LASMO International Ltd

MODIGLIANA - 1 COMPOSITE LOG

AREA : ROMAGNA - ITALY
PERMIT : MARRADI
CONTRACTOR/RIG : DELTA / NATIONAL 1320

DATE WELL SPUDDED: 21ST AUGUST 1989
DATE TD REACHED : 25TH MARCH 1990
DATE RIG RELEASED : 2ND APRIL 1990
TOTAL DEPTH : 5062 MBRT
5057 MBRT TVD

LOCATION (International Ellipsoid) :
GEOGRAPHIC (Monte Mario Datum 1940) : 44° 08' 16,75" N
00° 43' 08,89" W
GAUSS-BOAGA COORDINATES : 4 895 757 N
1 833 692 E
BOTTOM HOLE LOCATION : 4 895 693 N
1 833 661 E
GROUND ELEVATION : 530 m amsl
KB ELEVATION : 539 m amsl

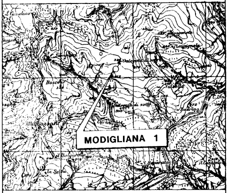
AGIP
ARCHIVIO POZZI
GEOP

E/PROF

SCALE 1 : 1,000

FINAL STATUS: PLUGGED & ABANDONED; GAS SHOWS

LOCATION MAP



Prov. : Forlì
Com. : Modigliana
Sheet : IGM 254
Scale 1: 25,000

PARTNERSHIP

-LASMO INTERNATIONAL LTD. (OPERATOR)	50%
-UNOCAL APENNINES	50%

PERSONNEL

WELL SITE GEOLOGIST : ALBERT VAN ZUTPHEN
PETROLEUM ENGINEER : –
DRILLING SUPERVISOR : GIOVANNI INDRI
DAVID NEWBOULD

SERVICE COMPANIES

MUD LOGGING	EXPLORATION LOGGING
WIRELINE LOGGING	WESTERN ATLAS
SEISMIC OPERATIONS	WESTERN ATLAS
TESTING	HALLIBURTON
CORING	–
CORE/FLUID ANALYSIS	THE GEOCHEM GROUP
BIOSTRATIGRAPHY	DR CLELIA PANSERI
GEOCHEMISTRY	–
SPECIAL OPERATIONS	–

DRILLING DATA

HOLE SIZE	INTERVAL (metres)
26"	11 - 511
17 1/2"	511 - 2042
12 1/4"	2042 - 3802
8 1/2"	3802 - 5055
6"	5055 - 5062

DRILLING FLUID

INTERVAL (metres)	SYSTEM
11-5062	BENTONITE / CMC / LIGNOSULPHONATE / FRESH WATER

CEMENT PLUGS

No.	INTERVAL (metres)
1	1015 - 1033
2	980 - 1015
3	1060 - 1121
4	977 - 1060
5	1777 - 1863
6	1104 - 1240
7	1020 - 1104
8	3605 - 3737
9	4954 - 5055 SAND PLUG
10 / 11	4850 - 5062 / 3570 - 3725
12 / 13	1990 - 2140 / 800 - 1000
14	11 - 150

CASING DATA

SIZE	TYPE	SHOE DEPTH (metres)	CEMENT
30"	1-INCH WALL	12	
20"	K55 BTC 20 JOINTS 133 LB/F 23 JOINTS 94 LB/F	508	LEAD: 1000 SX CLASS G + GEL 2% + HR5 0.3%; 1600 GR/LT. TAIL: 1350 SX CLASS G + HR5 0.25%; 1900 GR/LT.
13 3/8"	N80 BTC 2 JOINTS 72 LB/F 168 JOINTS 68 LB/F	2031	LEAD: 1400 SX CLASS G + GEL 2% + HR5 0.3%; 1560 GR/LT. TAIL: 500 SX CLASS G + HR5 0.25%; 1900 GR/LT.
9 5/8"	N80 BTA 248 JOINTS 47 LB/F P110 BTA 70 JOINTS 47 LB/F	3799	936 SX GEOTHERM + HALAD322 1%; 1860 GR/LT.
7"	C95 BTC 103 JOINTS 32 LB/F N80 BTC 15 JOINTS 29 LB/F P110 VAM 1 JOINT 32 LB/F	5015 LINER TOP 3651	1154 SX GEOTHERM + HALAD322 1.2% + HR5 0.4%; 1820 GR/LT.

LOGGING SUMMARY

DATE	LOG	RUN	INTERVAL (metres)	REMARKS
03-11-89	GR-DIFL-AC-SP	1A	508 -2039.5	GR THROUGH CASING TO SURFACE
03-11-89	4-ARM CAL	1A	500 -2040	
30-01-90	GR-DLL-AC-SP	2A	2031 -3790.5	
30-01-90	DIPLOG-CAL	2A	2031 -3777.5	
31-01-90	VSP	2A	2675 -3796	54 LEVELS; NO VSP RECORDED ABOVE 2675 DUE TO BREAKDOWN OF RECORDER UNIT
17-03-90	GR-DLL-AC-SP	3B	3799 -5036	
17-03-90	DIPLOG-CAL	3B	3799 -5046.5	
18-03-90	VSP	3B	100 -5042	25 m INTERVALS

CORE DATA

No.	INTERVAL (meters)	FORMATION	RECOVERY	BIT TYPE	REMARKS
	NO CORES CUT				

RFT TEST

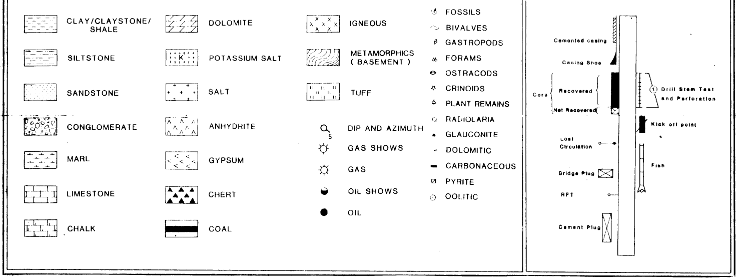
No.	DEPTH (metres)	HYDRO.P. (PSI)	FM.P. (PSI)	REMARKS
	NONE			

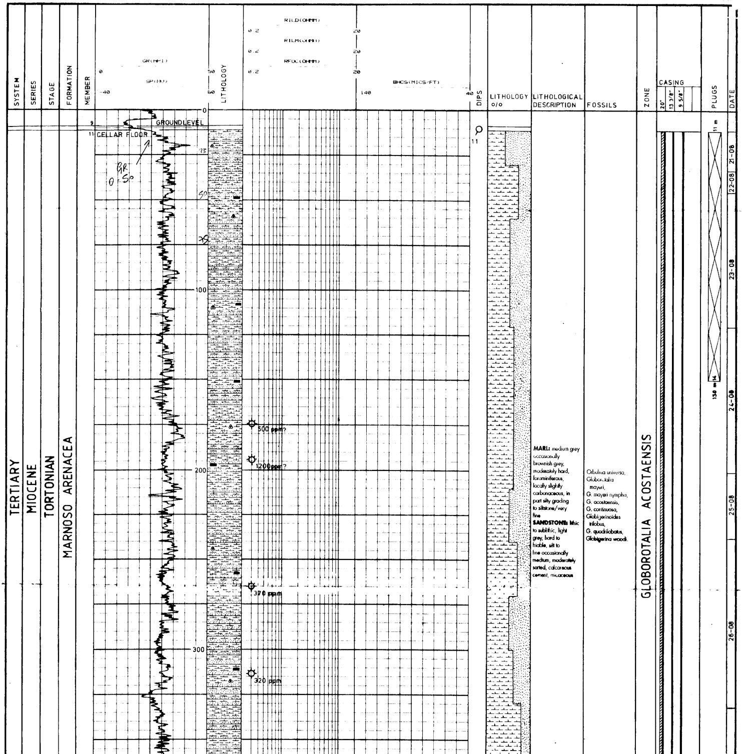
DST DATA

No.	INTERVAL (metres)	FORMATION	AVERAGE FLOW RATE	BHFP (PSI)	WHFP (PSI)	FSIP (PSI)	CHOKE SIZE	GOR (SCF/BBL)	API°	S.G.	REMARKS
1	5015 - 5062	BASAL SELCIFERO LIMESTONE / MASSICIO LIMESTONE	2.6 M³/HR	4830	0	6737	N/A	N/A	N/A	1.05	RECOVERED 10 M³ OF MUD + 14 M³ OF FORMATION WATER CONTAMINATED WITH SOME MUD

LITHOLOGY

SYMBOLS





MARL: medium grey occasionally brownish grey, moderately hard, foraminiferous, locally slightly carbonaceous, in part silty grading to siltstone/very fine **SANDSTONE:** lithic to sublithic, light grey, hard to friable, silt to fine occasionally medium, moderately sorted, calcareous cement, micaceous

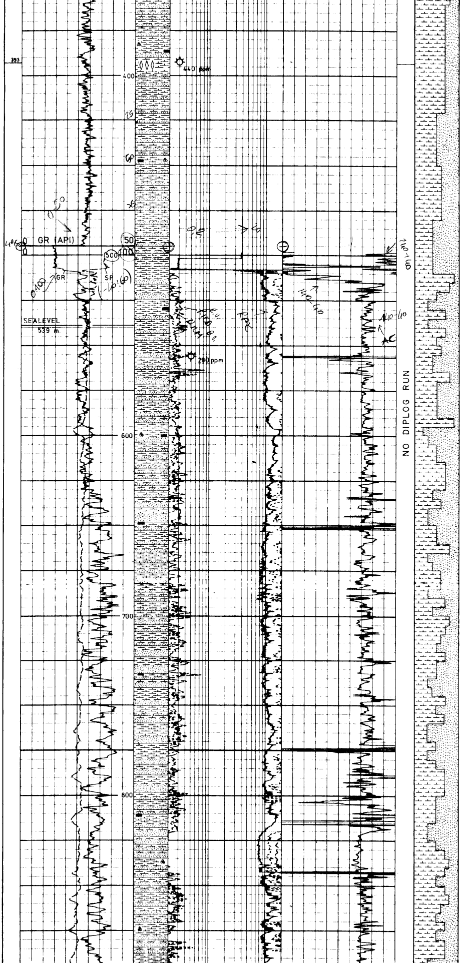
Orbulina universa,
Globorotalia mayeri,
G. mayeri nympha,
G. acostaensis,
G. continuosa,
Globigerinoides trilobus,
G. quadrilobatus,
Globigerina woodi.

TERTIARY

MIOCENE

TORTONIAN

MARNOSO ARENACEA

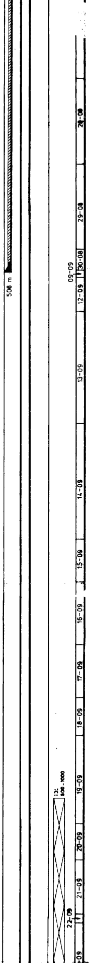


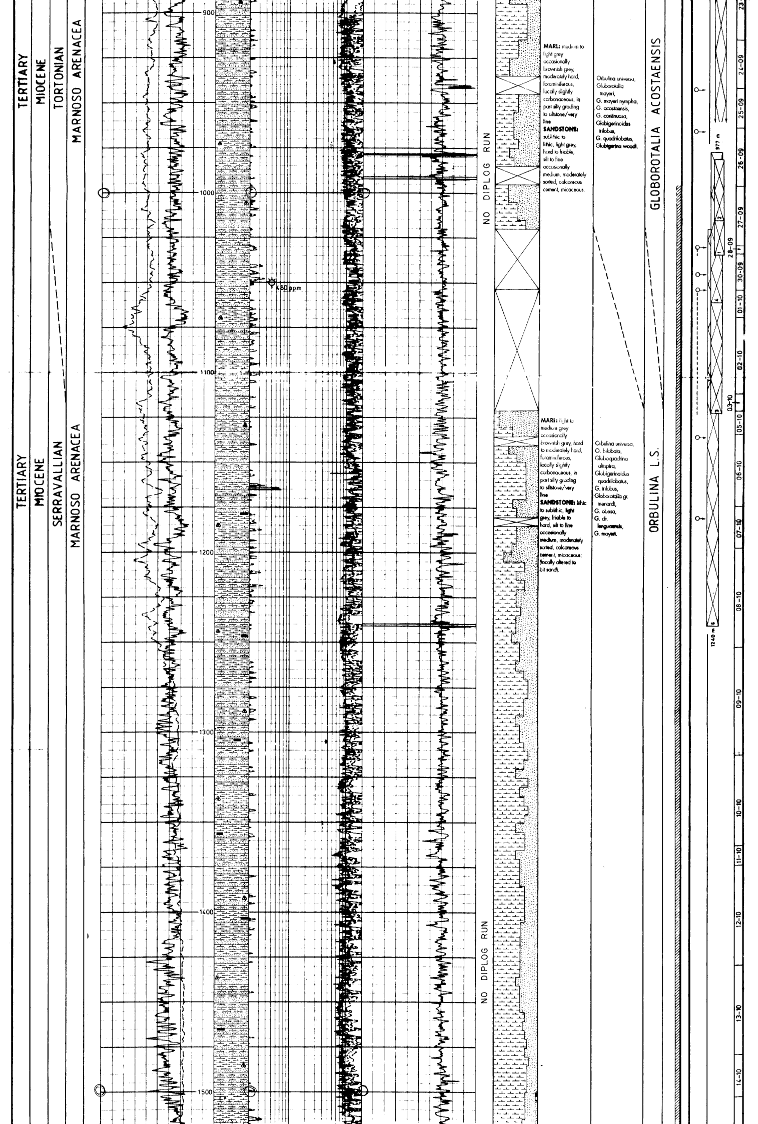
MARL: medium grey occasionally brownish grey, moderately hard, foraminiferous, locally slightly carbonaceous, in part silty grading to siltstone/very fine

SANDSTONE: lithic to sublithic, light grey, hard to friable, silt to fine occasionally medium, moderately sorted, calcareous cement, micaceous.

Orbulina universa,
Globorotalia mayeri,
G. mayeri nympha,
G. acostaensis,
G. continuosa,
Globigerinoides trilobus,
G. quadrilobatus,
Globigerina woodi.

GLOBOROTALIA ACOSTAENSIS



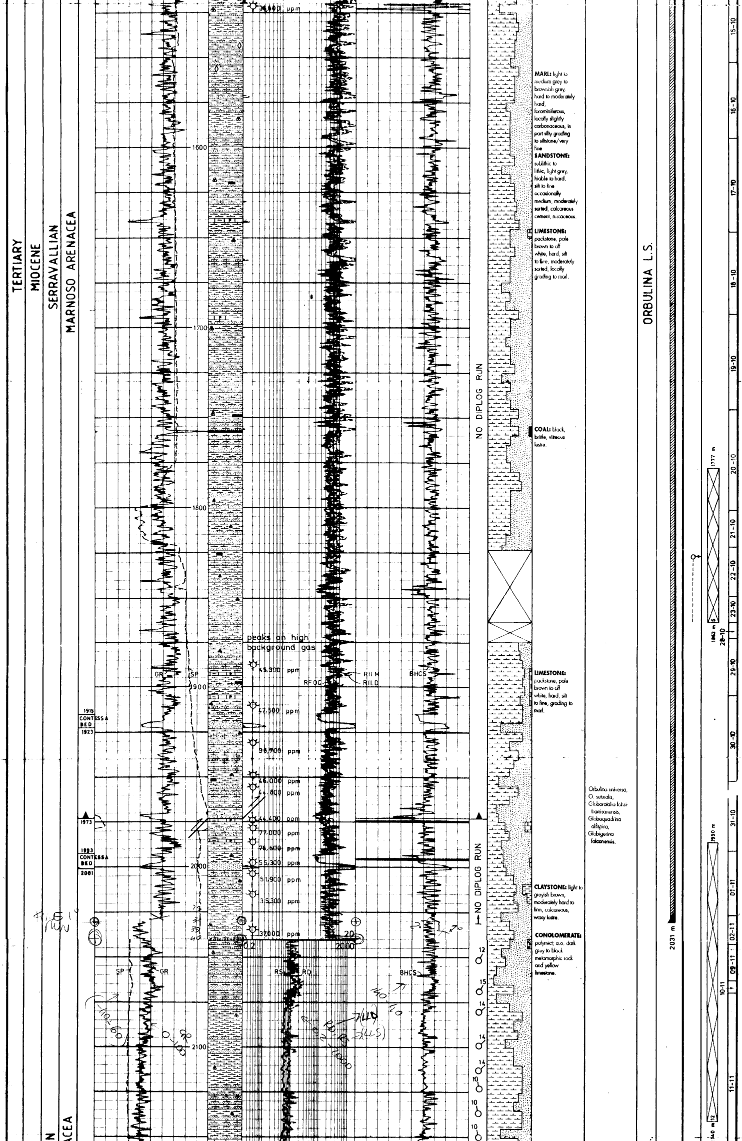


MARL: medium to light grey occasionally brownish grey, moderately hard, foraminiferous, locally slightly carbonaceous, in part silty grading to siltstone/very fine **SANDSTONE:** sublithic to lithic, light grey, hard to friable, silt to fine occasionally medium, moderately sorted, calcareous cement, micaceous.

Orbulina universa,
Globorotalia mayeri,
G. mayeri nympha,
G. acostaensis,
G. continuosa,
Globigerinoides trilobus,
G. quadrilobatus,
Globigerina woodi.

MARL: light to medium grey occasionally brownish grey, hard to moderately hard, foraminiferous, locally slightly carbonaceous, in part silty grading to siltstone/very fine **SANDSTONE:** lithic to sublithic, light grey, friable to hard, silt to fine occasionally medium, moderately sorted, calcareous cement, micaceous; (locally altered to bit sand).

Orbulina universa,
O. bilobata,
Globoquadrina altispira,
Globigerinoides quadrilobatus,
G. trilobus,
Globorotalia gr. menardi,
G. obesa,
G. cfr. lenguaensis,
G. mayeri.



MARL: light to medium grey to brownish grey, hard to moderately hard, foraminiferous, locally slightly carbonaceous, in part silty grading to siltstone/very fine

SANDSTONE: sublithic to lithic, light grey, friable to hard, silt to fine occasionally medium, moderately sorted, calcareous cement, micaceous.

LIMESTONE: packstone, pale brown to off white, hard, silt to fine, moderately sorted, locally grading to marl.

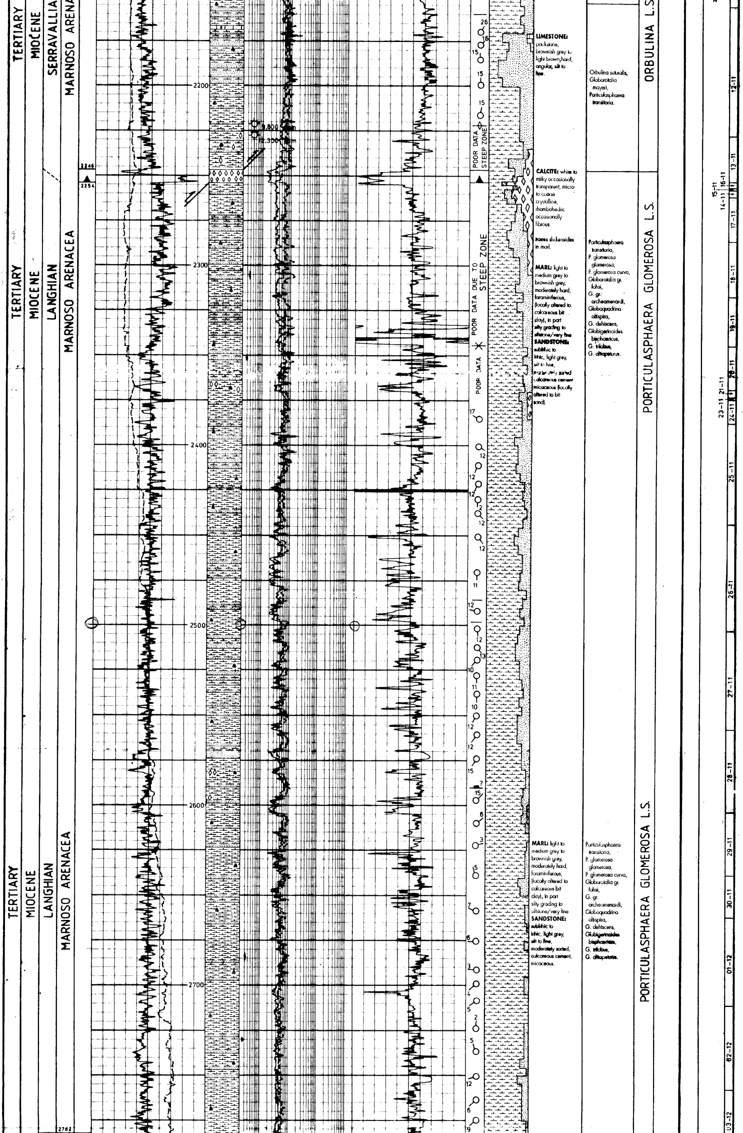
COAL: black, brittle, vitreous lustre.

LIMESTONE: packstone, pale brown to off white, hard, silt to fine, grading to marl.

Orbulina universa,
O. suturalis,
Globorotalia fohsi barrisanensis,
Globoquadrina altispira,
Globigerina falconensis.

CLAYSTONE: light to greyish brown, moderately hard to firm, calcareous, waxy lustre.

CONGLOMERATE: polymict; a.o. dark grey to black metamorphic rock and yellow limestone.



LIMESTONE: packstone, brownish grey to light brown, hard, angular, silt to fine.

Orbulina suturalis,
Globorotalia mayeri,
Porticulasphaera transitoria.

CALCITE: white to milky occasionally transparent, micro- to coarse crystalline, rhombohedric occasionally fibrous.

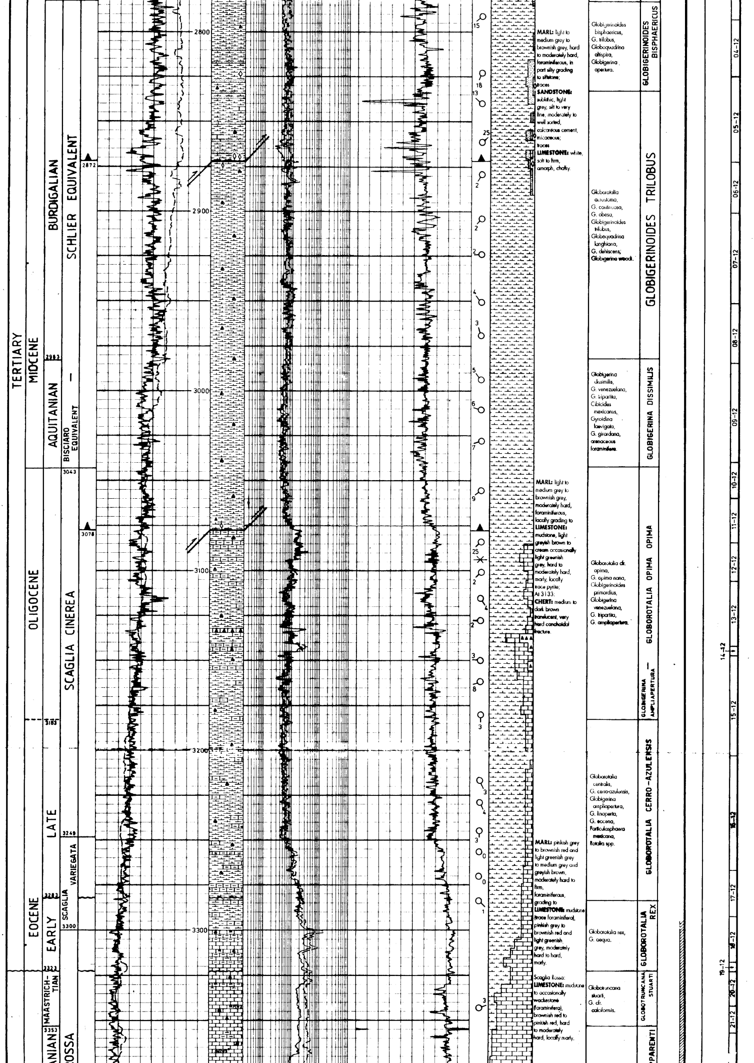
traces slickensides in marl.

MARL: light to medium grey to brownish grey, moderately hard, foraminiferous, (locally altered to calcareous bit clay), in part silty grading to siltstone/very fine **SANDSTONE:** sublithic to lithic, light grey, silt to fine, moderately sorted calcareous cement micaceous (locally altered to bit sand).

Porticulasphaera transitoria,
P. glomerosa glomerosa,
P. glomerosa curva,
Globorotalia gr. fohsi,
G. gr. archeomenardi,
Globoquadrina altispira,
G. dehiscens,
Globigerinoides bisphaericus,
G. trilobus,
G. altiapeturus.

MARL: light to medium grey to brownish grey, moderately hard, foraminiferous, (locally altered to calcareous bit clay), in part silty grading to siltstone/very fine **SANDSTONE:** sublithic to lithic, light grey, silt to fine, moderately sorted, calcareous cement, micaceous.

Porticulasphaera transitoria,
P. glomerosa glomerosa,
P. glomerosa curva,
Globorotalia gr. fohsi,
G. gr. archeomenardi,
Globoquadrina altispira,
G. dehiscens,
Globigerinoides bisphaericus,
G. trilobus,
G. altiapeturus.



MARL: light to medium grey to brownish grey, hard to moderately hard, foraminiferous, in part silty grading to siltstone; traces **SANDSTONE:** sublithic, light grey, silt to very fine, moderately to well sorted, calcareous cement, micaceous; traces **LIMESTONE:** white, soft to firm, amorph, chalky.

MARL: light to medium grey to brownish grey, moderately hard, foraminiferous, locally grading to **LIMESTONE:** mudstone, light greyish brown to cream occasionally light greenish grey, hard to moderately hard, marly, locally trace pyrite; At 3133: **CHERT:** medium to dark brown translucent, very hard conchoidal fracture.

MARL: pinkish grey to brownish red and light greenish grey to medium grey and greyish brown, moderately hard to firm, foraminiferous, grading to **LIMESTONE:** mudstone (trace foraminifera), pinkish grey to brownish red and light greenish grey, moderately hard to hard, marly.

Scaglia Rossa: **LIMESTONE:** mudstone to occasionally wackestone (foraminifera), brownish red to pinkish red, hard to moderately hard, locally marly.

Globigerinoides bisphaericus, G. trilobus, Globoquadrina altispira, Globigerina apertura.

Globorotalia acrostoma, G. continuosa, G. obesa, Globigerinoides trilobus, Globoquadrina langhiana, G. dehiscens, Globigerina woodi.

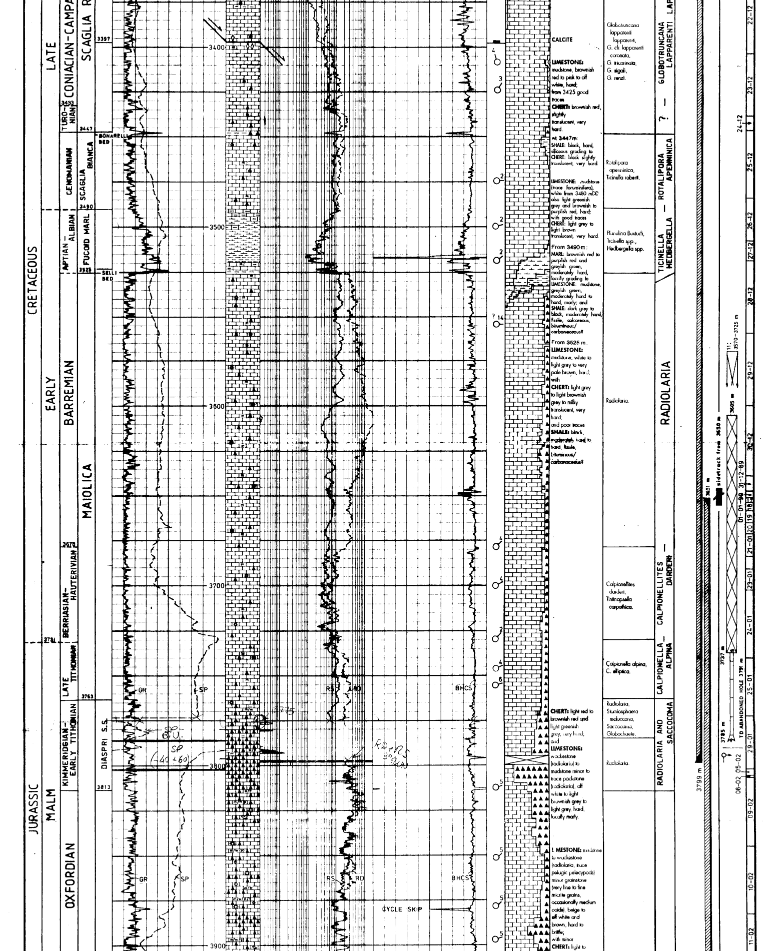
Globigerina dissimilis, G. venezuelana, G. tripartita, Cibicides mexicanus, Gyroidina laevigata, G. girardana, arenaceous foraminifera.

Globorotalia cfr. opima, G. opima nana, Globigerinoides primordius, Globigerina venezuelana, G. tripartita, G. ampliapertura.

Globorotalia centralis, G. cerro-azulensis, Globigerina ampliapertura, G. linaperta, G. eocena, Particulasphaera mexicana, Rotalia spp.

Globorotalia rex, G. aequa.

Globotruncana stuarti, G. cfr. calciformis.



CALCITE

LIMESTONE: mudstone, brownish red to pink to off white, hard; from 3425 good traces **CHERT:** brownish red, slightly translucent, very hard.

at 3447 m: **SHALE:** black, hard, siliceous grading to **CHERT:** black slightly translucent, very hard.

LIMESTONE: mudstone (trace foraminifera), white from 3480 mDC also light greenish grey and brownish to purplish red, hard; with good traces **CHERT:** light grey to light brown translucent, very hard.

From 3490 m: **MARL:** brownish red to purplish red and greyish green, moderately hard, locally grading to **LIMESTONE:** mudstone, greyish green, moderately hard to hard, marly; and **SHALE:** dark grey to black, moderately hard, fissile, calcareous, bituminous/carbonaceous?

From 3525 m. **LIMESTONE:** mudstone, white to light grey to very pale brown, hard; with **CHERT:** light grey to light brownish grey to milky translucent, very hard; and poor traces **SHALE:** black, moderately hard to hard, fissile, bituminous/carbonaceous?

CHERT: light red to brownish red and light greenish grey, very hard; and **LIMESTONE:** wackestone (radiolaria) to mudstone minor to trace packstone (radiolaria), off white to light brownish grey to light grey, hard, locally marly.

LIMESTONE: mudstone to wackestone (radiolaria, trace pelagic pelecypods) minor grainstone (very fine to fine micrite grains, occasionally medium ooids), beige to off white and brown, hard to brittle; with minor **CHERT:** light to

Globotruncana lapparenti lapparenti, G. cfr. lapparenti coronata, G. tricarinata, G. sigali, G. renzi.

Rotalipora apenninica, Ticinella roberti.

Planulina Buxtorfi, Ticinella spp., Hedbergella spp.

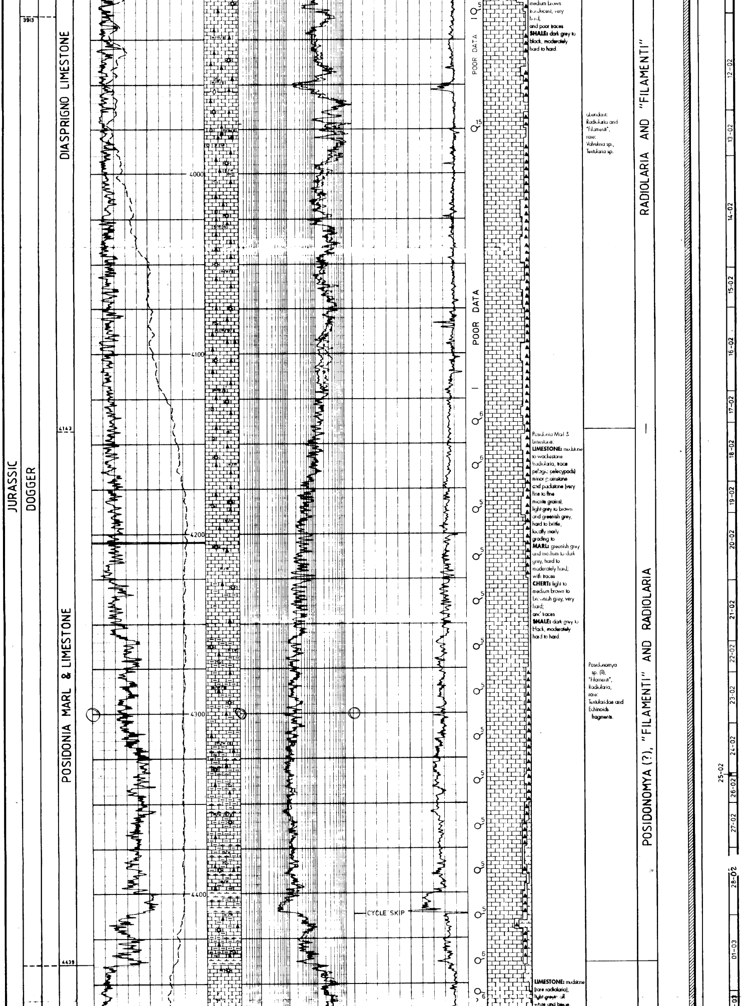
Radiolaria.

Calpionellites darderi, Tintinopsella carpathica.

Calpionella alpina, C. elliptica.

Radiolaria, Stomiosphaera moluccana, Saccocoma, Globochaete.

Radiolaria.



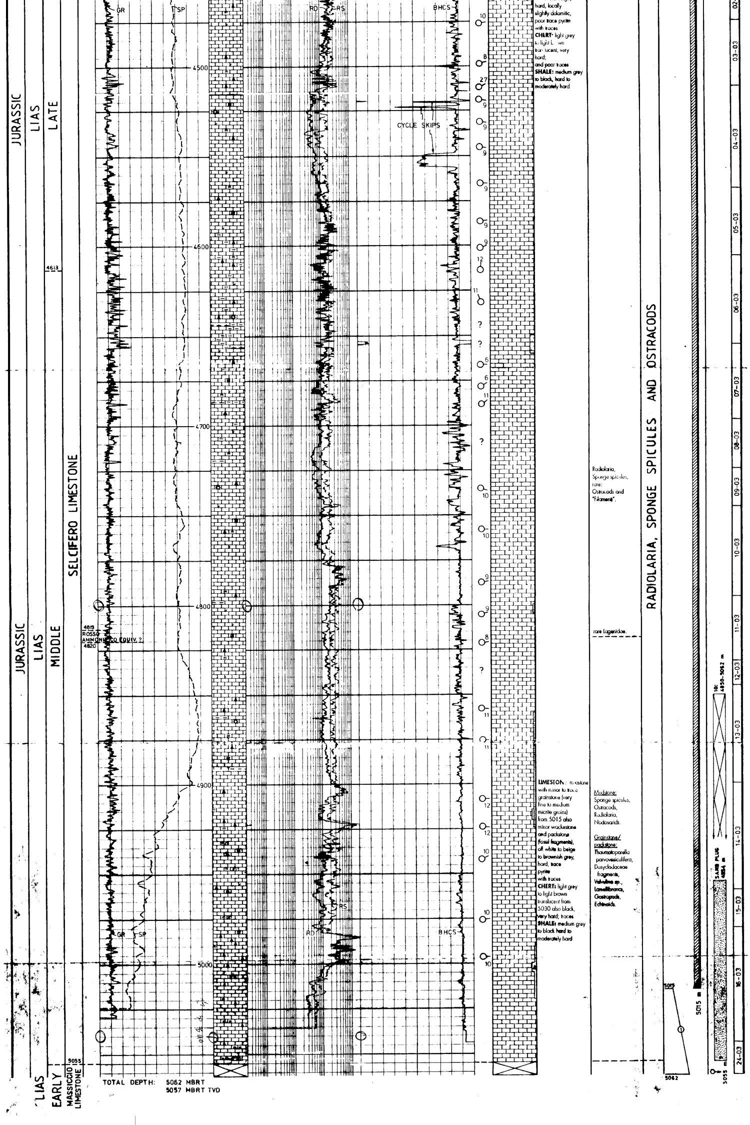
medium brown translucent, very hard;
and poor traces
SHALE: dark grey to black, moderately hard to hard.

abundant:
Radiolaria and "Filamenti",
rare:
Valvulina sp.,
Textularia sp.

Posidonia Marl & Limestone:
LIMESTONE: mudstone to wackestone (radiolaria, trace pelagic pelecypods) minor grainstone and packstone (very fine to fine micrite grains), light grey to brown and greenish grey, hard to brittle, locally marly grading to
MARL: greenish grey and medium to dark grey, hard to moderately hard;
with traces
CHERT: light to medium brown to brownish grey, very hard;
and traces
SHALE: dark grey to black, moderately hard to hard.

Posidonomya sp. (?),
"Filamenti",
Radiolaria,
rare:
Textularidae and Echinoids fragments.

LIMESTONE: mudstone (rare radiolaria), light grey to off white and beige,



hard, locally slightly dolomitic, poor trace pyrite with traces **CHERT:** light grey to light brown translucent, very hard; and poor traces **SHALE:** medium grey to black, hard to moderately hard

Radiolaria, Sponge spiculus, rare: Ostracods and "Filamenti".

rare Lagenidae.

LIMESTONE: mudstone with minor to trace grainstone (very fine to medium micrite grains) from 5015 also minor wackestone and packstone (fossil fragments), off white to beige to brownish grey, hard, trace pyrite with traces **CHERT:** light grey to light brown translucent from 5030 also black, very hard; traces **SHALE:** medium grey to black hard to moderately hard

Mudstone:
Sponge spiculus,
Ostracods,
Radiolaria,
Nodosarids.

Grainstone/packstone:
Thaumatoporella parvovesiculifera,
Dasycladaceae fragments,
Valvulina sp.,
Lamellibrancs,
Gastropods,
Echinoids.

TOTAL DEPTH: 5062 MBRT
5057 MBRT TVD