LASMO
International Oil Development Limited

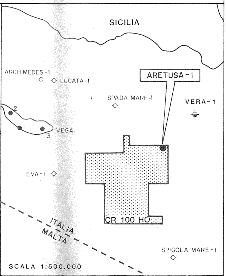
ARETUSA-1
COMPOSITE LOG

SCALA VERTICALE
1/1000

SEZIONE IDROCARBURI NAPOLI
24 MAR. 1986
Prot. n. 1905
Sez.
Posiz.

AREA : CANALE DI SICILIA,ITALIA
PERMESSO : CR 100 HO
LATITUDINE : 36° 29' 39·53" N
LONGITUDINE : 14° 56' 56·92" E
IMPIANTO DI PERFORAZIONE : SAIPEM DUE (DRILLSHIP)
CONTRATTISTA : SAIPEM
MUD LOG : GEOSERVICES
LOG ELETTRICO : SCHLUMBERGER

KB DAL LIVELLO MARINO : 13 m
PROFONDITA' FONDO MARINO : 83 m
PROFONDITA' TOTALE (PERF.) : 3741 m
DATA INIZIO PERFORAZIONE : 13 NOVEMBRE 1984
DATA FINE PERFORAZIONE : 13 MARZO 1985
DATA DI COMPLETAMENTO : 10 APRILE 1985
STATO DEL POZZO : PRODUTTIVO AD OLIO E GAS CHIUSO E ABBANDONATO
IMPIANTO RILASCIATO : 10 APRILE 1985



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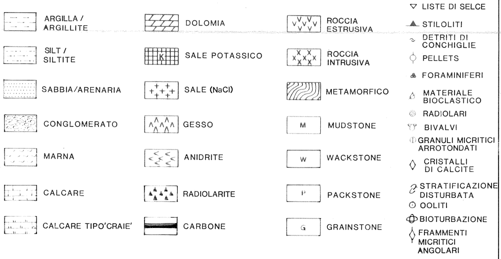
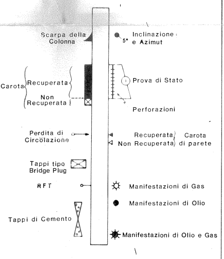
SIMBOLI LITOLOGICI



INGEGNERIA /GEOLOGIA



LOG ELETTRICI

DATA	PROFILO	RUN	INTERVALLO
27/11/84	DIL SLS SP GR	1	470-1234m
	GR Only		To Seabed (96m)
26/11/84	DIL-SLS-SP-GR	2	1083-2679m
10/2/85	DIL-SLS-SP-GR	3	2676-3152m
15/3/85	DIL-SLS-SP-GR	4	3152-3702m
27/12/84	FDC-CNL-GR-Cal	1	1750-2680m
11/2/85	LDL-CNL-GR-Cal	2	2676-3153m
14/3/85	LDL-CNL-GR-Cal	3	3151·5-3657m
27/12/84	DLL-MSFL-GR-Cal	1	2375-2679m
11/2/85	DLL-MSFL-GR-Cal	2	2676-3149m
14/3/85	DLL-MSFL-GR-Cal	3	3151·5-3655m
27/12/84	HDT	1	1750-2679m
	Caliper Only		Up to 1219m
11/2/85	SHDT	2	2676-3153m
16/3/85	SHDT	3	3151·5-3714m
5/12/84	Dual Caliper	1	474-1236m
16/3/85	Waveforms and O.H VDL	1	3151·5-3704m
17/3/85	CBL-VDL-GR-CCL	1	2400-3148m

CAROTE N°	INTERVALLO CAROTE	RECUPERO
1	3261-3270·4m	100%

TUBAZIONI

Ø SCALPELLO	PESO	SCARPA	CEMENTO
30"	1" Wall (5 Joints)	157m	1000 SX 'G' at 15·8ppg
20"	94 PPF (31 Joints)	474m	600 SX 'G' LEAD at 11·5PPG 1000 SX 'G' TAIL at 15·8PPG
13⅜"	68 PPF (90 Joints)	1227m	1477 SX 'G' LEAD at 13·2PPG 500 SX 'G' TAIL at 15·8PPG
9⅝"	47 PPF (207 Joints)	2676m	1055 SX 'G' LEAD at 13·2PPG 500 SX 'G' TAIL at 15·8PPG
7"	29 PPF (45 Joints)	3150m HUNG at 2558m	500 SX 'G' GEOTHERM at 15·5PPG

FLUIDO DI PERFORAZIONE
Seawater with high Viscous Pills 96-488m
Dispersed/Bentonite/CMC 488-3741m

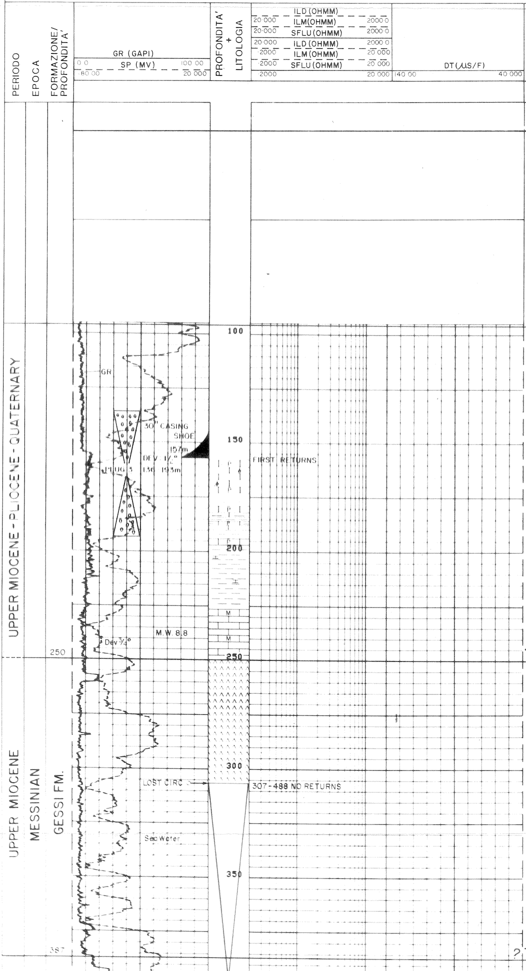
TAPPI DI CEMENTO	INTERVALLO
1	2530-2852m
2	1180-1270m
3	136-193m

PROVE DI STRATO

DST N°	INTERVALLO	RISULTATO	NOTE
1	2676-2778m	201 BOPD, 29·5° API + 1·48 MMSCFD INITIAL SIP 3324 p.s.i	OPEN HOLE ⅝" CHOKE FLOW 16hrs 3mm
2	3150-3706m	1400 BOPD, VARIABLE GRAVITY+11·5 MMSCFD INITIAL SIP : 4145 p.s.i	OPEN HOLE ¾" CHOKE ACIDIZED DEPLETING FLOW : 6hrs
3	2871-93m 2902-11m 2916-25m	NO FLOW INITIAL SIP: 2557 p.s.i.	ACIDIZED

DIAMETRO DEL FORO	INTERVALLO
36"	96 - 158m
14/" (Opened to 26")	158 - 488m
14/" (Opened to 18/")	488 - 1238m
12¼"	38 - 2683m
8½"	2683 - 3154m
6"	3154 - 3741m

4	2770 - 2815m 2825 - 52m	100 BOPD, 30 - 35° API + 0·9 MMSCFD + 400 BW INITIAL SIP: 4090 p.s.i.	½" CHOKE DEPLETING FLOW: 14hrs



DESCRIZIONE LITOLOGICA

K.B. 0 metri

SEA LEVEL 13 metri

SEA BED 96m (-83m)

158-173m LIMESTONE: fair intergranular porosity, occasionally vuggy, I B/C, orange-yellow, occ. white, compact packstone, bioclastic, hard.

173-190m LIMESTONE: argillaceous, fair intergranular porosity, occ. vugs, I B/C, grey, compact packstone, bioclastic, moderately hard.

190-227m CLAY: grey, plastic, calcareous.

227-260m LIMESTONE: fair intercrystalline porosity, occ. vugs, I B/C, white, extremely fine to very finely crystalline, moderately hard.
LIMESTONE: occ. vugs, I B/C, white, compact mudstone, moderately hard.

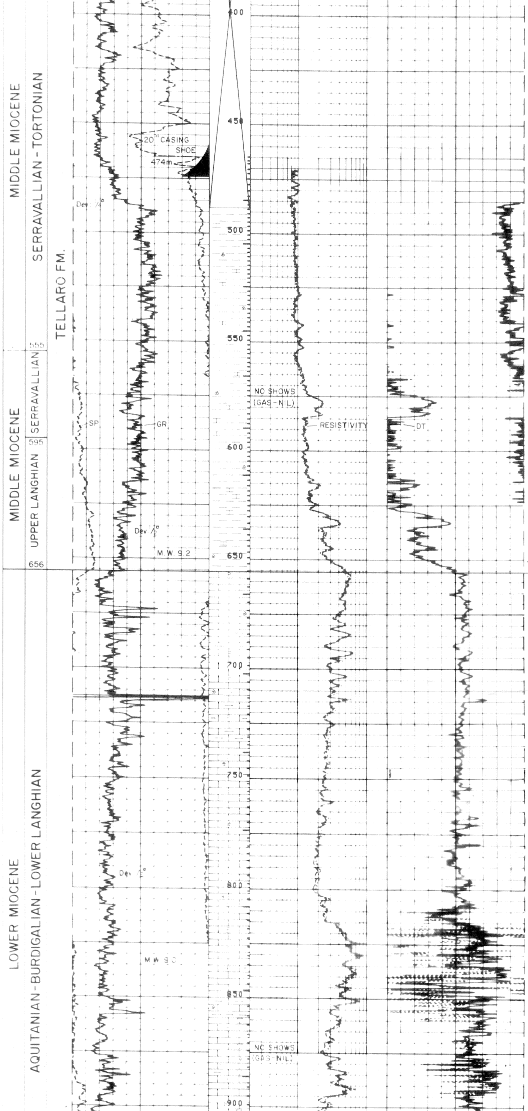
TOP GESSI FM. 250m (-237m)

250-307m: GYPSUM

307-387m: NO RETURNS

? TOP TELLARO FM. 387m (-374m)

387-488m NO RETURNS



488-530m CLAY/CLAYSTONE: light-medium grey, green grey, soft, plastic, occasionally firm, calcareous, microfossils and occ. macrofossil fragments.

530-550m CLAY/CLAYSTONE: a/a, commonly silty and grading to siltstone, light grey-green grey, soft, argillaceous, calcareous.

550-635m CLAY/CLAYSTONE: light-medium grey, green grey, becoming locally yellow brown brown grey towards base, soft, plastic, occ. firm, calcareous, microfossils and occ. macrofossil fragments.
LIMESTONE: fair intergranular porosity, white, packstone, bioclastic, friable, abundant glauconitic grains.

635-656m CLAY/CLAYSTONE: light-medium grey, brown grey, soft, plastic, commonly moderately firm, calcareous, becoming off white, very calcareous, grading to MARL.

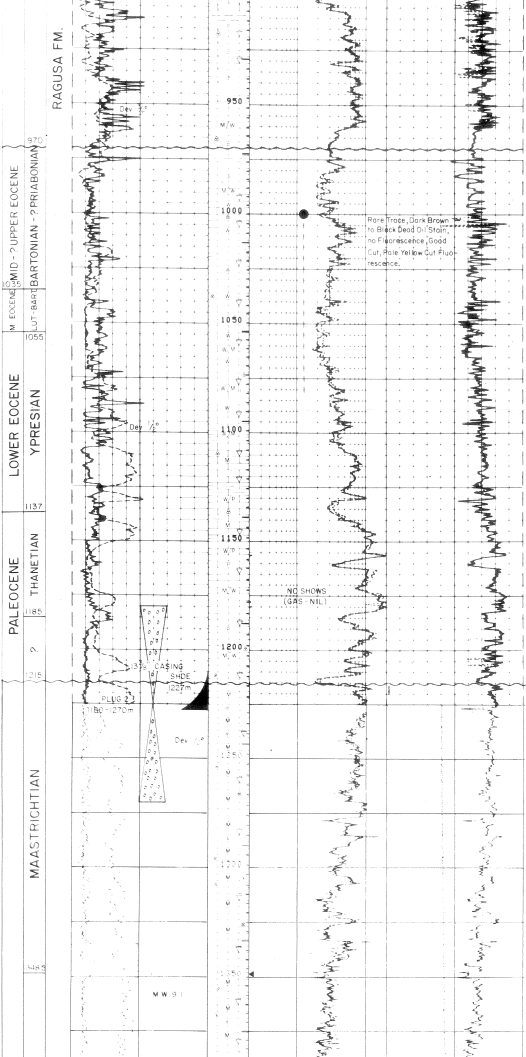
TOP RAGUSA FM. 656m (-643m)

656-815m LIMESTONE: fair intergranular porosity, off white cream, packstone, intraclastic, slightly bioclastic, fine-medium calcisand, friable – moderately hard, traces of glauconite diminishing towards base, occ. dark brown argillaceous carbonaceous and lignite specks and laminae increasing towards base.

815-840m LIMESTONE: fair intergranular porosity, off white cream, packstone, intraclastic, slightly bioclastic, friable-moderately hard.
LIMESTONE: very poor visible porosity, cream-light tan, compact packstone, intraclastic, slightly biodastic, hard, commonly partly dolomitized.

840-860m LIMESTONE: very poor visible porosity, off white light tan, compact packstone, fine medium calisand, intraclastic, slightly bioclastic, hard, commonly partly dolomitized.

860-920m LIMESTONE: very poor visible porosity, occ interbeds with fair intergranular porosity, off white-light tan, compact packstone, intraclastic, occ. bioclasts, fine calcisand, hard, occ friable – moderately hard, commonly partly dolomitized, traces brown translucent chert.



Rare Trace, Dark Brown to Black Dead Oil Stain, no Fluorescence, Good Cut, Pale Yellow Cut Fluorescence.

NO SHOWS (GAS-NIL)

920-955m LIMESTONE: very poor visible porosity, off white-cream-light tan, compact packstone, intraclastic, occ bioclasts, hard, locally slightly dolomitized.

955-975m LIMESTONE: very poor visible porosity, white-off white, compact packstone, intraclastic, slightly bioclastic, hard, rare trace glauconite, no apparent dolomitization.

LIMESTONE: no visible porosity, white, chalky mudstone/wackestone, bioclastic, soft-firm.

975-995m LIMESTONE: very poor visible porosity, off white-light tan, compact packstone, intraclastic, slightly bioclastic, hard, rare trace glauconite

LIMESTONE: very poor visible porosity, occ intergranular porosity, compact — occ chalky mudstone/wackestone, bioclastic, soft-firm

995-1055m LIMESTONE: very poor visible porosity, white-cream, compact wackestone, intraclastic, slightly bioclastic, calcisilt — fine calcisand, moderately hard, occ soft and chalky, traces dark brown-black carbonaceous and lignitic specks and laminae, traces brown grey, translucent chert

1055-1120m LIMESTONE: v. poor visible porosity, rare intergranular porosity, white-off white, compact wackestone/mudstone, occ. chalky, intraclastic, occ. bioclastic, mod. hard-soft, rare stylolites, decreasing traces carbonaceous and lignitic specks and laminae.

LIMESTONE: poor visible porosity, occ. fair intergranular porosity, light-medium brown, compact wackestone, locally packstone, intraclastic sl. bioclastic, mod. hard, commonly with abundant dark brown carbonaceous specks and laminae, decreasing towards base, sl argillaceous, locally grading to CLAYSTONE brown grey, firm, v. calcareous.

1120-1154m LIMESTONE, no visible porosity, white-off white-pale grey, compact mudstone, bioclastic, firm-mod. hard, sl. argillaceous in part

LIMESTONE: poor visible porosity, light-medium brown, compact wackestone/packstone, intraclastic, sl. bioclastic, mod. hard, sl argillaceous. Minor CLAYSTONE: green-green grey, soft-mod. firm, v. calcareous

1154-1215m LIMESTONE: v. poor visible porosity, occ. intergranular porosity, white, porcellanous lustre, compact mudstone/wackestone, occ packstone, intraclastic, bioclastic, hard

TOP AMERILLO FM. 1215m (-1202m)

1215-1238m LIMESTONE: no visible porosity, off white-pale grey, chalky mudstone, occ. compact, bioclastic, mod. hard, occ. stylolites, trace pyrite

1238-1295m LIMESTONE: no visible porosity, white mudstone, becoming chalky, bioclastic, firm-mod. hard, occ. stylolites, trace pyrite, good trace white-pale grey chert

1295-1330m LIMESTONE: chalky a/a, good traces chert

V. minor TUFFACEOUS CLAYSTONE: grey, green grey, green, blue grey, occ. mottled, mod. firm-soft, sl. — mod. calcareous, sl. silty

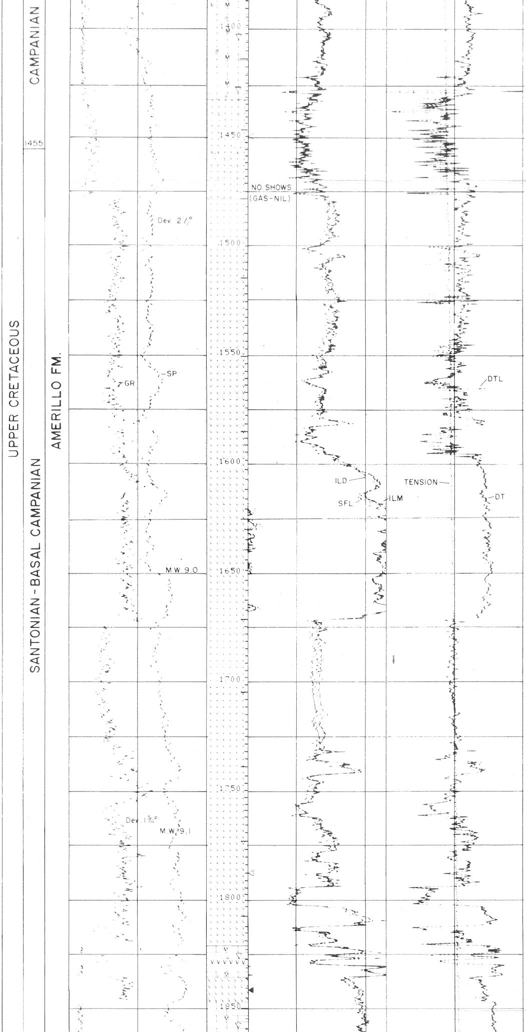
1330-1360m LIMESTONE: no visible porosity, white, mudstone, chalky, bioclastic, soft-mod. hard, rare stylolites, locally argillaceous, trace chert.

Minor LIMESTONE: no visible porosity, white-cream, compact mudstone/wackestone, bioclastic, occ. intraclastic, hard, trace pyrite, rare trace glauconite.

V. minor TUFFACEOUS CLAYSTONE: a/a.

1360-1432m LIMESTONE: no visible porosity, white-buff, mudstone, chalky, occ. bioclastic, soft-firm, occ. argillaceous, trace chert.

Minor TUFFACEOUS CLAYSTONE: grey green, grey, green, mottled, firm, sl.-mod. calcareous, occ. crystals and lithoclasts.



1432-1478m LIMESTONE: chalky mudstone a/a.
CLAYSTONE: light-dark brown, subfissile, soft-firm, mod. calcareous, occ. sl. silty.
TUFF: grey, green, grey green, firm, silt-size crystals and vitric clasts

1478-1590m BASALT: dark grey green, hard, brittle, calcite-filled vessicles, sl. calcareous, rare feldspars, ?pyroxene phenocrysts, highly altered, ?chloritized and serpentanized, associated vein calcite and pyrite
V. minor TUFF: light-dark green, mottled, vesicular, calcitic, zeolites, occ. laminated and brecciated

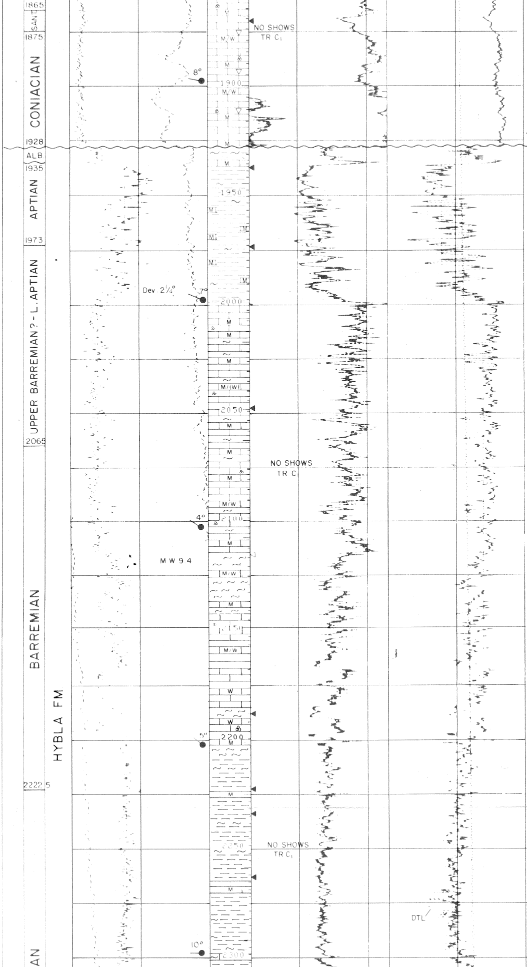
1590-1673m BASALT: a/a, less altered, less vesicular, occ. ?orthoclase and ?divine phenocrysts, decrease in vein calcite and pyrite, ?zeolites in vesicules
V. minor TUFF: a/a

1673-1820m TUFF: light brown, light grey, light dark green, mottled, soft-hard vesicular, sl. calcareous, occ. laminated, occ. brecciated, zeolites, calcite vesicules increase towards base, trace pyrite, rare trace vein calcite

1820-1835m LIMESTONE: no visible porosity, white-cream, mudstone, compact, occ. chalky, firm-hard, occ. argillaceous, rare stylolites, bioclastic, trace chert.
Minor LIMESTONE: no visible porosity, wackestone/mudstone, white-light pink, bioclastic, occ. intraclastic, hard, compact.
Minor TUFF: a/a

1835-1846m TUFF: a/a

1846-1928m LIMESTONE: no visible porosity, white-cream, mudstone a/a, trace chert
Minor LIMESTONE: white-light pink, mudstone/wackestone a/a



TOP HYBLA FM. 1928m (-1915m)

1928-1933m MARL. Light-medium brown, firm, occ subfissile, mottled, v. calcareous, argillaceous, rarely bioclastic
Minor LIMESTONE mudstone a/a

1933-1999m CLAYSTONE light-medium olive green, firm, subfissile, occ. waxy lustre, mod calcareous, pyritic, rarely carbonaceous, occ laminated
Minor MARL a/a
Minor LIMESTONE no visible porosity, white-v. light green, v. soft-soft, occ. firm, mudstone, chalky, rarely bioclastic, occ. argillaceous

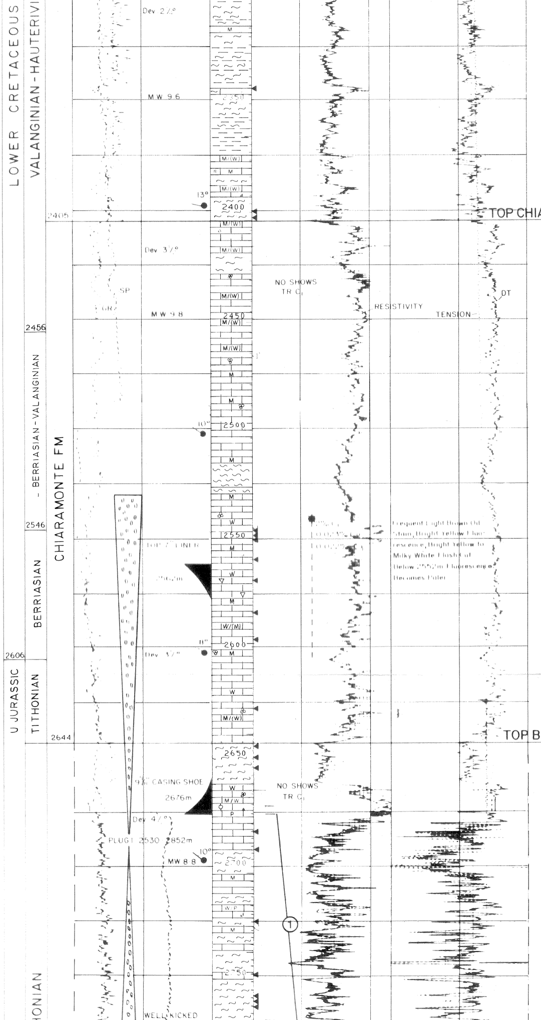
1999-2017m LIMESTONE no visible porosity, white-off white, occ. v. light grey, soft-firm, mudstone, chalky, bioclastic
Minor LIMESTONE white-cream, firm-hard, compact mudstone, bioclastic, rare stylolites, no visible porosity
2017-2060m LIMESTONE no visible porosity, off white-light grey, mudstone, chalky, rarely bioclastic, argillaceous, soft-firm
V. minor MARL light brown, firm\ argillaceous, subfissile in part

2060-2113m LIMESTONE no visible porosity, white-off white, mudstone, soft-v. soft, rarely bioclastic argillaceous
Increasing LIMESTONE no visible porosity, light grey-white-v. light green, mudstone, grading to mudstone/wackestone in part, bioclastic, firm-hard, becoming marly with depth
Minor MARL light-medium olive green, firm-hard, occ. subfissile

2113-2157m MARL light olive green grey, firm-hard, brittle, blocky, v. argillaceous, pyritic in part
LIMESTONE no visible porosity, white-off white-light grey, mudstone, chalky, occ. compact, v soft-firm, occ. hard, argillaceous, rarely bioclastic
Minor LIMESTONE no visible porosity, off white-v. light brown, wackestone, hard, brittle, bioclastic, occ. intraclastic, rare stylolites, occ argillaceous

2157-2176m MARL light olive grey green, generally firm, occ. soft, blocky-subfissile, waxy, argillaceous - v. argillaceous, grading to CLAYSTONE in part
LIMESTONE no visible porosity, white-light grey mudstone, chalky, soft-firm, rarely bioclastic argillaceous, rarely pyritic
V. minor CLAYSTONE dark olive green, firm subfissile, calcareous, waxy, occ. pyritic
2176-2202m MARL a/a
LIMESTONE no visible porosity, white-light grey, occ. yellow grey, compact wackestone, firm-hard, bioclastic, rarely intraclastic, argillaceous, blocky
Minor LIMESTONE no visible porosity, white-light grey, chalky, mudstone a/a
V. Minor CLAYSTONE a/a
2202-2281m LIMESTONE no visible porosity, white-light grey, mudstone, chalky, v soft-soft, rarely bioclastic, argillaceous, becoming increasingly argillaceous with depth, grading to MARLY LIMESTONE
MARL light olive grey green, a/a
CLAYSTONE dark-medium olive green, firm, subfissile, waxy, slightly-moderately calcareous, pyritic in part

2281-2326m LIMESTONE no visible porosity, white-off white, mudstone, chalky, v soft-soft, argillaceous, grading to MARLY LIMESTONE
CLAYSTONE light-dark olive green, firm, subfissile, slightly-moderately calcareous, pyritic, occ orange brown laminae, grading to MARL



2326-2367m LIMESTONE a/a becoming more consolidated, firm
CLAYSTONE a/a
LIMESTONE: no visible porosity, white, rarely light grey, compact wackestone, hard, brittle, bioclastic, rarely argillaceous

2367-2405m LIMESTONE: no visible porosity, occ. poor intergranular porosity, compact mudstone, occ. chalky white – light grey, bioclastic, grading to wackestone/packstone, friable, brittle, moderately hard, occ. soft, occ. v argillaceous, increasing hardness with depth
CLAYSTONE/MARL: compact, light-medium grey green, grading to CLAYSTONE, crumbly, moderately hard

TOP CHIARAMONTE FM. 2402m (-2392m)

2405-2430m LIMESTONE a/a, hard. MARL a/a.

2430-2446m MARL a/a, occ. pinkish brown
LIMESTONE a/a becoming light grey light brown white

2446-2515m LIMESTONE a/a, occ. v. poor isolated vuggy porosity
LIMESTONE: no visible porosity, compact, mudstone, occ. chalky, white light grey green, occ. slightly bioclastic, splintery crumbly, hard v hard, occ. friable, abundant radiolaria, carbonaceous material

2515-2529m MARL salmon pink ... slightly pinkish grey orange, crumbly, friable soft moderately hard

2529-2542m LIMESTONE a/a
MARL medium dark grey green, crumbly, friable moderately hard

2542-2572m LIMESTONE extremely poor intergranular porosity, white buff, slightly chalky wackestone, occ. marly, bioclastic, blocky crumbly, moderately hard hard
CHERT light brown, translucent, conchoidal break hard, brittle

2572-2586m LIMESTONE a/a growing to packstone

2586-2606m LIMESTONE extremely poor porosity mudstone and wackestone a/a, becoming light grey green, bioclastic, splintery, hard v. hard calcite

2606-2644m LIMESTONE a/a white light grey green beige
LIMESTONE no visible porosity, compact mudstone wackestone, white grey green, rarely pinkish, bioclastic, angular crumbly, well cemented, hard v hard, abundant radiolaria calcite

TOP BUCCHERI FM. 2644m (-2631m)

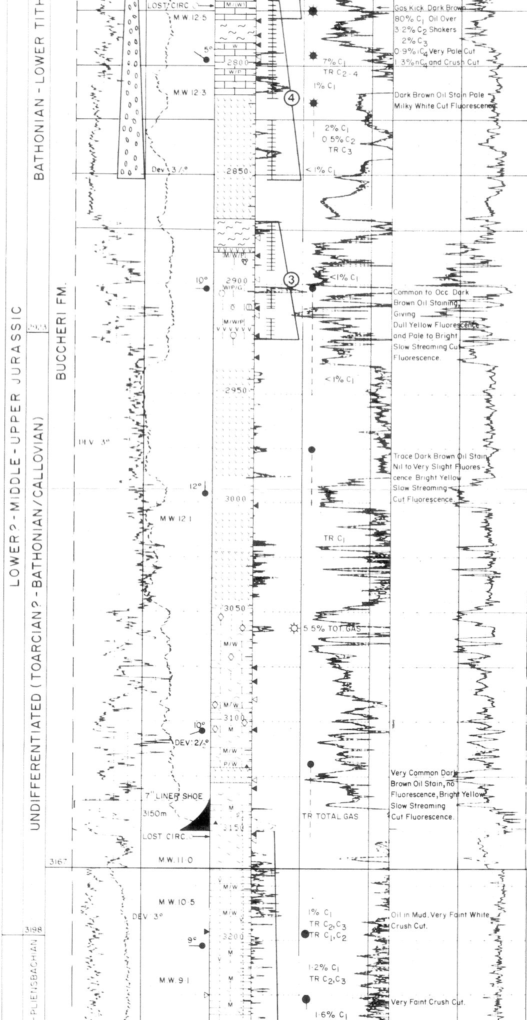
2644-2662m LIMESTONE a/a rarely packstone occ. marly
MARL: white light grey green, occ. pinkish, crumbly earthy, soft plastic, occ. medium grey green, splintery fissile, moderately hard brittle

2662-2692m LIMESTONE mudstone, compact, a/a, yellow, stylolitic, brittle, splintery, occ. wackestone, white, bioclastic, moderately hard, angular, grading to MARL
LIMESTONE packstone, compact, a/a, white beige, peloids, sparry calcite

2692-2717m CLAYSTONE medium grey, platey fissile, moderately hard, moderately calcareous, carbonaceous specks and microfossils

2717-2760m LIMESTONE: no visible porosity, mudstone, occ. wackestone/packstone, white-off white-light grey, bioclastic (bivalves), occ. sparry microspar cement, ooids and peloids, occ. silty, grading to MARL
MARL: medium grey-light-medium grey green and blue grey, firm-hard, blocky-fissile, silty
V. minor TUFF/ASH: light grey-light green, angular grains/clasts, speckled, slightly-non calcareous, blocky, brittle

2760-2778m: MARL and LIMESTONE a/a.
MARL: red brown, firm, blocky, amorphous
LIMESTONE: no visible porosity, white, occ. pale brown, mudstone-wackestone, hard angular, blocky
LIMESTONE: occ. intergranular porosity, generally zero, white, wackestone, occ. packstone



2778-2789m MARL a/a. grading to LIMESTONE: no visible porosity. compact mudstone/wackestone. occ. packstone. frequently sparry. white-light grey. angular. hard-brittle. pyritic. v. argillaceous. radiolaria. sponge spicules.

2789-2812m LIMESTONE: no visible porosity. compact wackestone/packstone. white-light grey. abundant radiolaria. angular-splintery. well cemented. occ. sparry. hard-brittle.
LIMESTONE: compact mudstone/wackestone a/a.
MARL: light-dark grey. fissile-blocky-crumbly. well cemented. hard-brittle.

2812-2870 VOLCANICS: medium-dark grey becoming light grey towards base. moderately soft. unconsolidated. crumbly. medium grains quartz. zeolites. feldspars mafics. slightly calcareous. argillaceous matrix. banded. weathering at top. finer grained at base.
LIMESTONE: no visible porosity. compact mudstone/wackestone. white-light grey-light brown. angular. hard-v.hard. well cemented. argillaceous. radiolaria.

2870-2892m MARL: medium-dark grey green. crumbly-fissile. moderately hard-hard. becoming soft. pyritic. silty and sandy with depth. radiolaria.
LIMESTONE: occ. slight vuggy porosity. compact mudstone/wackestone. grading to packstone with depth. white-light brown. microcrystalline. hard-v hard. fissile-blocky. occ. abundant thin-shelled bivalues. radiolaria.

2892-2921m LIMESTONE: compact mudstone/wackestone a/a. becoming light grey. soft-hard. partly microcrystalline-sparry.
LIMESTONE: no visible porosity. v. occ. slight visible porosity. compact wackestone/packstone. grading to packstone. light brown. partly sucrosic. microcrystalline. hard. friable. peloids. bioclastic.
MARL: medium dark grey green. occ. slightly blue. crumbly fissile. firm moderately hard. radiolaria. bivalues.

2921-2937m VOLCANICS: ash/tuff. breccia and agglomerate. light-dark grey green. mottled and spotted. chloritic. argillaceous matrix. pyrite. calcite in vessicules.
LIMESTONE: mudstone/wackestone a/a. grading to packstone. forams. bivalues and ammonite. gastropod and echinoid fragments.
MARL: a/a.

2937-3049m VOLCANICS: light-medium-dark grey green. ash/tuff. soft-brittle. crumbly-angular. mafics in fine. slightly calcareous matrix. green volcanic glass. with calcite cement in vessicules. basalt. dark grey-black. hard.
MARL: a/a.

3049-3076m LIMESTONE: sparry calcite. white translucent. microcystalline-sparry.
MARL and VOLCANICS: a/a.

3076-3088m MARLY LIMESTONE/MARL: no visible porosity. light grey-light brown. occ. light grey green. compact mudstone. fissile-blocky. friable-moderately hard. silty.
LIMESTONE: sparry calcite a/a.

3088-3102 LIMESTONE: no visible porosity. compact mudstone/wackestone. white-light grey brown. hard-v.hard. well cemented. crumbly-angular. abundant sponge spicules.
MARLY LIMESTONE and VOLCANICS: a/a.

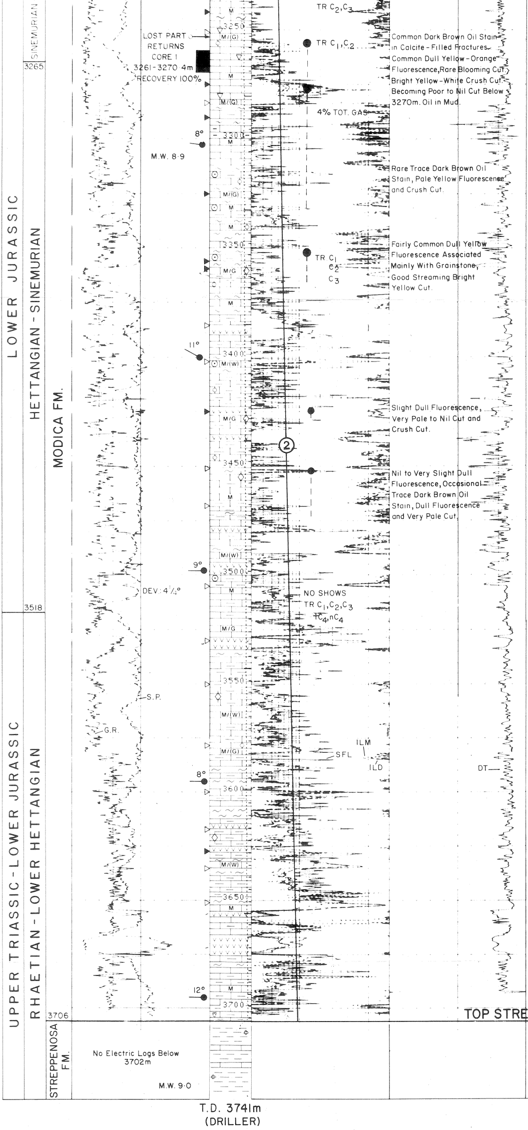
3102-3144m LIMESTONE: no visible porosity. compact mudstone. light grey-light brown. cream. mottled. microcystalline. moderately hard-v.hard. brittle. angular-blocky. v.rare-absent bivalues. radiolaria. stylolites.
MARL: light grey green. fissile-blocky. friable-moderately hard. slightly dolomitic.
LIMESTONE: no visible porosity. wackestone/packstone. detritic. mottled light brown. irregular intraclasts and disturbed bedding. moderately soft-hard. crumbly. calcite veins.
LIMESTONE: v. rare intercrystalline porosity. generally no visible porosity. compact wackestone/packstone. sponge spicules. microcrystalline. v hard. crumbly-angular. slightly dolomitic.
VOLCANICS: a/a.

3144-3167m LIMESTONE: compact mudstone. a/a. splintery. chert. porcellaneous. generally barren of fossils. v. occ. radiolaria and bivalues.
LIMESTONE: compact wackestone/packstone a/a.
MARL: a/a. not dolomitic.

TOP MODICA FM. 3167m (-3154m)

3167-3200m LIMESTONE: no visible porosity. mudstone/wackestone. light brown-off white. compact. hard. brittle, carbonaceous flecks. occ. marly. bioclastic. radiolaria and sponge spicules. chert.
V. minor TUFF: light grey-light brown. firm. blocky. laminated.

3200-3254m LIMESTONE: mudstone wackestone a/a.
Minor MARL: light brown-light grey. firm. fissile-brittle. moderately v. calcareous. carbonaceous. occ. volcanic material. grading to MARLY LIMESTONE.
V. minor TUFF: a/a.



3254-3270m LIMESTONE mudstone a a occ white microcrystalline sparry calcite beige light brown
LIMESTONE no visible porosity grainstone white-light brown. peloids

3270-3290m LIMESTONE no visible porosity generally compact mudstone white beige cryptocrystalline. occ chalky v hard-brittle angular fissile. occ. crumbly. chert
V. rare LIMESTONE: grainstone. ooliths. peloids
MARL: medium grey-brown. fissile. carbonaceous

3290-3390m LIMESTONE no visible porosity. compact mudstone. white-dark grey. cryptocrystalline. translucent. v hard-brittle. angular-fissile. occ. crumbly. becoming v argillaceous. grading to marl. occ. chalky. white. moderately soft. crumbly. pyritic. chert
MARL medium-dark grey. occ light grey. crumbly-fissile. firm-brittle.
Rare LIMESTONE no visible porosity. compact grainstone. white-beige. angular-crumbly. brittle.
BASALT: light grey green. crystalline. abundant quartz. chloritic. sparry calcite

3390-3408m LIMESTONE: no visible porosity. compact mudstone. occ. wackestone. a/a. decreasingly argillaceous. becoming frequently light grey-beige-white. pyrite. frequently slightly chalky.
MARL: a/a. light-dark grey and brown.

3408-3452m LIMESTONE: mudstone. a/a. slightly-v. argillaceous. brittle.
Trace LIMESTONE: grainstone. a/a. pelitic/intraclastic. rarely oolitic.
MARL a/a. occ. dark grey-black. v. carbonaceous
BASALT: crystalline. mafic. chloritic. a/a.

3452-3480m LIMESTONE. no visible porosity. mudstone. occ. wackstone. commonly chalky. white. moderately soft. angular-crumbly.
MARL: a/a. frequently v.dark grey. v. carbonaceous. v. fissile. grading to shale. rare intraclasts of lime mudstone.
Trace LIMESTONE: grainstone. a/a.

3480-3560m LIMESTONE: no visible porosity. mudstone. beige-light grey. slightly-very argillaceous. grading to MARL. occ. slightly dolomitic. occ. wackestone. a/a. and chalky mudstone. white. a/a. and occ. grainstone. intraclastic/pelitic. a/a.
MARL/SHALE: light dark grey. occ. black and dark brown. crumbly-v. fissile. firm-brittle.
BASALT: mottled black and white. crystalline. v. mafic. occ. chloritic. dark brown volcanic glass.

3560-3672m LIMESTONE: no visible porosity. mudstone/wackstone. a/a. mottled light-medium grey. beige. increasingly chalky. white. moderately soft-firm. crumbly. wackestone becomes increasingly rare. largely barren of fossils. nil-v. argillaceous. sparry calcite.
MARL: a/a mostly dark grey-black. grading to SHALE.
LIMESTONE: grainstone. a/a. decreasing with depth. with sub-angular intraclasts. poorly sorted.
BASALT: a/a.

3672-3706m LIMESTONE: no visible porosity. mudstone. white. chalky. moderately hard. blocky. occ. microcystalline. beige/buff.
CLAYSTONE/MARL: dark grey. occ. black. fissile. laminated. slightly silty.

TOP STREPPENOSA FM 3706m (-3693m)

3706-3741m CLAYSTONE/SHALE: medium-dark grey. moderately hard-soft. platey-fissile. occ. carbonaceous. specks. slightly silty. micromicaceous. non calcareous. pyritic. mottled.
LIMESTONE: no visible porosity. mudstone. white. chalky. blocky. moderately hard-hard.