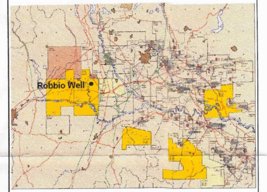
368

WELL: Robbio-1

COMPOSITE LOG

BG GROUP
SCALE 1:500

AREA:	Italy, Po Valley	FIELD:	Robbio
LATITUDE:	45° 18' 20.93" N	LONGITUDE:	08° 36' 46.99" E
UTM (Northing):	5017090 mN	UTM (Easting):	1469664 mE
SEISMIC LINE + S.P.:	Inline 5220 Crossline 1240	LICENCE:	Vercelli
		CONTRACTOR:	Pergemine
RIG:	Ideco E3000	RTE:	12.9 m
WATER DEPTH:	121 m	T.D. LOCATION:	LAT 45° 18' 19.26" N LONG 08° 36' 46.31" E UTM 5017121 mN UTM 1469656 mE
T.D. (DRILLER):	4570 m (-4569.2 m)		
SPUD DATE:	14th August 2006		
T.D. DATE:	6th December 2006		
T.D. FORMATION:	Gallare Marl (Lower)		
COMPLETION:	P& A		
STATUS:	Gas Shows		



OPERATOR:		PARTNERS:	
BG GROUP	50%	ENI	50%

GEOLOGISTS:	Richard Young Pietro Calgaro
PETROPHYSICIST:	Matt Waugh Kambeez Sobhani
DRILLING SUPERVISOR:	Angelo Mosca Ferninando Barbieri Paulo Pedrotti

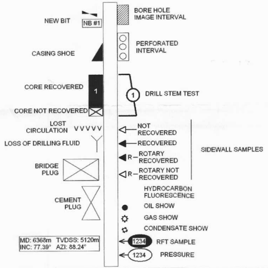
LITHOLOGICAL SYMBOLS

- CLAYSTONE/ MUDSTONE
- SHALE
- CONGLOMERATE
- SANDSTONE
- SILTSTONE/ SILT
- BRECCIA
- COAL (LIGNITE PEAT DESCRIPTORS)
- CHALK
- LIMESTONE
- DOLOMITE
- CALCAREOUS CLAY/ SHALE
- MARL

- HALITE
- ANHYDRITE
- GYPSUM
- POLYHALITE
- INTRUSIVE ACID IGNEOUS
- INTRUSIVE BASIC IGNEOUS
- IGNEOUS/INTRUSIVE METAMORPHIC
- TUFF
- VOLCANICS
- METAMORPHIC ROCK
- SANDY
- SILTY

- ARGILLACEOUS
- LIMESTONE STRINGER
- DOLOMITE STRINGER
- CALCAREOUS
- DOLOMITIC
- MACROFOSSILS
- FORAMINFERA
- CHERT
- GLAUCONITE
- MICA
- PYRITE
- NO SAMPLE

ENGINEERING/ GEOLOGICAL



CONTRACTORS

RIG CONTRACTOR:	PERGEMINE
MUD ENGINEERING:	MI-SWACO
MWD:	BHI & Pathfinder
MUD LOGGING:	GEOLOG
CORING:	BHI
WIRELINE LOGGING:	SCHLUMBERGER

MUD / CASING DATA

HOLE SIZE/ DEPTH (m MD)	CASING SIZE	MUD TYPE	SHOE DEPTH (m MD)
26" 43m	24 1/2"	-	43m
22" : 602m	18 5/8"	FW-K-Sil WBM	597m
16" : 1704m	13 3/8"	FW-K-Sil WBM	1699m
12 1/4" : 3814m	9 5/8"	FW-PO-RX WBM	3810m
8 1/2" : 4250m	7"	FW-PO-RX WBM	4249m
6 1/8" & 5 3/4" : 4570m		FW-PO-RX WBM	

SIDEWALL CORES

DEPTH	RECOVERY	LITHOLOGY
		No SWC taken

CONVENTIONAL CORE

NO	INTERVAL	CUT	REC.	REC. (%)	FORMATION
1	3972' - 3999'	27	26.13	97	Gallare - Robbio Upper Sand

DST DATA

INTERVAL	FORMATION	CHK. SIZE	RATE	STAB. PRES.
'-'	None taken			

FORMATION TOPS & TIMES

FORMATION	MD (m)	TVDSS (m)	TWT (m/sec)
Undifferentiated Pliocene - Recent	13	121	
Asti Sand	312	-178	199
Desana Sand	1348	-1214	1122
Santerno	2184	-2050	1704
Sartirana	2222	-2088	1729
Colombacci / Gessoso Solfifera	3080	-2945.8	2212
Gonfolite			
Gallare Marl (Upper)	3158	-3023.8	2262
[Messinian-Tortonian Unconformity]	3250	-3115.8	2312
Ottobiano	3416.5	-3282.3	2396
Gallare Marl (Mid)	3451	-3316.8	2413
Robbio			
Robbio Upper Sand	3990	-3855.8	2686
Robbio Upper Conglomerate	4061	-3926.7	2720
Robbio Intermediate Sand	4097	-3962.7	2734
Robbio Lower Conglomerate	4220	-4085.7	2789
Robbio Lower Sand	4280.5	-4146.2	2813
Robbio Basal Unit	4453.5	-4319.0	2895
Gallare Marl (Lower)	4562	-4427.3	2941
TD	4570	-4569.2	2944

MDT DATA

RUN NO	POINT NO	DEPTH (m MD)	DEPTH (m TVDSS)	HYD. PRESS	FM. PRESS	COMMENT	FORMATION
3g	3	3998.5	3864.2	11875	8816	8.1mD/cP	Robbio Upper Sand
3g	12	4030.5	3896.2	11977	8772	15.9mD/cP	Robbio Upper Sand
3g	18	4054.5	3920.2	12048	8822	0.5mD/cP	Robbio Upper Sand
3g	20	4057.0	3922.7	12056	8818	7.4mD/cP	Robbio Upper Sand

LWD / WIRELINE LOG DATA

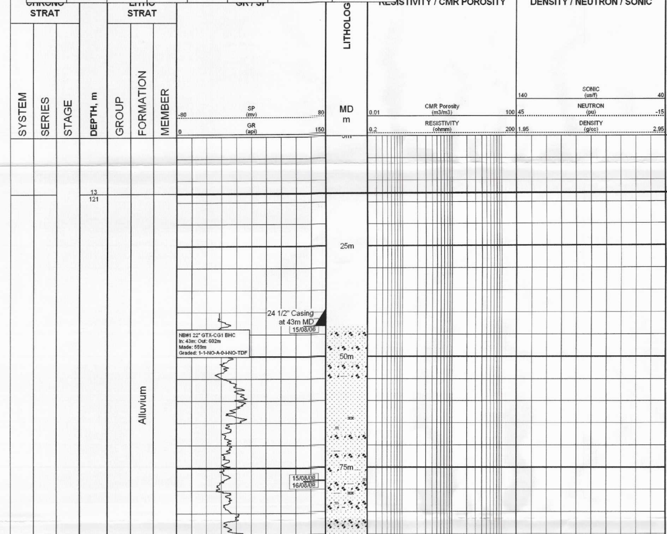
HOLE SIZE	TOOL	RUN	DEPTH INTERVAL (m MD)	DATE	BHT
12 1/4"	MWD Survey		1704 - 3578	05-21/09/06	
12 1/4"	MWD GR-RES		3578 - 3814	21-26/09/06	
8 1/2"	MWD GR-RES		3814 - 4250	10-30/10/06	
5 3/4"	MWD GR-RES		4250 - 4570	20/11-06/12/06	
16"	AIT-DSI-TLD-HNGS-ACTS-SP	1a	1674 - 597 (HNGS to 43m)	28/08/06	55°C
12 1/4"	AIT-TLD-HNGS-SP	2a	3810 - 1699	26-27/09/06	95°C
12 1/4"	FMI-DSI-GR	2b	3810 - 1699	27/09/06	102°C
12 1/4"	VSI-4-GR	2c	3740.5 - 3740.5	27-28/09/06	
12 1/4"	VSI-4-GR	2d	3680 - 134	08/10/06	
8 1/2"	SP-HNGS-APS-TLD-AIT-FMI (TLC)	3a	- - -	01-05/11/06	120°C
8 1/2"	GR-APS-TLD-AIT	3b	- - -	06/11/06	
8 1/2"	AIT-GR-CMR-PDC	3c	- - -	06-07/11/06	
8 1/2"	AIT-GR-CMR	3d	4232 - 3819	07/11/06	118°C
8 1/2"	GR-MDT	3e	- - -	07/11/06	
8 1/2"	GR-HRLA-FMI-SP	3f	4243 - 3813	09/11/06	120°C
8 1/2"	GR-MDT	3g	- - -	09-10/11/06	
8 1/2"	GR-MDT (LWF)	3h	- - -	11/11/06	
5 3/4"	USIT-GPIT-CBL-GR-CCL	4a	4248 - 3646	07/12/06	120°C
5 3/4"	TLD-APS-DSI-CCL-GR-SP	4b	4556 - 3640	07-08/12/06	127°C
5 3/4"	CSAT-GR	4c	4565 - 134	08/12/06	
5 3/4"	CCL-Guns	4d-f	4029 - 3997	13-14/12/06	
5 3/4"	MRPA-MRPS-AFA-MRSC-MRPO-CCL-GR (TLC)	4g	4029 - 3997	15-17/12/06	
5 3/4"	MRPA-MRPS-AFA-MRSC-MRPO-CCL-GR	4h	4029 - 3997	18-21/12/06	

SAMPLE DATA

RUN NO	POINT NO	DEPTH (m MD)	DEPTH TVDSS (m MD)	HYD. PRESS	FM. PRESS	COMMENT	FORMATION
3g	5	4002.0	3867.7	11888	8825	0.16cu/ft gas; 2300cc, 75% water, 25% mud filtrate	Robbio Upper Sand

GRADIENT DATA

No Gradient seen



LITHOLOGY DESCRIPTIONS

Well Spudded at 12:00 hrs
14th August 2006

Ground Level 121m above MSL
RTE elevation above GL at 12.9m

Alluvium
13m (121m TVDSS)

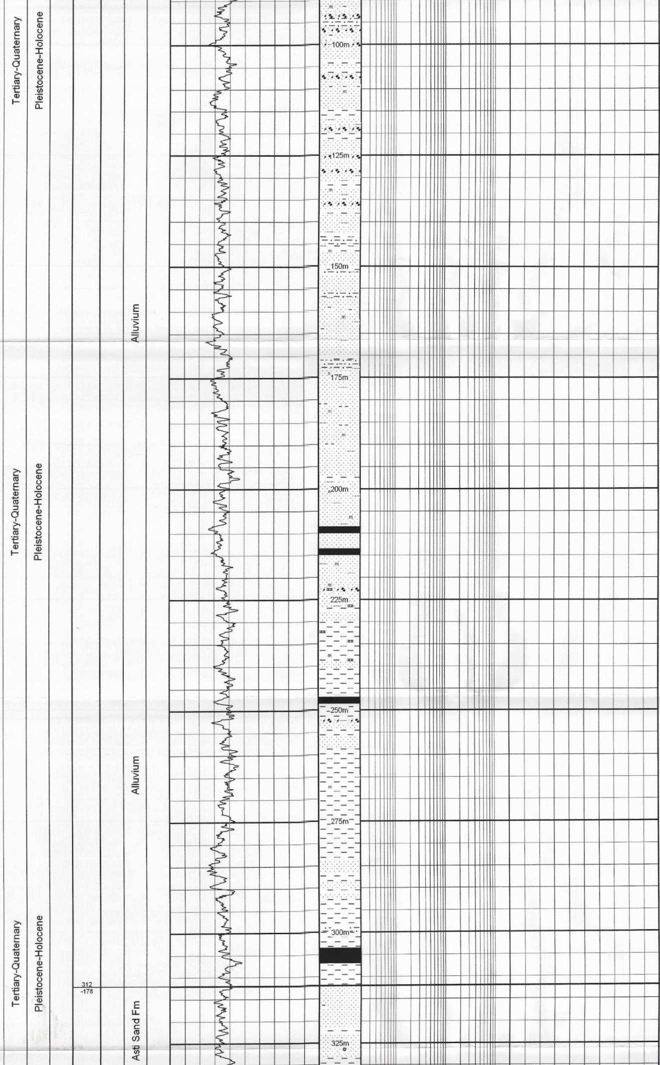
MD: 45m TVDSS: 89m
INC: 0.6° AZI: 0°

SAND: predominantly loose, pale - light grey, fine - very coarse, locally granule, grading Gravel, becoming coarser with depth, clear - translucent, rounded - angular, variable sphericity, occasional lithic fragments/grains, including mica, locally ferruginous, locally common chloritic veneer to quartz grains, trace pyrite, trace siliceous cement, poor - moderate sphericity, moderately sorted, Trace SILT, medium green, brown grey, moderately hard, non calcareous, chloritic.

GRAVEL: loose, predominantly pale - light grey, occasionally white, light - dark brown, yellow brown, medium green, trace orange, light yellow, very coarse - pebble, commonly fractured grains, mostly quartz, locally common siliceous and lithic grains, locally ferruginous, clear - opaque, locally common chloritic veneer to grains, trace - occasional mica.

Trace LIMESTONE: medium - light yellow, pale - light grey, cream, moderately hard - hard, locally angular fragments, microcrystalline - occasionally cryptocrystalline.

MD: 83m TVDSS: 51m
INC: 0.5° AZI: 0°



SILTSTONE: light grey - occasionally light green grey, soft - firm, argillaceous, micaceous, calcareous, occasional chlorite.

SAND: as above, predominantly loose, pale - light grey, white, very fine - very coarse, locally granule, grading Gravel, clear - translucent, rounded - angular, variable sphericity, occasional lithic fragments/grains, including mica, locally common chloritic veneer to quartz grains, trace siliceous cement, poor - moderate sphericity, moderately sorted.

CLAYSTONE: light grey, occasionally slightly green grey, soft - very soft, mostly dispersed in mud, occasionally calcareous, micaceous, generally very silty.

MD: 123m TVDSS: 11m
INC: 0.2° AZI: 0°

SANDSTONE: predominantly loose, pale - light grey, white, mostly fine grained, varying very fine - granule clear - translucent, rounded - angular, variable sphericity, micaceous, trace glauconite, pyrite and lignite, trace siliceous cement, poor - moderate sphericity, moderately sorted.

CLAYSTONE: light grey - light green grey, trace grey green, very soft - firm, commonly dispersed in mud, locally micaceous, generally silty - very silty, trace glauconite, trace very fine quartz sand.

SANDSTONE: predominantly loose, pale - light grey, white, trace yellow, mostly fine - medium grained, varying very fine - granule, clear - translucent, rounded - subangular, moderate - locally variable sphericity, micaceous, no visible cement.

MD: 165m TVDSS: -31m
INC: 0.1° AZI: 0°

SANDSTONE: predominantly loose, pale - light grey, white, trace yellow, locally slightly green-grey, mostly fine grained, becoming fine to medium grained, varying very fine - granule, clear - translucent, rounded - subangular, moderate sphericity, micaceous, trace calcareous cement, moderately sorted. Trace lignite, pyrite, glauconite; trace Limestone white, mudstone texture.

MD: 200m TVDSS: -66m
INC: 0.1° AZI: 0°

LIGNITE: black, black-brown, firm, locally friable.

GRAVEL: granule - pebble, mostly quartz, common lithic grains, locally ferruginous, occasional green chlorite, vari-coloured transparent - opaque.

CLAY: light grey, locally brown-grey, soft to very soft, locally dispersed in mud, commonly silty to very silty, non calcareous. Good trace limestone, cream, pale to light grey, brown-grey, firm, mudstone, very argillaceous, grading claystone, locally very silty. Trace calcareous tubes.

MD: 238m TVDSS: -104m
INC: 0.1° AZI: 0°

CLAY: light grey, soft to very soft, commonly dispersed in mud, commonly silty, locally very silty, non calcareous.

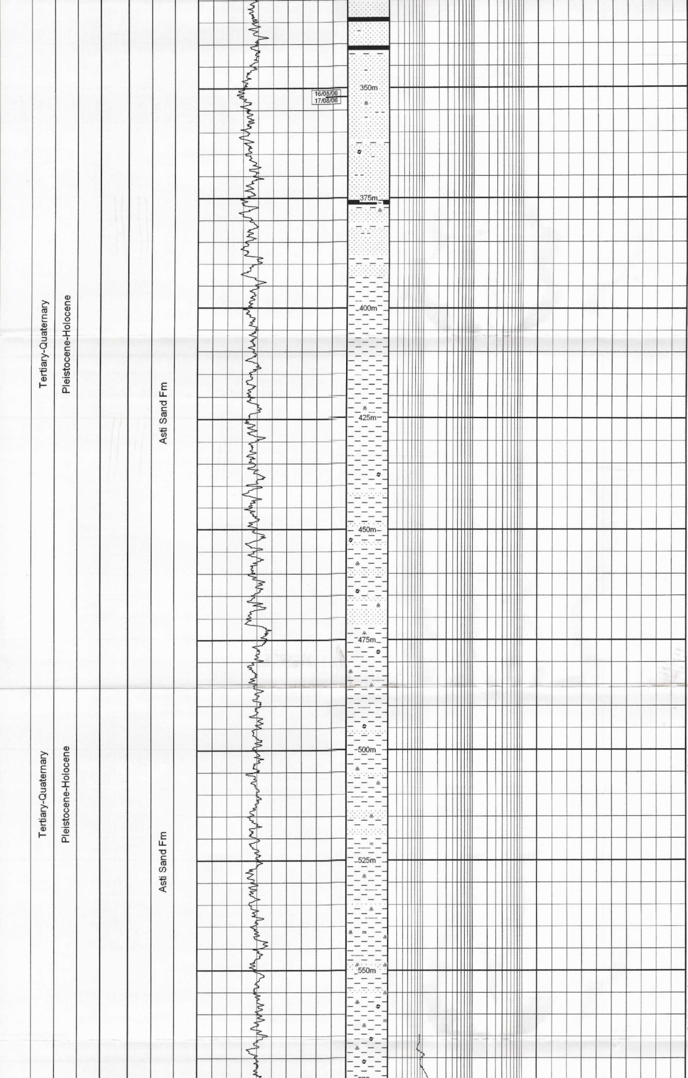
MD: 278m TVDSS: -144m
INC: 0.1° AZI: 0°

LIGNITE: black, black brown, firm, locally friable.

MD: 313m TVDSS: -179m
INC: 0.1° AZI: 0°

Asti Sand Fm
312m (-178m TVDSS)

SANDSTONE: loose, predominantly fine - medium grained, trace - occasional coarse - very coarse, pale - light grey, white, rounded - subangular, moderate sphericity, trace mica, becoming predominantly fine grained with depth.



MD: 352m TVDSS: -218m
INC: 0° AZI: 0°

SANDSTONE: loose, predominantly fine - medium grained, varying trace - occasional very fine - very coarse, pale - light grey, white, rounded - subangular, moderate sphericity, trace mica, trace shell fragments, trace Lignite.

MD: 392m TVDSS: -258m
INC: 0.1° AZI: 0°

CLAYSTONE: light grey, soft - very soft, commonly dispersed in mud, plastic, locally silty, non calcareous, trace - occasional shell fragments, including bivalves, gastropods, foraminifera, trace carbonaceous.

MD: 430m TVDSS: -296m
INC: 0.1° AZI: 0°

CLAYSTONE: grey, soft - very soft, plastic, locally silty, non calcareous, trace - occasional shell fragments, including bivalves, gastropods, foraminifera, trace carbonaceous.

MD: 468m TVDSS: -334m
INC: 0.2° AZI: 0°

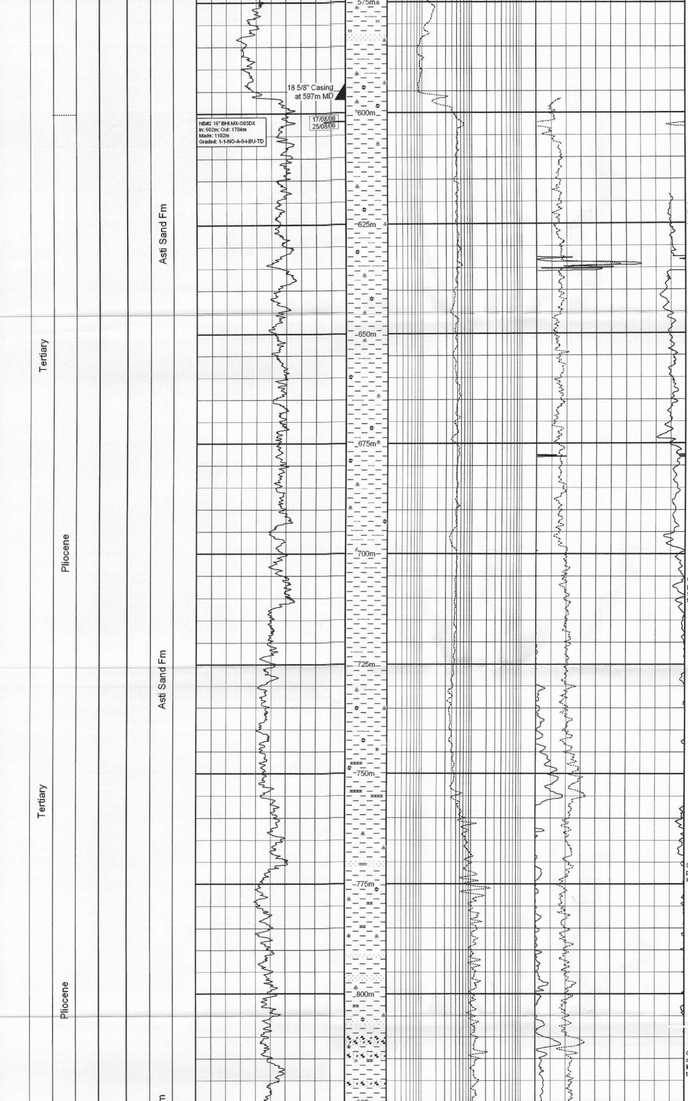
CLAYSTONE: light grey- grey, soft - very soft, commonly dispersed in mud, plastic, locally silty, shell fragments, including bivalves, gastropods, foraminifera, trace carbonaceous.

MD: 507m TVDSS: -373m
INC: 0° AZI: 0°

MD: 545m TVDSS: -411m
INC: 0.1° AZI: 0°

CLAYSTONE: as above with increase in macrofossiles (gastropods, bivalves) and foraminifera.

SANDSTONE: loose, predominantly fine - very fine grained, occasionally medium, translucent, pale - light grey, white, occasionally brown, green, rounded - subangular, moderate sphericity, trace mica, shell fragments, foraminifera, trace Lignite.



MD: 584m TVDSS: -450m
INC: 0.1° AZI: 0°

16" hole section drilled
with WBM (FW-K Syl.)

MD: 605m TVDSS: -471m
INC: 0.2° AZI: 0°

CLAYSTONE: grey - dark grey, soft - very soft, plastic, sticky, dispersed in mud, sometimes silty, shell fragments, including bivalves, gastropods, foraminifera, trace carbonaceous.

MD: 663m TVDSS: -529m
INC: 0.1° AZI: 0°

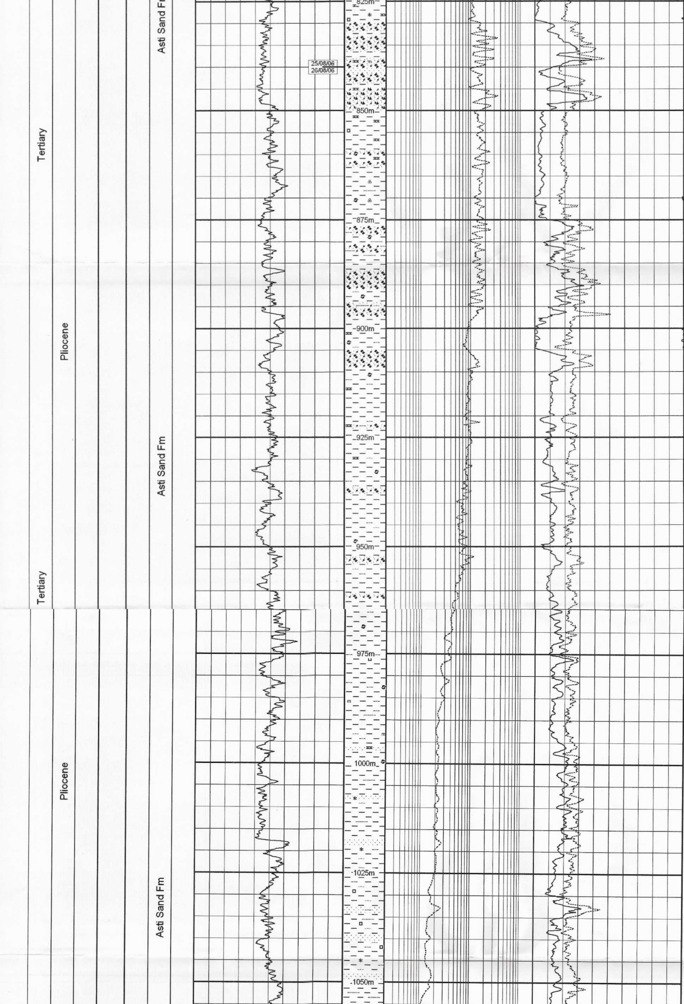
CLAYSTONE: grey - dark grey, soft - very soft, plastic, sticky, dispersed in mud, sometimes silty, shell fragments, including bivalves, gastropods, foraminifera, trace carbonaceous, rare glauconite.

MD: 721m TVDSS: -587m
INC: 0.2° AZI: 0°

SANDSTONE: very fine - fine, predominantly loose, pale - light grey, clear - translucent, rounded, trace of argillaceous matrix, trace pyrite, glauconite.

MD: 779m TVDSS: -645m
INC: 0.1° AZI: 0°

GRAVEL: granule - pebble, sometimes quartzose, common lithic grains, light grey, occasionally white, light to dark brown, green, occasional ferruginous, transparent - opaque.



MD: 837m TVDSS: -703m
INC: 0.2° AZI: 0°

CLAYSTONE: grey - dark grey, soft - very soft, plastic, sticky, dispersed in mud, sometimes silty, shell fragments, including bivalves, gastropods, foraminifera, trace pyrite.

GRAVEL: granule - pebble, sometimes quartzose, common lithic grains, light grey, occasionally white, light to dark brown. green, occasional ferruginous, transparent - opaque.

MD: 894m TVDSS: -760m
INC: 0.2° AZI: 0°

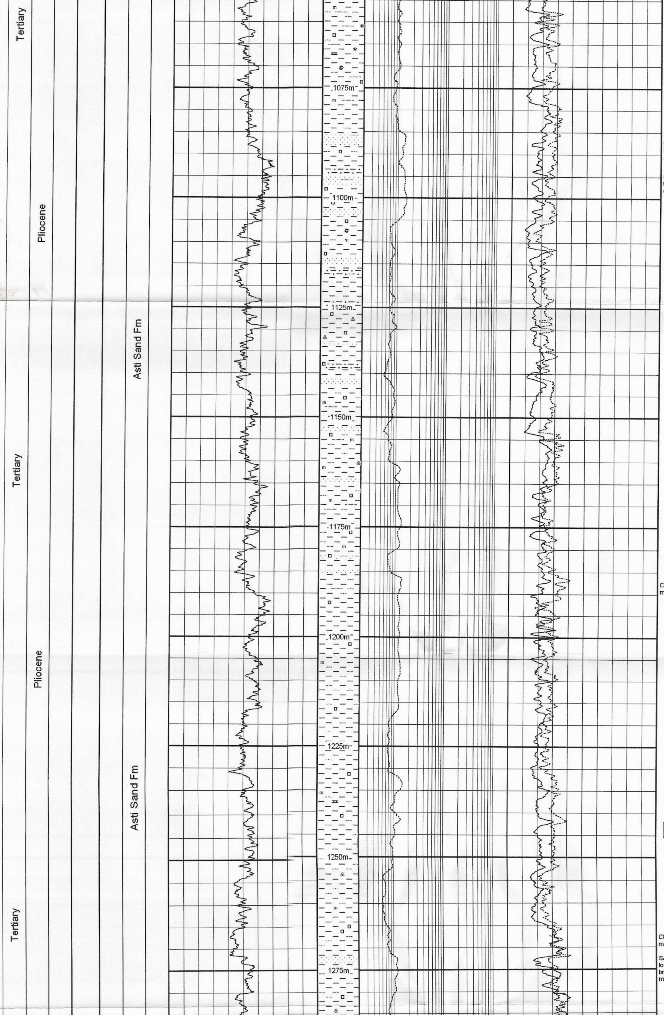
MD: 953m TVDSS: -819m
INC: 0.3° AZI: 0°

CLAYSTONE: light grey- dark grey, soft - very soft, plastic, sticky, dispersed in mud, sometimes silty, occasional shell fragments, including bivalves, gastropods, foraminifera, trace carbonaceous.

CLAYSTONE: light grey- dark grey, soft - very soft, plastic, sticky, dispersed in mud, sometimes silty, trace shell fragments, including bivalves, gastropods, foraminifera, trace carbonaceous.

MD: 1011m TVDSS: -877m
INC: 0.1° AZI: 0°

SANDSTONE: very fine to fine grained, occasionally medium, loose, translucent, grey - light grey, white, green. rounded to sub-rounded, rarely angular, micaceous and pyritic.



MD: 1069m TVDSS: -935m
INC: 0.1° AZI: 0°

CLAYSTONE: grey, soft, dispersed in mud, silty, trace fossil shell fragments.

SANDSTONE: fine - medium grained, loose, translucent. grey, light grey. green, occasionally ferruginous, micaceous, locally with glauconite and chlorite.

SILTSTONE: off-white, green, grey. red, brown, firm to moderately hard, argillaceous, micaceous, locally chloritic.

MD: 1127m TVDSS: -993m
INC: 0.1° AZI: 0°

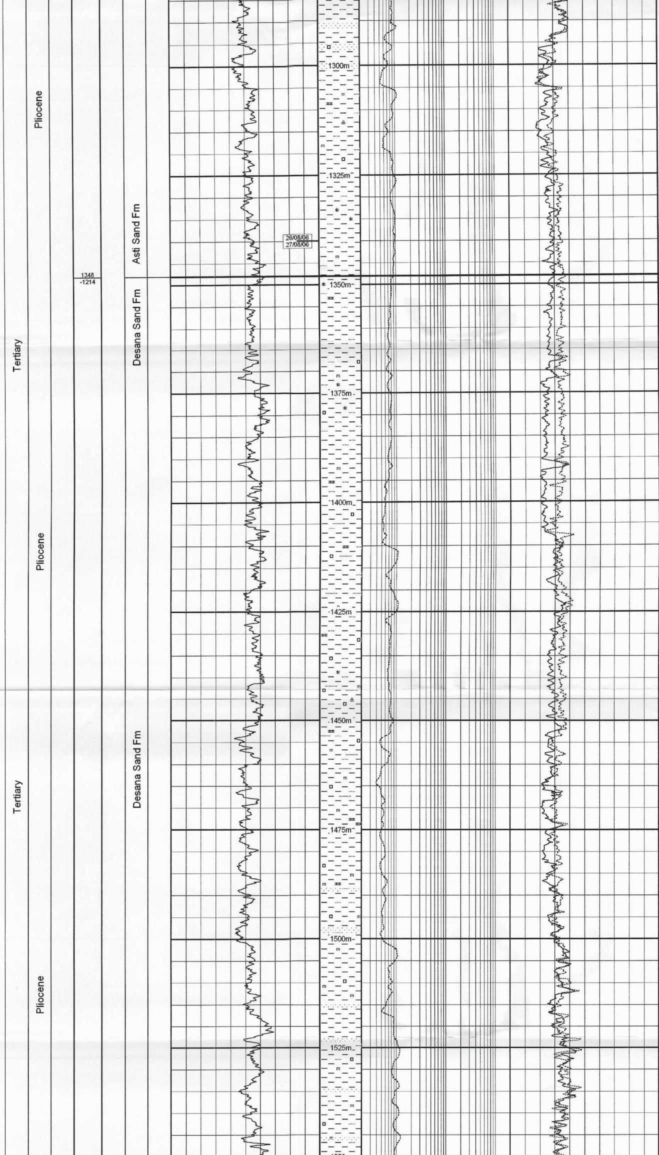
MD: 1184m TVDSS: -1050m
INC: 0.1° AZI: 0°

CLAYSTONE: grey - dark grey, soft, dispersed in mud, silty, rare fossil shell debris.

MD: 1242m TVDSS: -1108m
INC: 0.1° AZI: 0°

CLAYSTONE: grey - dark grey, soft, dispersed in mud, silty, rare fossil shell debris.

SANDSTONE: variable grain size, very fine - coarse, loose, translucent, grey, white, green, pale yellow, red, brown, micaceous, trace - occasional glauconite, mica and pyrite, trace fossil shell debris.



CLAYSTONE: grey - dark grey, soft, mainly dispersed in mud, plastic, silty, rare fossil shell debris.

MD: 1300m TVDSS: -1166m
INC: 0.1° AZI: 0°

Desana Sand Fm
1348m (-1214m TVDSS)

MD: 1358m TVDSS: -1224m
INC: 0.1° AZI: 0°

CLAYSTONE: medium to dark grey, soft, mainly dispersed in mud, plastic, silty, rare fossil shell debris, trace chlorite, pyrite.

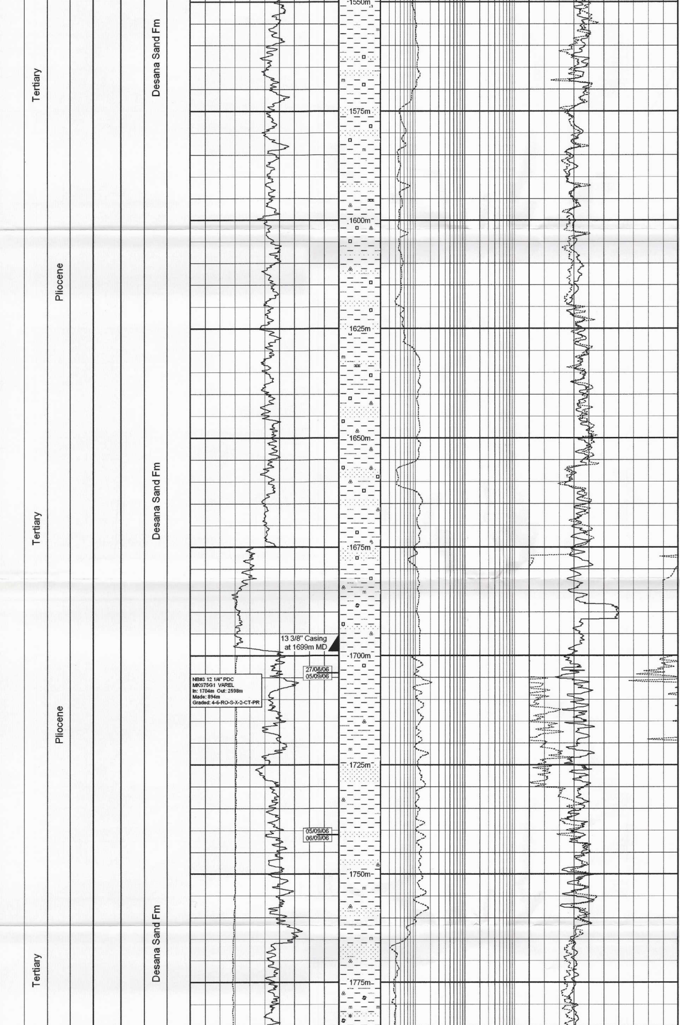
MD: 1416m TVDSS: -1282m
INC: 0.1° AZI: 0°

MD: 1474m TVDSS: -1340m
INC: 0.2° AZI: 0°

CLAYSTONE: medium to dark grey, soft, mainly dispersed in mud, plastic, silty, rare fossil shell debris, trace chlorite, pyrite.

SANDSTONE: very fine - fine grained, loose, translucent, light - medium grey, white, green, rounded - angular, micaceous and pyritic.

MD: 1531m TVDSS: -1397m
INC: 0.1° AZI: 0°



MD: 1590m TVDSS: -1456m
INC: 0.2° AZI: 0°

CLAYSTONE: medium - dark grey, soft, mainly dispersed in mud, plastic, silty, trace - occasional fossil shell debris, trace pyrite.

SANDSTONE: very fine to fine grained, occasionally medium, very rarely coarse, loose, translucent - transparent, pale - light grey, green, occasionally ferruginous, rounded - sub-angular, micaceous, trace pyrite.

MD: 1647m TVDSS: -1513m
INC: 0.1° AZI: 0°

SANDSTONE: very fine to fine grained, occasionally medium, very rarely coarse, loose, translucent - transparent, pale - light grey, green. occasionally ferruginous, rounded - sub-angular, micaceous, trace pyrite.

MD: 1693m TVDSS: -1559m
INC: 0.2° AZI: 0°

Wireline Logs at 1704m
1a : AIT/MCFL/TLD/DSI/HNGS

FIT at 1707m of 1.72sg EMW;
MW at 1.17sg

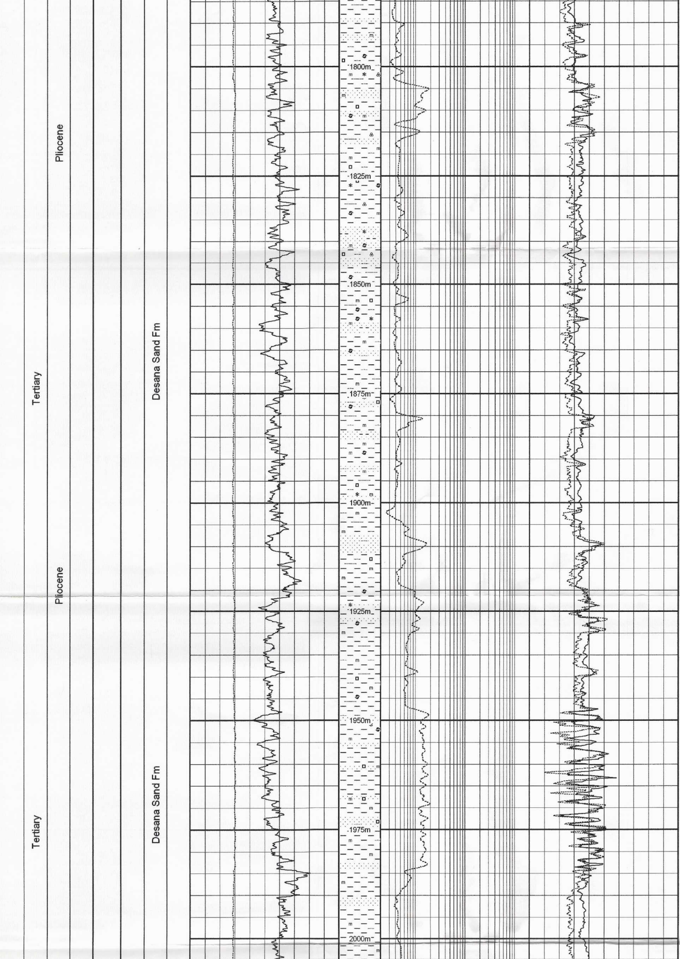
CLAYSTONE: light - medium grey, soft, plastic, dispersed in mud, silty, trace - occasional fossil shell debris.

12 1/4" hole section drilled
with WBM (FW-PO-RX)

SANDSTONE: very fine - fine grained, loose, transparent - translucent, pale - light grey.

MD: 1745m TVDSS: -1611m
INC: 0.44° AZI: 309.45°

SANDSTONE: very fine - medium grained, occasionally coarse, loose, transparent, grey, green, yellow, red, rose, light - medium brown, rounded - sub-angular, micaceous. Trace SILTSTONE medium - dark grey, firm to moderately hard, argillaceous.



MD: 1803m TVDSS: -1669m
INC: 0.44° AZI: 283.62°

CLAYSTONE: medium - dark grey, soft, very plastic, dispersed in mud, silty, fossiliferous.

MD: 1860m TVDSS: -1725.99m
INC: 0.5° AZI: 175.11°

SANDSTONE: variable grain size, very fine - very coarse, loose, transparent - translucent, white, beige, pale - trace dark grey, occasionally brown, subrounded - subangular, locally abundant shell debris, including gastropods, bivalves.

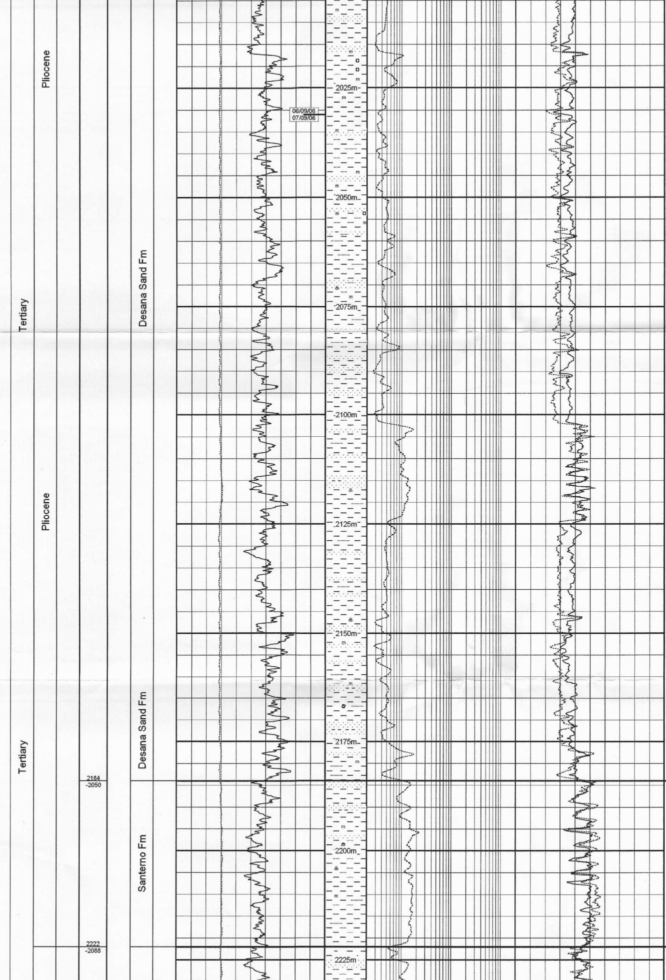
SANDSTONE: disaggregated, fine - very fine grained, trace medium, loose, transparent - translucent, white, pale - light grey, occasionally green, yellow, red, rose, light brown, brown, rounded - sub-rounded, occasionally sub-angular, commonly micaceous, abundant shell debris, including gastropods, bivalves.

CLAYSTONE: medium - dark grey, soft, very plastic, dispersed in mud, silty, fossiliferous.

MD: 1947m TVDSS: -1812.99m
INC: 0.62° AZI: 331.54°

SANDSTONE: loose, predominantly very fine - fine grained, commonly medium, loose, mostly transparent, commonly translucent, white, grey, light grey, occasionally green, yellow, red, rose, light - medium brown, rounded - sub-angular, commonly very micaceous, generally less fossiliferous than above.

CLAYSTONE: medium - dark grey, soft, plastic, dispersed in mud, very silty, trace pyrite, occasional fossil shell debris.



MD: 2005m TVDSS: -1870.99m
INC: 0.35° AZI: 71.75°

MD: 2063m TVDSS: -1928.99m
INC: 0.44° AZI: 193.03°

CLAYSTONE: light - medium grey, brown grey, trace slightly green-grey, brown, trace - occasionally dark grey, very soft - soft, plastic, commonly dispersed in mud, silty, trace fossil shell fragments, trace foraminifera.

SANDSTONE: predominantly loose, varying very fine - fine, locally common - abundant medium grained, rarely coarse, white, pale - light grey, rare pink, yellow, with rare green veneer, transparent - translucent, sub-angular - sub-rounded, locally rounded, micaceous, trace fossil shell fragments, including bivalves and gastropods, trace moderately firm - hard, calcareous cemented, poorly - moderately sorted, nil - negligible visible porosity.

MD: 2149m TVDSS: -2014.99m
INC: 0.26° AZI: 323.74°

CLAYSTONE: light - medium grey, brown grey, trace slightly green-grey, brown, trace - dark grey, very soft - soft, plastic, commonly dispersed in mud, silty, trace fossil shell fragments, trace foraminifera.

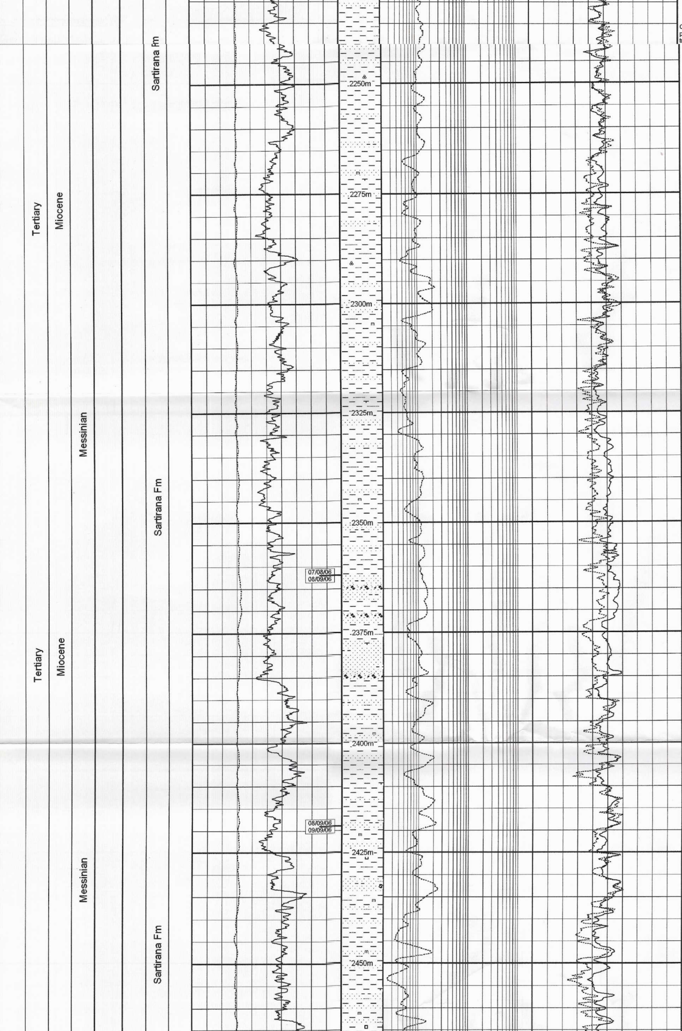
SANDSTONE: predominantly loose, varying very fine - fine, locally common - abundant medium grained, trace coarse - very coarse, white, pale - light grey, rare pink, rare green veneer, transparent to translucent, sub-angular - sub-rounded, micaceous, trace fossil shell fragments, trace moderately firm - hard, calcareous cemented, poorly - moderately sorted, locally argillaceous, nil - negligible visible porosity.

Santerno Fm
2184m (-2050m TVDSS)

MD: 2207m TVDSS: -2072.99m
INC: 0.44° AZI: 91.85°

CLAYSTONE: light grey, brown grey, trace slightly green grey, soft - very soft, plastic, commonly dispersed in mud, silty - very silty, slightly - locally moderately calcareous, trace foraminifera, trace very fine - medium grained quartz sand.

Sartirana Fm
2222m (-2088m TVDSS)



CLAYSTONE: light grey, brown grey, soft - very soft, plastic, commonly dispersed in mud, silty, calcareous, trace foraminifera.

MD: 2264m TVDSS: -2129.99m
INC: 0.53° AZI: 128.77°

SANDSTONE: predominantly loose, very fine - medium grained, trace coarse - very coarse, subangular - subrounded, white - light grey, trace green, translucent - transparent, trace - occasionally calcareous cemented, moderately sorted, nil visible porosity.

Trace CONGLOMERATE, very coarse - gravel fractured quartz grains, medium grey lithic fragments, trace varicoloured medium red brown, green/white mottled, trace - occasional pyrite.

MD: 2322m TVDSS: -2187.99m
INC: 0.44° AZI: 126.1°

CLAYSTONE: light grey, brown grey, trace slightly green grey, soft - very soft, plastic, commonly dispersed in mud, silty - very silty, non - slightly calcareous, trace foraminifera.

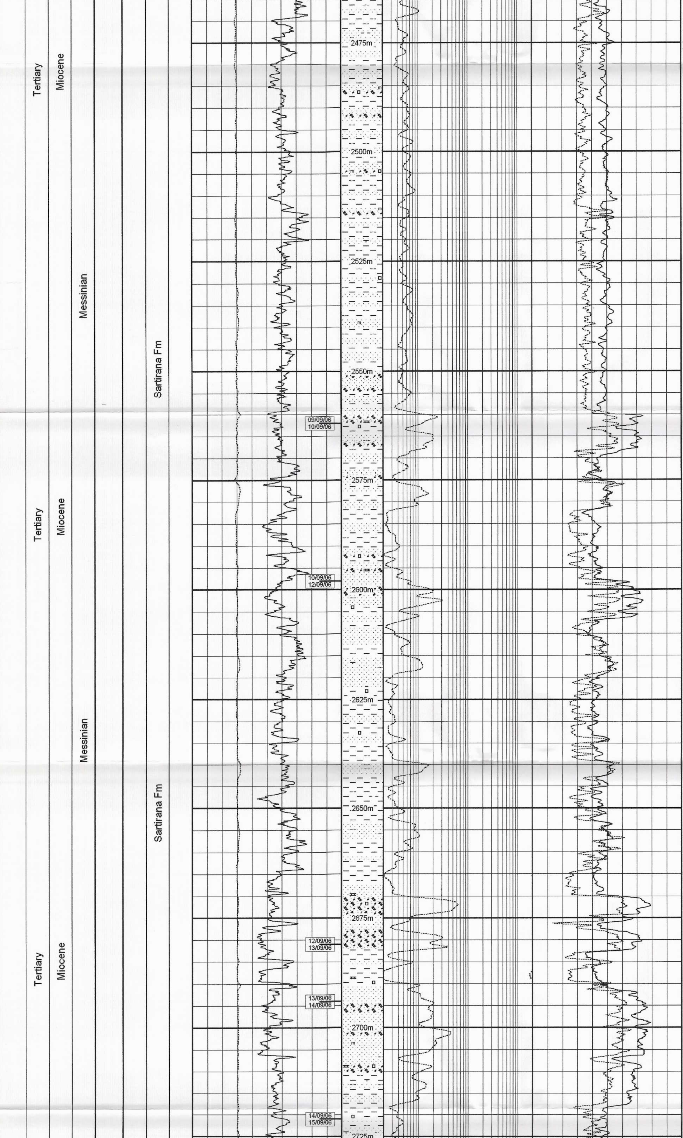
MD: 2350m TVDSS: -2215.99m
INC: 0.53° AZI: 0.87°

CONGLOMERATE, very coarse - granule, fractured quartz grains, medium - dark grey lithic fragments, trace varicoloured medium red brown lithic and green / white silicic fragments, occasional green inclusions to quartz, trace pyrite.

SANDSTONE: predominantly loose, very fine - medium grained, trace coarse - very coarse, subangular - subrounded, white - light grey, trace - occasional green, trace orange, translucent - transparent, occasional lithic and silicic fragments, trace very fine grained and calcareous cemented, trace grading Siltstone, poorly - moderately sorted, trace pyrite, nil visible porosity.

CLAYSTONE: light grey - grey brown, soft, locally firm, plastic, commonly dispersed in mud, commonly silty - very silty, locally sandy, non - slightly calcareous.

MD: 2436m TVDSS: -2350.98m
INC: 0.35° AZI: 310.86°



SANDSTONE: predominantly loose, mostly fine - medium grained, varying very fine to trace - occasional coarse - very coarse, subangular - subrounded, white - light grey, trace green, orange, translucent - transparent, occasional lithic and silicic fragments, trace very fine grained and calcareous cemented, trace grading Siltstone, poorly - moderately sorted, micaceous, trace pyrite, nil visible porosity.

MD: 2494m TVDSS: -2408.98m
INC: 0.44° AZI: 351.55°

CONGLOMERATE: very coarse - granule, predominantly quartz grains, trace - occasionally fractured, subangular - rounded, occasional green and black inclusions and veneer to grains, trace - locally common pyrite, occasional medium - dark grey, trace medium red brown, dark brown lithic fragments, occasional green / white silicic fragments, with occasional vitreous lustre, locally micaceous.

CLAYSTONE: light grey - grey brown, soft, locally firm, plastic, commonly dispersed in mud, commonly silty - very silty, locally sandy, becoming moderately calcareous.

SANDSTONE: predominantly loose, mostly fine - medium grained, varying very fine - very coarse, subangular - subrounded, white - light grey, trace green, orange, translucent - transparent, occasional lithic and silicic fragments, trace very fine grained and calcareous cemented, trace grading Siltstone, moderately sorted, micaceous, trace pyrite, nil visible porosity.

MD: 2552m TVDSS: -2466.98m
INC: 0.26° AZI: 125.16°

CONGLOMERATE: very coarse - pebble, mostly quartz, white, light grey, trace light brown, locally fractured, subangular - rounded, occasional green and black inclusions and veneer to grains, trace pyrite, common silicic fragments, orange, light yellow brown, light brown, grey, hard, cryptocrystalline - crystalline, local angular fracture, occasional - common varicoloured and locally mottled lithic fragments, medium - dark grey, trace medium red brown, dark brown, brown grey, red grey, green grey, hard, trace quartz / silicic inclusions, common irregular fracture, trace Limestone, white - cream - light yellow brown, hard, cryptocrystalline, mudstone texture.

CLAYSTONE: light grey - grey brown, soft, commonly dispersed in mud, commonly silty - very silty, locally sandy, moderately calcareous, trace pyrite.

MD: 2609m TVDSS: -2523.98m
INC: 0.26° AZI: 335.64°

SANDSTONE: loose, very fine - fine, trace medium grained becoming predominantly fine, occasional medium with depth, angular - subrounded, white - pale grey, trace yellow, translucent - transparent, trace green veneer, abundant very fine quartz grains/shards from bit action, trace fine grained size lithic and silicic fragments.

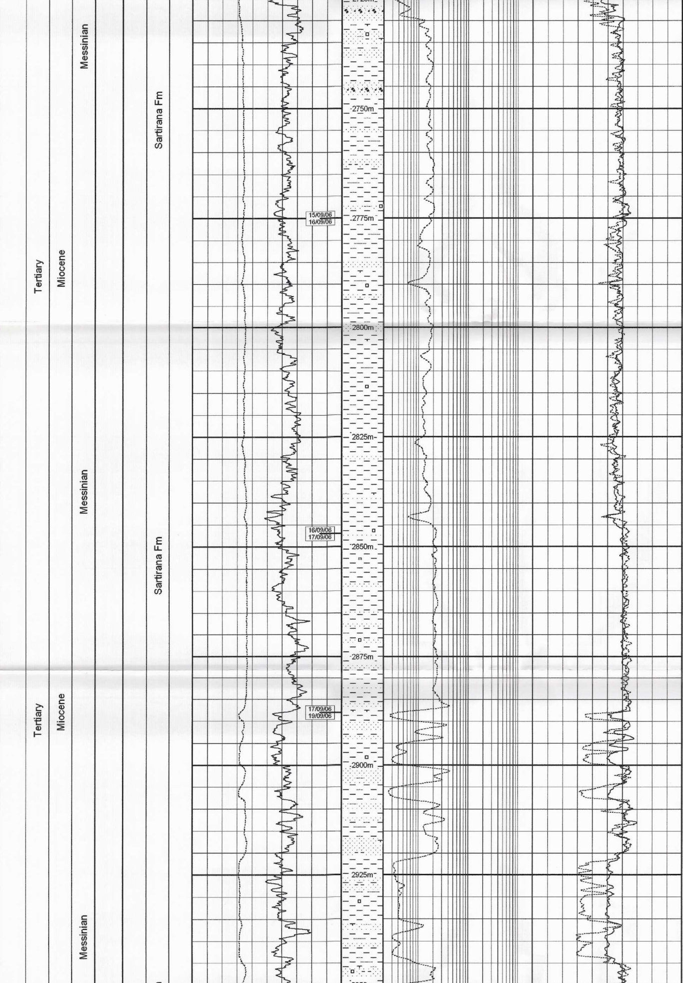
SANDSTONE: loose, mostly fine - medium grained, varying trace very fine and coarse, white to pale grey, trace yellow, green, translucent - transparent, subangular - subrounded abundant, trace fine grained size lithic and silicic fragments.

MD: 2666m TVDSS: -2580.98m
INC: 0.35° AZI: 164.78°

CONGLOMERATE: very coarse - granule, common as fine - medium fragments from bit action, mostly quartz, white - light grey, light brown, trace green, occasionally - commonly fractured, angular - rounded, occasional green inclusions and veneer to grains, trace - occasional pyrite, common silicic fragments, light - medium grey, orange, light yellow brown - brown, grey green, hard, cryptocrystalline - crystalline, local angular fracture, occasional - common varicoloured and locally mottled lithic fragments, dark grey, dark red brown, dark brown, medium green grey, green, hard, common irregular fracture, trace quartz and silicic inclusions, trace mica, trace to occasional Limestone, cream - light yellow brown, hard, cryptocrystalline, mudstone - trace wackestone texture, trace indeterminate bioclasts replaced by calcite.

MD: 2712m TVDSS: -2626.98m
INC: 0.62° AZI: 11.46°

CLAYSTONE: light grey - grey brown, soft - firm, locally plastic, commonly friable, silty - very silty, locally sandy, moderately calcareous, trace pyrite.



SANDSTONE: mostly loose, predominantly fine grained, occasional - commonly very fine, trace - occasionally medium, white - pale grey, trace yellow, green, translucent - transparent, angular - subrounded, locally fractured grains, occasional - common fine grained size lithic and silicic fragments, occasionally cemented in silt and clay calcareous matrix, light grey - brown grey, hard, moderately sorted, trace pyrite, nil visible porosity.

CLAYSTONE: light grey - grey brown, soft - firm, commonly friable, silty - very silty, locally sandy. moderately calcareous, trace pyrite.

CLAYSTONE: light grey brown, trace slightly green grey, soft - firm, commonly friable, silty - very silty, occasional very fine - fine grained sand, moderately calcareous, occasional pyrite.

MD: 2800m TVDSS: -2714.94m
INC: 2.55° AZI: 336.97°

SANDSTONE: mostly loose, very fine - fine grained, trace medium, white - light grey, translucent - transparent, angular - subrounded, trace calcareous cement, friable, rarely firm - moderately hard, moderately sorted, rare glauconite, trace pyrite, nil visible porosity.

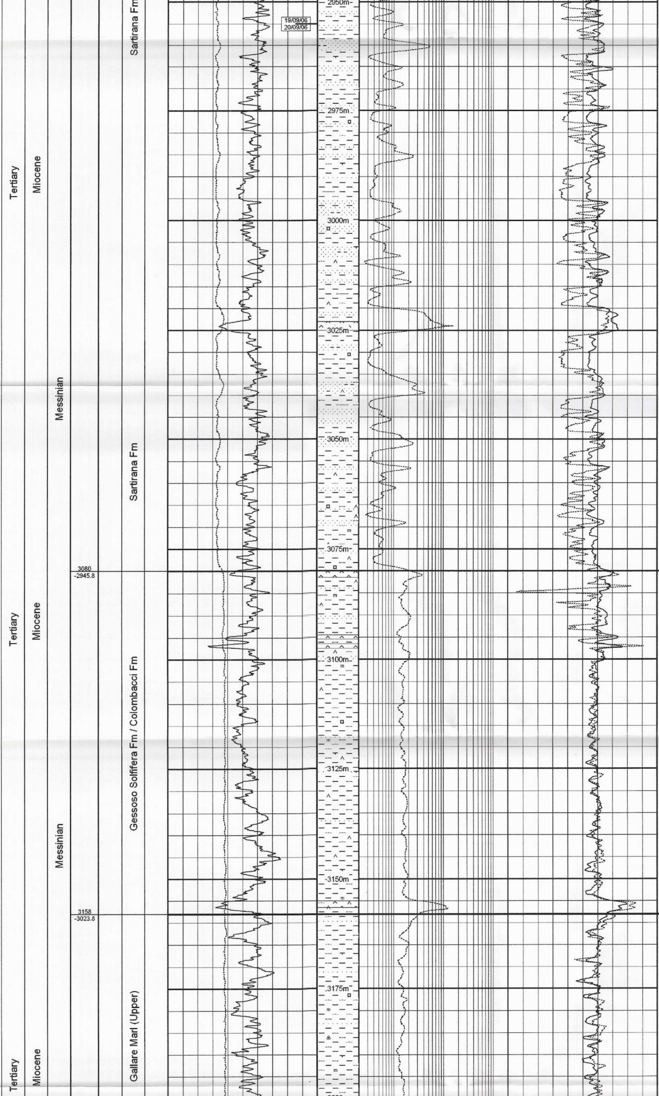
CLAYSTONE: light grey brown, trace slightly green grey, soft - firm, commonly friable, silty - very silty, occasional very fine - fine grained sand, moderately calcareous, occasional pyrite.

SANDSTONE: predominantly loose, mostly fine grained, common very fine - medium, white - pale grey, trace yellow, green, translucent - transparent, angular - subrounded, variable sphericity, trace calcareous cement with very fine grain quartz, friable, rarely firm - moderately hard, moderately sorted, trace pyrite, nil visible porosity.

MD: 2887m TVDSS: -2801.83m
INC: 2.9° AZI: 344.61°

CLAYSTONE: light grey brown, occasionally light grey, trace medium grey, soft - firm, silty - very silty, occasional very fine - fine grained sand, moderately calcareous, trace pyrite.

SANDSTONE: loose, predominantly fine - medium grained, common very fine, white - pale grey, trace yellow, orange, green, translucent - transparent, angular - subrounded, variable sphericity, trace pyrite.



CLAYSTONE: light grey brown, occasionally light grey, trace medium grey, soft - firm, silty - very silty, occasional very fine - fine grained sand, moderately calcareous, trace pyrite.

MD: 2972m TVDSS: -2886.79m
INC: 0.7° AZI: 186.38°

SANDSTONE: loose, predominantly fine - medium grained, common very fine, white - pale grey, trace yellow, orange. green, translucent - transparent. angular - subrounded, variable sphericity, trace pyrite, Trace Anhydrite below 2990m, white, firm - moderately hard, sub-blocky.

ANHYDRITE: white, locally pale grey, soft - moderately hard, occasionally cryptocrystalline, locally argillaceous.

MD: 3030m TVDSS: -2944.78m
INC: 0.79° AZI: 96.22°

CLAYSTONE: light grey, occasionally light brown. trace medium - dark grey, soft - firm, silty, micromicaceous. moderately calcareous, trace pyrite, trace anhydrite.

SANDSTONE: loose, very fine - medium grained, white - pale grey, rarely pink, translucent - transparent, angular - subrounded, variable sphericity.

CLAYSTONE: light grey, occasionally light brown grey, trace becoming occasionally medium grey, trace dark grey, soft - firm, silty, micromicaceous, becoming slightly calcareous, trace pyrite, trace anhydritic with white streaks/lenses, Trace Anhydrite. Trace Limestone, dark grey, brown grey, hard, blocky, mudstone texture, locally dolomitic.

Colombacii/Gessoso Solfifera Fm
3080m (-2945.8m TVDSS)

ANHYDRITE: white, soft - moderately hard, occasionally cryptocrystalline, trace white - pale grey. translucent - transparent, microystalline - crystalline.

MD: 3089m TVDSS: -3003.78m
INC: 0.7° AZI: 162.21°

CLAYSTONE: light - medium grey, occasionally brown grey, trace dark grey, soft - firm, generally very silty, micromicaceous, slightly - moderately calcareous, trace pyrite, trace slightly anhydritic.

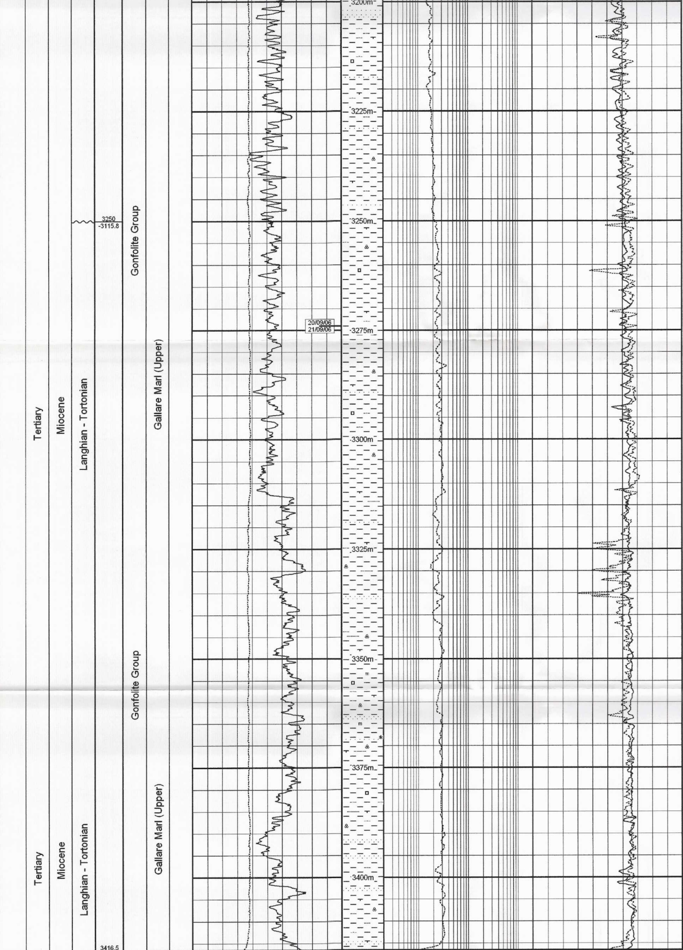
CLAYSTONE: light - medium grey, occasionally brown grey, trace dark grey, soft - firm, generally very silty, micromicaceous, moderately calcareous, trace pyrite, trace Anhydrite.

SANDSTONE: loose, very fine - fine grained, trace medium, white - pale grey, translucent to transparent, subangular - subrounded, moderate sphericity.

Gallare Marl (Upper)
3158m (-3023.8m TVDSS)

CLAYSTONE: pale - light grey, brown grey, trace medium - dark grey, soft - firm, silty - very silty, locally grading Siltstone. micromicaceous, moderately calcareous, trace pyrite, trace foraminifera (Orbulina, Bulimina).

MD: 3176m TVDSS: -3090.78m
INC: 0.53° AZI: 161.21°



SANDSTONE: loose, predominantly fine grained, common very fine, occasionally medium, white - pale grey, translucent - transparent, angular - subrounded, variable sphericity.

CLAYSTONE: light grey brown, trace light - medium grey, soft - firm, silty - very silty, moderately calcareous, trace pyrite, trace foraminifera, Trace Limestone, white, translucent, crystalline, brittle, bivalve shell debris(?).

MD: 3262m TVDSS: -3176.78m
INC: 0.44° AZI: 152.59°

CLAYSTONE: light grey brown, trace light - medium grey, soft - firm, occasionally silty, moderately calcareous, trace pyrite, trace foraminifera.
Trace Limestone, white, translucent, crystalline, brittle, bivalve shell debris(?).
Trace Sandstone, loose, mostly fine grained, varying very fine - medium grained, white - pale grey, trace orange, translcuent - transparent, subangular - subrounded, moderate sphericity.

MD: 3320m TVDSS: -3234.78m
INC: 0.53° AZI: 13.51°

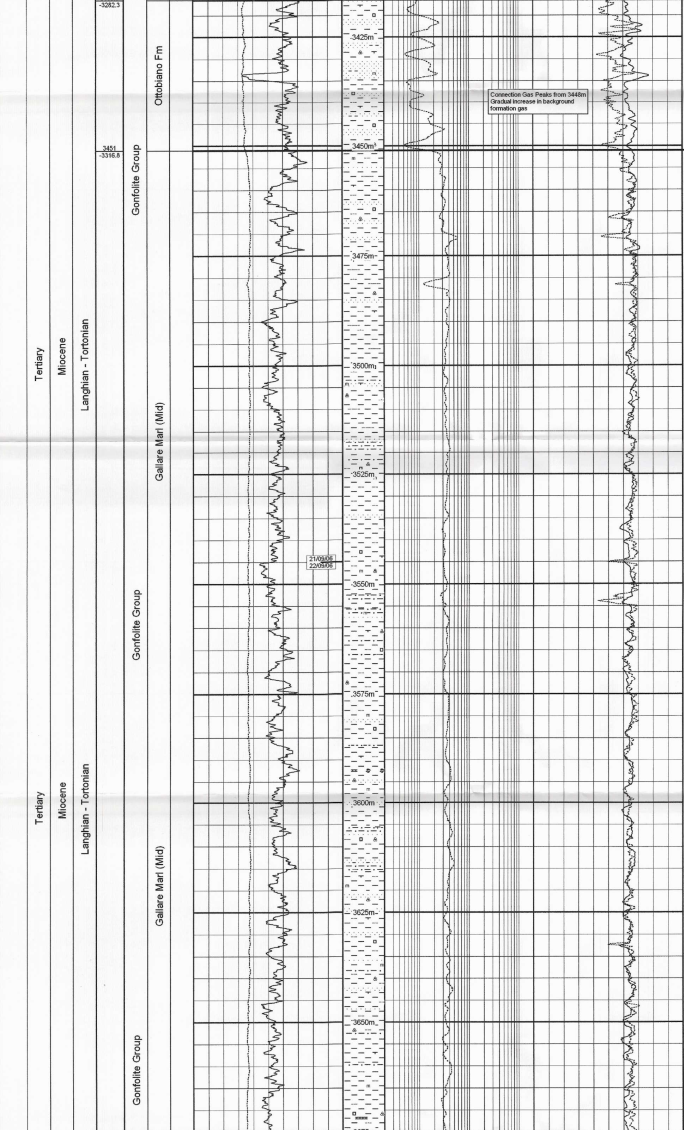
CLAYSTONE: light - medium grey brown, trace light - medium grey, soft - firm, occasionally silty, moderately calcareous, trace pyrite, trace foraminifera.

SANDSTONE: loose, mostly fine grained, varying very fine - medium grained, white - pale grey, trace orange, translucent - transparent, subangular - subrounded, moderate sphericity.

CLAYSTONE: light - medium grey brown - brown grey, soft - firm, occasionally silty - very silty, moderately calcareous, trace pyrite, trace foraminifera.

Trace SANDSTONE: commonly loose, very fine - fine grained, trace medium, white - pale grey, translucent - transparent, subangular - subrounded, moderate sphericity, occasionally calcareous cemented, white, firm - moderately hard, silt - very fine grained, moderately sorted, trace micaceous, trace glauconite, nil - poor visible porosity.

MD: 3407m TVDSS: -3321.77m
INC: 0.53° AZI: 271.77°



Connection Gas Peaks from 3448m
Gradual increase in background formation gas

Ottobiano Fm
3416.5m (-3282.3m TVDSS)

SANDSTONE: white, friable - firm, predominantly very fine grained, varying common silt - fine, trace medium, common - abundant white carbonate cement, white - pale grey, translucent - transparent, subangular - subrounded, moderately sorted, nil - poor visible porosity, trace mica, common loose very fine - medium grains also, rare coarse, angular - subrounded, variable sphericity.

Gallare Marl (Mid)
3451m (-3316.8m TVDSS)

CLAYSTONE: light grey brown, occasionally light grey, trace medium grey, soft - firm, occasionally silty - very silty, moderately calcareous, trace pyrite, trace micromicaceous, trace foraminifera.

MD: 3464m TVDSS: -3378.77m
INC: 0.32° AZI: 135.26°

SANDSTONE: predominantly loose, mostly very fine grained, varying silt - medium, white - pale grey, trace pink, translucent - transparent, angular - subrounded, moderate - variable sphericity, occasional - locally common white calcareous cement, mostly silt - very fine grained, occasionally fine, friable - firm, moderately sorted, trace mica, nil - poor visible porosity.

CLAYSTONE: light grey brown, trace light grey, soft - firm, commonly silty - very silty, locally becoming SILTSTONE, moderately calcareous, trace pyrite, trace micromicaceous, trace foraminifera.

MD: 3522m TVDSS: -3436.77m
INC: 0.56° AZI: 6.48°

CLAYSTONE: light grey brown - brown grey, trace light grey, soft - firm, commonly silty - very silty, locally grading SILTSTONE, moderately calcareous, trace pyrite, trace micromicaceous, trace foraminifera, Trace Sandstone, loose, very fine - medium grained, pale grey, trace pink, orange, angular - subrounded, variable sphericity.

SILTSTONE: light grey - light grey brown, soft - firm, locally friable, usually argillaceous, calcareous, micromicaceous, trace pyrite. locally grading to very fine quartz SANDSTONE, white - pale grey, friable, poor calcareous cemented, moderately sorted, nil - poor visible porosity.
Common CALCITE: white, translucent, crystalline.

SANDSTONE: white - pale grey, very fine grained, commonly silt and grading Siltstone, soft - friable, locally firm. carbonate cement, moderately sorted, trace argillaceous, nil - poor visible porosity.

MD: 3608m TVDSS: -3522.76m
INC: 1.14° AZI: 263.83°

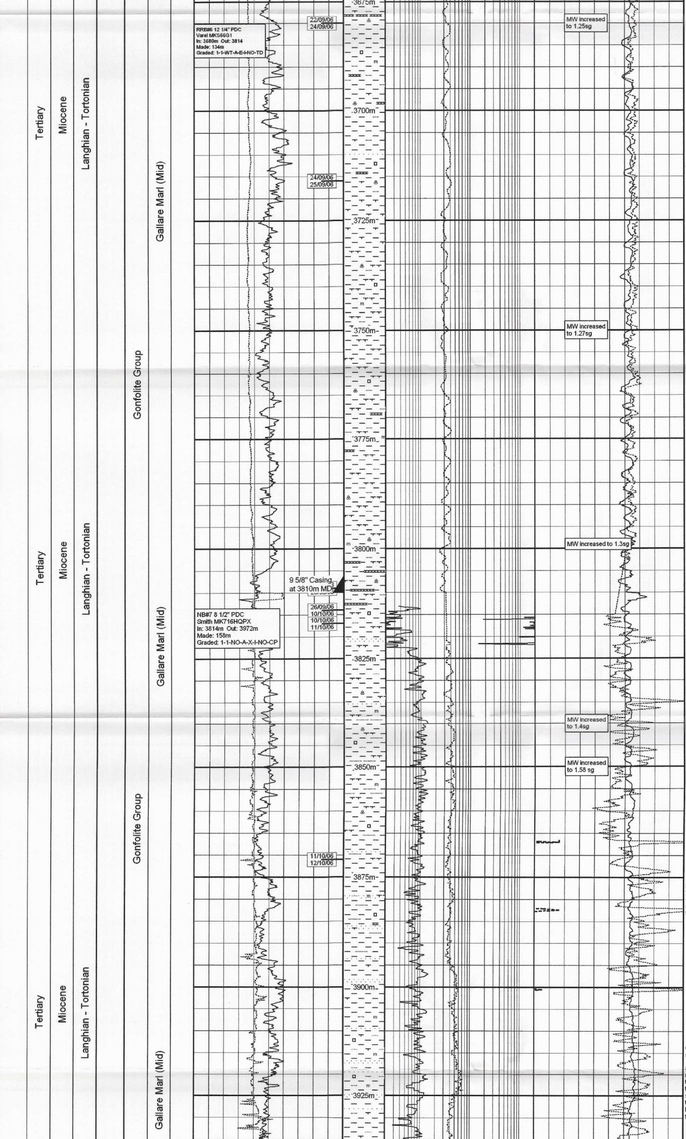
CLAYSTONE: light grey brown - brown grey, trace light grey, soft - firm, commonly silty - very silty, locally grading Siltstone, moderately calcareous, trace pyrite, trace micromicaceous, trace foraminifera.

CLAYSTONE: light grey brown - brown grey, soft - firm, occasionally - commonly silty - very silty, locally grading Siltstone, moderately calcareous, trace pyrite, trace foraminifera.

SANDSTONE: white - pale grey, very fine grained, locally silt and grading Siltstone, calcareous cemented, friable - firm, moderately sorted, rarely argillaceous, common loose very fine - occasional fine grains.

MD: 3666m TVDSS: -3580.75m
INC: 1.06° AZI: 304.95°

CALCITE: white, translucent, crystalline.



RRB#6 12 1/4" PDC
Varel MKS66G1
In: 3680m Out: 3814
Made: 134m
Graded: 1-1-WT-A-E-I-NO-TD

MW increased to 1.25sg

CLAYSTONE: light grey brown - brown grey, occasionally light - medium grey, soft - firm, occasionally - commonly silty - very silty, locally becoming Siltstone, moderately calcareous, trace micromicaceous, trace pyrite, trace foraminifera.

SANDSTONE: loose, very fine - fine grained, trace - occasional medium, clear, pale grey, trace orange, translucent, angular - subrounded, moderate sphericity.

CLAYSTONE: pale - light grey brown, occasionally light brown grey, trace light grey, soft - slightly firm, occasionally silty - very silty, generally very calcareous, trace pyrite, trace foraminifera, common Calcite, white, translucent, crystalline, trace quartz sand, very fine - medium grained.

MD: 3722m TVDSS: -3636.74m
INC: 0.88° AZI: 264.82°

MW increased to 1.27sg

CLAYSTONE: pale - light grey brown, becoming common medium grey brown, occasionally light brown grey, soft - slightly firm, occasionally silty - very silty, generally very calcareous, trace micromicaceous, trace pyrite, trace foraminifera, trace very fine - fine quartz sand.

MD: 3780m TVDSS: -3694.74m
INC: 0.62° AZI: 180.12°

CLAYSTONE: pale - medium grey brown, occasionally light brown grey, soft - firm, occasionally silty - very silty, generally very calcareous, trace micromicaceous, trace foraminifera, trace very fine - fine quartz sand.

MW increased to 1.3sg

Wireline Logs at 3814m
2a : HNGS/TLD/AIT/SP
2b : FMI/DSI/GR
2c-d : VSI-4/GR

9 5/8" Casing at 3810m MD

CALCITE: white, translucent, brittle, crystalline.

NB#7 8 1/2" PDC
Smith MK716HQPX
In: 3814m Out: 3972m
Made: 158m
Graded: 1-1-NO-A-X-I-NO-CP

LOT at 3817m of 2.12sg EMW;
MW at 1.35sg

8 1/2" hole section drilled with WBM (FW-PO-RX)

CLAYSTONE: pale - light grey - grey brown, soft - slightly firm, locally silty, generally very calcareous becoming Marl, trace micromicaceous, trace foraminifera, trace pyrite.

SANDSTONE: loose, mostly fine - medium, varying very fine - rarely coarse, pale grey, clear, occasionally white, trace yellow, trace green veneer/inclusions, transparent - translucent, subangular to subrounded, variable sphericity, trace pyrite.

MW increased to 1.4sg

MW increased to 1.58 sg

MD: 3850m TVDSS: -3764.74m
INC: 0.09° AZI: 155.29°

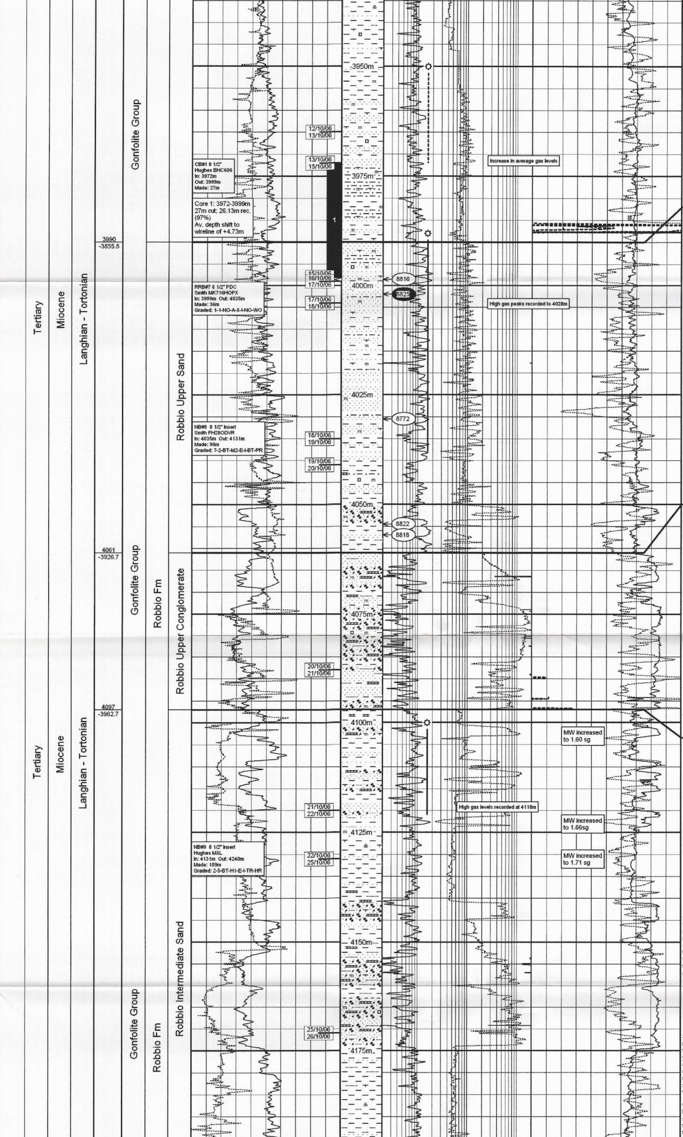
CLAYSTONE: pale grey, grey - light brown, slightly firm - firm, silty, very calcareous becoming Marl, trace pyrite and mica, rare foraminifera.

SANDSTONE: mostly loose, very fine - fine grained, trace - occasionally medium, clear, occasionally white, locally yellow, pale red, trace with green veneer/inclusions, translucent - transparent, subangular - subrounded, variable sphericity, rare calcareous cement, friable - moderately hard, moderately sorted, poor visible porosity, occasional silicic grains, white, yellow, red brown, translucent, commonly fractured, occasional red brown, medium - dark brown, trace medium - dark grey, fine lithic fragments, ferruginous, trace pyrite.

MD: 3908m TVDSS: -3822.74m
INC: 0.53° AZI: 32.77°

CLAYSTONE: pale grey, grey - light brown, soft - slightly firm, silty, calcareous, trace pyrite, mica.

SANDSTONE: loose, very fine - fine grained, trace medium, clear, occasionally white, yellow, pale red, trace with green veneer/inclusions, translucent - transparent, subangular - subrounded, variable sphericity, trace silicic grains, white, yellow, green, translucent, commonly fractured, occasional red brown, medium - dark brown, orange brown, fine lithic fragments, trace pyrite.



SANDSTONE: commonly loose, very fine - fine grained, becoming mostly fine - occasionally medium, trace coarse, pale grey, occasionally white, yellow, trace with green veneer/inclusions, translucent - transparent, subangular - subrounded, moderate - variable sphericity, common white calcareous cement, friable, poorly - moderately sorted, trace mica, poor visible porosity, commonly as rock flour, no visible shows, trace silicic grains, white, yellow, green, translucent, commonly fractured, locally coarse, trace varicoloured fine lithic fragments, trace pyrite.

SILTSTONE: (Core) light - medium grey, moderately hard, argillaceous, micaceous, calcareous, irregular subfissile, occasional - common very fine quartz sand, trace fine.

Robbio Upper Sand
3990m (-3855.8m TVDSS)

SANDSTONE: (Core) light grey, moderately hard - friable, predominantly fine grained, becoming fine - medium, trace coarse, pale grey, white, trace yellow, partly green, subangular - subrounded, variable sphericity, moderately well calcareous cemented, poorly to moderately sorted, poor - moderate visible porosity, locally abundant mica, white, brown, trace green, trace lithic fragments, orange, red - red brown.

MD: 3993m TVDSS: -3907.77m
INC: 1.32° AZI: 355.42°

SANDSTONE: predominantly loose, predominantly fine grained, becoming mostly fine - medium grained below 4008m, varying occasionally - common very fine - coarse, trace - occasionally very coarse & rarely granule below 4022m, pale grey, commonly white, trace yellow, pink, light grey, partly green, w/ trace chlorite(?) inclusions, translucent - transparent, angular - subrounded, variable sphericity, trace calcareous cemented with very fine - fine grained quartz sand, moderately sorted, poor visible porosity, no visible shows, locally common white - off-white calcareous rock flour, trace - occasional mica, trace silicic fragments, white, yellow, cream, light grey brown, light - medium brown, translucent - opaque, trace lithic fragments, red brown, orange, medium grey, green, moderately hard, non-calcareous, trace Limestone, medium brown, hard, irregular fracture, mudstone texture.

CLAYSTONE: light grey, grey brown, trace medium grey, firm, silty, slightly calcareous, trace pyrite.

Robbio Upper Conglomerate
4061m (-3926.7m TVDSS)

CONGLOMERATE: mostly loose, very coarse - granule, predominantly Limestone, light - dark grey, brown, occasionally white - cream, trace mottled, hard, angular, common fractured grains, microcrystalline, locally slightly dolomitic, trace slightly argillaceous; common quartz, pale grey, off-white, translucent to transparent, angular - subrounded, variable sphericity, occasional fractured grains, trace chlorite, occasional silicic grains, light brown, light grey, trace lithic fragments, red brown, green, and including claystone, medium - dark grey, hard, blocky, trace calcareous cemented conglomerate with claystone, lithic clasts and quartz sand medium - very coarse.

MD: 4079m TVDSS: -3993.69m
INC: 1.59° AZI: 350.92°

SANDSTONE: predominantly loose, generally fine - medium grained, commonly very fine, trace coarse - locally granule, pale grey - white, trace yellow, partly green, translucent - transparent, angular - subrounded, variable sphericity, trace pyrite, trace calcareous cemented, friable - moderately hard, white - off-white, moderately hard, moderately sorted, poor visible porosity, no visible shows, trace - occasional mica, trace lithic fragments, red brown, non calcareous.

Robbio Intermediate Sand
4097m (-3962.7m TVDSS)

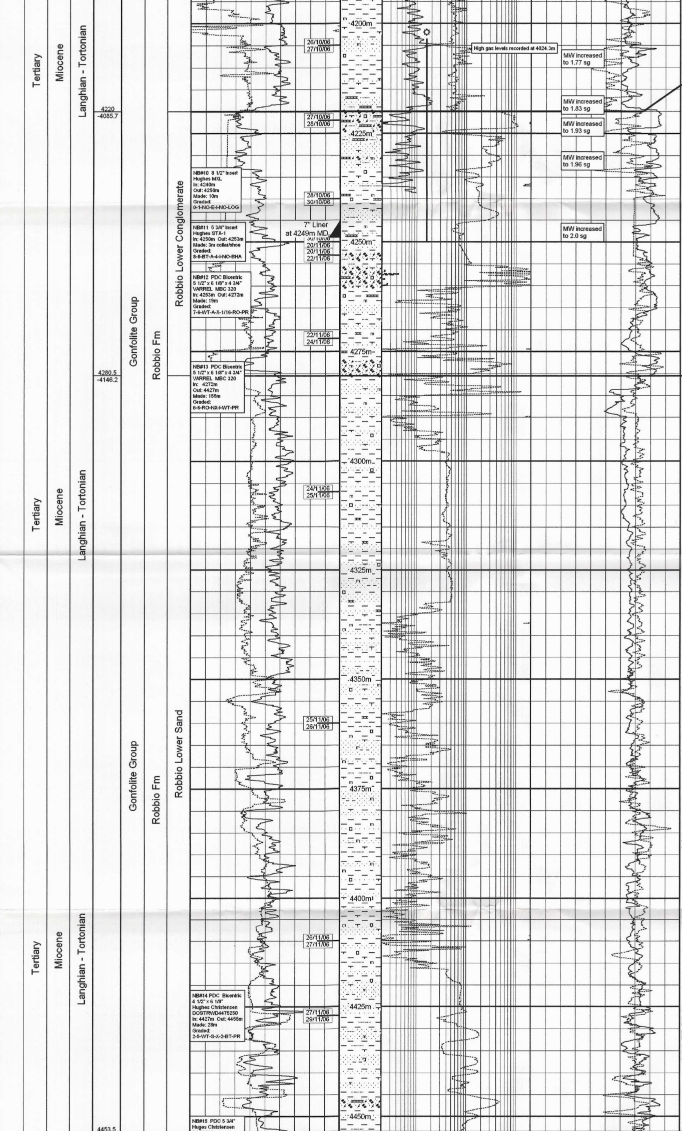
CLAYSTONE: light - medium grey, grey brown, firm, locally moderately hard, amorphous, silty, moderately calcareous, trace - occasionally very fine - fine quartz sand, slightly micromicaceous, trace foraminifera.

CONGLOMERATE: loose, coarse - granule, trace pebble, common Limestone, medium - dark grey, brown, occasionally white - cream, trace pale green, hard, angular, common fractured grains, microcrystalline, locally slightly dolomitic, trace slightly argillaceous; common quartz, pale grey, off-white, trace green, translucent - transparent, common fractured grains, trace mica and pyrite inclusions, trace lithic fragments, red brown, green, locally mottled white, hard, blocky, non-calcareous; trace silicic fragments, white - off-white, light brown, light yellow, pale green, hard, fractured, angular.

MD: 4165m TVDSS: -4079.67m
INC: 1.49° AZI: 343.29°

SANDSTONE: mostly loose, predominantly fine - medium grained, occasionally very fine, trace coarse - very coarse, pale grey, occasionally white, trace yellow, trace partly green, translucent - transparent, angular to subrounded, variable sphericity, trace - occasionally calcareous cemented, hard, poorly - moderately sorted, poor visible porosity, locally slightly argillaceous, trace - occasional mica, no visible shows.

CLAYSTONE: light - medium grey, occasionally grey brown, dark grey, firm - moderately hard, amorphous, silty, moderately calcareous, trace - occasionally very fine - medium quartz sand, slightly micromicaceous, trace foraminifera.



SANDSTONE: loose & cemented, predominantly fine - medium grained, occasionally very fine, trace coarse - very coarse, pale grey, white, trace yellow, trace partly green, translucent - transparent, angular - subrounded, variable sphericity, commonly calcareous cemented, hard, poorly - moderately sorted, poor - locally moderate visible porosity, locally slightly argillaceous, trace - occasional mica; trace lithic fragments, red brown, dark grey, hard, non-calcareous, no visible shows.

Robbio Lower Conglomerate
4220m (-4085.7m TVDSS)

CONGLOMERATE: coarse - pebble, predominantly Limestone, light - dark grey, medium brown, grey brown, occasionally white - cream, hard, angular, common fractured grains, microcrystalline, locally slightly dolomitic, trace slightly argillaceous; common quartz, pale - light grey, white, translucent - transparent, common fractured grains, trace - locally common mica and pyrite inclusions; trace silicate fragments, variable coloured, pale yellow, light yellow brown, light grey, green, dark brown, green/white mottled, medium blue -green, hard, fractured, angular, translucent - opaque, local trace pyrite; rare cemented fragments, silicic, hard, clear, poorly sorted, nil visible porosity.

Wireline Logs at 4250m
3a-c,e : Abandoned
3d : AIT/GR/CMR
3f : GR/HRLA/FMI/SP
3g : GR/MDT
3h : GR/MDT (LWF)

FIT at 4253 m of 2.36sg EMW;
MW at 2.10 sg

6 1/8" / 5 3/4" hole section drilled with WBM (FW-PO-RX)

Robbio Lower Sand
4280.5m (-4146.2m TVDSS)

CLAYSTONE: light - medium grey, grey brown, firm - moderately hard, amorphous, silty, moderately calcareous, trace - occasionally very fine - fine quartz sand, slightly micromicaceous, trace pyrite.

SANDSTONE: loose & cemented, predominantly fine - medium grained, occasionally very fine, trace - occasionally coarse, pale grey, white, trace yellow, translucent - transparent, angular - subrounded, variable sphericity, common calcareous cemented, friable - hard, poorly - moderately sorted, poor - moderate visible porosity, locally argillaceous, trace mica, pyrite, trace lithic fragments, orange brown, hard, non-calcareous, no visible shows

MD: 4302m TVDSS: -4216.62m
INC: 1.76° AZI: 351.62°

CLAYSTONE: light - dark grey, occasionally grey brown, firm - moderately hard, amorphous, silty, slightly calcareous, trace quartzy sand, very fine - fine; trace mica, pyrite.

SANDSTONE: loose & cemented, very fine - medium grained, locally coarse, pale - medium grey, white, rarely yellow, green, brown, dark brown, cream, pink, translucent - transparent, rounded - subangular, locally calcareous cemented, friable - hard, poorly - moderately sorted, poor visible porosity, locally argillaceous, trace mica, pyrite.

SANDSTONE: loose & cemented, very fine - medium grained, pale - light grey, white, milky, rarely yellow, green, brown, dark brown, cream, pink, translucent - transparent, rounded - subangular, poor calcareous cement, locally argillaceous, poorly - moderately sorted, poor visible porosity, trace mica, pyrite.

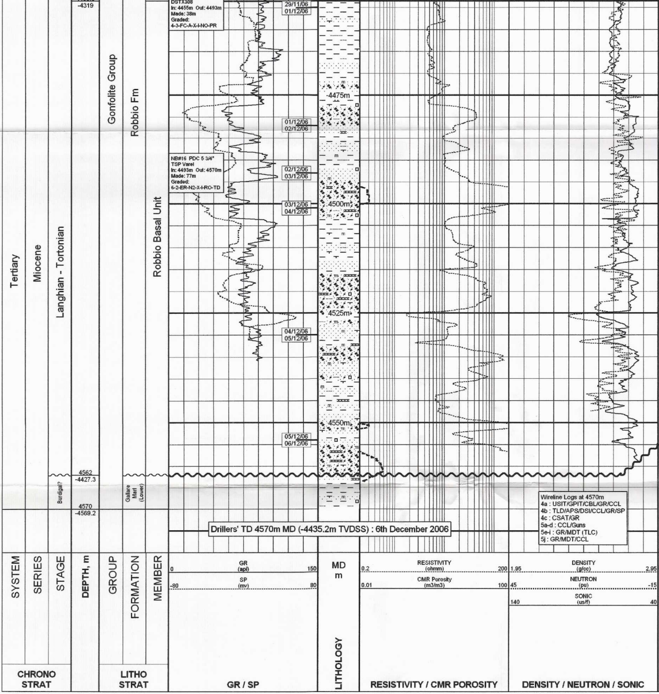
MD: 4360m TVDSS: -4274.57m
INC: 2.99° AZI: 357.76°

CLAYSTONE: light - dark grey, occasionally grey brown, firm - very hard, calcareous, occasionally silty, trace quartz sand where firm, very fine - fine grained, trace mica, pyrite.

CLAYSTONE: light - dark grey, firm - very hard, very calcareous, occasionally silty, trace in quartzy sand where firm, very fine - fine grained, traces mica, pyrite.

MD: 4415m TVDSS: -4329.5m
INC: 3.25° AZI: 358.67°

SANDSTONE: loose & cemented, fine - very fine grained, commonly medium, occasionally coarse, mainly quartz, white, milky, transparent and translucent, pale - dark grey, very rarely yellow, green, pink, cream, brown, dark brown, rounded - subangular, calcareous cement, locally argillaceous, poorly - moderately sorted, poor visible porosity, trace mica, pyrite, Trace Conglomerate.



Robbio Basal Unit
4453.5m (-4319.0m TVDSS)

CLAYSTONE: light - medium grey, occasionally medium brown grey, dark grey, firm, trace moderately hard, very calcareous, locally silty, trace very fine - fine grained sand, trace mica, pyrite.

MD: 4473m TVDSS: -4387.37m
INC: 3.69° AZI: 5.53°

SANDSTONE: predominantly loose, mostly fine grained, occasional - common very fine - medium, trace coarse, pale grey, white, rarely partly green, translucent - transparent, angular - subrounded, variable sphericity, rarely calcareous cemented, moderately hard, poorly - moderately sorted, locally argillaceous, poor visible porosity, trace mica, pyrite.

CONGLOMERATE: mostly as fine - medium grain sized shards & fragments due to bit action; Occasional - abundant Limestone, light grey, cream - light brown, occasionally medium - dark grey, hard, microcrystalline, locally slightly dolomitic, Quartz grains, pale - light grey, transparent - translucent, commonly fractured, locally common mica, trace pyrite inclusions, Trace lithic fragments, medium - dark grey, medium red brown, dark brown, rarely black/white mottled, hard, trace pyrite, Trace silicic fragments, white, trace green, mostly fractured grains, locally commonly well rounded, very hard.

SANDSTONE: predominantly loose, mostly fine grained, common - locally abundant medium, occasionally very fine, trace - locally common coarse, pale grey, white, rarely partly green, translucent - transparent, angular - subrounded, variable sphericity, occasional fractured grains due to bit action, trace calcareous cemented, poorly sorted, poor visible porosity, occasional firm - hard rounded off-white, calcareous grains possibly from sandstone matrix, trace - locally common mica, trace - occasional pyrite, rare lithic fragments, no visible shows.

MD: 4531m TVDSS: -4445.26m
INC: 3.78° AZI: 344.61°

CLAYSTONE: light - medium grey, occasionally medium brown grey, locally common dark grey to grey-black, brown-black due to bit/motor action, firm - moderately hard and brittle, locally sub-fissile, non - moderately calcareous, locally common very fine - fine grained quartz sand, locally silty, trace mica, pyrite.

Gallare Marl (Lower)
4562m (-4427.3m TVDSS)

SANDSTONE: predominantly loose, fine grained, common - locally abundant medium, occasionally very fine, trace - occasionally coarse, pale grey, white, translucent - transparent, angular - subrounded, variable sphericity, occasional fractured grains due to bit action, locally argillaceous, trace calcareous cemented, poorly sorted, poor visible porosity, trace - locally common mica, trace - occasional pyrite, rare lithic fragments, no visible shows.

LITHOLOGY DESCRIPTIONS