomposed pug in part. Ghost bioclastic texture. Contact: not seen.	185.1						
				189.5	1.9	Laminated mudst partings in fg carb sst. (fine // lam, not slump shear) Ls ~40° to LCA. Contact: not seen.	189.5						
				191.4	9.5	Massive carbonate: fg sst – core very broken on fractures ~30° to LCA. Contact: abrupt colour change - mid grey to (Fe) brown.	191.4						
				200.9	10.1	Partially decomposed core: broken to pug in part. Significant feature is brown mineral resembling sphalerite in part, apparently replacing indistinct bioclastic shapes or appears to be pervasive through rock like an	200.9		fg brown mineral resembling sphalerite in part – replacing bioclastic shapes in part, e pervasive thru rock like				

5 cm

PASMINCO EXPLORATIOI
DIAMOND DRILL CORE LOG

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Graphic Scale 1: 200

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
						Fe stain weathering front. (	205		(Sample 31475 >10,000ppm Mn)				
						Contact : coarse in-situ breccia , and abrupt change		broken	Fe stain weathering front.				
						in appearance - may represent increase in influence							
						of shearing in a similar rock type.		209.6 Pug					
						- Ankerite + dolomite alteration.	211						
				211	13.8	Totally decomposed rock : grey brown massive rock,		decomposed plastic black brown rock	Trace very fine grained				
						when first drilled was plastic but retained ghost			disseminated pyrite -				
						(possibly) bioclastic texture + ghost jointing so			Trace vfg dim sp?				
						decomposition was insitu? When dry rock becomes			abundant unidentified brown				
						friable . Zone contains irregular patches of brown			mineral?				
						mineral . Minor zones of insitu brecciation .							
						Contact : abrupt conformable .							
						Alteration : minor ankerite - dolomite.							
				224.8	7.3	Totally decomposed rock : dark grey - plastic	224.9		Minor fine disseminated				
						when drilled - friable when dry.			pyrite - indistinct				
						225.8 - 226.8 zone contains abundant 1-3 mm angular			Minor granulated aggregates				
						white quartz grit - increasing towards contact at 232.1m			of fg diss. Py.				
						Minor ghost breccia texture . Indistinct pyrite in part			Pyrite is indistinct and				
						Contact : brittle fault breccia ~ 30° to LCA.	232.1	grit.	may be abundant.				
						Alteration : minor ankerite - dolomite.							
				232.1	–	MOINA SANDSTONE -							
						Zone very broken + brecciated - contains framework							
						supported white quartz grit (not typical q/ls conglomerate	238.5						
						seen at normal conformable contact) overlain by pale							
						grey fg. siliceous sandstone with minor bands +							

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PASMINCO EXPLORATI
DIAMOND DRILL CORE L

5 cm

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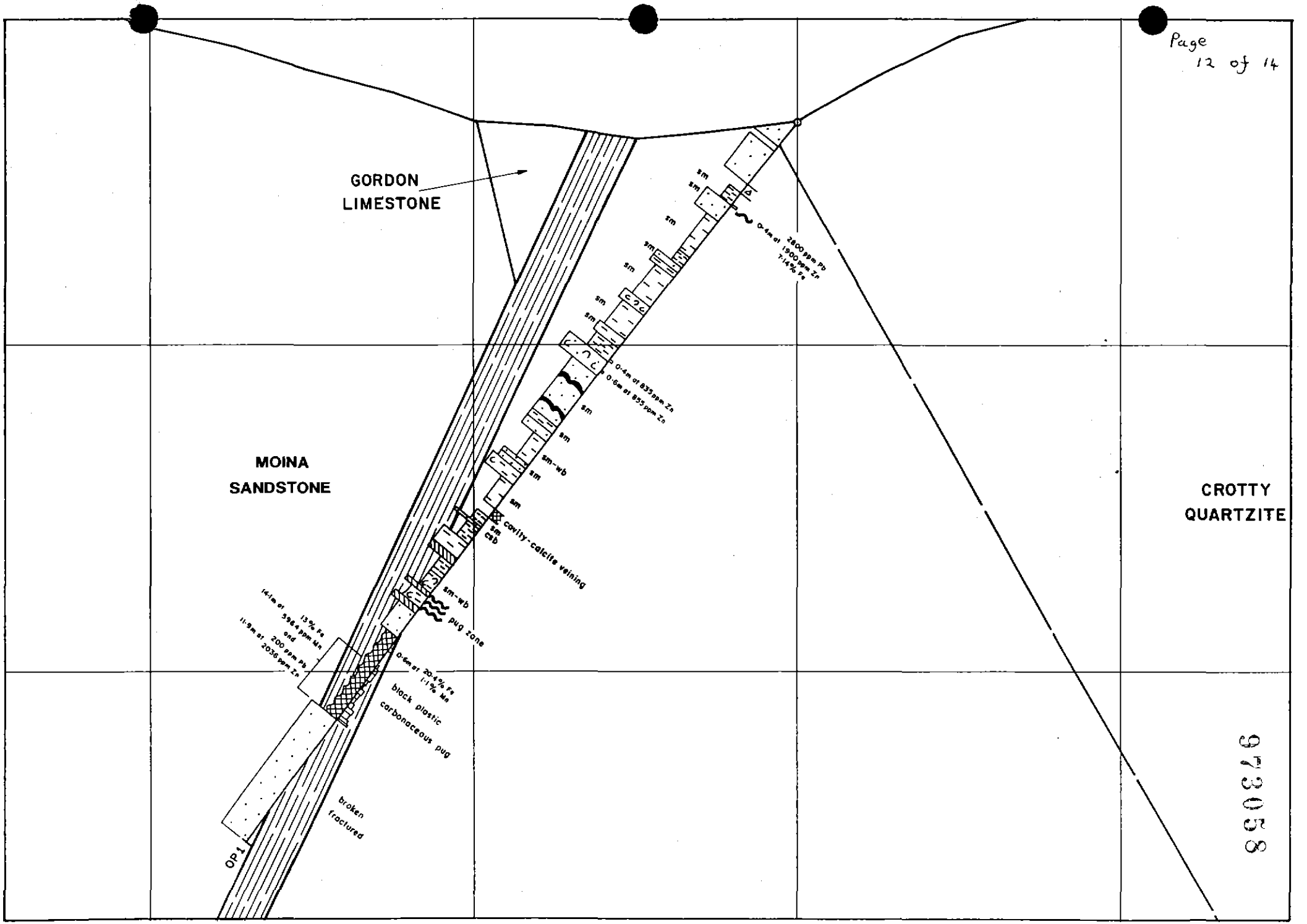
Graphic Scale 1:

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
						wisps overlain by massive buff colored sandstone, siliceous but with carbonate component in matrix.							
				233.4	–	Redrill – contains contact - brittle fault.							
				254.5	44.9	Moina Sandstone: core very broken to rubble, texture mostly obliterated - but variable from massive coarse grained siliceous quartzose sandstone to fine grained grey siliceous sandstone. bedding Xs at 274.5m = 45° to LCA.							
				279.4	–	E.O.H.							


GORDON LIMESTONE
MOINA SANDSTONE
CROTTY QUARTZITE
sm
sm-wb
cavity-calcite veining
pug zone
black plastic carbonaceous pug
broken fractured
OP1
0·4m at 2800 ppm Pb 1900 ppm Zn 1·14% Fe
0·4m at 835 ppm Zn
0·6m at 855 ppm Zn
14·1m at 13% Fe 596·4 ppm Mn and 11·9m at 200 ppm Pb 2036 ppm Zn
0·6m at 20·4% Fe 1·1% Mn