Agip

G E C R

Composite well log :

CASCINA RIVIERO 1 DIR

AGIP ARCHIVIO POZZI GEOP

A

BK

Licence SEBINO				Well code 06357
Drawing N° :	Up-to-date :	Enclosure to : FINAL REPORT	Approved by Dr. G. Ragosa	Encl. N° 1
Scale : 1:1000	Date : June 94'	Compiler : I.GAZ-A.PAGANIN / Operator (setup): F. ADAMI	Revised by:	

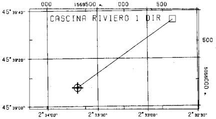
Partecipants : AG-CHV-PPI-EDG

Operator :	AGIP	46.000%
Partners :	PHILLIPS PETROLEUM INT.	28.500%
	CHEVRON	16.500%
	EDISON GAS	9.000%

Country: ITALIA Reg. : LOMBARDIA 2

Map IGM 46 I NE Scale : 1/25000

County : GANDOSSO (BG)



Geog. Coor.	Long.	W002° 32' 45.5"	Lat.	N45° 39' 38.29"
Grid	Est	1.570.612 m	Nord	5.056.836 m
Bottom hole	Long.	W002° 33' 42.5"	Lat.	N45° 39' 04.19"

TERRIGENOUS ROCKS

- Breccia elements
- Breccia in general
- Pebbles
- Conglomerate in general
- Granules
- Sand in general
- Coarse sand
- Fine sand
- Silt
- Sandstone in general
- Siltstone
- Shale/clay
- Sandy shale
- Silty shale
- Marl
- Sandy marl
- Silty marl

CEMENTS

- Cement in general
- Siliceous cement
- Carbonate cement
- Calcareous cement
- Dolomitic cement

CARBONATE ROCKS

- Limestone in general
- Argillaceous limestone
- Limestone with chert nodules
- M Mudstone
- W Wackestone
- P Packstone
- G Grainstone
- B Boundstone
- Chalk
- Dolomitic limestone
- Calcareous dolomite
- Dolomite in general*
- MC Medium to coarse dolomite (>62µ)
- F Fine dolomite (<62µ)

OTHER ROCKS

- Gypsum or anhydrite
- Salt in general
- Coal in general
- Chert
- Ferruginous rocks

IGNEOUS AND METAMORPHIC ROCKS

- Intrusive rocks
- Extrusive rocks
- Dykes
- Pyroclastic rocks
- Metamorphic rocks

PARTICLES AND FOSSILS

- Angular intraclasts in general
- Rounded intraclasts in general
- Pelletoids
- Oolites
- Onkolites
- Megafossils in general
- Algae in general
- Bryozoa
- Corals
- Crinoids
- Pelecypods
- Rudists
- Large foraminifera
- Microfossils in general
- Planktonic foraminifera
- Benthonic foraminifera
- Fossil fragments
- Rudist fragments
- Radiolaria
- Sponge spicules
- Ostracods

SEDIMENTARY AND DIAGENETIC STRUCTURES

- Massive bedding
- dm Decimetre bedding
- Parallel laminations
- Cross bedding
- Graded bedding
- Nodular structures
- Stromatolites
- Burrows
- Slumping
- Convolute laminations
- Ripple marks
- Mud cracks
- Pressure solution
- Geopetal textures
- Birdseyes

POROSITY TYPES

PK	Chalky porosity
PI	Intergranular porosity
PV	Vuggy porosity
PC	Intercrystalline porosity
PF	Fracture porosity

OTHER SYMBOLS

- Losses
- Lost circulation
- Cores (recovered part in black)
- Side wall cores
- F.I.T.
- Tectonic boundary
- Unconformity
- Fractures
- 5° Azimuth and dip

FORMATION FLUIDS

FW	Fresh water
BW	Brackish water
SW	Salt water
GTR	Gas traces
GAS	Gas
OTR	Oil traces
OIL	Oil
CO_2	Carbon dioxide

SHOWS

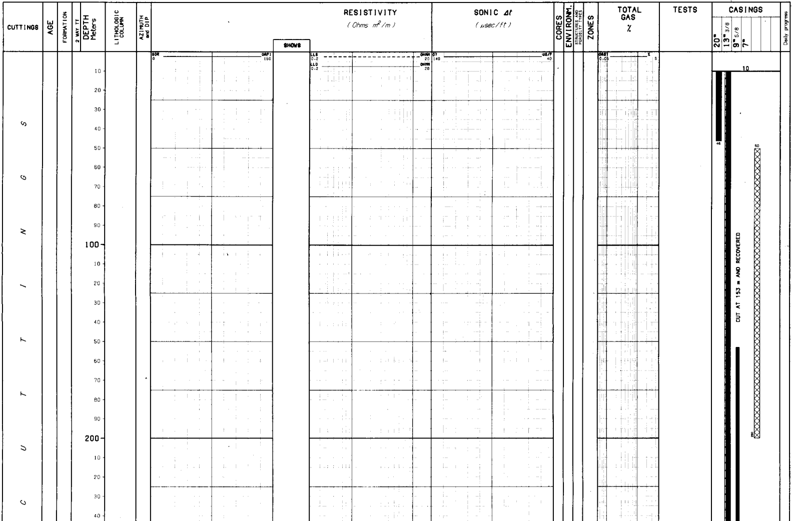
- Gas traces
- Gas
- H_2S Hydrogen sulphide
- CO_2 Carbon dioxide
- Oil traces
- Oil
- Bitumen traces
- Bitumen
- Salt water
- Fresh water
- Gas and salt water
- Gas and oil traces

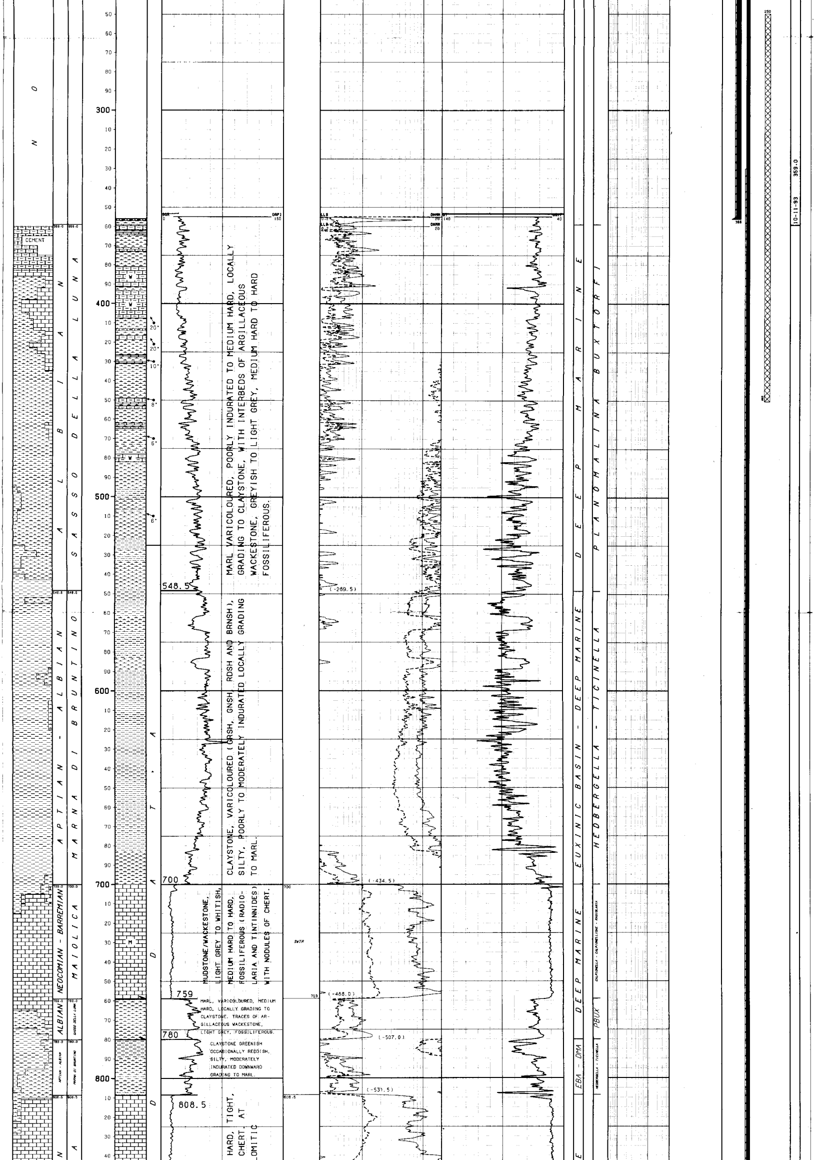
- Cemented casing
- Stuck casing
- Gun perforated casing
- Casing shoe
- Stuck drill pipes
- Cement plug
- Squeezing
- Bridge plug
- Directional hole
- Sidetracking
- Successful tes
- Unsuccessful tes
- P Production test
- Tubing with production packer
- Subsurface pumping unit
- Gravel packing

W3908V01 january 1994 - APPL

Rig	OILWELL E 2000	Spudding date	01-11-93	Production started on	- -
Contractor	Saipem	Drilling end date	12-04-94	Producing interval	
Total depth	4226.0	Rig release date	22-04-94		

Results	DRY WELL	Elevation amsl	Rotary Table 257.50
Status	PLUGGED AND ABANDONED		First flange 247.50
			Ground level 248.20





MARL VARICOLOURED, POORLY INDURATED TO MEDIUM HARD, LOCALLY GRADING TO CLAYSTONE, WITH INTERBEDS OF ARGILLACEOUS WACKESTONE, GREYISH TO LIGHT GREY, MEDIUM HARD TO HARD FOSSILIFEROUS.

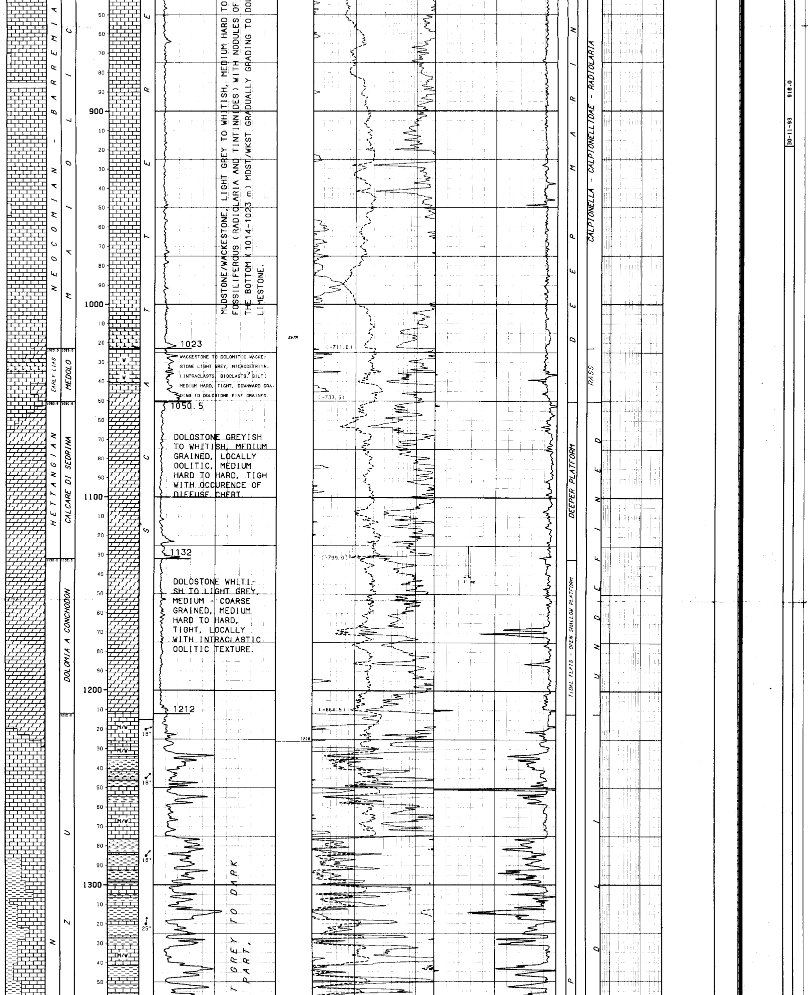
CLAYSTONE, VARICOLOURED (GRSH, GNSH, RDSH AND BRNSH), SILTY, POORLY TO MODERATELY INDURATED LOCALLY GRADING TO MARL.

MUDSTONE/WACKESTONE, LIGHT GREY TO WHITISH, MEDIUM HARD TO HARD, FOSSILIFEROUS (RADIOLARIA AND TINTINNIDES) WITH NODULES OF CHERT.

MARL, VARICOLOURED, MEDIUM HARD, LOCALLY GRADING TO CLAYSTONE. TRACES OF ARGILLACEOUS WACKESTONE, LIGHT GREY, FOSSILIFEROUS.

CLAYSTONE GREENISH OCCASIONALLY REDDISH, SILTY, MODERATELY INDURATED DOWNWARD GRADING TO MARL.

HARD, TIGHT, CHERT. AT
OMITIC



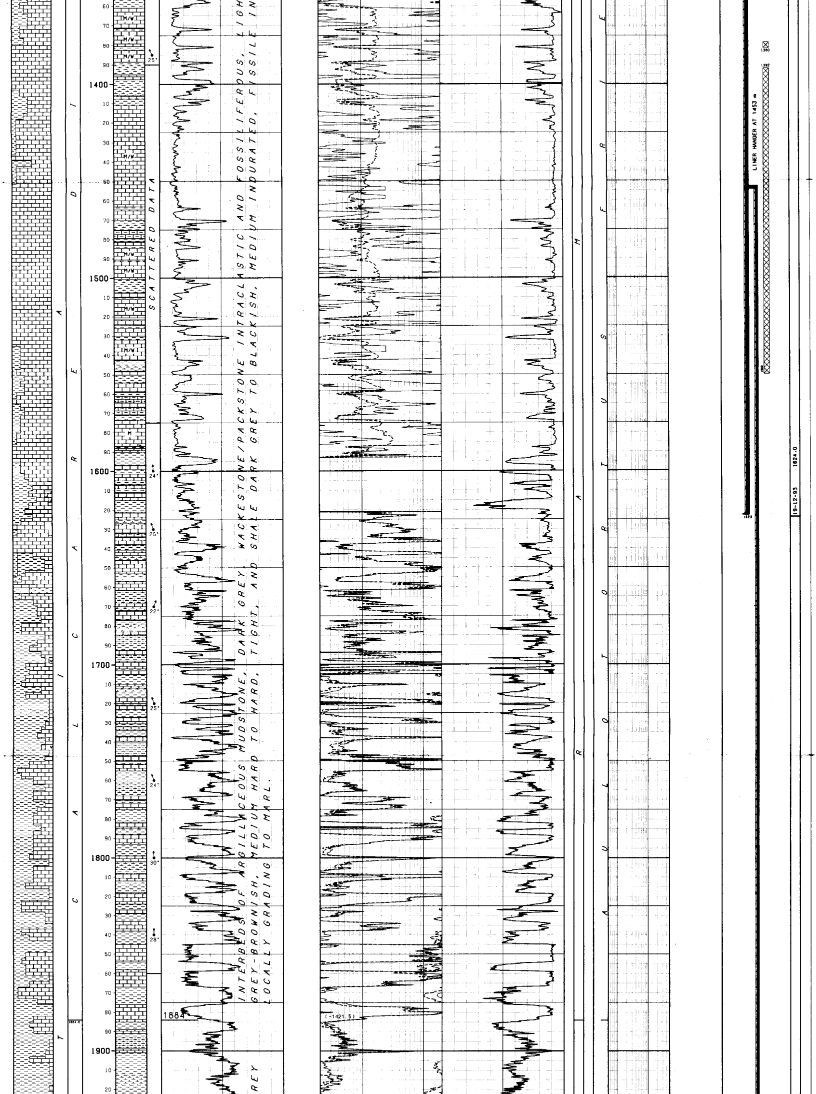
MUDSTONE/WACKESTONE, LIGHT GREY TO WHITISH, MEDIUM HARD TO
FOSSILIFEROUS (RADIOLARIA AND TINTINNIDES) WITH NODULES OF
THE BOTTOM (1014-1023 m) MDST/WKST GRADUALLY GRADING TO DOL
LIMESTONE.

WACKESTONE TO DOLOMITIC WACKESTONE LIGHT GREY, MICRODETRITAL (INTRACLASTS, BIOCLASTS, SILT) MEDIUM HARD, TIGHT, DOWNWARD GRADING TO DOLOSTONE FINE GRAINED.

DOLOSTONE GREYISH TO WHITISH, MEDIUM GRAINED, LOCALLY OOLITIC, MEDIUM HARD TO HARD, TIGH WITH OCCURENCE OF DIFFUSE CHERT.

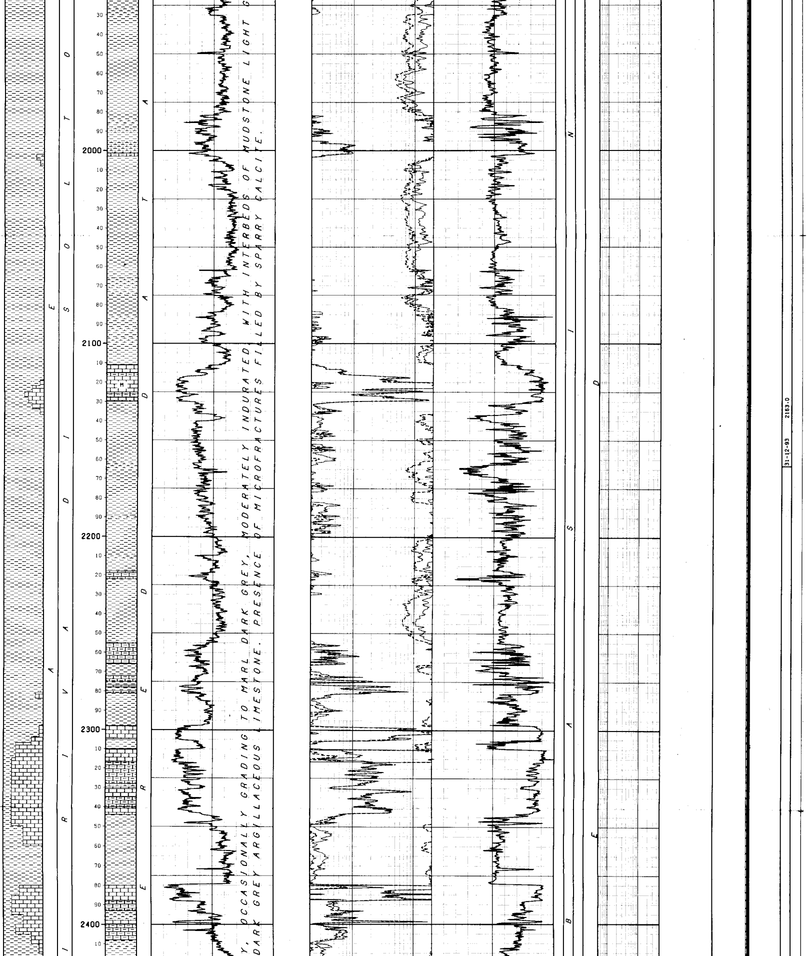
DOLOSTONE WHITISH TO LIGHT GREY, MEDIUM - COARSE GRAINED, MEDIUM HARD TO HARD, TIGHT, LOCALLY WITH INTRACLASTIC OOLITIC TEXTURE.

T GREY TO DARK
PART,



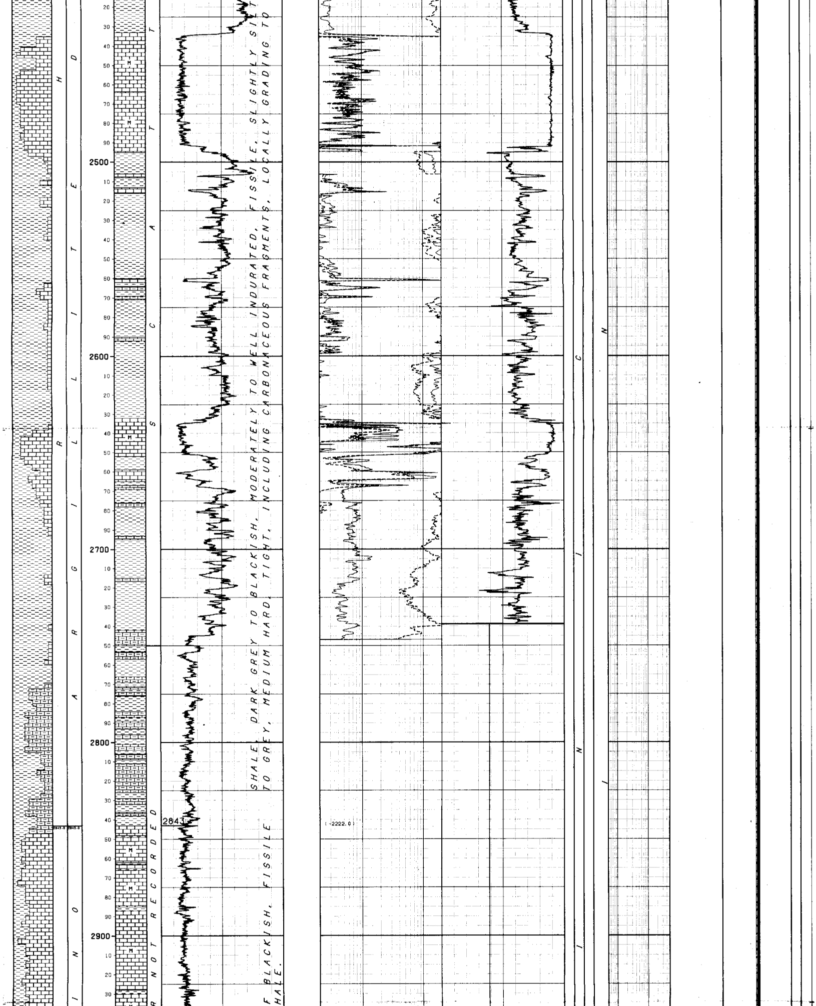
INTERBEDS OF ARGILLACEOUS MUDSTONE, DARK GREY, WACKESTONE/PACKSTONE INTRACLASTIC AND FOSSILIFEROUS, LIGH
GREY-BROWNISH, MEDIUM HARD TO HARD, TIGHT, AND SHALE DARK GREY TO BLACKISH, MEDIUM INDURATED, FISSILE IN
LOCALLY GRADING TO MARL.

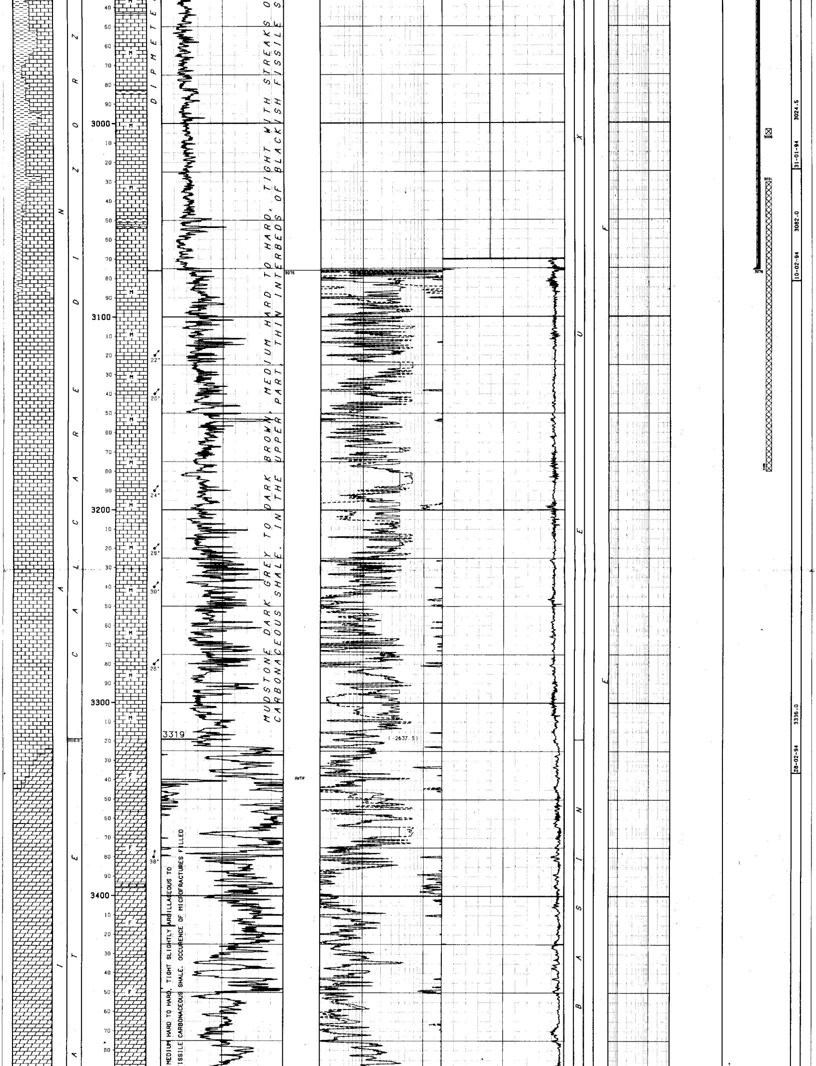
REY

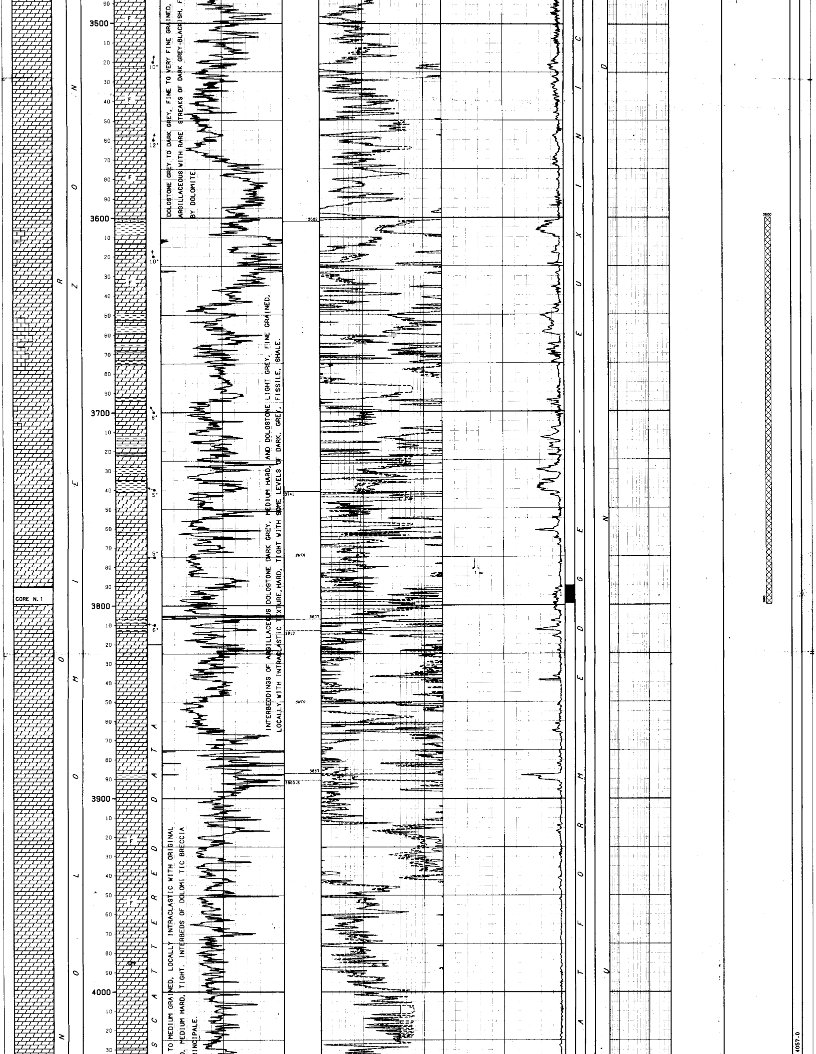


Y, OCCASIONALLY GRADING TO MARL DARK GREY, MODERATELY INDURATED, WITH INTERBEDS OF MUDSTONE LIGHT G

DARK GREY ARGILLACEOUS LIMESTONE. PRESENCE OF MICROFRACTURES FILLED BY SPARRY CALCITE.



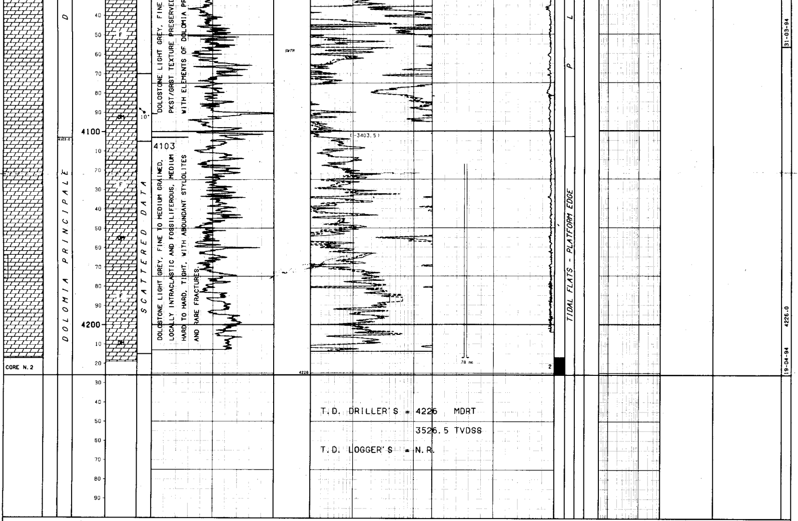




DOLOSTONE GREY TO DARK GREY, FINE TO VERY FINE GRAINED, ARGILLACEOUS WITH RARE STREAKS OF DARK GREY-BLACKISH, F BY DOLOMITE.

INTERBEDDINGS OF ARGILLACEOUS DOLOSTONE DARK GREY, MEDIUM HARD, AND DOLOSTONE LIGHT GREY, FINE GRAINED, LOCALLY WITH INTRACLASTIC TEXTURE, HARD, TIGHT WITH SOME LEVELS OF DARK, GREY, FISSILE, SHALE.

TO MEDIUM GRAINED, LOCALLY INTRACLASTIC WITH ORIGINAL D, MEDIUM HARD, TIGHT. INTERBEDS OF DOLOMI TIC BRECCIA RINCIPALE.



INDEX OF CODES

ENVIRONMENT

EBR - DMR --> EUXINIC BASIN - DEEP MARINE

BIOZONE

PBUX --> PLANOMALINA BUXTORFI
RASS --> RADIOLARIA & SPONGE SPICULES

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RIG  NUMBER  :  1        RIG  NAME : OILWELL E 2000                  R.T.E.     257.5   a.s.l.

Remark: all Depths are in meters and  referred to the R.T., Pressures  in  Kg/sq.cm, Temperatures in •C and Times in hours and minute

CASINGS
===========(T=Type/C=Casing/L=Liner/F=Slotted liner/R=Tie-back )

Hl. Nr. T  Top       Bottom            Size       Remarks
--- --- -  -------   -------           ---------  ----------------------------------------
 1   1  C     10.0      46.0 Shoe      20-00/00  C.P. Hammered to 46 m (< 2 mm/shot).
 1   2  C     10.0     357.0 Shoe      13-03/08  61 lb/ft  - J55 - Antares
                                        __CEMENT JOB________________________________________________SLURRY__COMPOSITION________________________________________________
                                        Nr. Stg  D.V.   Th.Cmt.Top  Remarks                          Nr  Component      Description                                  Quantity
                                        --- ---  ------ ----------  -------------------------------  -   ---------      ------------------------------------------   --------
                                         1  1              10.0     At surface 3 mc of slurry at D=1850 g/l
                                                                                                      1   CEMENT      Geocem-G (Scurry D=1900 g/l )                      40.0  t
 1   3  C     10.0    1623.0 Shoe      09-05/08  43.5 lb/ft  - L80 - Antares
                                        __CEMENT JOB________________________________________________SLURRY__COMPOSITION________________________________________________
                                        Nr. Stg  D.V.   Th.Cmt.Top  Remarks                          Nr  Component      Description                                  Quantity
                                        --- ---  ------ ----------  -------------------------------  -   ---------      ------------------------------------------   --------
                                         1  1             330.0     Csg. cut at 153 m and recovered
                                                                                                      1   CEMENT      Geocem-G (Scurry D=1900 g/l )                      94.0  t
                                                                                                          ADDITIVE    R12L (Retarder)                                     0.9  %
 1   4  L   1453.0    3076.0 Shoe      07-00/00  32 lb/ft  - L80 35 lb/ft  - P110 Antares
                                        __CEMENT JOB________________________________________________SLURRY__COMPOSITION________________________________________________
                                        Nr. Stg  D.V.   Th.Cmt.Top  Remarks                          Nr  Component      Description                                  Quantity
                                        --- ---  ------ ----------  -------------------------------  -   ---------      ------------------------------------------   --------
                                         1  1            1453.0
                                                                                                      1   CEMENT      GEOCEM-G (Scurry D=1900 g/l )                      65.0  t
                                                                                                          ADDITIVE    R12L (Retarder)                                     0.6  %
                                                                                                              "       CD31L (Friction reducer)                            0.6  %
                                                                                                              "       FL19L (Fluid loss reducer)                          1.2  %
```

DEVIATION SURVEYS
=====================(Sexagesimal degrees - TT=Totco/SS=Single Shot/MW=MWD/GY=Gyroscope)

Hl.	M.Depth	V.Depth	Tool	Dev.	Geog.Dir.
1	86.0	86.0	SS	0.50	N55•10E
1	149.0	149.0	SS	0.75	N85•10E
1	222.0	222.0	SS	1.00	S69•90E
1	339.0	338.9	SS	1.75	S81•90E
1	363.0	362.9	MW	1.80	S64•30E
1	372.0	371.9	MW	1.90	S49•10E
1	382.0	381.9	MW	1.60	S46•20E
1	391.0	390.9	MW	2.10	S17•90E
1	400.0	399.9	MW	2.60	S10•80W
1	410.0	409.9	MW	3.30	S18•30W
1	419.0	418.9	MW	4.00	S24•20W
1	428.0	427.9	MW	5.00	S31•80W
1	438.0	437.8	MW	5.20	S38•70W
1	447.0	446.8	MW	6.00	S41•10W
1	456.0	455.7	MW	6.30	S43•80W
1	466.0	465.7	MW	6.80	S43•30W
1	475.0	474.6	MW	7.30	S41•50W
1	494.0	493.4	MW	8.70	S43•10W
1	503.0	502.3	MW	9.60	S47•30W
1	512.0	511.2	MW	9.90	S48•30W
1	522.0	521.0	MW	10.40	S50•50W
1	531.0	529.9	MW	10.60	S49•80W
1	541.0	539.7	MW	11.20	S49•30W
1	549.0	547.5	MW	11.60	S50•70W
1	558.0	556.3	MW	12.00	S50•20W
1	587.0	584.6	MW	13.50	S52•30W
1	605.0	602.0	MW	15.80	S51•80W
1	624.0	620.2	MW	17.10	S54•30W
1	643.0	638.3	MW	18.00	S54•70W
1	670.0	663.9	MW	19.90	S55•60W
1	699.0	690.9	MW	22.20	S54•70W
1	727.0	716.7	MW	24.10	S54•70W
1	755.0	742.1	MW	25.90	S54•30W
1	782.0	766.1	MW	28.50	S53•10W
1	806.0	787.1	MW	29.40	S54•10W
1	833.0	810.4	MW	30.80	S52•80W
1	852.0	826.7	MW	31.30	S54•60W
1	871.0	842.9	MW	31.50	S53•50W
1	885.0	854.8	MW	32.00	S53•90W
1	898.0	865.8	MW	32.50	S53•50W
1	917.0	881.7	MW	33.60	S53•20W
1	936.0	897.5	MW	34.60	S53•20W
1	967.0	922.9	MW	35.20	S52•50W
1	995.0	945.8	MW	35.20	S52•50W
1	1023.0	968.6	MW	35.90	S52•80W
1	1052.0	992.0	MW	36.10	S52•80W
1	1070.0	1006.6	MW	36.00	S53•10W
1	1098.0	1029.2	MW	36.00	S53•50W
1	1134.0	1058.3	MW	36.00	S53•80W
1	1171.0	1088.4	MW	35.50	S54•40W
1	1200.0	1112.1	MW	35.00	S54•00W
1	1239.0	1144.0	MW	34.90	S54•70W
1	1277.0	1175.2	MW	35.00	S53•50W
1	1315.0	1206.3	MW	34.90	S54•50W
1	1353.0	1237.6	MW	34.50	S53•20W
1	1400.0	1276.2	MW	34.70	S53•40W
1	1429.0	1300.1	MW	34.90	S54•00W
1	1468.0	1332.1	MW	34.60	S53•60W
1	1507.0	1364.2	MW	34.50	S54•00W
1	1545.0	1395.6	MW	34.20	S54•10W
1	1582.0	1426.2	MW	34.00	S53•80W
1	1605.0	1445.3	MW	33.70	S53•00W
1	1615.0	1453.7	MW	33.80	S52•80W
1	1637.0	1472.0	MW	33.40	S53•00W
1	1660.0	1491.2	MW	33.20	S53•20W
1	1686.0	1513.0	MW	33.30	S53•40W
1	1712.0	1534.6	MW	33.60	S53•50W
1	1731.0	1550.5	MW	33.50	S53•50W
1	1741.0	1558.8	MW	33.10	S53•60W
1	1770.0	1583.2	MW	32.90	S53•90W
1	1798.0	1606.7	MW	32.80	S54•00W
1	1827.0	1631.1	MW	32.60	S53•50W
1	1855.0	1654.6	MW	32.90	S53•50W
1	1884.0	1678.9	MW	33.20	S53•40W
1	1913.0	1703.2	MW	33.10	S52•80W
1	1941.0	1726.6	MW	33.30	S52•50W
1	1969.0	1750.0	MW	33.70	S50•70W
1	2008.0	1782.3	MW	34.50	S50•40W
1	2037.0	1806.2	MW	34.30	S49•00W
1	2066.0	1830.2	MW	34.10	S48•00W
1	2094.0	1853.4	MW	34.10	S48•20W
1	2123.0	1877.4	MW	34.30	S47•10W
1	2152.0	1901.3	MW	34.40	S48•00W
1	2182.0	1926.1	MW	34.40	S48•30W
1	2214.0	1952.5	MW	34.10	S48•80W
1	2241.0	1974.9	MW	33.80	S48•90W
1	2270.0	1999.1	MW	33.40	S49•60W
1	2302.0	2025.8	MW	33.40	S50•50W
1	2330.0	2049.1	MW	33.90	S50•50W
1	2359.0	2073.1	MW	34.10	S50•50W
1	2387.0	2096.3	MW	34.50	S49•80W
1	2415.0	2119.3	MW	34.60	S50•10W
1	2434.0	2134.9	MW	35.10	S49•90W
1	2458.0	2154.4	MW	36.10	S50•40W
1	2485.0	2176.1	MW	37.30	S50•10W
1	2499.0	2187.2	MW	37.50	S50•20W
1	2525.0	2207.8	MW	37.50	S49•70W
1	2554.0	2231.0	MW	36.30	S49•10W
1	2582.0	2253.7	MW	35.20	S49•30W
1	2619.0	2284.4	MW	33.00	S48•80W
1	2648.0	2308.8	MW	32.10	S48•70W
1	2686.0	2341.3	MW	30.40	S48•00W
1	2725.0	2375.2	MW	28.70	S46•80W
1	2753.0	2399.9	MW	28.00	S46•00W
1	2782.0	2425.5	MW	27.40	S44•30W
1	2810.0	2450.4	MW	27.20	S42•40W
1	2846.0	2482.4	MW	27.70	S41•10W
1	2870.0	2503.5	MW	28.50	S40•60W
1	2894.0	2524.6	MW	28.90	S41•30W
1	2922.0	2548.9	MW	30.90	S41•20W
1	2948.0	2571.0	MW	32.40	S41•80W
1	3062.0	2666.8	SS	33.25	S41•00W
1	3093.0	2692.7	SS	33.25	S43•00W
1	3132.0	2725.9	SS	30.25	S44•00W
1	3142.0	2734.5	SS	29.75	S44•00W
1	3170.0	2759.1	SS	27.25	S44•50W
1	3208.0	2793.1	SS	25.75	S44•00W
1	3236.0	2818.5	SS	24.25	S44•00W
1	3270.0	2849.6	SS	23.25	S44•00W
1	3298.0	2875.5	SS	22.00	S44•00W
1	3327.0	2902.5	SS	21.00	S44•00W
1	3356.0	2929.6	SS	20.00	S42•00W
1	3393.0	2964.5	SS	19.25	S39•00W
1	3431.0	3000.5	SS	18.25	S46•00W
1	3469.0	3036.6	SS	17.50	S52•00W
1	3498.0	3064.3	SS	17.25	S47•00W
1	3527.0	3092.1	SS	15.00	S45•00W
1	3559.0	3123.2	SS	13.00	S46•00W
1	3587.0	3150.5	SS	12.00	S46•00W
1	3615.0	3178.0	SS	11.50	S46•00W
1	3644.0	3206.4	SS	11.25	S46•00W
1	3672.0	3233.9	SS	10.00	S46•00W
1	3692.0	3253.6	SS	10.00	S50•00W
1	3728.0	3289.1	SS	9.00	S51•00W
1	3775.0	3335.6	SS	7.75	S46•00W
1	3826.0	3386.2	SS	7.25	S51•00W
1	3874.0	3433.8	SS	7.25	S51•00W
1	3921.0	3480.4	SS	7.00	S51•00W
1	3973.0	3532.0	SS	7.00	S47•00W
1	4021.0	3579.7	SS	6.75	S50•00W
1	4108.0	3666.2	SS	5.25	S40•00W
1	4120.0	3678.1	MW	4.80	S44•40W
1	4140.0	3698.1	MW	4.50	S47•40W
1	4160.0	3718.0	MW	4.20	S48•00W
1	4180.0	3738.0	MW	3.80	S53•00W
1	4200.0	3757.9	MW	3.30	S55•40W
1	4226.0	3783.9		3.30	S55•40W

CUTTINGS

(Type:L=Washed/U=Unwashed/W=Wet/H=Head space/S= Source Rock/I=Hydrogen Sulphide Presence)

Hl.	Top	Bottom	Inter.	Type	Sets
1	360.0	380.0	5.0	Washed	4
1	360.0	600.0	3.0	Source R	3
1	380.0	600.0	3.0	Washed	4
1	540.0	6000.0	30.0	Head Sp	1
1	600.0	765.0	5.0	Washed	4
1	600.0	765.0	5.0	Source R	3
1	765.0	1170.0	3.0	Washed	4
1	765.0	942.0	3.0	Source R	3
1	942.0	3024.0	6.0	Source R	3
1	1170.0	1190.0	5.0	Washed	4
1	1190.0	2290.0	3.0	Washed	4
1	2290.0	2295.0	5.0	Washed	4
1	2295.0	2310.0	3.0	Washed	4
1	2310.0	2440.0	5.0	Washed	4
1	2440.0	2518.0	3.0	Washed	4
1	2518.0	2528.0	5.0	Washed	4
1	2528.0	2549.0	3.0	Washed	4
1	2549.0	2559.0	5.0	Washed	4
1	2559.0	2592.0	3.0	Washed	4
1	2592.0	2632.0	5.0	Washed	4
1	2632.0	2668.0	3.0	Washed	4
1	2668.0	2718.0	5.0	Washed	4
1	2718.0	3790.0	3.0	Washed	4
1	3024.0	4217.0	3.0	Source R	3
1	3790.0	3799.0	1.0	Washed	1
1	3799.0	4217.0	3.0	Washed	4
1	4217.0	4226.0	1.0	Washed	1

BOTTOM HOLE CORES

CORE NR. 1

HOLE 1 FROM 3790.0 TO 3799.0 PURP. PETROGRAPHIC/MINING REC.: 9.0=100.0%

Shows: Nil
Porosity: min.= 0.4% max.=1.7% Permeability: min.=0.1 mD max.=1.6 mD
Dip: Not evident Last survey: 7.0 S46W at 3775.0 m
Age / Formation : NORIAN - DOLOMIE ZONATE
Description:

3790 - 3799 m Dolostone dark-grey to blackish, fine grained, occasionally recrystallized, rarely with intraclastic-pelletiferous W/P texture preserved.
Presence of thin beds with millimetric to centimetric thick, blackish, argillaceous laminae , often stylolitized. Rare interbeds of light grey dolostone with algae remains and vugs recemented by diagenetic anhydrite.

CORE NR. 2

HOLE 1 FROM 4217.0 TO 4226.0 PURP. PETROGRAPHIC/MINING REC.: 9.0=100.0%

Shows: Nil
Porosity: min.=0.5% max.=1.2% Permeability: min.=0.5% max.=1.2%
Dip: Not evident Last survey: 5.25 S40W at 4108.0 m
Age / Formation: NORIAN / Dolomia Principale
Description:

4217 - 4218 m Dolostone, hazel,recrystallized with stromatolites , encrusting micro-organisms and presence of vugs filled by polyphasic cement.

4218 - 4223 m Dolostone, light grey, fine to medium grained with fossiliferous-intraclastic (algae and mollusca) W/P texture preserved.
At the base, bed 20 cm thick, of dolomitic microbreccia.

4223 - 4226 m Interbeds of: hazel, fine grained dolostone.
stromatolitic dolostone.
dolopackstone with algae and mollusca.

All along the core, presence of poly-orientated stylolites with blackish,argillaceous-bituminous residual.

SIDEWALL CORES

NONE

LITHOLOGY DESCRIPTION

FROM 359.0 TO 548.5 SASSO DELLA LUNA

Marl varicoloured, poorly indurated to medium hard, locally grading to claystone, with interbeds of argillaceous Wackestone, greyish to ligth grey, medium hard to hard,fossiliferous.

FROM 548.5 TO 700.0 MARNA DI BRUNTINO

Claystone, varicoloured (grsh, gnsh, rdsh, and brnsh), silty, poorly to moderately indurated,locally grading to marl.

FROM 700.0 TO 759.0 MAIOLICA

Mudstone/Wackestone, light grey to whitish, medium hard to hard, fossiliferous (Radiolaria and Tintinnides) with nodules of chert.

FROM 759.0 TO 780.0 SASSO DELLA LUNA

Marl, varicoloured, medium hard, locally grading to claystone. Traces of argillaceous Wackestone, light grey, fossiliferous.

FROM 780.0 TO 808.5 MARNA DI BRUNTINO

Claystone greenish occasionally reddish, silty moderately indurated downward grading to marl.

FROM 805.5 TO 1023.0 MAIOLICA

Mudstone/Wackestone, ligth grey to whitish, medium hard to hard, tigth, fossiliferous (Radiolaria and Tintinnides) with nodules of chert.
At the bottom (1014-1023 m) MDST/WKST gradually grading to dolomitic limestone.

FROM 1023.0 TO 1050.5 MEDOLO

Wackestone to dolomitic Wackestone ligth grey, microdetrital (Intraclast, bioclasts, silt) medium hard, tigth, downward grading to dolostone fine grained.

FROM 1050.5 TO 1132.0 CALCARE DI SEDRINA

Dolostone greyish to whitish, medium grained, locally oolitic, medium hard to hart, tigh with occurence of diffuse chert.

FROM 1132.0 TO 1212.0 DOLOMIA A CONCHODON

Dolostone whitish to ligth grey, medium-coarse grained, medium hard, to hard, tight, locally with intraclastic-oolitic texture.

FROM 1212.0 TO 1884.0 CALCARE DI ZU

Interbeds of argillaceous Mudstone, dark grey, Wackestone/Packstone intraclastic and fossiliferows, light grey to dark grey-brownish, medium hard to hard, tight and shale dark grey to blackish, medium indurated, fissile in part, locally grading to marl.

FROM 1884.0 TO 2843.0 ARGILLITE DI RIVA DI SOLTO

Shale, dark grey to blackish, moderately to well indurated, fissile, slightly silty, occasionally grading to marl dark grey, moderately indurated, with interbeds of Mudstone ligth grey to gery, medium hard, tight,including carbonaceous fragments, locally grading to dark grey argillaceous Limestone.
Presence of microfractures filled by sparry calcite.

FROM 2843.0 TO 3319.0 CALCARE DI ZORZINO

Mudstone dark grey to dark brown, medium hard to hard, tight with streaks of blackish, fissile carbonaceous shale.
In the upper part, thin interbeds of blackish fissile shale.

FROM 3319.0 TO 4103.0 DOLOMIE ZONATE

From 3319 to 3602: Dolostone grey to dark gery,fine to very fine grained medium hard to hard, tight, slightly argillaceous to argillaceous with rare streaks of dark grey- blakish, fissile shale. Occurences of microfractures filled by dolomite.

From 3602 to 3890.5: Interbeddings of argillaceous dolostone dark grey, medium hard, and dolostone light grey, fine grained, locally with intraclastic texture, hard, tight with some levels of dark, grey, fissile, shale.

From 3890.5 to 4103: Dolostone light grey, fine to medium grained, locally intraclastic with original PKST/GRST texture preserved medium hard, tight. Interbeds of dolomitic breccia with elements of Dolomia Principale.

FROM 4103.0 TO 4226.0 DOLOMIA PRINCIPALE

Dolostone light grey, fine to medium grained, locally intraclastic and fossiliferous, medium hard to hard, tight, with aboundant stylolites and rare fractures.

DRILLING MUD

(Weight in g/l,Salinity in g/l NaCl)

Hl.	Top	Bottom	Type	Weight	Salinity	Oil %
1	10.0	51.0	FWAR	1040		
1	51.0	70.0	FWGE	1090		
1	70.0	118.0	FWGE	1100		
1	118.0	150.0	FWGE	1120		
1	150.0	304.0	FWGE	1140	1.5	
1	304.0	359.0	FWGE	1160	1.5	
1	359.0	840.0	FWLSLI	1150	0.6	
1	840.0	894.0	FWLSLI	1170	0.6	
1	894.0	1860.0	FWLSLI	1150	0.6	2.0
1	1860.0	1977.0	FWLSLI	1170	0.6	1.0
1	1977.0	2163.0	FWLSLI	1230	0.6	1.0
1	2163.0	2993.0	FWLSLI	1260	1.5	1.0
1	2993.0	3050.0	FWLSLI	1340	1.5	5.0
1	3050.0	3059.0	FWLSLI	1360	1.5	5.0
1	3059.0	3082.0	FWLSLI	1390	1.5	5.0
1	3082.0	3455.0	FWLSLI	1250	1.4	4.0
1	3455.0	3703.0	FWLSLI	1250	1.8	6.0
1	3703.0	4226.0	FWLSLI	1250	1.8	8.0

MUD LOSSES

(T=Type/A=losses/P=lost circulation)

Hl.	Top	Bottom	T	c.m.	Remarks
1	1125.0	1141.0	A	11	Drilling
1	3776.0	3781.0	A	1	Drilling
1	4117.0	4130.0	A	8	Drilling
1	4130.0	4130.0	A	4	Tripping
1	4130.0	4164.0	A	12	Drilling
1	4164.0	4195.0	A	14	Drilling
1	4195.0	4217.0	A	10	Drilling
1	4217.0	4217.0	A	3	Short trip before log
1	4217.0	4217.0	A	3	Pooh bit + Vsp
1	4217.0	4217.0	A	5	Log + Rih bit
1	4217.0	4217.0	A	3	Vsp + Tripping
1	4217.0	4217.0	A	4	Pooh bit
1	4217.0	4217.0	A	2	Vsp
1	4217.0	4217.0	A	2	Coring n.1

SHOWS

NONE

WIRELINE LOGGING OPERATIONS

(D = Down hole tools set / R = Run)

Hl.	Nr	D	Code	R	Top	Bottom	Date	Company
1	1	1	CHT	1	356.0	1604.0	16/12/93	Western Atla
1	1	1	DAC	1	356.0	1594.0	"	"
1	1	1	DLA	1	356.0	1604.0	"	"
1	1	1	SL	1	356.0	1589.5	"	"
1	1	1	SP	1	356.0	1559.0	"	"
1	1	2	DIPLOG	1	355.2	1607.2	"	"
1	1	3	ACL	1	355.2	1603.7	17/12/93	"
1	1	3	DLA	2	355.2	1596.0	"	"
1	1	3	GR	1	355.2	1597.2	16/12/93	"
1	1	3	SP	2	355.2	1587.8	17/12/93	"
1	1	4	TEMP	1	48.5	682.0	"	"
1	1	5	CN	1	965.0	1595.2	"	"
1	1	5	ZDL	1	965.0	1602.3	"	"
1	2	1	AMS	1	1621.0	2727.3	07/02/94	Schlumberger
1	2	1	BHC	1	1621.0	2737.0	"	"
1	2	1	DLL	1	1621.0	2746.9	"	"
1	2	1	NGS	1	1621.0	2739.2	"	"
1	2	2	AMS	2	1621.0	2740.9	"	"
1	2	2	SHDT	1	1621.0	2751.5	"	"
1	3	1	AMS	3	3076.0	4196.1	07/04/94	"
1	3	1	BHC	2	3076.0	4204.5	"	"
1	3	1	DLL	2	3076.0	4213.9	"	"
1	3	1	NGS	2	2700.0	4206.8	"	"
1	3	2	AMS	4	3300.0	4204.0	"	"
1	3	2	APS	1	3300.0	4211.9	"	"
1	3	2	HNGS	3	3300.0	4207.6	"	"
1	3	2	LDS	1	3300.0	4218.2	07/04/94	Schlumberger
1	3	3	AMS	5	3076.0	4196.2	08/04/94	"
1	3	3	FMS	1	3076.0	4219.0	"	"
1	3	3	NGS	4	3076.0	4206.0	"	"
1	3	4	AMS	6	3280.0	4205.7	"	"
1	3	4	CNL	1	3280.0	4218.2	"	"
1	3	4	GR	4	3280.0	4207.8	"	"
1	3	4	HLDL	1	3280.0	4215.9	"	"
1	3	5	AMS	7	10.0	300.0	"	"
1	3	5	CBLVDL	1	10.0	300.0	"	"
1	3	6	DVSP	1	500.0	4210.0	09/04/94	"
1	3	6	WSS	1	258.0	400.0	"	"

PRODUCTION LOG RESULTS

NONE

TEMPERATURE FROM LOGS

(Static T calc.using Fertl-Wichmann method)

Hl.	Nr	D	M.Depth	V.Depth	Meas.T.	t	Dt	Static T
1	1	2	1595.8	1437.7	53.0	1.00	19.30	54.0
1	1	3	1587.0	1430.4	53.5	"	27.30	"
1	1	4	682.0	675.2	43.0		31.30	
1	1	5	1592.5	1434.5	53.0	1.00	33.30	54.0
1	2	1	2727.3	2377.2	61.0	2.00	14.30	66.0
1	2	2	2740.9	2389.2	63.0	2.00	24.30	66.0
1	3	1	4196.1	3754.0	97.0	"	12.15	99.0
1	3	2	4196.2	3754.1	97.5	"	18.40	98.9
1	3	3	4196.2	3754.1	98.0	2.00	27.30	99.0
1	3	4	4205.7	3763.6	"	"	33.00	"
1	3	5	288.5	288.5	21.0	"	37.00	

PLUGS

(TT=Type/ CM=Cement/SS=Sand/BA=Barite)-(q=Quantity in metric tons)

Hl.	Nr.	TT	Top	Bottom	Purpose	Cem.cl.	q.	Additives	q.	Drilled out for...	To	Remarks
1	1	CM	3600.0	3800.0	WELL ABANDONMENT	"G"	6.0	FL19L	15.0			Additives quantity expressed in litres.
1	2	CM	3031.0	3180.0	WELL ABANDONMENT	"G"	6.2	FL19L	6.6			Tested with 10 tons.
1	3	CM	1392.0	1550.0	WELL ABANDONMENT	"G"	8.3	R12L	4.5			Tested with 10 tons.
1	4	CM	250.0	450.0	WELL ABANDONMENT	"G"	10.4					
1	5	CM	50.0	200.0	WELL ABANDONMENT	"G"	13.3					

SQUEEZINGS

(q=Quantity in metric tons)

NONE

BRIDGE PLUGS

Hl.	Nr.	Depth	Type	Purpose	Dril.out Y/N	Tested Y/N	Pressure	Remarks
1	1	3005.0	MERCURY K1-3AA 7"	WELL ABANDONMENT	N	Y	500.0	
1	2	1380.0	MERCURY K1-6AA 9"5/8	WELL ABANDONMENT	N	N	500.0	

DRILL STEM TESTS

NONE

PRODUCTION TESTS

NONE

VACUUM TESTS

NONE

LEAK OFF TEST

NONE

WIRELINE FORMATION TESTS

NONE

STIMULATIONS

NONE

ANALYSIS

NONE

TECHNICAL REMARKS

HOLE 1 NR. 1

FROM 884.0 TO 884.0

At the depth of 884.0 m, two cones plus part of the third one of the bit n° 9 (type MSDGH 12"1/4) have been lost in the hole.
Two runs with Super Junk Mill plus Junk Sub were neccessary to mill the cones and recover the pieces of junk.

HOLE 1 NR. 2

FROM 1920.0 TO 3082.0

In the interval 1920.0 - 3082.0 (Argilliti di Riva di Solto and Calcari di Zu fms.) a lot of difficulties have been encountered to drill the 8"1/2 hole section.
The action of the fluid (fresh water mud) used to drill the section, associated with the types of shale (mostly fissile) interbedded with tight limestone and the well inclination, produced a lot of washed hole in front of the shales while in the limestone layers the borehole was quite calibrated.
The tripping in and out was getting worse with a consequent loss time, even if attempts to improve the situation have been made by increasing the mud weight from 1.16 to 1.39 specific gravity and adding 4-5% of oil in the mud
To overcome the problem, a 7" liner (not scheduled in the drilling program) was set at 3067.0 m.

HOLE 1 NR. 3

FROM 3082.0 TO 3082.0

Due to the large washout in front of the shales and the hole inclination, it was not possible to run logging tools below 2752 m. For this reason, in the 8" 1/2 hole section, the logs have been recorded from 2750 m up to the 9"5/8 casing shoe. In the lowest part of this section,only the GR has been recorded in cased hole during the final well logs operations.

HOLE 1 NR. 4

FROM 3082.0 TO 3091.0

Just after the 7" liner shoe was drilled out, drilling difficulties were encountered due to the presence of junk in the bottom hole. The problem has been solved with two runs of junk mill plus junk sub.

HOLE 1 NR. 5

FROM 3082.0 TO 4226.0

No particular drilling difficulties have been encountered to drill the 5" 3/4 phase. Only minor overpull while tripping out and two stuck pipes, have been recorded.
The first stuck pipe which occured at 3200 m, was easily solved with an overpull of 50 tons, while the second one at the depth of 3327 m got free only after 9.5 hours of attempt. The string had been worked alternatively with overpull of 120 tons and slack-off of about 50 tons associated to the action of EZ spot cushions that had been displaced at the rate of 500 lt every 2 hours.

HOLE 1 NR. 6

FROM 4226.0 TO 4226.0

Total displacement at the bottom: 1622.6 m S 49.56° W.

MINING REMARKS

NR. 1

HOLE FROM 356.0 TO 4226.0

No significant gas or oil shows have been detected while drilling.
The petrophisical characteristics of the two potential reservoirs, Dolomia a Conchodon and Dolomia Principale, obtained from the log analysis are very poor. The bottom hole core, cut in the Dolomia Principale after the final well logs, confirms this picture.
The very low porosities generally ranging between 1 - 2 %, only occasionally up to 3 - 4 %, do not allow to evaluate a reliable water saturation.
For more details, refer to Encl. n° 5 (Dolomia a Conchodon - Dolomia Principale Petrophisical Evaluation).
Considering the very poor porosities, the absence of any shows and the poor mud losses occured, the Cascina Riviero 1 Dir well has proved dry.

Some encouraging data, have been instead gathered from a geochemical point of view. The preliminar source rock evaluation, carried out on the unwashed & wet cutting samples relevant to the Calcare di Zu and Argilliti di Riva di Solto fms., shows fair / good source rock potential in the last one.
For more details, refer to Encl. n° 3 (Geochemical Report).

GEOLOGICAL REMARKS

The well Cascina Riviero 1 Dir, is the first that has been drilled in the Sebino Permit.
The aim was to explore the late Triassic reservoirs, Dolomia a Conchodon and Dolomia Principale, where gas and condensate have been found in the Malossa, San Bartolomeo and Seregna fields located between 20 Km south and 40 Km south-west from the Cascina Riviero 1 Dir well.
The structure was seismically interpreted as a back-thrusted south-verging anticline related to the Alpine Orogenesis.
In the original seismic interpretation, led by the Franciacorta 1 Dir well data calibration onto the IT 90-01 Profile, the seismic pattern between 0.9 and 1.2 sec TWT, onto the IT 91-08 Prof.,was inferred to the Rhaetian units (Conchodon, Zu and Riva di Solto fms.) while the over and underlaying sequences characterized by the absence of reflections were correlated to the Medolo and Dolomia Principale respectively.
The data gathered from the well, on the contrary, highlighted that the sequences of the deaf responses were corresponding to the Riva di Solto shaly interval the upper one and to the Calcari di Zorzino / Dolomie Zonate fms. the lower one. The seismic pattern, originally interpreted as Rhaetian units, was instead corresponding to the lower part of the Riva di Solto fm. characterized by alternances of shale and limestone.
This in synthesis,is the main reason that explain the remarkable differences between the prognosis and the real situation encountered by the well.

The significant thickness reduction of the Medolo fm. and the complete lack of the Selcifero and R.A.L. fms., could likely be due to a major tectonic event which, however, cannot so far be pointed out by the seismic interpretation.
Other tectonic events, reverse faults, at m 759 and m 780 are very well defined by the stratigraphic repeat as showed by DIFL-AC-GR logs and cutting analysis.
The Conchodon fm, that was the shallower target, has been encountered at 1132 m M.D. (799.0 m TVDSS), 1201 m higher than the prognosis. The structural trend, 15 - 25° dipping North-NE, indicate that the well crossed the potential reservoir on the NE flank of a structural culmination likely located to the SW of the well.
The Dolomia Principale fm., has been encountered at 4103 m M.D. (3403.5 m TVDSS), 803.5 m deeper than the prognosis.
The last seismic reflection interpretable onto the IT 91-08 Profile at 1.25 sec TWT, after calibration with the sonic log, correlates with the "near" top of the Zorzino fm. Such an horizon, looks to have been encountered in a structurally favourable situation. The structural trend 6 - 12° dipping NNE at 3550 m gradually rotating to 3 - 8° WNW at 3750 m, within the Dolomie Zonate fm., than smoothly increasing downward to 8 - 12° dipping NW at the top of the Dolomia Principale, seems to indicate that the well has reached the target close to the structural culmination.