Teleco Oilfield Services Inc.

23 Feb 1988

DIRECTIONAL SURVEY LISTING

Company: AGIP SpA

Well: CLARA W 8 DIR

Field: CLARA OVEST

Job No: TIY 074/00

Survey Calculation Method: Minimum Curvature
Vert Sect Calculation Method: Overall

Proposal Azimuth:	80.75
Total Azimuth Correction:	-.50
Proposal Origin North:	0.00
Proposal Origin East:	0.00

TELECO SONAT

DIRECTIONAL SURVEY LISTING

Company: AGIP SpA
Well: CLARA W 8 DIR

M.Depth Metere	Inc Deg	Azt Deg	NORTH Metere	EAST Metere	TVD Metere	DLS Deg/30m	VS Metere
			TIE-ON COORDINATES				
0.00	0.00	80.75	0.00	0.00	0.00	0.00	0.00
80.00	.50	250.00	-.12	-.33	80.00	.19	-.34
120.00	.75	280.00	-.13	-.75	120.00	.31	-.78
150.00	.50	230.00	-.18	-1.04	150.00	.58	-1.06
180.00	.50	250.00	-.31	-1.27	179.99	.18	-1.30
210.00	.25	260.00	-.37	-1.45	209.99	.26	-1.49
240.00	.50	250.00	-.42	-1.64	239.99	.26	-1.69
270.00	.75	260.00	-.50	-1.96	269.99	.28	-2.01
300.00	.50	340.00	-.41	-2.20	299.99	.84	-2.23
327.00	1.40	343.30	.01	-2.33	326.99	1.02	-2.30
355.00	4.00	356.30	1.31	-2.49	354.95	2.88	-2.25
383.00	7.60	11.50	4.10	-2.19	382.81	4.23	-1.50
412.00	11.60	24.10	8.65	-.61	411.40	4.72	.79
440.00	14.20	27.30	14.27	2.11	438.69	2.93	4.38
469.00	15.60	31.50	20.76	5.78	466.71	1.86	8.04
497.00	17.50	45.60	26.91	10.76	493.58	4.82	14.95
525.00	18.10	62.10	31.90	17.62	520.24	5.51	22.51
553.00	20.50	75.40	35.17	26.21	546.68	5.44	31.52
582.00	24.60	83.20	37.17	37.12	573.46	5.33	42.62
610.00	27.30	84.90	38.43	49.31	598.64	3.05	54.84
638.00	27.60	84.60	39.65	62.62	624.37	.35	68.18
667.00	27.60	83.90	40.95	75.53	649.18	.35	81.13
696.00	27.80	83.50	42.43	88.93	674.86	.29	94.59
724.00	28.70	85.30	43.72	102.12	699.53	1.35	107.82
753.00	28.70	85.60	44.83	116.00	724.96	.15	121.69
781.00	28.70	84.90	45.94	129.40	749.52	.37	135.10
810.00	28.60	84.90	47.18	143.25	774.97	.11	148.97
838.00	29.10	83.50	48.59	157.17	800.37	.88	162.93
895.00	29.00	86.00	51.08	184.24	849.33	.66	190.05
953.00	27.40	87.00	52.76	211.59	900.44	.88	217.32
1001.00	26.50	86.00	54.08	233.31	943.23	.64	238.97
1059.00	27.90	84.90	56.19	259.73	994.82	.78	265.39
1116.00	26.60	84.90	58.51	285.73	1045.48	.70	291.42
1173.00	22.20	86.00	60.40	308.19	1097.39	2.37	314.88
1231.00	17.40	85.60	61.83	328.78	1151.94	2.52	334.44
1288.00	12.70	85.30	63.00	343.53	1206.97	2.51	349.19
1345.00	11.10	89.10	63.60	355.26	1262.74	.95	360.87
1402.00	8.80	94.40	63.35	365.10	1318.88	1.32	370.53

TELECO SONAT

DIRECTIONAL SURVEY LISTING

Company: AGIP SpA
Well: CLARA W 8 DIR

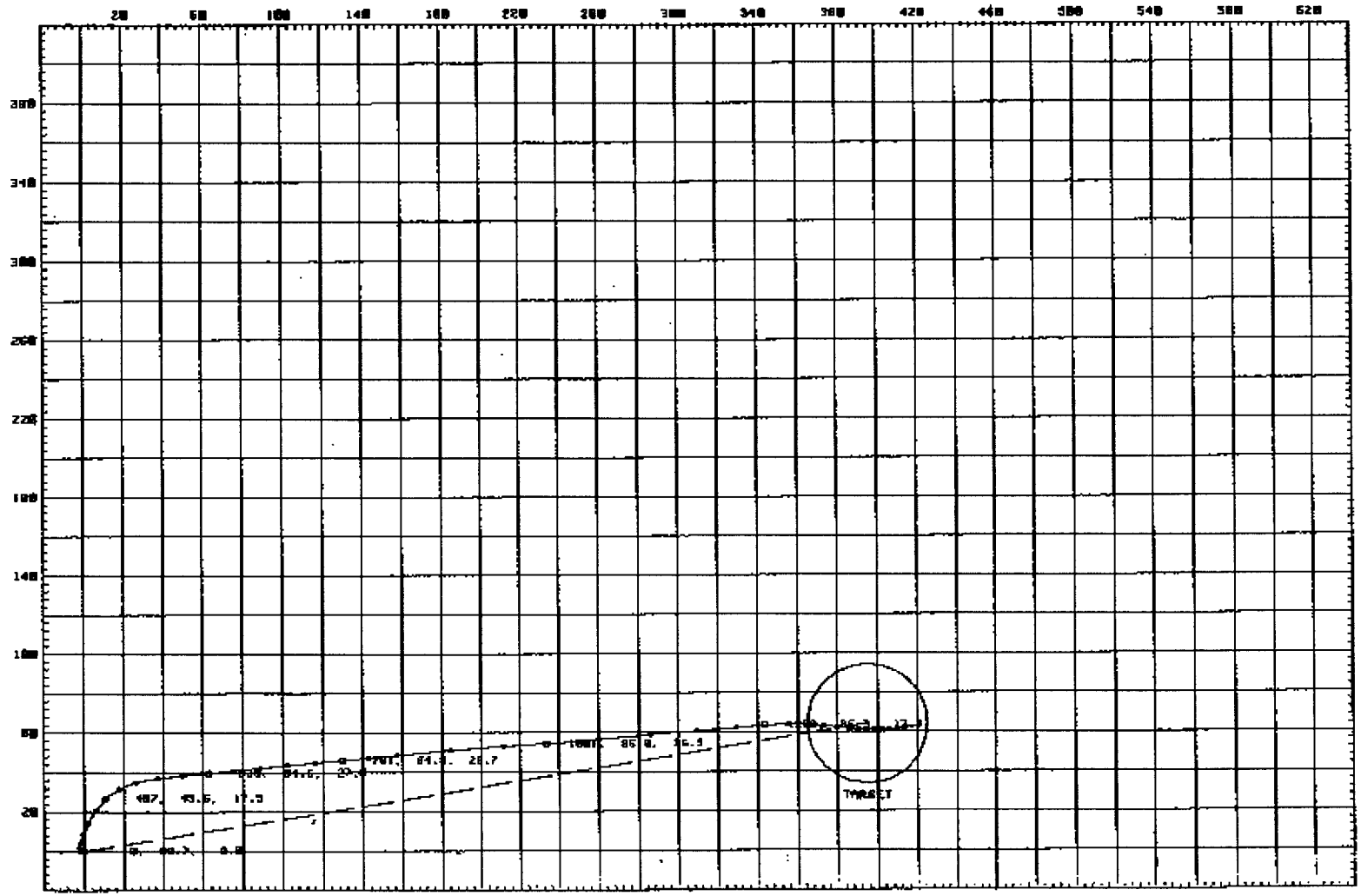
M.Depth Meters	Inc Deg	Azt Deg	NORTH Meters	EAST Meters	TVD Meters	DLS Deg/30m	VS Meters
1458.00	7.60	84.80	62.71	373.06	1374.31	.65	378.28
1515.00	6.20	90.60	61.93	379.06	1430.90	.78	384.88
1572.00	5.20	92.30	61.37	385.48	1487.61	.63	390.34
1629.00	4.30	95.50	61.06	390.19	1544.42	.50	394.93
1686.00	3.90	92.70	60.77	394.26	1601.27	.24	398.90
1743.00	3.80	88.40	60.73	398.08	1658.14	.16	402.67
1800.00	4.00	88.40	60.84	401.96	1715.01	.11	406.51
1857.00	3.80	87.70	60.97	405.83	1771.88	.11	410.35
1914.00	3.70	83.90	61.24	409.55	1828.76	.14	414.06
1971.00	4.00	81.00	61.72	413.34	1885.63	.18	417.89
2081.00	3.90	79.70	62.93	420.82	1995.37	.05	425.46

TELECO OILFIELD SERVICES
SONAT

TELECO SONAT

East (meters)

North (meters)



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PLAN VIEW

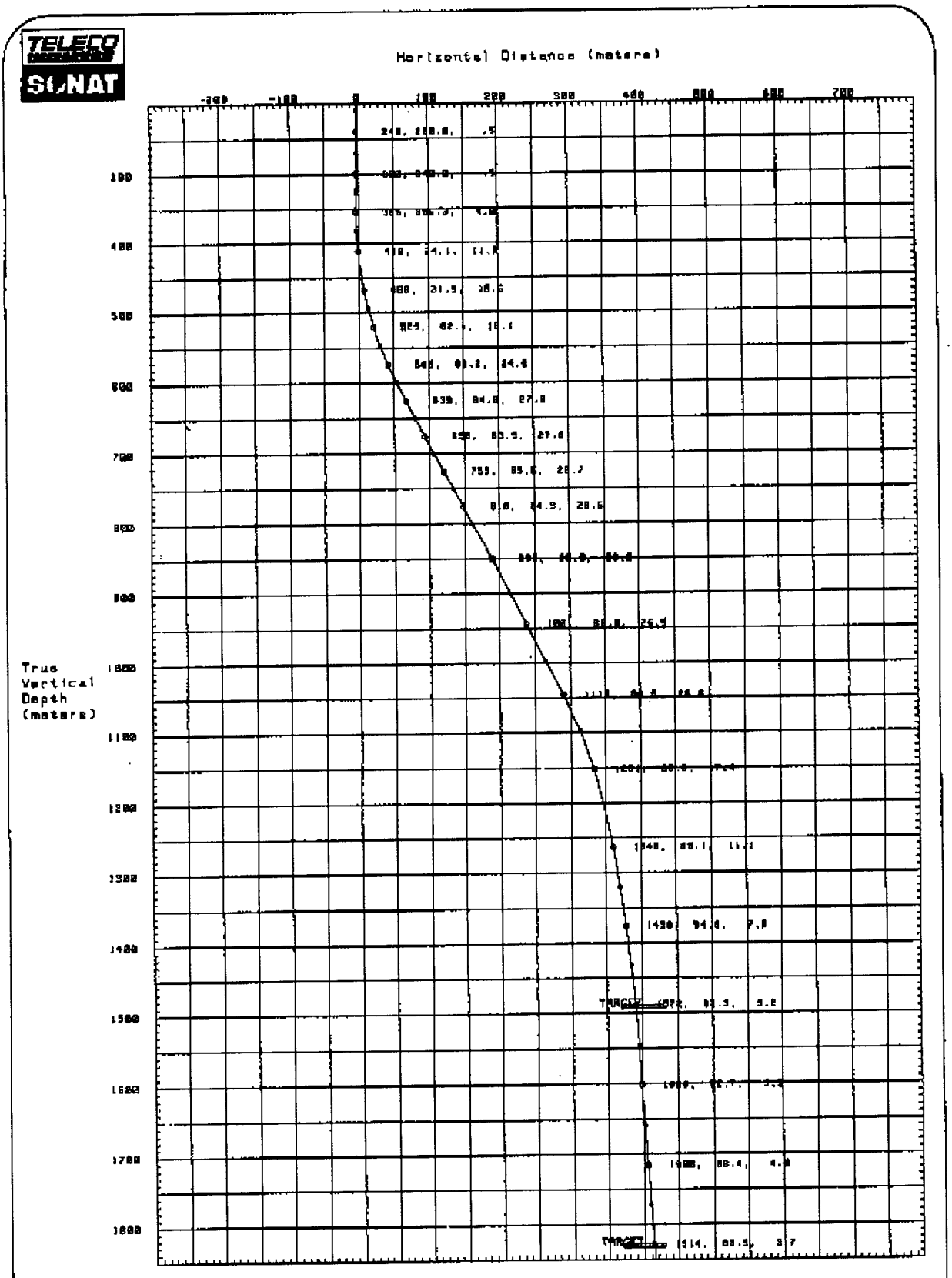
Labeled Surveys: M.Depth Azimuth Inclination

Scale: 1cm= 20(meters)

Company: AGIP SpA

Well: CLARA W @ DIR

Date: 23 Feb 1988



VERTICAL SECTION
Date: 23 Feb 1988
Company: AGIP SpA
Well: CLARA W 8 DIR

Labeled Surveys: M.Depth Azimuth Inclination
V.S. Calc. Method: Overall
Scale: 1cm= 50(meters)

TELECO INC., RAVENNA, ITALY.

PERFORMANCE REPORT

Introduction

Teleco MWD services were employed on the Clara Ovest Field for the drilling of the 12¼" and 8½" hole sections. Directional only services were provided in the 12¼" hole section and Resistivity-directional services in the 8½" hole section.

12¼" hole section

The 12¼" hole section was drilled using a Smith F2000S steerable system in one bit run.

Due to the close proximity of Clara W 6 (approximately 4.5 metres at the kick-off point) it was decided that magnetic survey readings would be unreliable and the drillstring was initially oriented from the surface by eye whilst running in the hole.

The proposal direction for this well was N 80° E building from 0° to 25° inclination. As a result of the doubt as to the validity of the Teleco and magnetic single-shot surveys the well continued to be oriented from surface until 400 metres (7.6° inclination) when it was decided to orient by Teleco surveys. As a result of this the well path (as calculated from the magnetic surveys) took longer than normal to turn from an initial 343° to the proposal direction but the wellpath was finally brought around to 86° to correct the displacement without problems.

8½" hole section

Another Smith F2000S Steerable system was used to complete this hole section in two bit runs. The first bit drilled at unusually low rates of penetrations and was pulled at 1105 metres. The steerable motor was also changed at this point as a precaution. The Hughes J1 bit was found to have some broken teeth.

No problems were encountered with the next bit run and Teleco's services ended at 2099 metres when wireline logging commenced.

TELECO INC., RAVENNA, ITALY.

MAINTENANCE REPORT

EQUIPMENT DESCRIPTION: TR 2300 Surface decoding and processing system (No. 017)
OPERATIONAL PROBLEM: Performed to Teleco specifications
FAULT FOUND:
COMMENTS:

—oOo—

EQUIPMENT DESCRIPTION: 8¼" Directional - only downhole tool (No 884-14)
OPERATIONAL PROBLEM: None - operated to Teleco specifications
FAULT FOUND: -
COMMENTS: This tool completed the 12¼" hole section without problems

—oOo—

EQUIPMENT DESCRIPTION: 6¾" Resistivity - directional downhole tool (No 1592-7)
OPERATIONAL PROBLEM: Operated to Teleco specifications
FAULT FOUND: -
COMMENTS: This tool completed the 8½" hole section without problems

—oOo—

TELECO INC., RAVENNA, ITALY.

ENGINEER DEPLOYMENT SUMMARY

ENGINEER	DEPARTURE TIME/DATE	RETURN TIME/DATE
G. SODEN	08.00 14.02.88	15.30 23.02.88
D. INGRAM	14.00 18.02.88	15.30 23.02.88

TELECO INC., RAVENNA, ITALY.

TOOL DEPLOYMENT SUMMARY

TOOL NO:	O.D.	SERVICE TYPE	TOTAL CIRC. HOURS
894-14	8¼"	DIR	29.0
886-21	8¼"	DIR	0.0 Not used (Back-up only)
1592-7	6¾"	RES-DIR	71.3
1543-5	6¾"	RES-DIR	0.0 Not used (Back-up only)

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TELECO INC., RAVENNA, ITALY

BHA RECORD LISTING

TELECO RUN NUMBER	1	2	3
BIT TYPE	SMITH FDS	HUGHES J1	REED HP11
HOLE SIZE	12¼	8½	8½
JETS/TFA	4.88	3.85	2.95
DEPTH START	306	1019	1105
DEPTH END	1019	1105	2099
MIN/MAX/WOB	3/8	7/15	5/13
MIN/MAX/RPM	140/220	140/270	140/230
ROTARY DRILLING HRS	22.5	13.0	35.5
MONEL ABOVE DIR SENSOR	18.20	19.49	19.49
MONEL BELOW DIR SENSOR	6.15	9.92	9.92
PREDOMINANT FORMATION	CLAYSTONE	CLAYSTONE	CLAYSTONE

TELECO
SONAT

TELECO INC., RAVENNA, ITALY

MUD PROPERTIES LISTING

DATE:	16.02.88	17.02.88	19.02.88	20.02.88	21.02.88
TIME:	15.00	14.00	20.00	14.00	07.00
DEPTH:	500	970	1050	1348	1401
MW:	1.240	1.250	1.350	1.350	1.360
PV:	18	19	16	17	17
YP:	8	6	8	8.5	8
GELS:	2/10	3/9	2/7	2/8	1.5/6
FILTRATE:	5.0	7.6	5.0	5.3	4.9
CHLORIDES:	5.84	5.80	6.1	5.9	5.8
pH:	9.5	9.5	10.0	10.0	10.0
SOLIDS:	17	13	14	15	16
SAND:	1.0	0.75	TRACE	TRACE	TRACE
OIL:	-	-	-	-	-
WATER:	84	87	86	85	84
TYPE	LS	LS	LS	LS	LS

TELECO INC., RAVENNA, ITALY

MUD PROPERTIES LISTING

DATE:	21.02.88	22.02.88	22.02.88	23.02.88
TIME:	22.00	07.00	19.30	06.00
DEPTH:	1608	1761	1983	2099
MW:	1.360	1.360	1.360	1.370
PV:	16	16	14	17
YP:	9	8.5	10	8.5
GELS:	2/7	1.5/7	2/8	2/6
FILTRATE:	4.8	4.7	5.0	4.9
CHLORIDES:	5.6	5.2	5.2	5.5
pH:	10	9.5	10	9.5
SOLIDS:	16	17	13	14
SAND:	TRACE	TRACE	TRACE	TRACE
OIL:	-	-	-	-
WATER:	84	83	87	86
TYPE	LS	LS	LS	LS

TELECO INC., RAVENNA, ITALY

FORMATION EVALUATION SERVICE REPORT

The Teleco Formation Evaluation MWD Service was utilised on this occasion for the following purposes:-

LITHOLOGY IDENTIFICATION

REAL TIME CORRELATION

RESERVOIR DETECTION

RESERVOIR THICKNESS DETERMINATION

RESERVOIR PAY ZONE THICKNESS DETERMINATION

RESERVOIR FLUID DETERMINATION

TELECO INC., RAVENNA, ITALY.

MWD LOG REPORT

INTRODUCTION

MWD FORMATION EVALUATION SERVICES WERE PROVIDED IN THE 8½" HOLE SECTION FROM THE 9⅝" CASING TO THE WELL T.D. AT 2099m.

THE TELECO 16" SHORT-NORMAL RESISTIVITY TOOL WAS UTILIZED AND THE RAW DATA CORRECTED FOR MUD RESISTIVITY AT DOWNHOLE TEMPERATURE, HOLE SIZE AND COLLAR DIAMETER.

LOG RECOVERY WAS COMPLETE OVER TWO BIT RUNS, PROVIDING IMMEDIATE CORRELATION WITH OFFSET WELL-LOGS FOR THE IDENTIFICATION OF HYDROCARBON-BEARING RESERVOIR.

TELECO RUN NUMBER 2 (1019m - 1105m)

THIS CLAYSTONE SECTION WAS INDICATED BY THE CONSTANT RESISTIVITY READINGS BETWEEN 2.5 AND 2.8 OHMM, INTERRUPTED BY THIN WATER-BEARING SAND SECTIONS WHERE THE RESISTIVITY SHOWED A SHARP DROP TO AROUND 1.2 OHMM.

THE RUN WAS PREMATURELY ENDED DUE TO LOW RATE OF PENETRATION.

TELECO RUN NUMBER 3 (1105m - 2099m)

THE THICK CLAYSTONE LITHOLOGY CONTINUED WITH RESISTIVITY READINGS FALLING GRADUALLY FROM 2.8 OHMM AT THE START OF THE RUN TO 1.9 OHMM AT 1640M. A FEW SAND STRINGERS WERE EVIDENT IN THIS SECTION.

RESISTIVITY VARIED SLIGHTLY OVER THE NEXT 230M SHOWING THE PRESENCE OF MORE SANDS, THIS TIME CONTAINING HYDROCARBONS, CONFIRMED BY QUANTITIES OF GAS IN THE MUD. (RECORDED BY EXPLORATION LOGGING).

BELOW 1870M, HYDROCARBON-BEARING SANDS BECAME THICKER, AND MORE FREQUENT, WITH RESISTIVITY READINGS PEAKING AT OVER 8 OHMS.

AS DRILLING CONTINUED, THE RESISTIVITY TREND BECAME MORE CONSTANT AT 2.4 TO 2.8 OHMS FROM 2062M, THUS INDICATING A RETURN TO CLAYSTONE.

TELECO INC., RAVENNA, ITALY

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FINAL WELL REPORT

AGIP SNOR/DEUTSCHE SHELL

CLARA OVEST WELLS : 4 - 11 DIR

OFFSHORE ITALY

NOVEMBER - MAY 1988

The information, interpretations, recommendations, or opinions contained herein are advisory only any may be rejected. Consultant does not warrant their accuracy or correctness. Nothing contained herein shall be deemed to be inconsistent with, nor expand, modify or alter consultants obligation of performance as provided for in written agreement between the parties, or, if none, in Consultants most recent price list.

EXPLORATION LOGGING ITALIA S.R.L

MAY 1988

CONTENTS

INTRODUCTION

Company :	Agip Snor (51%)
Partner :	Deutsche Shell (49%)
Contractor :	Foramer
Rig :	Cormorant (Tender assisted rig)
	Nat 110 VE
Location :	Adriatic Sea, Offshore Italy
Position :	Latitude 43° 49' 40.994"
	Longitude 13° 42' 42.013"
Field :	Clara (west)
RKB to Sea level :	28.29 m
Sea Water Depth :	72 m
RKB to Sea Bed :	100.29 m
Rig on Location :	21st October 1987

Exploration Logging Italia SRL

Unit # :	239	
Logging Crew :	M Sommers	L Pazzaglia
	L Nori	A Ball
	D Masters	E Saperdi
	P Limongi	G Johnson
	A Andreou	

WELL SUMMARY

CLARA OVEST 7 DIR

Spud : 15.00 hrs - 15th November 1987

Finish drilling : 10.00 hrs - 7th December 1987

KOP : 360 m

TD : 1990 m (measured) 1871.6 m (vertical)

Completion status : Provisionally completed prior to production.

Completion date : 18th December 1987 (15.00 hrs)

Co-ordinates (TD) : Latitude 43° 49' 38.750"

Longitude 13° 42' 59.631"

CLARA OVEST 4 DIR

Spud : 15:30 hrs - 20th December 1987

Finish drilling : 08:30 hrs - 8th March 1988

KOP : 167 m

TD : 2188 m (measured) 1760.0 (vertical)

Completion status : As above.

Completion date : 15th March 1988 (15:00 hrs)

Co-ordinates (TD) : Latitude 43° 49' 53.660"

Longitude 13° 42' 00.801"

CLARA OVEST 9 DIR

Spud : 15:30 hrs - 23rd december 1987

Finish drilling : 23:30 hrs - 11th February 1988

KOP : 200 m

TD : 2015 m (measured) 1862.0 m (vertical)

Completion status : As above.

Completion date : 15th February 1988 (11.00 hrs)

Co-ordinates (TD) : Latitude 43° 49' 44.376"

Longitude 13° 43' 08.446"

CLARA OVEST 5 DIR

Spud : 08:30 hrs - 26th December 1987

Finish drilling : 23:30 hrs - 21st January 1988

KOP : 205 m

TD : 2145 m (measured) 1931.0 m (vertical)

Completion status : As above.

Completion date : 28th January 1988 (18:00 hrs)

Co-ordinates (TD) : Latitude 43° 49' 47.631"

Longitude 13° 42' 12.039"

CLARA OVEST 6 DIR

Spud : 22:30 hrs - 27th December 1987

Finish Drilling : 02:30 hrs - 10th January 1988

KOP : 801 m

TD : 1853 m (measured) 1729.0 m (vertical)

Completion status : As above.

Completion date : 31st January 1988 (14:00 hrs)

Co-ordinates (TD) : Latitude 43° 49' 44.546"

Longitude 13° 49' 22.542"

CLARA OVEST 8 DIR

Spud : 19:00 hrs - 29th December 1987

Finish drilling : 02:30 hrs - 26th February 1988

KOP : 321 m

TD : 2240 m (measured) 2154.0 m (vertical)

Completion status : As above.

Completion date : 1st March 1988 (14:00 hrs)

Co-ordinates (TD) : Latitude 43° 49' 43.027"

Longitude 13° 42' 59.683"

CLARA OVEST 11 DIR

Spud : 10.00 hrs - 16th March 1988

Finish drilling : 19:00 hrs - 29th March 1988

KOP : 170 m

TD : 2674 m (measured) 1811.0 m (vertical)

Completion status : Plug and abandon.

Completion date : 6th April 1988 (24:00 hrs)

Co-ordinates (TD) : Data unavailable.

CLARA OVEST 11A DIR

Spud : 11:00 hrs - 7th April 1988

Finish drilling : 08.30 hrs - 17th April 1988

Side track : 308 m

TD : 2411 m (measured) 2100.0 m (vertical)

Completion status : Plug and abandon.

Completion date : 30th April 1988 (05:00 hrs)

Co-ordinates (TD) : Data unavailable.

CLARA OVEST 11A DIR 2ND HOLE (SIDE TRACK)

Spud : 11:00 hrs - 30th April 1988

Finish drilling : 23:30 hrs - 2nd May 1988

Side track : 1708 m

TD : 2371 m (measured) 2052 m (vertical)

Completion status : Provisionally completed prior to production.

Completion date : 8th May 1988 (08:00 hrs)

Co-ordinates : Data unavailable.

CLARA OVEST 10 DIR

Spud : 21:30 hrs - 8th May 1988

Finish drilling : 23:00 hrs - 16th May 1988

KOP : 713 m

TD : 2063 m (measured) 2083 m (vertical)

Completion status : As above.

Completion date : 21st May 1988 (12:00 hrs)

Co-ordinates : Data unavailable.

PROGNOSIS

CLARA OVEST 4 DIR - 11 DIR (INC. DIR A AND 11 DIR A 2°F)

The Clara Ovest field is located in the Adriatic Sea, about 28 km from Ancona. The sea bed here is at an average depth of 72 m. Three wells had previously been drilled in this area, these being Clara Ovest 1 (1971), Clara Ovest 2 (1979), and Clara Ovest 3 (1984). The first of these proved to be dry, but the other two both showed ten levels of mineralisation.

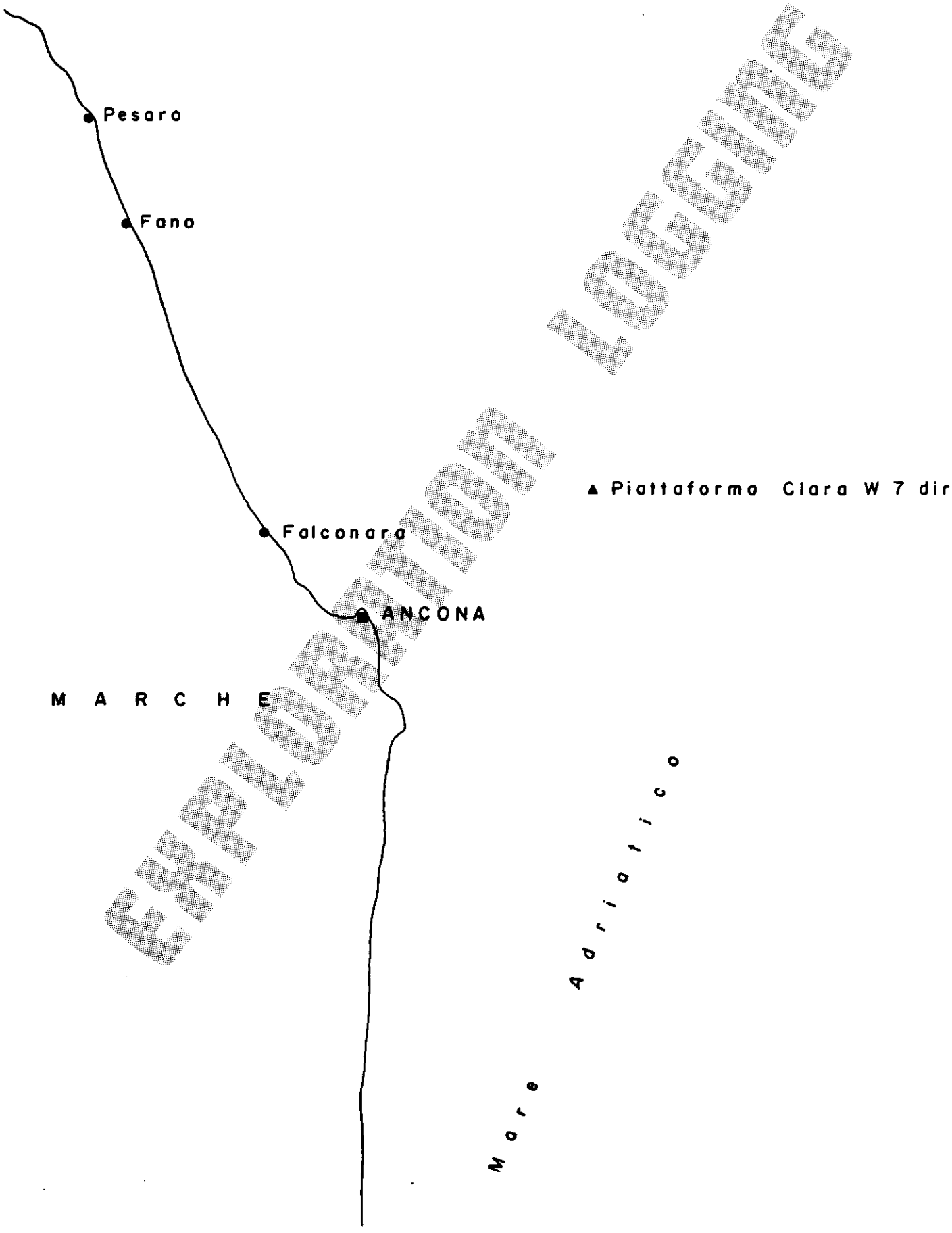
Interpretation of data from seismic surveys and the previous three wells highlighted an anticlinal structure with an axis striking WNW - ESE, the limits of which are defined by a series of normal faults rising towards the SE. There is also another normal fault which runs in the opposite direction to the general trend. Due to these faults, the structure is divided into at least 4 blocks (A, B, C and D). Of these, block A (where Clara Ovest 3 was drilled) has the greatest GOIP volume. It is also possible that block D has a consistent GOIP volume in the mid-upper part of the structure, where no well has as yet been drilled. Clara Ovest 2 did drill into block D, but only into the lowest part of the structure after having drilled through the other three blocks in the order B, A and C. Based on this interpretation, it was initially decided to develop this field by drilling four wells, or six should the first well indicate the possibility of pay zones in the mid-upper section of block D.

Wells 4, 5, 6 and 7 were to be drilled regardless of what information they provided about other possible areas of mineralisation, with the provision of drilling two further wells (8 and 9) depending upon the outcome of well 7, (that which was to investigate the mid upper part of block D). Two extra slots were also provided, allowing for the possibility of drilling

other wells if necessary. In the end, all the available slots were utilised, wells 10 and 11 being drilled as well (and well 11 being sidetracked twice).

LOCATION MAP

WELL: Piattaforma Clara W 7dir



SECTION 1

CLARA OVEST 7 DIR

CLARA OVEST 7 DIR

Logging commenced from spud on November 15th 1987 with a sample interval of 10 m and a calcimetry interval of 20 m for the duration of the well. The kick off point was at 360 m. This was, in a sense, the most important of the initial four wells, as the drilling of at least two further wells depended on its outcome. The well was drilled in a total of 23 days. The total depth (measured) was 1990 m.

150 m - 340 m

This section consisted of clay with interbeds of peat and loose quartz sands.

The clay was light to medium grey, soft, amorphous, fairly soluble, plastic and moderately calcareous. The peat, which was found predominantly in the upper part of the interval was light to dark brown, or black, and was firm and woody. There were also abundant shell fragments (both bivalve and gastropod) and bryozoans throughout this section, but especially in the upper part. Traces of sand were observed in all samples taken over this section, occasionally constituting as much as 10% of the total sample. This sand was generally very fine to fine loose quartz, clear or white and translucent, and generally subangular to subrounded.

Rate of penetration (ROP) was in the range of 0.1 - 10 min/m. Total gas values generally averaged 0.2%, increasing to 0.4% towards the bottom of the interval. Only methane was recorded.

340 m - 1990 m

This section consisted of clay with some thin sand stringers. The clay was

light to medium grey, soft, sticky, soluble, amorphous and locally silty. It also contained traces of pyrite, and some forams, the latter increasing in frequency below 1000 m.

The sand was clear to milky-white translucent loose quartz, occasionally with an amber staining. It was very fine to fine, subangular to subrounded, and moderately sorted. Seen in trace quantities throughout the interval, it was only rarely present as more than 5% of the total sample.

The ROP over this interval varied considerably due to a variety of reasons, only some of which related directly to the nature of the formation. The average ROP over the initial part of this section was generally in the range 1 - 3 min/m, occasionally slowing to around 5 min/m due to factors such as clay "balling up" on the bit, or speeding up to 0.5 min/m over rare intervals of never more than 1 m in thickness, representing sand stringers (most of which were well under 1 m in thickness). The average ROP decreased to around 4 - 5 min/m with depth, indicating an increasing degree of induration of the formation. Drilling breaks due to sand over the last 600 m of the section tended to be in the range of 1 - 3 min/m, and were of increasing frequency and duration. This suggested that a lot more sand was present over this interval than was observed in the samples, this probably being due to the fact that the sands here were so fine that they generally passed through the shale shaker screens.

Total gas figures were generally in the range from 0.1% to 0.4% above 1670 m, with two small peaks of 0.6% (at 1507 m and 1624 m respectively). From 1670 m onwards a series of 19 peaks in excess of 1% were observed, the largest of which were 7.8% at 1969 m and 4% at 1910 m and 1676 m. Nearly all the gas recorded was methane, although some very small traces of ethane

and propane were observed in the larger shows.

ELECTRIC LOGS

The following E-Logs were run by Schlumberger:

ISF - SLS - SP

ISF : 306 m - 1010 m, 1005 m - 1989 m

SLS : 306 m - 1000 m, 1005 m - 1978 m

SP : 306 m - 1012 m, 1005 m - 1981 m

SHDT : 306 m - 1010 m

LDL - CNL - EATT

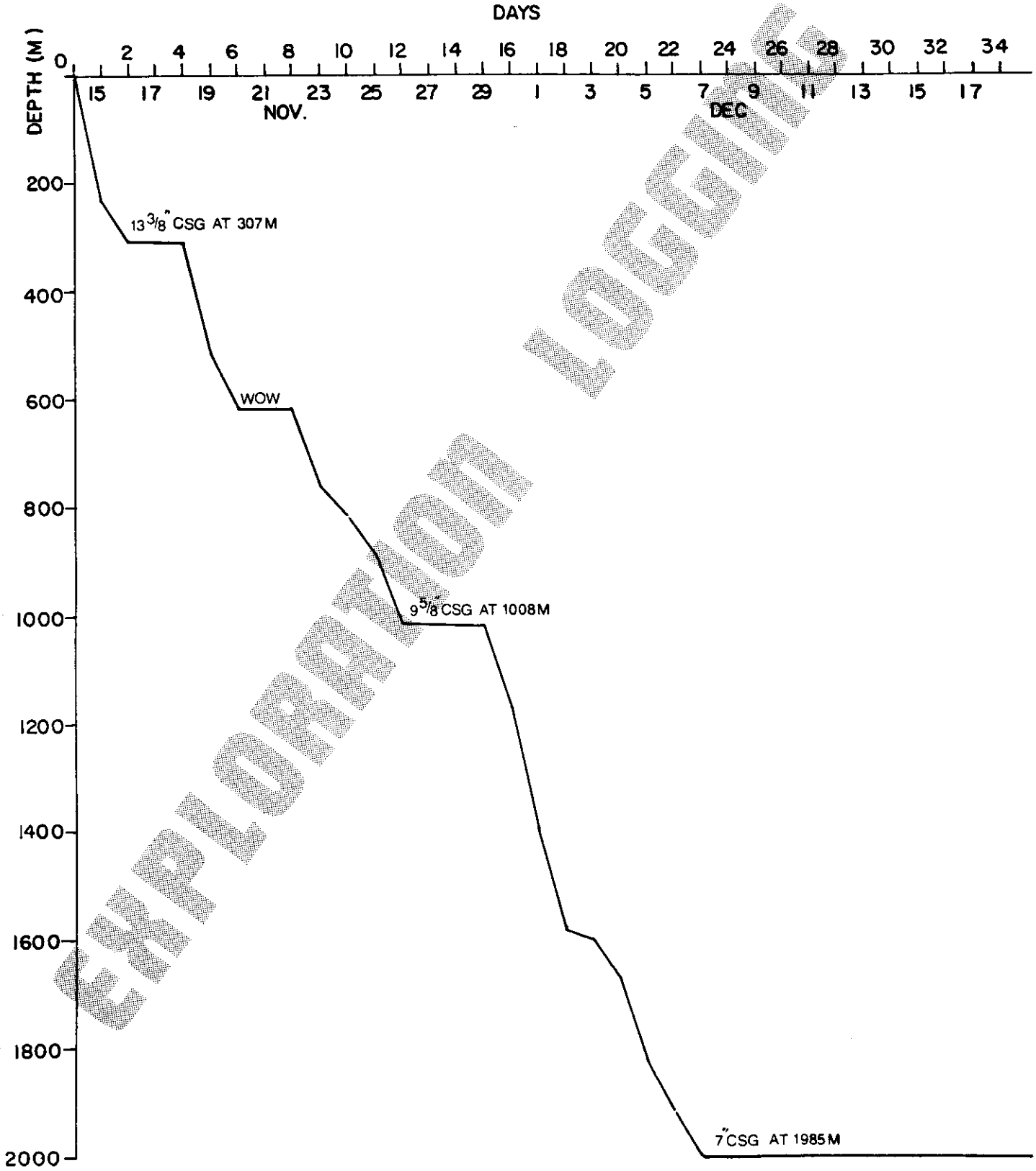
LDL : 1550 m - 1990 m

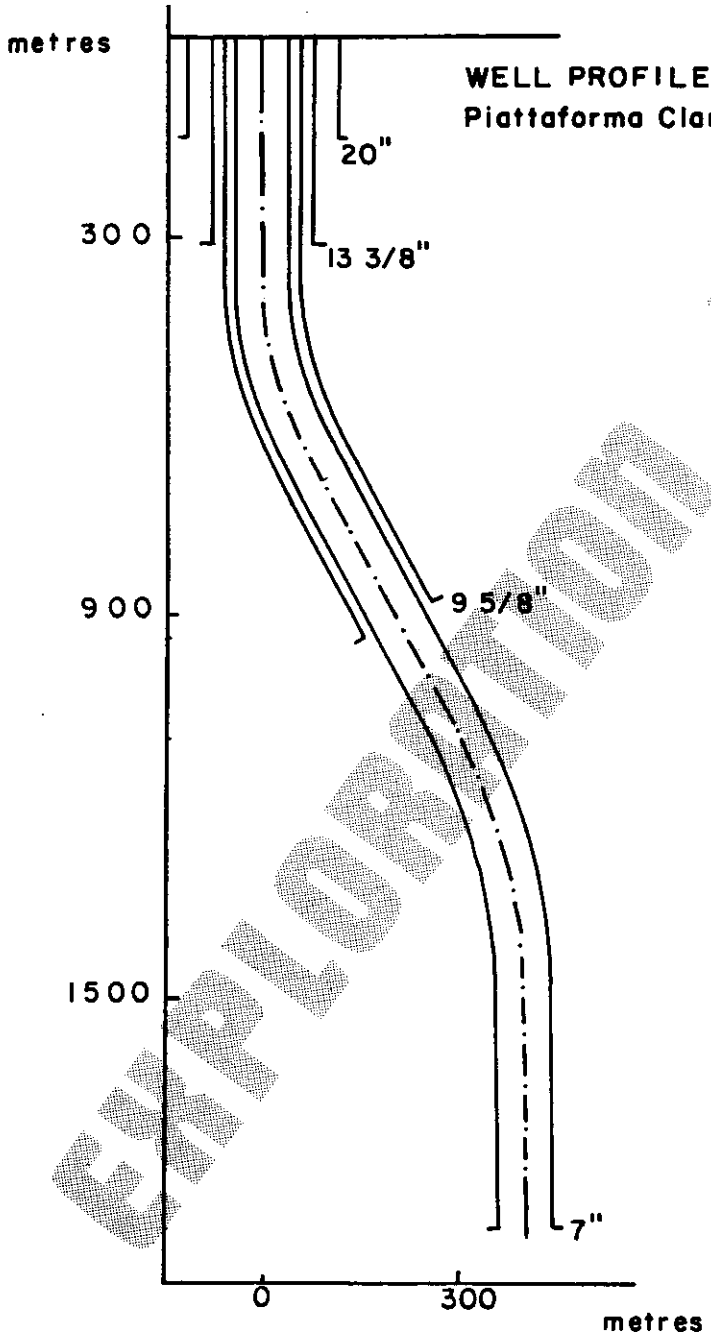
CNL : 1550 m - 1977 m

EATT : 1550 m - 1985 m

CLARA OVEST 7 (DIR.)

DRILLING PROGRESS CHART (AT MIDNIGHT DEPTHS)





SECTION 2

CLARA OVEST 4 DIR

CLARA OVEST 4 DIR

This well was drilled in two phases. The first section (17.5") was spudded on December 20th 1987 and completed on December 22nd 1987. The second phase commenced on March 3rd 1988 and was completed on March 8th 1988. The sample interval was 10 m and the calcimetry interval 20 m throughout. Total depth (measured) was 2188 m. The kick off point was 167 m.

120 m - 180 m

This section consisted of clay with some interbeds of peat and loose quartz sands.

The formation over this interval was as in Clara Ovest 7.

ROP in this section averaged 0.5 min/m, with occasional slower intervals probably due to clay "balling up" on the bit rather than to any significant change in the formation.

Total gas readings throughout were less than 0.1% except for a small peak of 0.24% at 120 m.

180 m - 1780 m

This section consisted of clay with traces of sand.

The clay was light to medium grey, soft, soluble, sticky, amorphous, locally silty and moderately calcareous. It contained traces of pyrite, forams, and some shell fragments (mostly gastropod with some bivalves). The sand was clear to milky-white translucent loose quartz, occasionally with an amber staining. It was very fine to fine, subangular to subrounded and moderately sorted, and contained mica flakes. It was generally seen in

quantities of less than 5% of the total sample.

ROP varied more due to varying drilling parameters than due to formation changes, being slower during orientating (with the turbine alone) than during normal drilling (turbine plus top-drive). It was also seen to decrease with depth, averaging 0.25 - 1.5 min/m in the upper part of the interval and slowing down to 1.5 - 3 min/m in the lower part.

Gas was not observed in significant quantities in this section, being mostly in the range 0.1 - 0.25%, except for peaks at 540 m (0.6%), 572 m (0.7%), 668 m (0.7%), 886 m (0.9%), and 1480 m (1.2%). Methane was the only gas recorded.

1780 m - 2188 m

This section consisted of clay with thin interbeds of sand.

The clay was more or less as in the preceding interval, becoming slightly less soluble and more indurated with depth. The sand too was generally as above, but was seen to become medium grained in part, although it was still predominantly fine to medium grained. As in well 7, this sand was almost certainly present in quantities greater than were observed in the samples, of which it never visibly constituted more than 10%.

ROP varied from 0.75 - 4 min/m, the faster intervals corresponding to sand beds which were rarely seen to be more than 1 m in thick.

Total gas values averaged 0.4 - 0.5% down to 2092 m where they began to decrease to 0.2% at 2188 m (TD). The principal peaks seen were at 1940 m (2.2%), 1982 m (2.8%), 2010 m (1.4%), 2104 m (1.9%), 2037 m (2.9%), 2047 m (1.96%), 2061 m (3.08%), and 2090 m (2.3%). The only gas seen to be present

was methane.

ELECTRIC LOGS

The following E-Logs were run by Schlumberger:

DITE - MSFL - SLS - SP

DITE : 1142 m - 2185 m

MSFL : 1142 m - 2177 m

SLS : 1142 m - 2168 m

SP : 1142 m - 2183.7 m

CNL - EPT - LDL

CNL : 1800 m - 2168 m

EPT : 1800 m - 2175 m

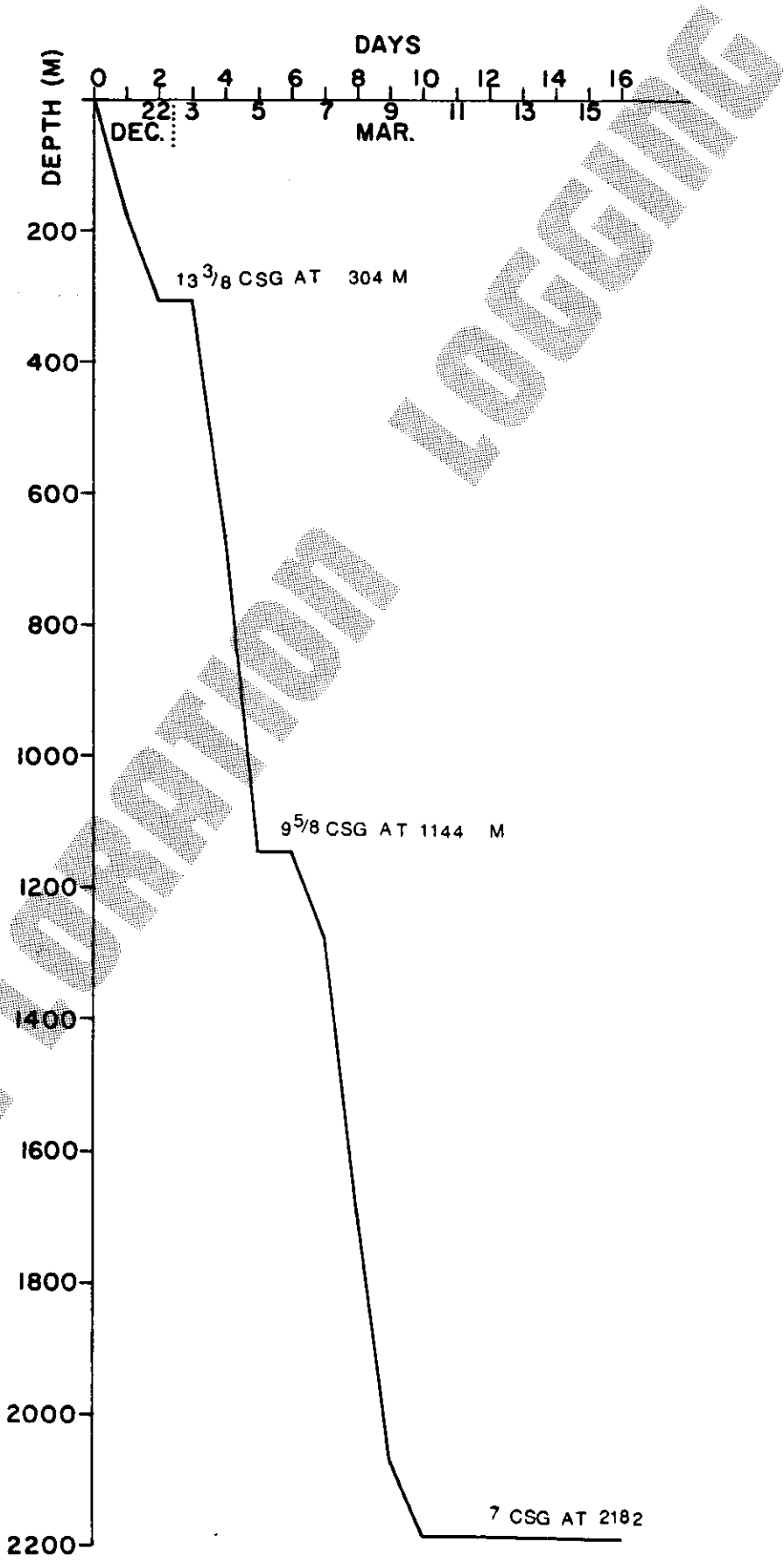
LDL : 1800 m - 2181 m

SHDT : 1142 m - 2178 m

CBL/VDL : 350 m - 1139 m

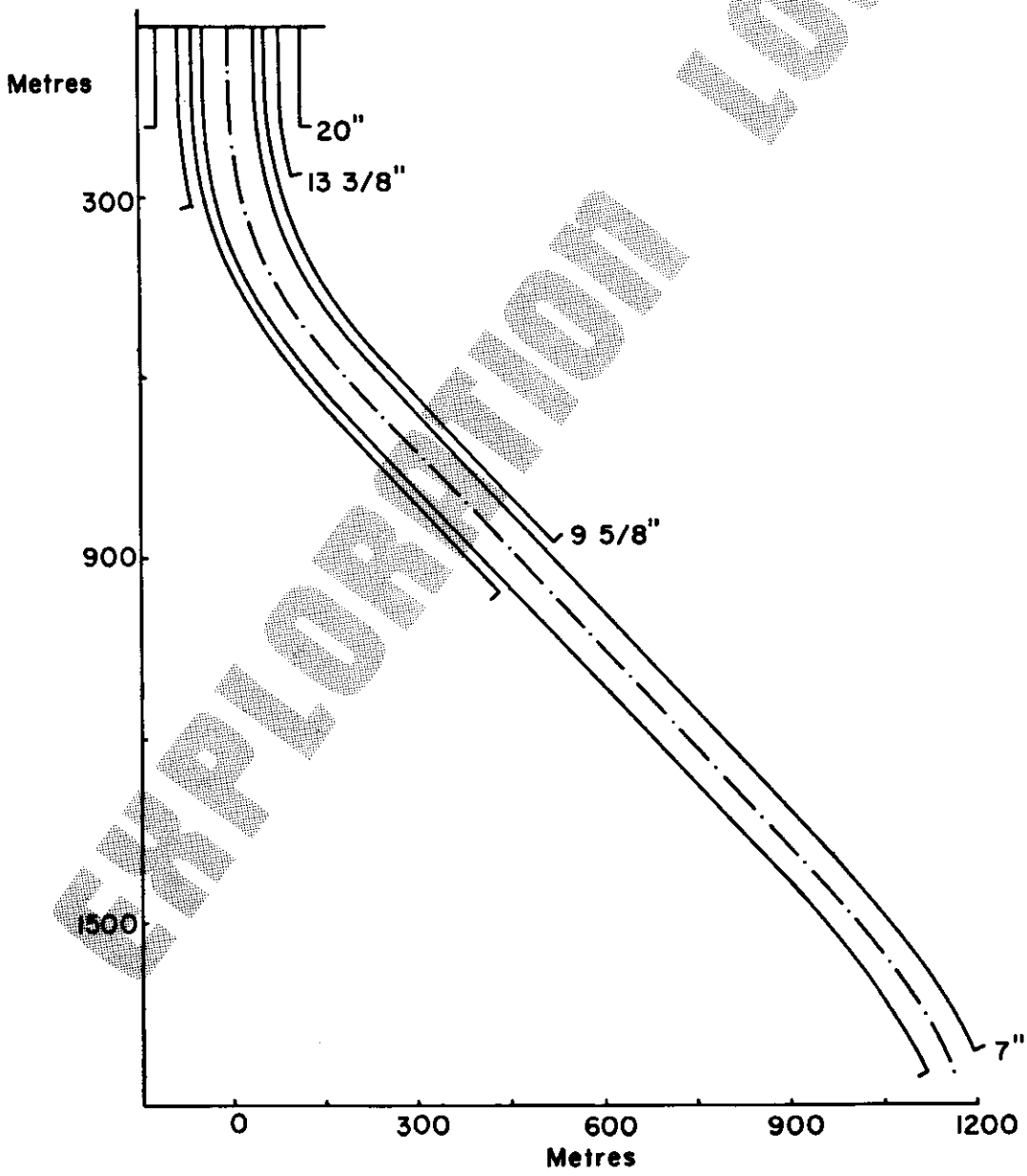
CLARA OVEST 4 (DIR.)

DRILLING PROGRESS CHART (AT MIDNIGHT DEPTHS)



WELL PROFILE

Piattaforma Clara Ovest 4



SECTION 3

CLARA OVEST 9 DIR

CLARA OVEST 9 DIR

This well was drilled in two phases. The first section (17.5") was spudded on December 23rd 1987 and completed on December 29th 1987. The second phase began on February 1st 1988 and was completed on February 12th 1988. Total depth (measured) was 2015 m. The sample interval was 10 m and the calcimetry interval 20 m throughout. The kick off point was at 200 m.

110 m - 320 m

This section consisted of clay and some interbeds of peat and loose quartz sands.

The formation over this interval was as in the preceding wells.

ROP varied considerably over this section, from 0.2 - 60 min/m, slow rates reflecting intervals where clays were "balling up" on the bit, rather than to hardness of the formation.

Gas in this interval was generally in the range 0.05 - 0.2% with one exceptional peak of 0.9% at 138 m. The only gas recorded was methane.

320 m - 1600 m

This section consisted mainly of clay with traces of sand.

The formation over this interval was as in the preceding wells.

From 320 m - 1050 m, the ROP decreased steadily from an average of 0.3 - 0.5 min/m, to 2 min/m. From then on it continued to decrease and increase in the range 1.5 - 6 min/m, the faster intervals probably corresponding to sandier sections.

Total gas was usually in the range 0.1 - 0.2% with no really distinct peaks, but it was seen to slowly decrease at some points, the maximum observed values being 0.9% at around 415 m and 670 m. Only methane was detected.

1600 m - 2015 m

This section consisted of clay with interbeds of sand.

The formation was generally as in the preceding wells.

As before, the sand was certainly present in greater quantities than were observed here. It was seen to constitute 10% of the sample over the interval from 1690 m - 1710 m, but elsewhere was only seen in trace quantities (not more than 5%).

ROP in this section averaged 2 - 3 min/m, with frequent drilling breaks of 0.5 - 1.5 min/m indicating the presence of sand stringers, these rarely being more than 1 m thick.

Total gas values were on average in the range 0.2 - 0.4% with a number of significant peaks, the most noteworthy of which were at 1710 m (4.2%), 1768 m (4.3%), 1941 m (6.8%) and 1915 m (5.2%). Methane was by far the most commonly observed gas, but some very small traces of ethane and propane were also seen in the above shows.

ELECTRIC LOGS

The following E-Logs were run by Schlumberger:

ISF - SLS - SP

ISF : 1049.5 m - 1988 m

SLS : 1049.5 m - 1975 m

SP : 1049.5 m - 1985 m

LDL - CNL - EATT

LDL : 1597 m - 1990 m

CNL : 1597 m - 1987 m

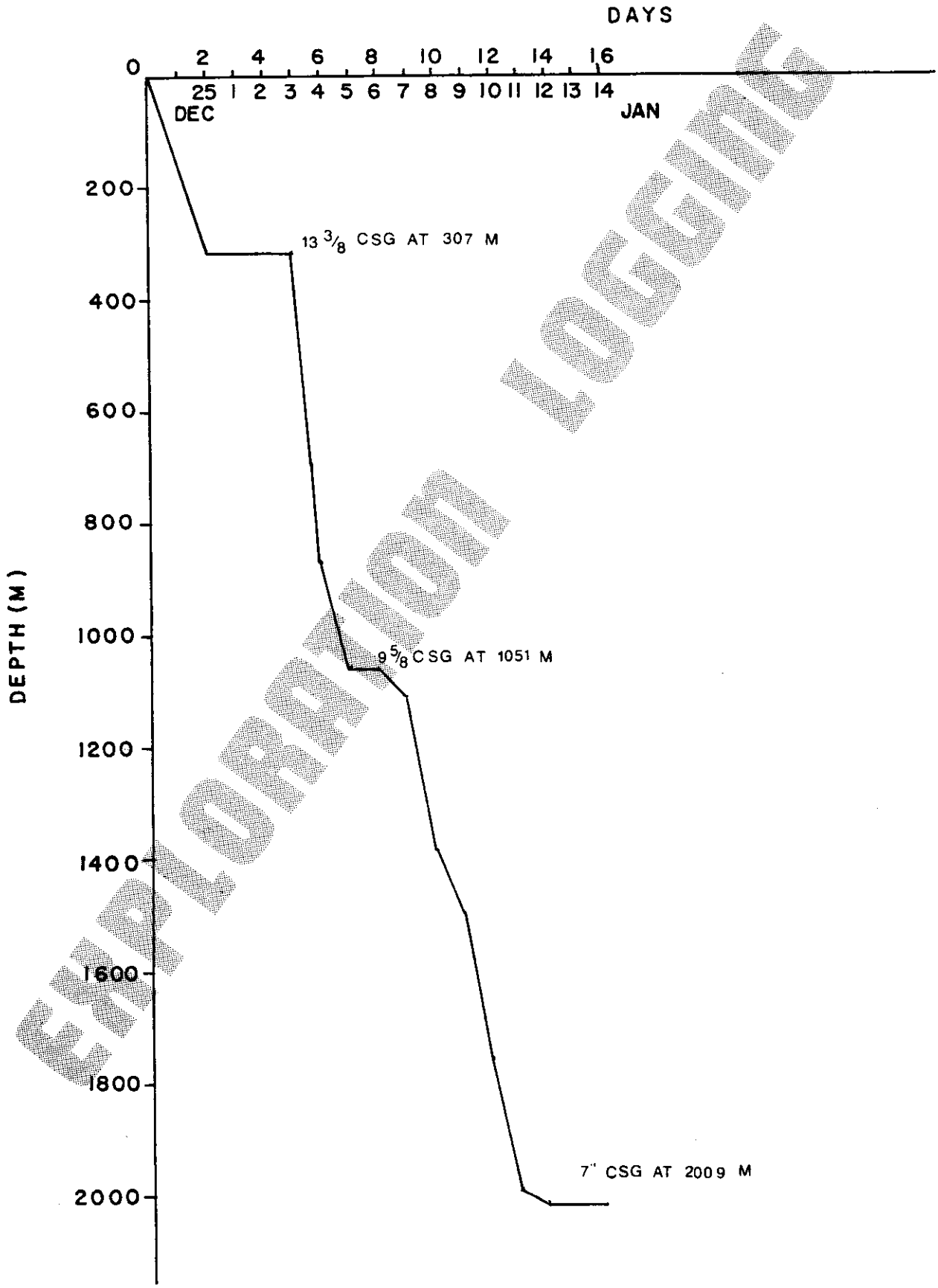
EATT : 1597 m - 1978 m

SHDT : 1045 m - 1989 m

CBL/VDL : 450 m - 1047 m

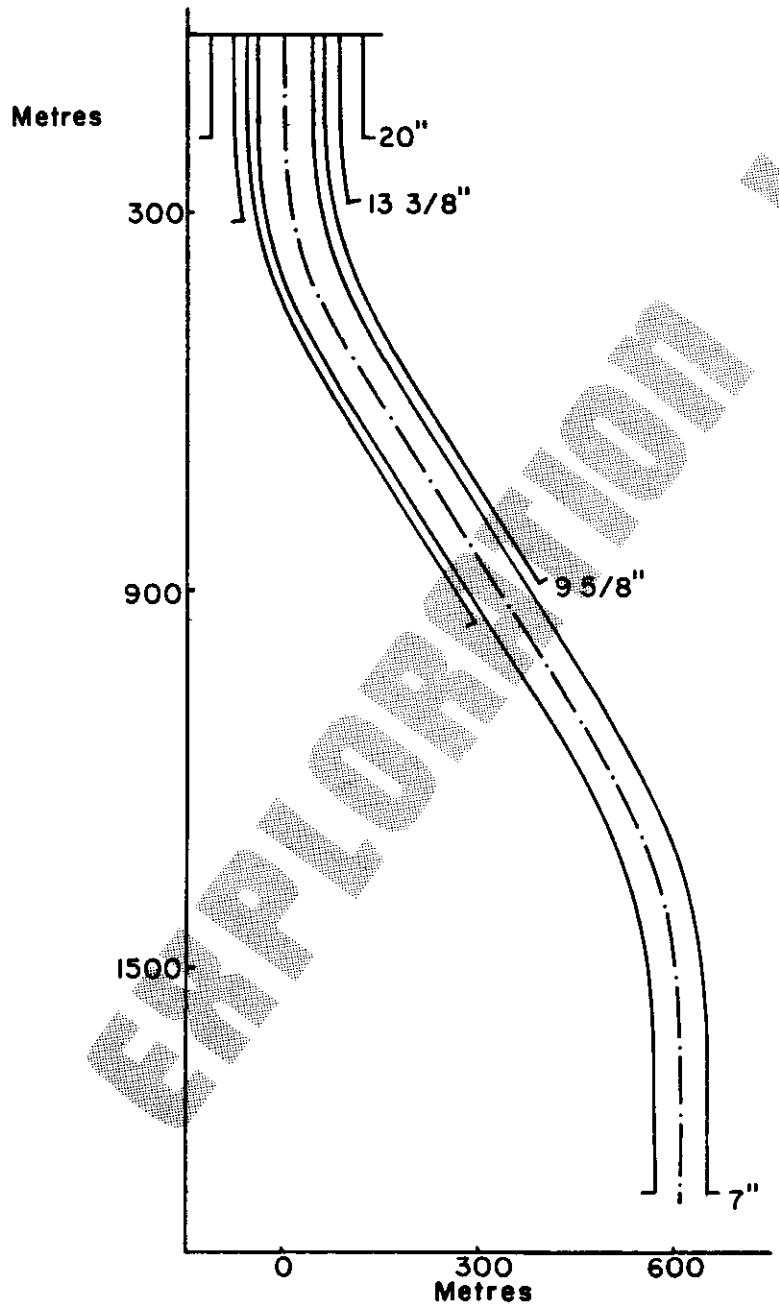
CLARA OVEST 9 DIR

DRILLING PROGRESS CHART (AT MIDNIGHT DEPTHS)



WELL PROFILE

Piattaforma Clara Ovest 9



SECTION 4

CLARA OVEST 5 DIR

CLARA OVEST 5 DIR

This well was drilled in two phases. The first section (17.5") was spudded on December 26th 1987 and completed on December 27th 1987. The second phase began on January 13th 1988 and was completed on January 28th 1988. The total depth (measured) was 2145 m. The sample interval was 10 m throughout, and the calcimetry interval 20 m. The kick-off point was 205 m.

110 m - 300 m

This section comprised of clay and some interbeds of peat and loose quartz sand.

The formation over this interval was as in preceding wells.

ROP over this interval averaged 0.2 min/m, with some slower intervals, but was generally more consistent than previously seen over this depth range.

Total gas figures were generally less than 0.1%, but peaks of 1.4% and 0.6% were observed at 121 m and 225 m respectively, and consisted of entirely of methane.

300 m - 1590 m

This section consisted of clay with traces of fine quartz sand.

The formation here was as seen over corresponding intervals in the previous wells.

ROP was again reasonably consistent in this section, tending to remain in the range 0.2 - 1.0 min/m.

Total gas values averaged between 0.2 - 0.4%, with a maximum value of 1% being recorded at 710 m. Only methane was observed.

1590 m - 2145 m

This section consisted of clay with interbeds of generally fine quartz sand.

The formation here was much the same as in the preceding wells, but some traces of glauconite were observed, and there were slightly larger traces of mica in the samples. As before, the sand was rarely seen to comprise more than 5% of the sample, but in some levels there seemed to be an increase in medium sized grains, and probably as a result of this, the percentage of sand increased to be 20% of the sample from 1840 m - 1850 m and 30% of the sample from 1890 m - 1900 m.

ROP was highly erratic over the greater part of this interval, varying between 1 - 5 min/m to 2100 m, after which it tended to become more consistent, averaging 2 - 3 min/m. As before, the presence of sand stringers was more easily determined from drilling breaks than from the samples.

The average background gas over most of this section was 0.3 - 0.4%. There were, however, a number of peaks in excess of 1%, the largest of which was 5% at 1829 m. Below 1990 m, gas values decreased again, averaging 0.2%. The only gas observed was methane.

ELECTRIC LOGS

The following E-Logs were run by Schlumberger:

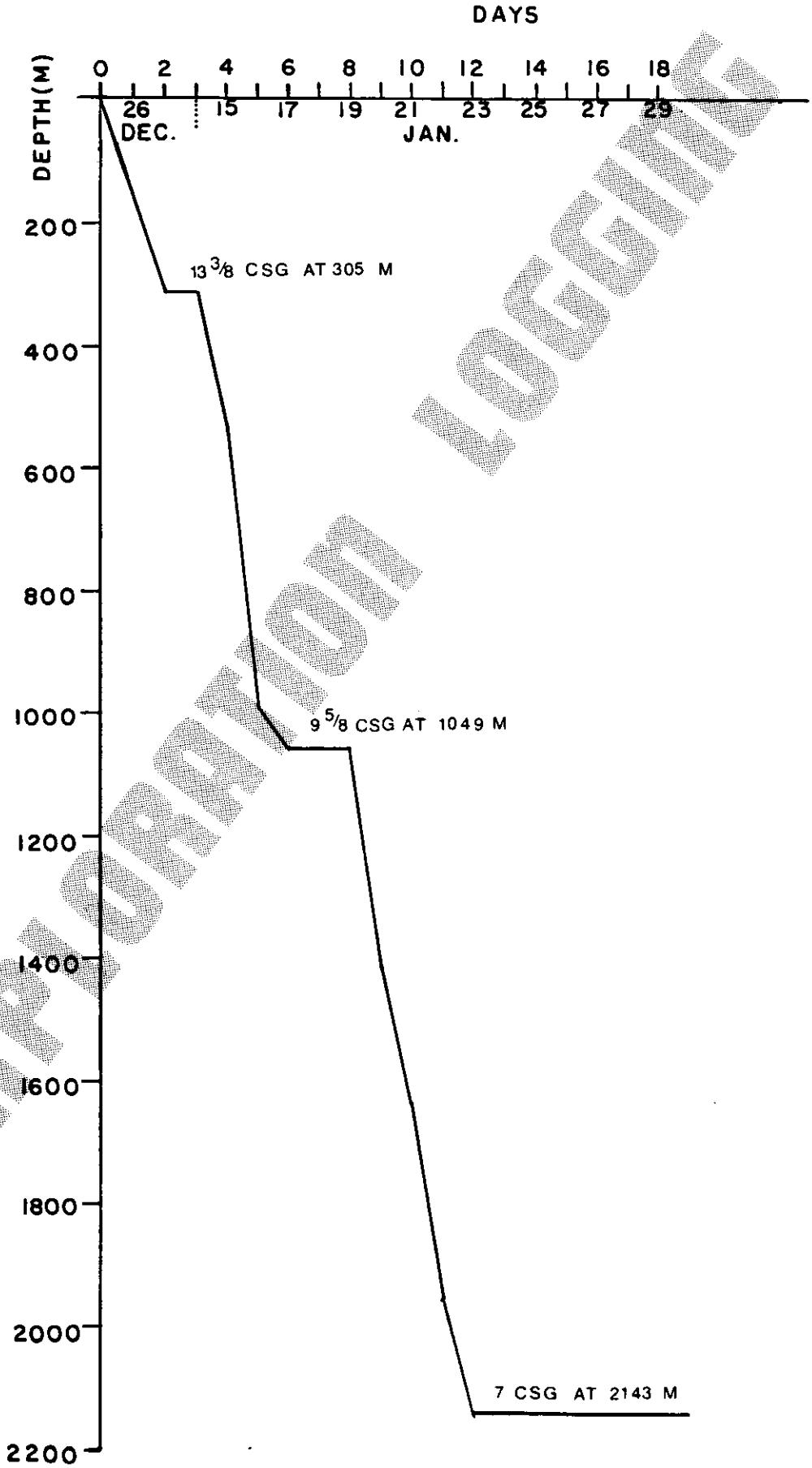
ISF - SLS : 1048 m - 2145 m

SHDT : 1048 m - 2145 m

LDL - CNL - EATT : 1600 m - 2145 m

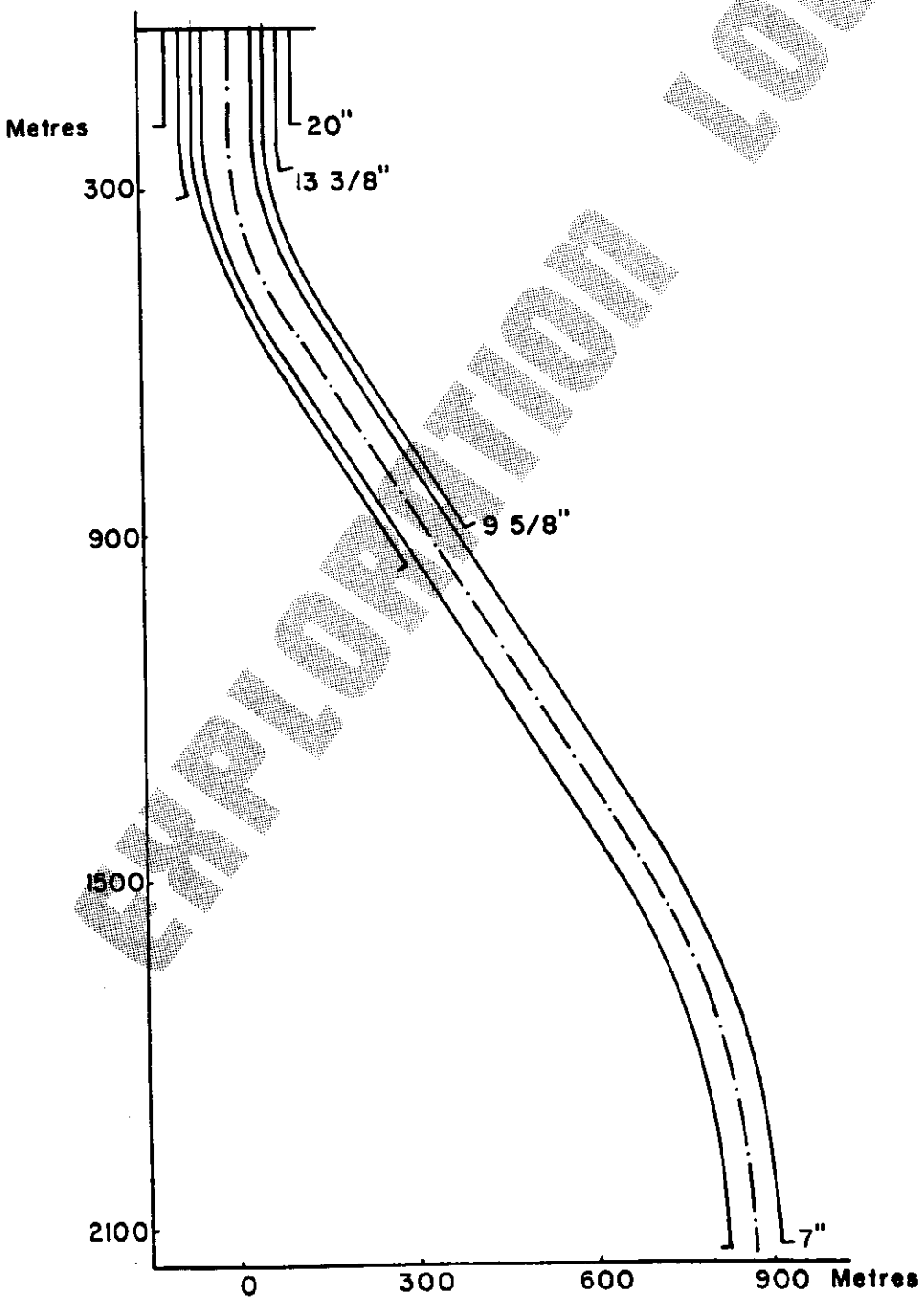
CLARA OVEST 5 (DIR)

DRILLING PROGRESS CHART (AT MIDNIGHT DEPTH



WELL PROFILE

Piattaforma Clara Ovest 5



SECTION 5

CLARA OVEST 6 DIR

CLARA OVEST 6 DIR

This well was drilled in two phases. The first section (17.5") was spudded on December 28th 1987 and completed on December 29th 1987. The next phase began on January 1st 1988 and was completed on January 13th 1988. Throughout the well, the sample interval was 10 m and the calcimetry interval was 20 m. The total depth (measured) was 1853 m and the kick-off points was at 801 m.

110 m - 300 m

This interval consisted of clay with some interbeds of peat and loose quartz sand.

The formation was as in the previous wells.

ROP in this section averaged 0.8 min/m, but over some intervals it decreased to as much as 9 min/m, probably due to clay "balling up" on the bit.

Gas averaged 0.2% total with a maximum value of 0.5% at 130 m.

300 m - 1440 m

Throughout this section the formation consisted of clay with traces of fine quartz sand, having the same characteristics as observed in the preceding wells.

ROP was generally slower than had been seen before for this depth range. At first, it averaged 1 min/m, but decreased with depth to 7 - 8 min/m towards the bottom of the interval. This trend was interrupted at 1200 m where a marked drilling break from 9 - 2 min/m was seen, followed by a

gradual decrease in ROP. It seemed unlikely however that these fluctuations reflect correspondingly major changes in the nature of the formation.

Total gas averaged 0.3 - 0.4% with a peak of 2% at 450 m. Methane was the only gas seen to be present.

1440 m - 1853 m

This section was comprised of clay with interbeds of fine to very fine quartz sand.

The formation here was again much the same as had been observed in previous wells, the sand tending to be slightly more homogenous (i.e. better sorted) than in Clara Ovest 5. This sand was rarely seen to exceed 10% of the total sample volume, and usually it was present in quantities of less than 5%.

ROP averaged 3 min/m with fairly frequent drilling breaks of usually, around 1 min/m. The average background total gas figure increased from 0.2% at 1450 m to the substantially higher value of 1% by 1800 m. Observed peaks were correspondingly larger, the most significant being 11% at 1791 m, and several peaks of the order of 10% appeared between 1700 m and 1800 m. The only gas detected was methane.

ELECTRIC LOGS

The following E-Logs were run by Schlumberger:

SHDT : 1116 m - 1801 m

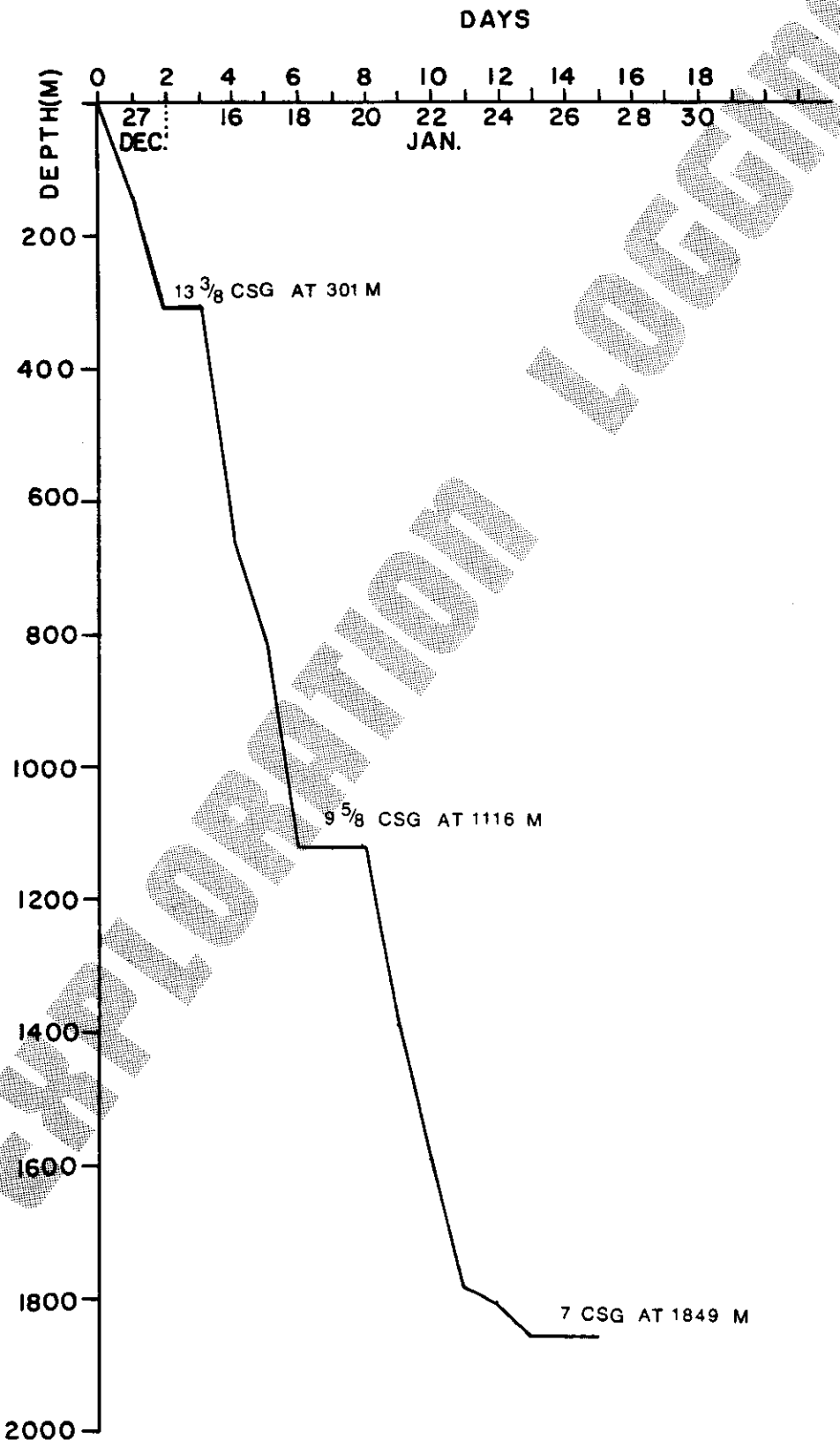
LDL - CNL - EATT : 1445 m - 1801 m

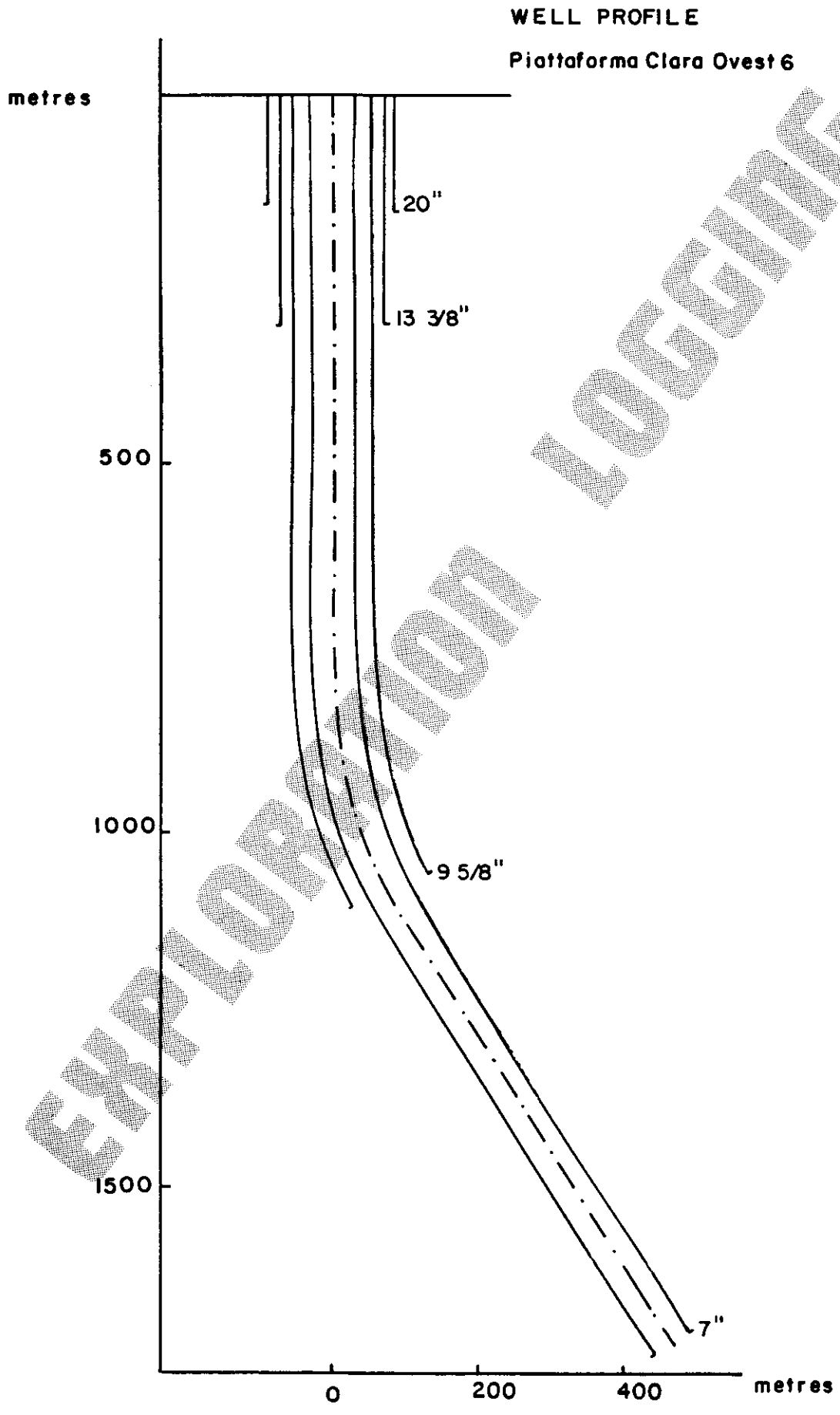
ISF - SLS - SP : 1116 m - 1802 m

CBL - VDL - CCL : 405 m - 1116 m

CLARA OVEST 6 (DIR.)

DRILLING PROGRESS CHART (MIDNIGHT DEPTHS)





SECTION 6

CLARA OVEST 8 DIR

CLARA OVEST 8 DIR

This well was drilled in two phases. The first section was spudded on December 30th 1987 and completed on December 31st 1987. The next phase began on February 15th 1988 and was completed on February 26th 1988. The kick-off point was at 321 m and the total depth (measured) was 2240 m. Throughout the well, the sample interval was 10 m and the calcimetry interval was 20 m.

110 m - 304 m

This interval consisted of clay with interbeds of peat and loose quartz sand.

The formation seen here was as in the previous wells.

ROP in this section varied between 0.5 - 5 min/m, but usually remained in the range 0.5 - 1.5 min/m.

Total gas was very low over this interval, often being less than 1% and never being more than 2%.

304 m - 1590 m

This section comprised of clay with some traces of fine quartz sand, generally having the same characteristics as seen over this depth range in the preceding wells.

ROP varied considerably, more so than had been the case with the preceding wells, and these variations correlated well with bit runs and hole size. Over the 12.25" hole section (i.e. to 1019 m) there was an overall decrease in ROP from 0.5 - 2 min/m to 2 - 4 min/m. This slowed down further at the

start of the 8.5" section to 5 - 10 min/m, speeding up to 1 - 5 min/m at the start of the second 8.5" bit run. The effect of the formation was secondary to these fluctuations.

The first significant amount of gas seen in this well was at 420 m (0.64%). From this depth until 844 m total gas remained within the range 0.2 - 0.5% to 844 m. From 844 m - 1276 m the background gas was generally less than 0.2% with a few minor peaks, the most substantial of which was 0.5% at 940 m. From 1276 m onwards the background gas was again in the range of 0.2 - 0.5%, with peaks of 0.9% seen at 1330 m and 1565 m respectively. The only observed gas was methane.

1590 m - 2210 m

This interval consisted of clay with thin stringers of fine quartz sand, being essentially the same as seen in the previous wells over corresponding sections. The percentage of sand in the samples was usually less than 5% and only rarely greater than 10%.

ROP varied between 1 - 5 min/m, the faster rates correlating with sandier horizons.

The average background gas over this section was in the range of 0.3 - 0.4% with numerous peaks of the order of 4% at 1740 m, 1802m, 1822 m, 1870 m, 1881 m, 1931 m, 1951 m, 2001 m, 2023 m, and 2040 m. The largest peak was 4.7% at 1740 m. Below 2100 m the magnitude of both peaks and background gas began to decrease, and by 2200 m background gas was less than 0.2%. The only gas recorded was methane.

2210 m - 2240 m

This section was comprised of calcareous clay, marl and traces of chalky limestone.

The clay was at first as seen previously in this and preceding wells, having an average calcimetry value of 20 - 30%. Bulk calcimetries were then seen to increase from 30% at 2220 m to 70% at 2240 m, and the presence of marl and traces of chalky limestone were noted in the samples. The marl was firm to slightly hard, grey to dark grey, occasionally greenish grey, laminated, silty and fossiliferous. The limestone was firm, milky white to off white and argillaceous in part.

ROP in this section varied between 5 - 10 min/m, the slower values corresponding to chalky horizons.

No gas was detected in this section.

ELECTRIC LOGS

The following E-Logs were run by Schlumberger:

1. At 2099 m :

ISF - SLS - SP : 1011 m - 2094 m

LDL - CNL - EATT : 1500 m - 2080 m

SHDT : 1011 m - 2098 m

CBL - VDL - CCL : 325 m - 1010 m

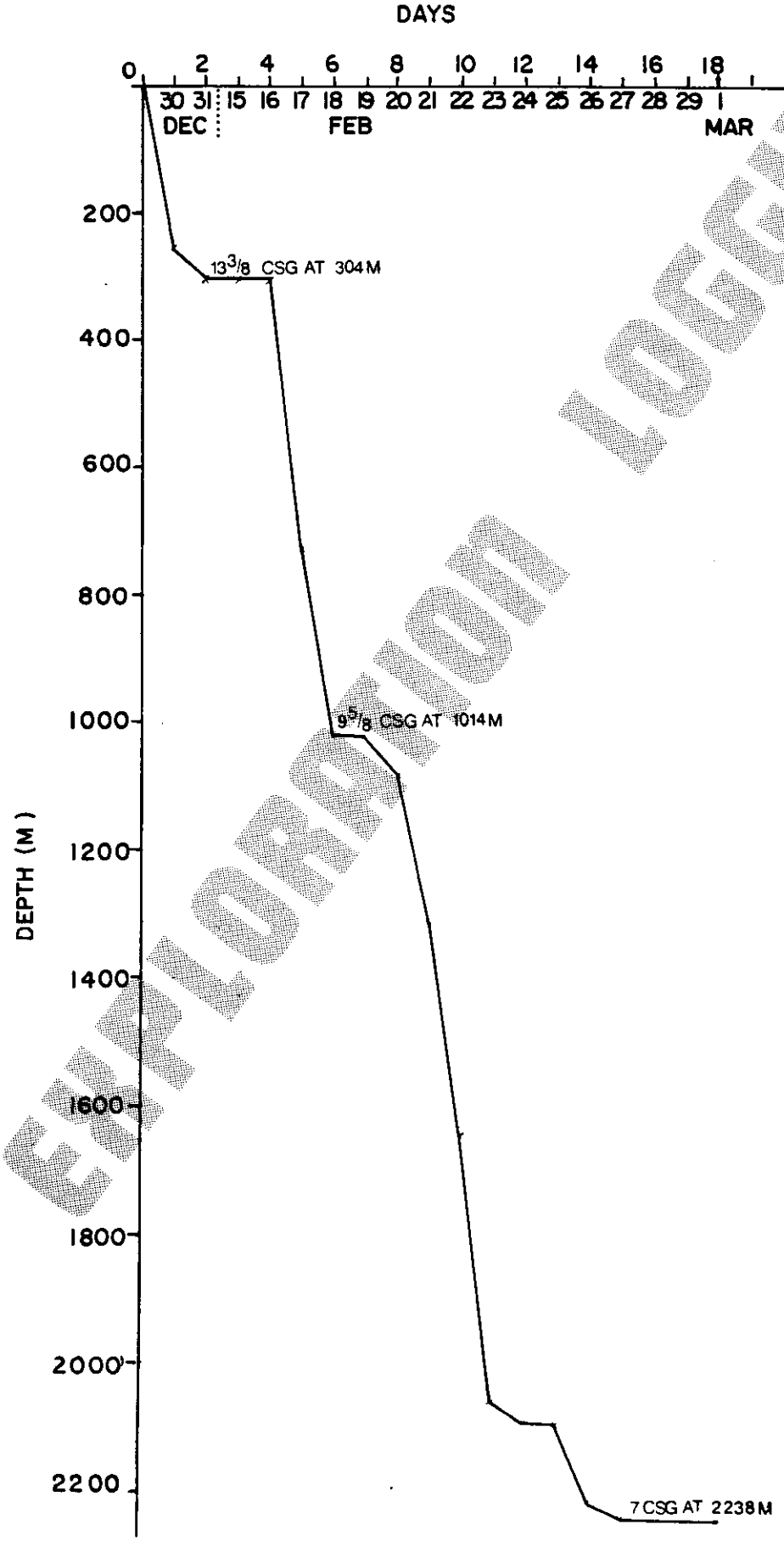
2. At 2024 m :

DITE - SLS - SP : 1850 m - 2237.5 m

LDL - EPT - CNL : 1500 m - 2238 m

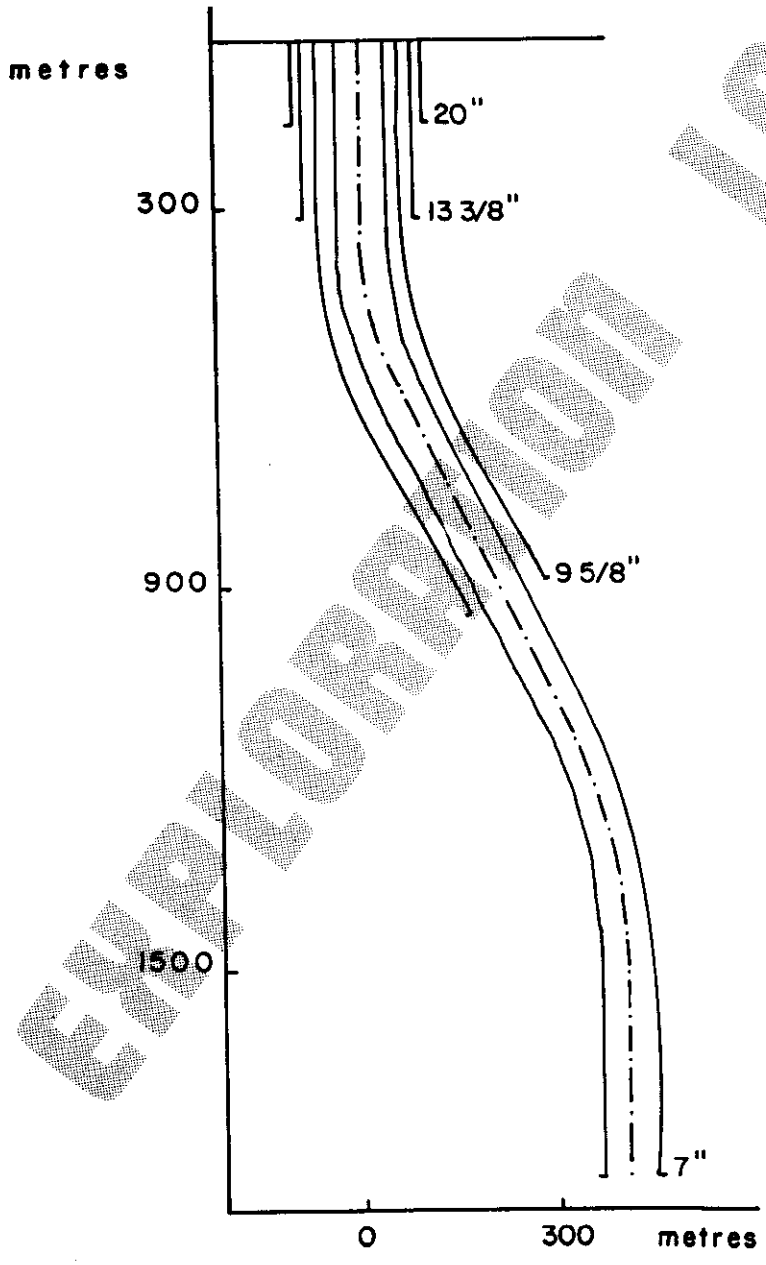
CLARA OVEST 8 (DIR)

DRILLING PROGRESS CHART (AT MIDNIGHT DEPTHS)



WELL PROFILE

Piattaforma Clara Ovest 6



SECTION 7

CLARA OVEST 11 DIR, 11A DIR AND 11A DIR 2ND WELL INTRODUCTION

CLARA OVEST 11 DIR, 11A DIR AND 11A DIR 2ND WELL

Clara Ovest 11 dir was spudded on March 16th 1988 and drilled without interruption to TD (2674 m measured) on March 29th 1988. This well was drilled with a very large deviation (52°) and was essentially an exploration well, the intention being to explore a hitherto unknown section and decide whether or not to put the well into production after logging. In the event of the well not showing a significant degree of mineralisation, a sidetrack, Clara Ovest 11A dir was to be drilled, this with a lower angle of deviation (38°). This was to drop off from 1610 m (measured) to investigate another zone for which there was considered to be more probability of finding producable quantities of gas. This was eventually drilled, well 11, having no worthwhile shows, being plugged and abandoned. However, towards TD, well 11A drilled into a section of gypsum and sulphur, with high formation pressures and H2S (100 ppm detected by Exlog sensors) which led to this well, also being plugged and abandoned. Well 11A was sidetracked out of cased hole at 308 m on April 7th 1988, and TD was reached on April 17th 1988, the well being completed on April 30th 1988. Due to the loss of this well, it was decided to drill another sidetrack, Clara Ovest 11A dir 2nd hole, to the same objective but with a shallower TD. This well was kicked off out of open hole at 1708 m on April 30th 1988 and reached TD (2371 m measured) on May 5th 1988, the well being completed on May 8th 1988.

SECTION 8

CLARA OVEST 11 DIR

CLARA OVEST 11 DIR

110 m - 220 m

This interval consisted of clay with interbeds of peat and loose quartz sands. The formation was as seen in previous wells.

ROP generally averaged 0.2 - 0.4 min/m, slowing down frequently to 6 - 20 min/m, probably as a result of clay "balling up" on the bit.

Total gas values were on average less than 0.1%, with a peak of 0.85% at 130 m. The only gas observed was methane.

220 m - 2764 m

This interval consisted of clay with some thin beds of loose quartz sand, usually fine to very fine grained but occasionally becoming medium grained. The formation generally consisted of material much the same as seen in previous wells. However, in the lower part of the section, there was an increase in the amount of mica seen in the samples, both muscovite and biotite being present, and also some traces of glauconite.

The sand was present in smaller quantities than seen elsewhere, and even spot samples coinciding with drilling breaks displayed less than 10% sand by volume.

ROP gradually decreased over this interval from 1 min/m (average) at the top to 2.5 min/m (average) from 2650 m onwards, with some slow intervals of 7 - 8 min/m, again due to clay "balling up" on the bit.

Total gas values averaged 0.2 - 0.3%, the only significant peaks being at 389 m (0.8%), 710 m (0.65%), 2090 m (0.6%) and 2342 m (1.72%). Only

methane was seen to be present.

ELECTRIC LOGS

The following E-Logs were run by Schlumberger:

ISF - SLS - SP : 1442 m - 2644 m

LDL - CNL - EATT : 2100 m - 2450 m

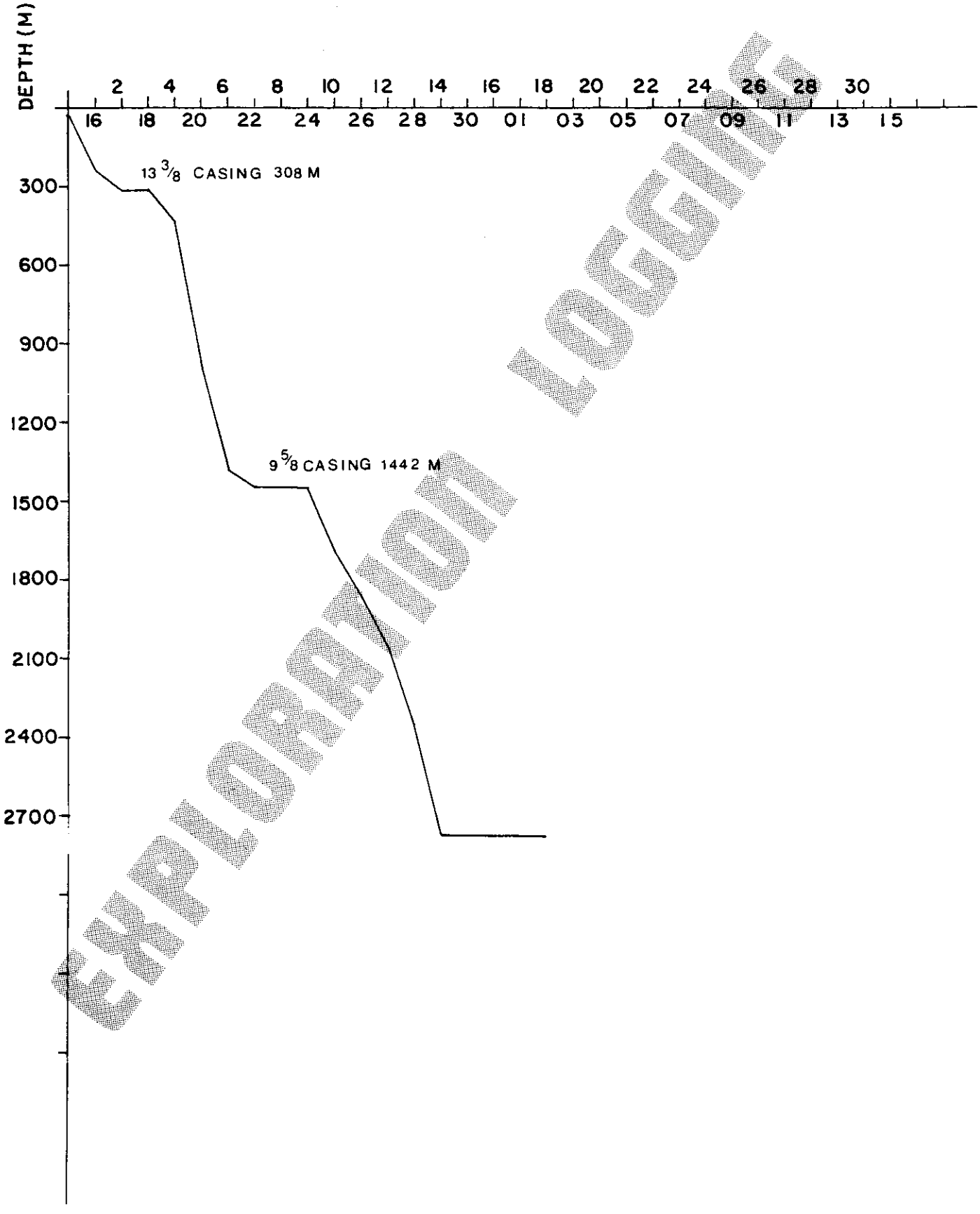
SHDT : 1442 m - 2655 m

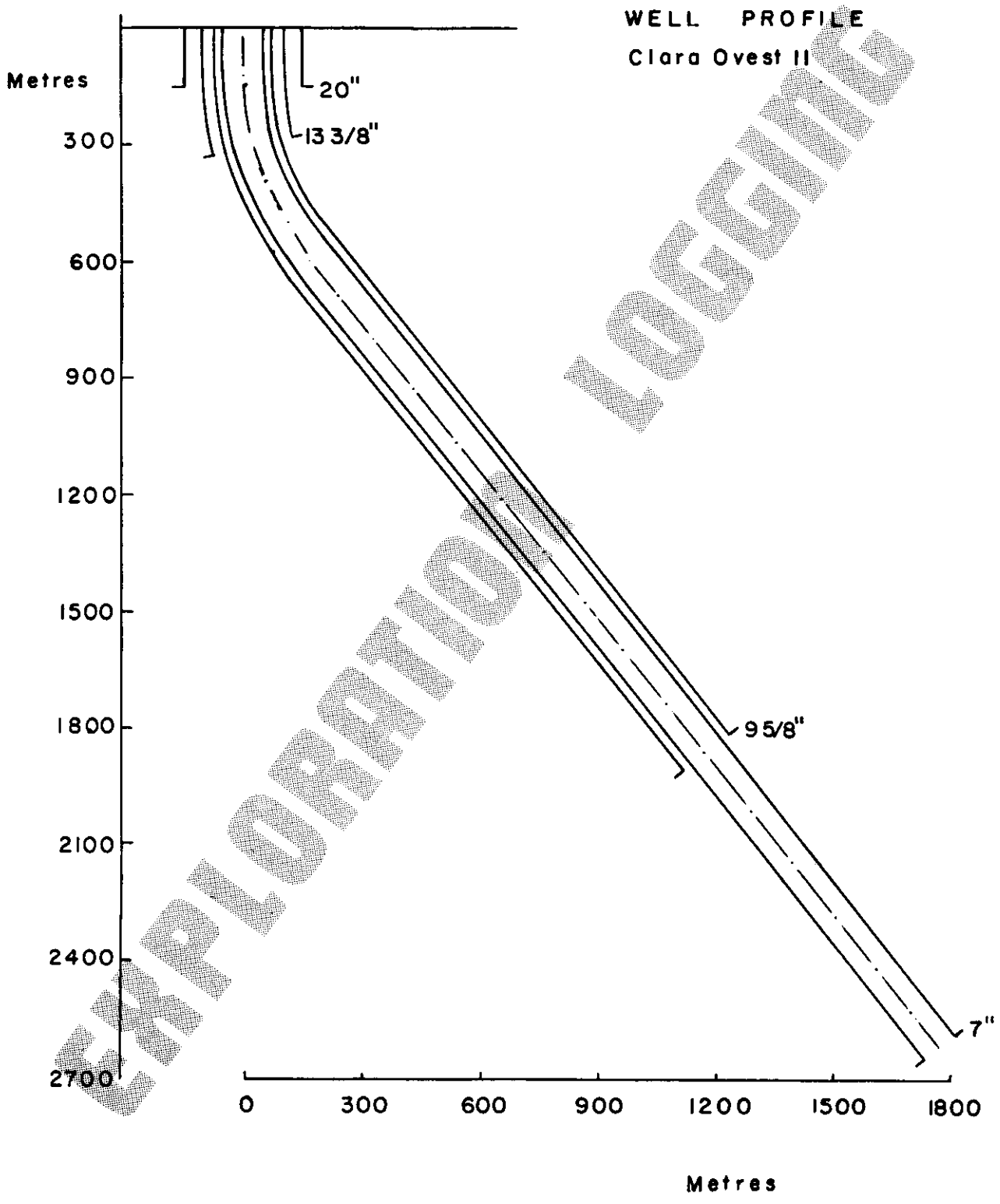
CBL - VDL - CCL : 750 m - 1439.5 m

An RFT was also run, but became stuck after 1 test at 2253 m. It was afterwards successfully fished.

CLARA OVEST 11 (DIR)

DRILLING PROGRESS CHART (AT MIDNIGHT DEPTHS)




WELL PROFILE
Clara Ovest II
Metres
20"
13 3/8"
9 5/8"
7"
300
600
900
1200
1500
1800
2100
2400
2700
0
300
600
900
1200
1500
1800
Metres

SECTION 9

CLARA OVEST 11A DIR

CLARA OVEST 11A DIR

308 m - 1640 m

Over this hole section the formation consisted of clay with fine quartz sand as seen in previous wells.

ROP were more regular than seen in most of the other wells over corresponding intervals, initially averaging 1 min/m and gradually slowing down to average 2 min/m by the end of the section.

Total gas averages were initially fairly high, being in the range 0.6 - 1.0% from 500 - 800 m. They then decreased to an average of 0.3% to the end of the interval, the only significant peak being at 1106 m (1.12%). The only observed gas was methane.

1640 m - 2395 m

Over this interval the formation consisted of clay with thin stringers of loose quartz sand, as seen in previous wells.

ROP averaged 2.5 min/m down to 2290 m, thereafter decreasing to 5 - 7 min/m.

Total gas averaged between 0.3 - 0.4% with frequent peaks of 2 - 3% associated with sand stringers. The most significant of these, 4.2% at 2266 m, also showed traces of ethane, propane and n-butane, the only gas seen elsewhere being methane. For this section, no more significant peaks were observed below 2320 m.

2395 m - 2411 m

This section consisted of marl with some chalky limestone, gypsum and

sulphur.

The marl was grey to dark grey, soft, amorphous, locally becoming firm to hard, generally slightly soluble and laminated, and was the major component over this interval (calcimetries here were seen to increase from an average of 20 - 30% to 70%). There were also traces of a white to off-white, soft, slightly argillaceous chalky limestone.

The gypsum was in part white, soft and soluble and in part clear, crystalline and tabular.

The sulphur was lemon yellow, translucent, hard, brittle, angular and had a silky lustre.

Throughout this section the ROP averaged 5 min/m (generally 3 1/2 - 6 min/m) with surprisingly little variation for such diverse formation types.

Total gas was generally very low throughout this section, averaging 0.2% (methane). However, the short trip gas after the wiper trip at TD (2411 m measured) consisted of H_2S, a figure of 100 ppm being registered by the Exlog sensor above the shale shakers.

During trips and flow checks in the lower part of this section, the well was seen to flow at rates of between 35 and 2000 lt/hr. The mudweight was increased from 1.4 kg/lt to 1.64 kg/lt, thus bringing the well under control, but the high pressure, combined with the presence of H_2S lead to the decision being taken to plug and abandon the well.

ELECTRIC LOGS

The following E-Logs were run by Schlumberger:

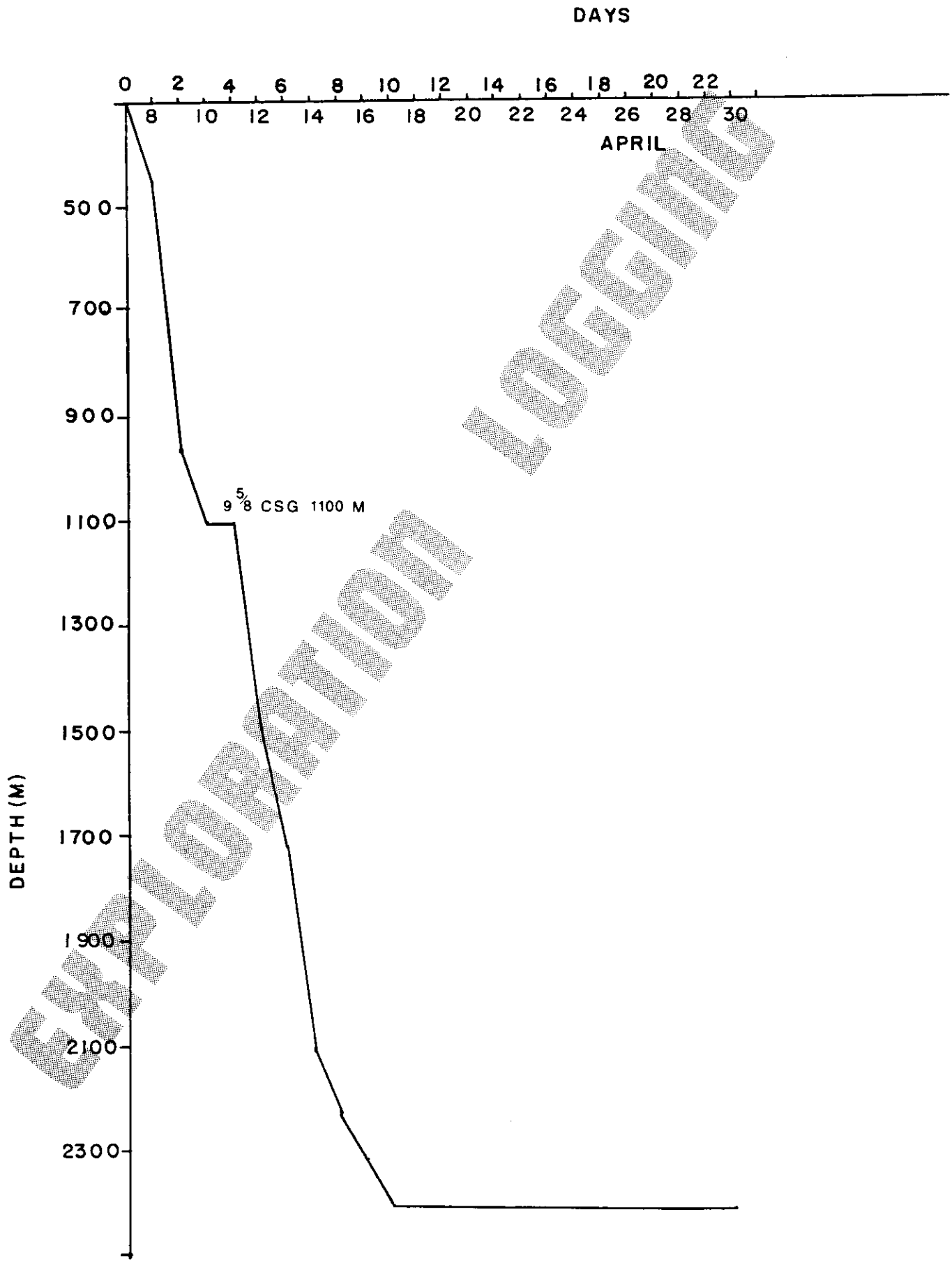
ISF - SLS - SP : 1600 m - 2315 m

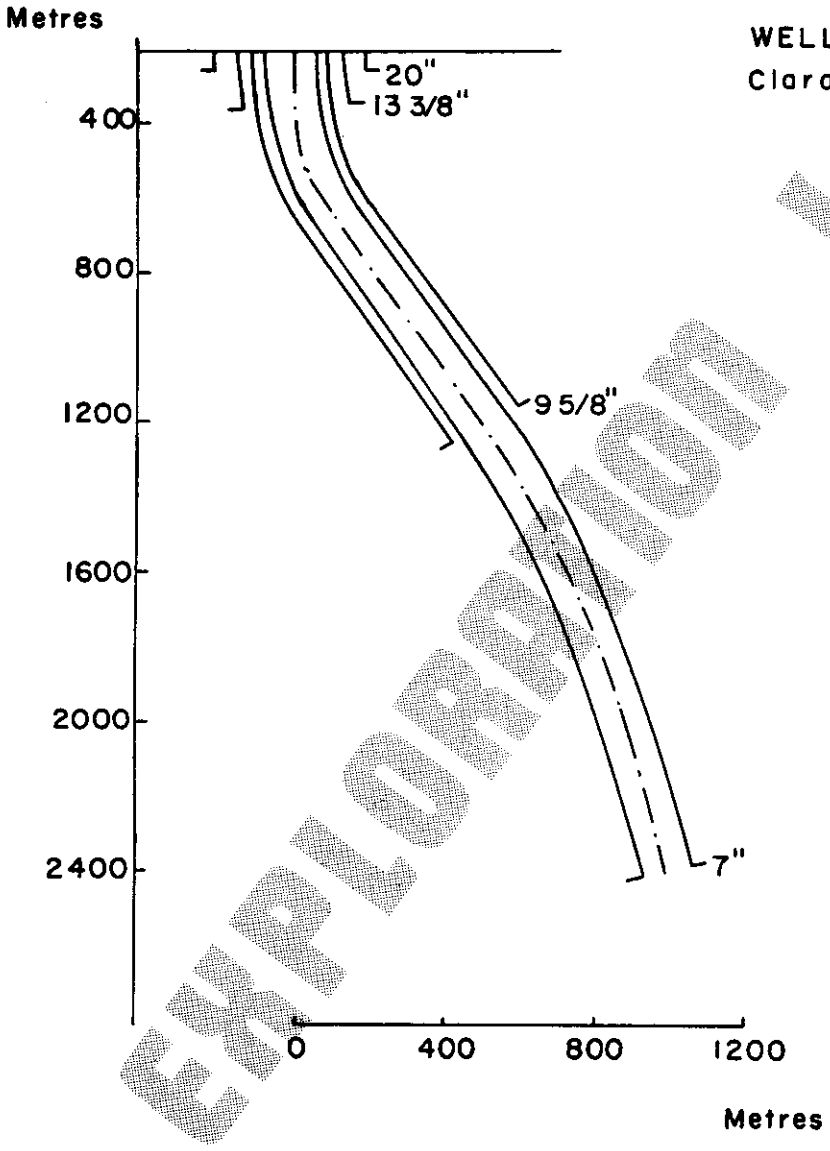
SHDT : 1600 m - 2317 m

CBL - VDL - CCL : 425 m - 1100 m

CLARA W 11 DIR A

DRILLING PROGRESS CHART (AT MIDNIGHT DEPTH)





WELL PROFILE
Clara Ovest 11 A

SECTION 10

CLARA OVEST 11A DIR 2ND WELL

CLARA OVEST 11A DIR 2ND WELL

1708 m - 2371 m

This section consisted of clay with thin stringers of fine loose quartz sand, with the same characteristics as in preceding wells, with the exception that the sand occasionally was seen to become slightly coarser (fine to medium grained) than in most of the other wells drilled here. It was also locally slightly glauconitic.

ROP averaged from 1.5 to 2.5 min/m, with some slower intervals of 5 to 7 min/m due to clay "balling up" on the bit.

Total gas values were generally in the range of 0.2 to 0.4% with few peaks, only exceeding 1% on five occasions, the most significant of which was at 1893 m (1.5%). Only methane was recorded on this well.

ELECTRIC LOGS

The following E-Logs were run by Schlumberger:

ISF - SLS - SP : 1708 m - 2366 m

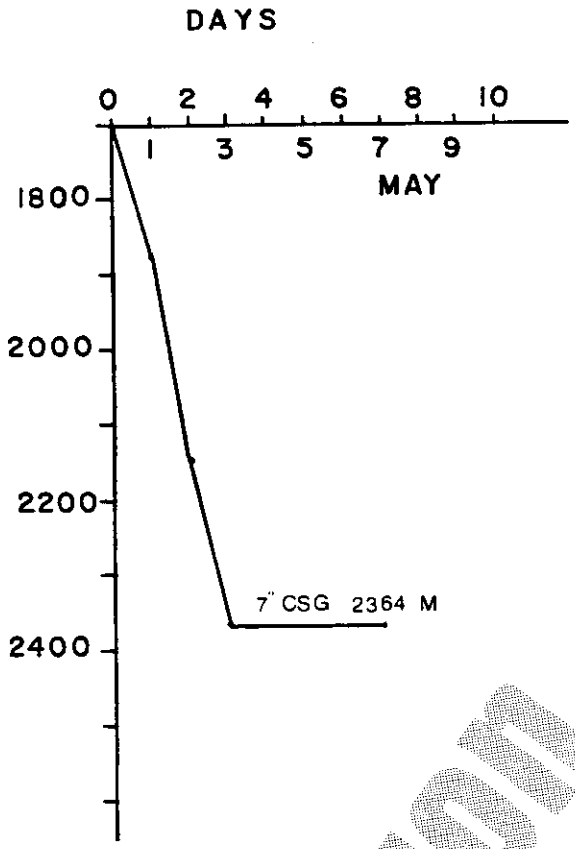
LDL - CNL - EATT - GR : 1770 m - 2366 m

SHDT : 1708 m - 2366 m

An RFT was also run, readings being taken at 1855 m, 1914 m, 1959 m, 1972 m, 2000 m, 2054 m, 2243.5 m, 2244 m, 2272 m, 2296 m and 2317 m.

CLARA W II DIR A 2

DRILLING PROGRESS CHART (AT MIDNIGHT DEPTHS)



SECTION 11

CLARA OVEST 10 DIR

CLARA OVEST 10 DIR

Logging commenced from spud on May 8th 1988, and the well was completed on May 21st 1988. The sample interval was 10 m throughout. The calcimetry interval was 20 m for most of the well, being reduced to 10 m for the last 60 m of hole. The kick-off point was at 713 m and the total depth (measured) was 2063 m.

110 m - 200 m

This section consisted of clay with interbeds of peat and fine loose quartz sand, much as seen in the preceding wells but with a slight increase in the sand percentage (averaging 10% of the sample).

ROP varied between 0.2 and 2 min/m over this section.

Total gas was consistently less than 0.2% and was comprised of methane only.

200 m - 1550 m

This section consisted of clay with frequent traces of very fine loose quartz sand. The formation was as seen in preceding wells. Some pyritised worm burrows were observed in the lower part of the interval.

ROP was in the range 0.75 - 3 min/m, averaging 2 min/m throughout, except for some intervals where it slowed down to 5 - 10 min/m, due to clay "balling up" on the bit.

Total gas was generally in the range 0.1 - 0.6%, tending to increase slowly with depth. The few small peaks seen never exceeded 0.8% and were all between 1250 m and 1550 m.

1550 m - 1990 m

This interval consisted of clay with thin stringers of fine loose quartz sands. The formation over this section was as seen in preceding wells. The sand was generally seen as comprising less than 5% of the sample, occasionally increasing to as much as 20%, but, as stated previously, it was generally so fine that a large amount would have been lost at the shale shakers, making actual percentages significantly higher (as for all Clara Ovest wells).

ROP was more varied over this section, the frequent sands resulting in many short drilling breaks, rarely more than 1 m in length and frequently less than that. They ranged from 0.25 to 3.5 min/m.

Total gas values were generally in the range 0.25% to 0.7% (background) with a number of sharp peaks of the order of 2.5%, the largest being 2.9% (1817 m) and 2.85% (1880 m). Only methane was observed.

1990 m - 2063 m

The formation over this section was much as in the preceding one, the clay becoming slightly harder and the sand less evident. Hardly any fossils were seen here (only rare forams).

ROP was generally in the range 2 - 3.5 min/m, and such drilling breaks as occurred were of the order 1 - 1.5 min/m.

Total gas values gradually diminished from 0.2 - 0.5% at the top of the section to being constantly less than 0.2% by TD.

ELECTRIC LOGS

The following E-Logs were run by Schlumberger:

ISF - SLS - GR - SP : 1011 m - 2063 m

SHDT : 1011 m - 2063 m

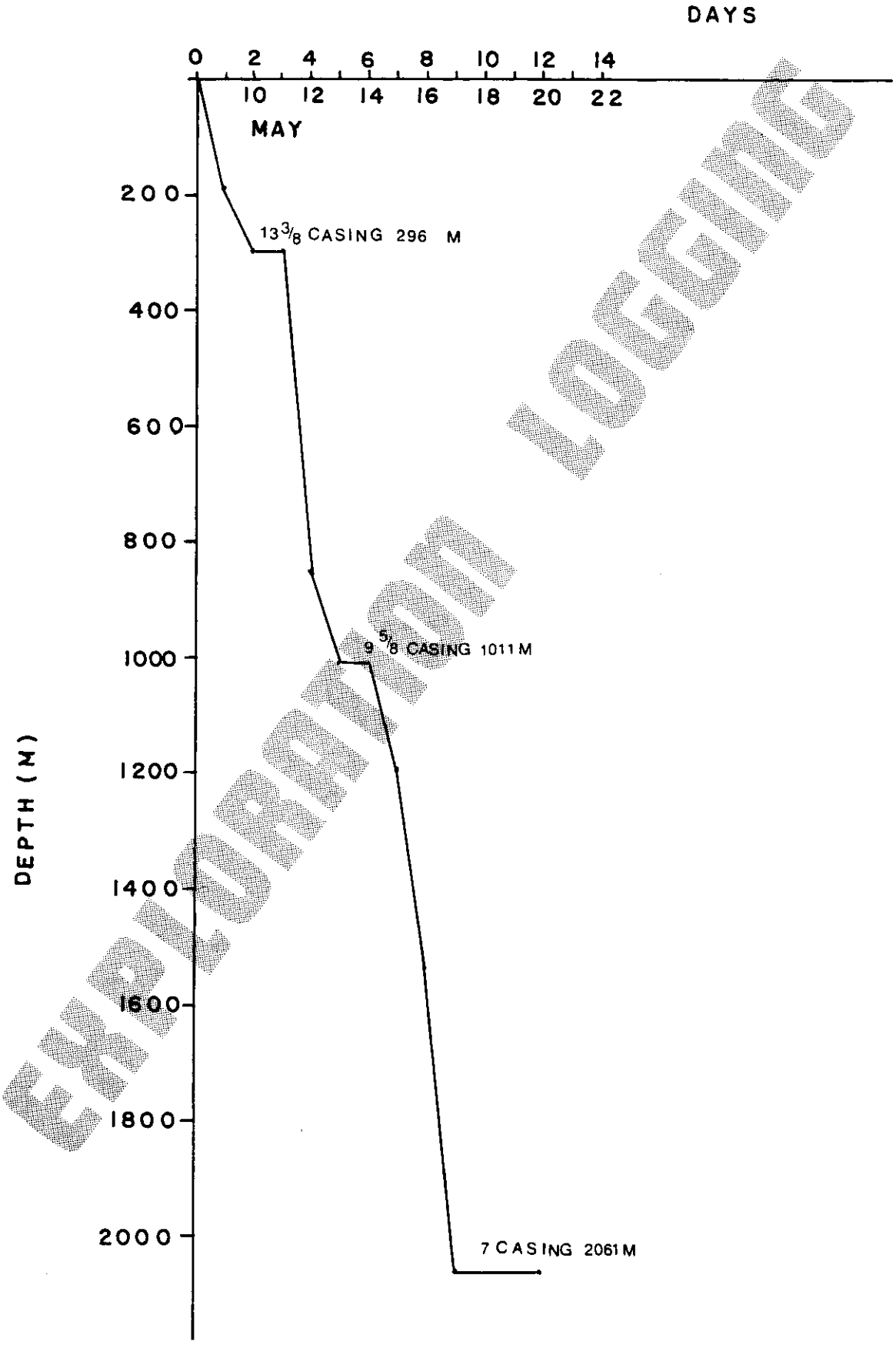
LDL - CNL - EATT : 1500 m - 2063 m

CBL - VDL - CCL : 370 m - 1010.5 m

An RFT was also run, readings being taken at 1583 m, 1596 m, 1623 m, 1652 m, 1651.5 m, 1668.5 m, 1686 m, 1702 m, 1736 m, 1780.5 m, 1798.5 m, 1829 m, 1843 m, 1883 m, 1893 m, 1908 m, 1934.5 m, 1966.5 m, 1999.5 m, 2028 m.

CLARA OVEST 10 DIR

DRILLING PROGRESS CHART (AT MIDNIGHT DEPTHS)



A G I P

GEOL/SNOR

CLARA W 8 DIR

RELAZIONE FINALE

RAVENNA, GIUGNO 1990

REDATTORE

R E L A Z I O N E F I N A L E

INDICE GENERALE

PARTE IV - PERFORAZIONE

4.01 IMPIANTO
4.02 CONTRATTISTA
4.03 TEMPI DI ATTIVITA'
4.04 PROFONDITA' FINALE POZZO (da perforazione)
4.05 PROFONDITA' FINALE POZZO (da log)
4.06 TOTALE METRI PERFORATI
4.08 MISURE DI VERTICALITA' E DEVIAZIONI
4.09 FANGO DI PERFORAZIONE
4.10 RIVESTIMENTI
4.11 CEMENTAZIONI
4.12 VACUUM TEST
4.13 LEAK OFF TEST
4.14 PERFORAZIONE RIVESTIMENTI
4.15 TAPPI
4.16 SQUEEZING
4.17 BRIDGE PLUG
4.18 PERDITE ED ASSORBIMENTI

NOTE: -le profondita' sono in metri e riferite al p.t.r.
-le pressioni sono espresse in Kg/cm2
-le temperature sono espresse in gradi C.
-i tempi sono espressi in ore e minuti
-le densita' del fango sono espresse in gr/l
-i cloruri sono espressi in gr/l (Nacl)
-le inclinazioni del foro in gradi sessagesimali e le frazioni di grado in centesimi di grado

FIGURE NEL TESTO
==========

1- CARTA INDICE
2- SITUAZIONE POZZO
3- DEVIAZIONE DEL POZZO (da DATADRILL)
4- MAPPA TOP PLQ-J1

ALLEGATI
========

1- PROFILO 1:1000
2- MASTER LOG
3- STRATIGRAFIA DESUNTA DA CORRELAZIONI ELETTRICHE (Vedi Allegato 1)
4- STRATIGRAPHIC HIGH-RESOLUTION DIPMETER m 1012-2098
5- ISF-SLS-SP m 1011-2097
6- DITE-SLS-SP m 1850-2237,5
7- LDL-CNL-EATT m 1500-2238
8- CBL-VDL-CNL-CCL m 1270-2194
9- TDTM-CCL m 1745-2013
10- PLT m 1974-2010 (FLOW)(SHUT-IN)
11- Interpretazione logs (CPI-SCHLUMBERGER -Aprile 88)
12- PROVA DI PRODUZIONE m 1976-2026

PARTE I --- DATI GENERALI ED UBICAZIONE

1.01 POZZO

Codice : 04610
Nome : CLARA W 8 DIR
Sigla : B.C14.AS/8

1.02 PAESE

Codice : 101
Nome : ITALIA

1.03 MARE

ADRIATICO

1.05 PERMESSO / CONCESSIONE

B.C14.AS

1.06 TITOLARE DEL PERMESSO / CONCESSIONE

AGIP-DEUTSCHE SHELL		(Titolare)
AGIP	51.000 %	(Operatore)
DEUTSCHE SHELL	49.000 %	(Partner)

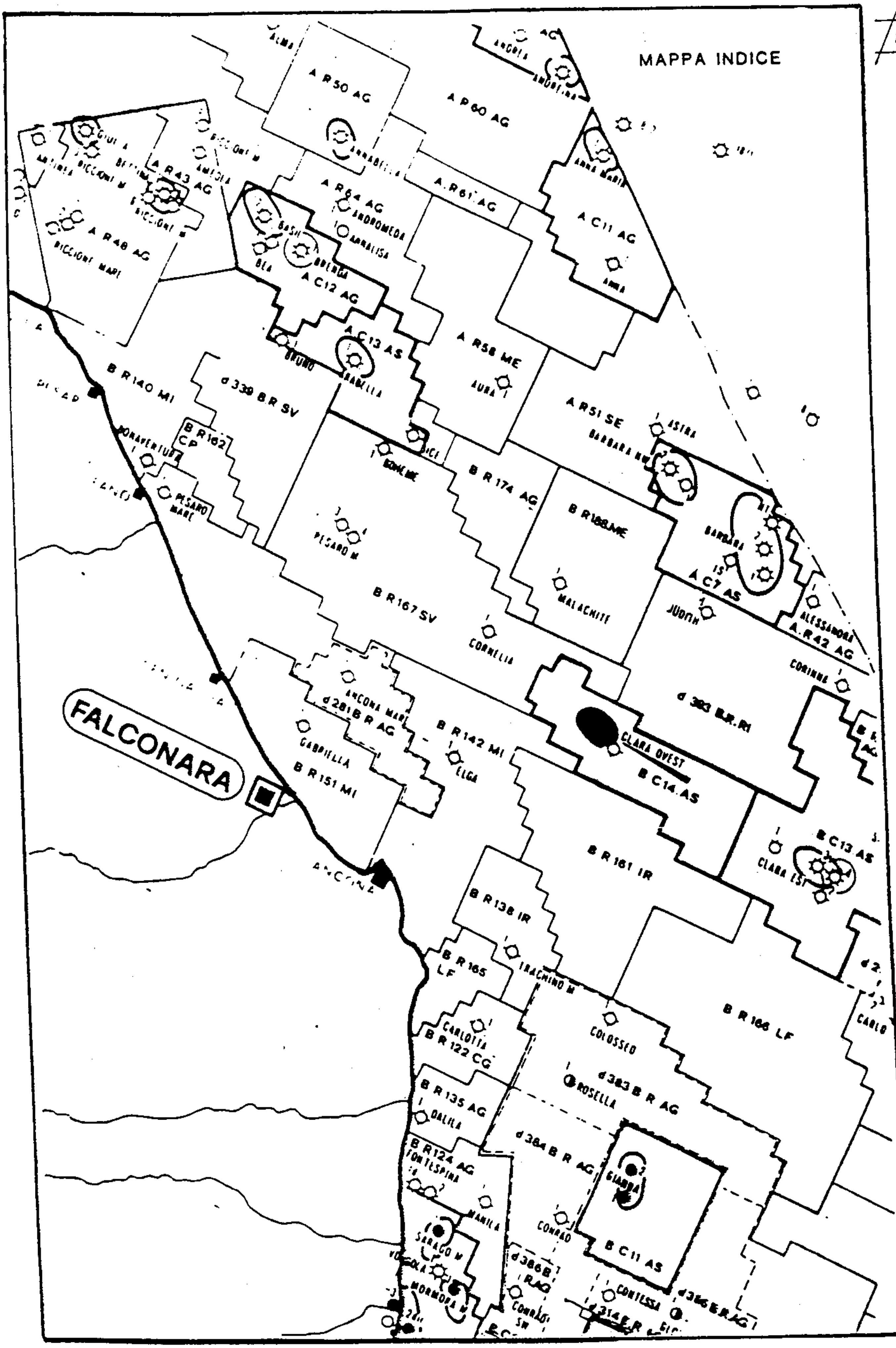
1.07 UBICAZIONE

Carta : NAUTICA
Foglio : 923
Linea Sismica :
S.P. :
Coordinate
Geogr. Long : E 013*42'42".0 Lat. : N 43*49'40".9 GREENWICH

1.08 COORDINATE FONDO POZZO

Geogr. Long :E 013*43'01".3 Lat.:N 43*49'42".9 GREENWICH
Geogr. Long :E 001*15'52".9 Lat.:N 43*49'42".9 MONTE MARIO

Fig. 1



MAPPA INDICE
A R 50 AG
A R 60 AG
A R 43 AG
A R 48 AG
A R 64 AG
A R 61 AG
A C 11 AG
A C 12 AG
A C 13 AS
A R 58 ME
A R 51 SE
A C 7 AS
A R 42 AG
B R 140 MI
d 339 B R SV
B R 162 CP
B R 174 AG
B R 188 ME
B R 167 SV
d 383 B.R.RI
d 281 B R AG
B R 142 MI
B R 151 MI
B C 14 AS
B C 13 AS
B R 161 IR
B R 138 IR
B R 165 LF
B R 166 LF
B R 122 CG
d 383 B R AG
B R 135 AG
d 384 B R AG
B R 124 AG
B C 11 AS
FALCONARA
ANCONA
CLARA OVEST
CLARA EST
GIANNA
ROSELLA
COLOSSEO
CONTESSA
MALACHITE
CORNELIA
JUDITH
ALESSANDRA
CORINNA
CARLO
ELGA
GABRIELLA
ANCONA MARE
PESARO M
PESARO MARE
BONAVENTURA
BRUNO
AURA
ASTRA
BARBARA
BARBARA NW
ANNA MARIA
ANNA
ANNABELLA
ANDROMEDA
BREDGA
BEA
ARIANNA
CARLOTTA
DALILA
FONTESPINA
MANILA
CONRAD
SARAGO M
MORMORA M
TRACHINO M

1.09 QUOTE (riferite al livello del mare)

Fondo Marino	:	-72.0
Tavola Rotary	:	28.0
Prima Flangia	:	13.4

1.10 OBBIETTIVO DEL POZZO

Il giacimento di Clara Ovest, ubicato nell'off-shore Adriatico a circa km 28 a NE di Ancona, e' caratterizzato da un struttura anticlinalica con asse WNW-ESE, suddivisa traversalmente in diversi blocchi separati da faglie dirette. Il campo presenta la mineralizzazione a gas metano distribuita su un serie di livelli sabbiosi della formazione Porto Garibaldi (Pliocene medio-superiore) e della formazione Argille del Santerno (Pliocene superiore-Pleistocene). L'ipotesi di sviluppo del giacimento di Clara Ovest prevedeva la perforazione di sei pozzi deviati.
Il pozzo Clara Ovest 8 dir si proponeva lo sfruttamento nella zona centrale del campo (blocco D) di alcuni livelli, PL8 H-K e PL3 A+A1 e C con completamento doppio selettivo su entrambe le string di produzione.
La perforazione doveva arrestarsi a m 1909 (v.1830).

1.11 CLASSIFICAZIONE INIZIALE

DEVELOPMENT WELL O POZZO DI COLTIVAZIONE

1.12 CLASSIFICAZIONE FINALE

DEVELOPMENT WELL

1.13 PROFONDITA' FINALE (da perforazione)

2240.0 (v. 2154.0)

1.14 ESITO MINERARIO

GAS

1.15 SITUAZIONE ATTUALE

COMPLETATO

1.16 GIACIMENTO

CLARA OVEST

1.17 INIZIO PRODUZIONE

24/02/89

1.18 INTERVALLO IN PRODUZIONE

1936.5-1943.5 1919-1923

PARTE II --- DATI GEOLOGICI

2.01 CAMPIONATURA IN FORMAZIONE

CUTTINGS

Nr.Fr.	Top	Bottom	Freq.Camp.	Tipo
1	110.0	2220.0	10.0	Lavati
1	2220.0	2240.0	5.0	Lavati

CAROTE DI FONDO

Nessuna

CAROTE DI PARETE

Nessuna

2.02 OPERAZIONI DI WELL LOGGING

Fr.	Nr.	D.	Codice	Run	Top	Bottom	Data	Contrattista
1	1	1	MWDR	1	1919.0	2083.0	19/12/88	TELECO
1	2	1	ISF	1	1011.0	2097.0	23/02/88	SCHLUMBERGER
1	2	1	SLS	1	1011.0	2087.0	23/02/88	SCHLUMBERGER
1	2	1	SP	1	1011.0	2098.0	23/02/88	SCHLUMBERGER
1	2	2	CNL	1	1500.0	2073.0	23/02/88	SCHLUMBERGER
1	2	2	LDL	1	1500.0	2086.0	23/02/88	SCHLUMBERGER
1	2	3	SHDT	1	1011.0	2098.0	24/02/88	SCHLUMBERGER
1	2	4	CBLVDL	1	317.0	1006.0	24/02/88	SCHLUMBERGER
1	3	1	DITE	1	1850.0	2237.5	27/02/88	SCHLUMBERGER
1	3	1	SLS	2	1850.0	2226.0	27/02/88	SCHLUMBERGER
1	3	1	SP	2	1850.0	2237.5	27/02/88	SCHLUMBERGER
1	3	2	CNL	2	1500.0	2225.0	28/02/88	SCHLUMBERGER
1	3	2	EATT	1	1500.0	2232.5	28/02/88	SCHLUMBERGER
1	3	2	LDL	2	1500.0	2237.0	28/02/88	SCHLUMBERGER
1	4	1	CBLVDL	2	1270.0	2194.0	03/08/88	SCHLUMBERGER
1	4	1	CNLCCL	1	1690.0	2187.0	03/08/88	SCHLUMBERGER
1	5	1	TDT-M	1	1745.0	2013.0	20/08/89	SCHLUMBERGER
1	5	2	PLT	1	1971.0	2013.0	02/08/89	SCHLUMBERGER

2.03 TEMPERATURE DAI LOGS

Fr.	Nr.	D.	Prof.Mis.	Prof.V.	T.Misur.	t.	Dt.	T.Calc.
1	2	1	2090.0	2004.2	48.0	2.00	7.15	52.0
1	2	1	2090.0	2004.2	48.0	2.00	7.15	52.0
1	2	1	2090.0	2004.2	48.0	2.00	7.15	52.0
1	2	2	2090.0	2004.2	49.5	2.00	12.15	52.0
1	2	2	2090.0	2004.2	49.5	2.00	12.15	52.0
1	2	3	2090.0	2004.2	50.5	2.00	16.15	52.0
1	3	1	2230.0	2144.0	50.0	2.00	7.15	52.5
1	3	1	2230.0	2144.0	50.0	2.00	7.15	52.5
1	3	1	2230.0	2144.0	50.0	2.00	7.15	52.5
1	3	2	2230.0	2144.0	51.0	2.00	13.30	52.5
1	3	2	2230.0	2144.0	51.0	2.00	13.30	52.5
1	3	2	2230.0	2144.0	51.0	2.00	13.30	52.5

2.04 FORMAZIONI - ETA'

INTERVALLO	-1- FORMAZIONE	-2- ETA'
1011.0		
	-1-ARGILLE DEL SANTERNO	
	-2-PLEISTOCENE	
1571.0		
	-1-ARGILLE DEL SANTERNO	
	-2-PLIOCENE	SUPERIORE
1637.5		
	-1-PORTO GARIBALDI	
	-2-PLIOCENE	SUPERIORE
2195.5		
	-1-ARGILLE DEL SANTERNO	
	-2-PLIOCENE	MEDIO
2210.0		
	-1-ARGILLE DEL SANTERNO	
	-2-PLIOCENE	INFERIORE
2225.0		
	-1-GESSOSO SOLFIFERA	
	-2-MESSINIANO	
2240.0		

2.05 DESCRIZIONE LITOLOGICA DELLE FORMAZIONI

Intervallo : 1011.0 - 1637.5
Formazione : ARGILLE DEL SANTERNO
Descrizione :
Argille ed argille siltose grigie, con qualche livello di sabbia a grana da fine a finissima.

Intervallo : 1637.5 - 2195.5
Formazione : PORTO GARIBALDI
Descrizione :
Sabbie a grana medio fine e finissima, con intercalazioni di argille siltose sabbiose grigie.

Intervallo : 2195.5 - 2225.0
Formazione : ARGILLE DEL SANTERNO
Descrizione :
Argille grigie e grigio verdastre, fossilifere.

Intervallo : 2225.0 - 2240.0
Formazione : GESSOSO SOLFIFERA
Descrizione :
Calcare biancastro talora chalky e marne grigio verdastre.

2.06 RISULTATI GEOLOGICI

Il giacimento Clara Ovest e' costituito da una struttura anticlinalica, con asse principale diretto WNW-ESE, divisa in vari blocchi da una serie di faglie dirette, ad orientamento NE-SW.
Il pozzo Clara Ovest 8 dir ha interessato i blocchi: D1 fino alla parte alta del livello PLQ J; D2 fino al top del livello PL3-B1; D3 fino alla parte alta del PL3 E1 indi il D4 fino alle Argille del Santerno.
La serie litostratigrafica attraversata dal sondaggio e' costituita da sabbie e argille depositatesi in facies prevalentemente torbiditica a partire dal Pliocene superiore (F.ne Porto Garibaldi) fino al Pleistocene (F.ne Argille del Santerno), dove il rapporto sabbia/argilla e' decisamente a favore di quest'ultima.
Le correlazioni elettriche con i pozzi vicini sono buone e permettono di riconoscere con buona approssimazione tutti i livelli del campo, evidenziandone nel contempo la loro continuita' laterale.
Eta'e formazione sono state desunte da correlazioni elettriche con i pozzi precedenti.
L'interpretazione dello SHDT registrato da m 1011 a m 2098, mostra una situazione strutturale in armonia con quanto esposto. I responsi sono di buona qualita' e ben organizzati su tutto l'intervallo registrato eccetto qualche breve tratto. Da m 1011 a m 1270, pendenze 1-8*; azimut di direzione preferenziale NE.
Da m 1270 a m 1300 azimut variabili con preferenza nei settori Est, pendenze 4-15*, probabile zona tettonicamente disturbata.
Da m 1300 a m 1465 pendenze 2-6*, azimut di direzione preferenziale SW, a m 1465 e' presente una faglia. Da m 1470 a m 1632 pendenze 1-6*, azimut di direzione preferenziale SE.

Da m 1632 a m 1650 pattern rosso e blu, che evidenzia la faglia diretta che separa il blocco D1 (parte superiore) dal D2. Da m 1650 a m 1870 pendenze da 2 a 10* azimut di direzione preferenziale SE. A m 1732 e' evidente la faglia diretta che separa il blocco D2 dal D3. Da m 1870 a m 1895 si nota un pattern rosso e blu che evidenzia la faglia diretta che separa il blocco D3 dal D4. Da m 1895 a m 2000 pendenze da 10* a 1*, azimut di direzione preferenziale SE, a m 1950 e' presente un pattern blu e da m 2000 a m 2005 i responsi sono caotici per un probabile disturbo tettonico.
Da m 2005 a m 2098 azimut di direzione preferenziale NW, pendenze che vanno da 1 a 10*. In conclusione il sondaggio Clara Ovest 8 dir ha attraversato la struttura in vicinanza del culmine confermando le varie faglie dirette che separano i blocchi e dimostrando anche la probabile esistenza di altre faglie minori.

PARTE III --- DATI MINERARI

3.01 MANIFESTAZIONI

- Foro : 1
  Intervallo : 150.0 - 2240.0
  Operazione in corso : PERFORAZIONE
  Descrizione :
  Durante la perforazione al detector continuo EXLOG, sono state registrate diverse manifestazioni di gas. I valori piu' significativi, di gas totale, rilevati sono i seguenti: m 1736-1740=4%; m 1801-1808=2.5%; m 1821-1823= 2.6%; m 1853=2.3%; m 1868-1872=3.1%; m 1879-1181=4.5%; m 1931=3%; m 1936=2.5%; m 1950=4%; m 1977=2.3%; m 2001-2006=2.2%; m 2021-2026=3%; m 2039=2.5%; m 2050=1.3%.

3.02 MINERALIZZAZIONI

Intervallo	-1- Mineralizzazione -2- Formazione
1011.0 - 1028.0	- ***** Codice mineralizzazione non presente
1028.0 - 1041.0	-1- ACQUA SALATA -2-ARGILLE DEL SANTERNO
1047.0 - 1067.0	-1- TRACCE D'ACQUA SALATA -2-ARGILLE DEL SANTERNO
1358.5 - 1412.0	-1- TRACCE D'ACQUA SALATA -2-ARGILLE DEL SANTERNO
1475.0 - 1526.0	-1- TRACCE D'ACQUA SALATA -2-ARGILLE DEL SANTERNO
1578.5 - 1585.5	-1- TRACCE DI GAS E TRACCE DI ACQUA SALATA -2-ARGILLE DEL SANTERNO -Zona PLQ -Livello H
1592.5 - 1598.0	-1- GAS -2-ARGILLE DEL SANTERNO -Zona PLQ -Livello H1

Intervallo	-1- Mineralizzazione -2- Formazione
1603.5 - 1609.5	-1- GAS -2-ARGILLE DEL SANTERNO -Zona PLQ -Livello H2
1614.5 - 1629.0	-1- TRACCE DI GAS E TRACCE DI ACQUA SALATA -2-ARGILLE DEL SANTERNO -Zona PLQ -Livello I
1629.0 - 1637.5	-1- ACQUA SALATA E TRACCE DI GAS -2-ARGILLE DEL SANTERNO -Zona PLQ -Livello I
1639.5 - 1643.0	-1- ACQUA SALATA E TRACCE DI GAS -2-PORTO GARIBALDI -Zona PLQ -Livello S
1643.0 - 1653.0	-1- ACQUA SALATA -2-PORTO GARIBALDI -Zona PLQ -Livello J
1657.0 - 1666.0	-1- ACQUA SALATA -2-PORTO GARIBALDI -Zona PLQ -Livello J1
1668.0 - 1675.5	-1- TRACCE DI GAS E TRACCE DI ACQUA SALATA -2-PORTO GARIBALDI -Zona PLQ -Livello K
1675.5 - 1687.5	-1- ACQUA SALATA E TRACCE DI GAS -2-PORTO GARIBALDI -Zona PLQ -Livello K
1698.5 - 1700.5	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello A
1700.5 - 1705.5	-1- TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello A

Intervallo	-1- Mineralizzazione -2- Formazione
1705.5 - 1717.5	-1- ACQUA SALATA E TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello A
1718.5 - 1727.5	-1- ACQUA SALATA E TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello A1
1732.5 - 1735.5	-1- ACQUA SALATA E TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello B
1736.0 - 1744.0	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello B
1744.0 - 1749.0	-1- ACQUA SALATA E TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello B
1749.0 - 1758.5	-1- ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello B
1765.5 - 1768.5	-1- ACQUA SALATA E TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello C
1771.0 - 1776.5	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello C1
1777.5 - 1794.5	-1- ACQUA SALATA E TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello C2
1801.0 - 1807.5	-1- TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello C3

Intervallo	-1- Mineralizzazione -2- Formazione
1811.5 - 1819.5	-1- TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello D
1819.5 - 1824.0	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello D
1824.0 - 1847.5	-1- GAS E TRACCE DI ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello D
1849.0 - 1852.0	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello D1
1868.0 - 1880.5	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello E
1881.5 - 1895.5	-1- GAS E TRACCE DI ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello E1
1907.0 - 1926.5	-1- GAS E TRACCE DI ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello F
1927.5 - 1945.0	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello F1
1948.0 - 1957.5	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello G
1964.5 - 1976.0	-1- TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello H
1976.0 - 1983.5	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello H

Intervallo	-1- Mineralizzazione -2- Formazione
1996.5 - 2033.0	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello H1
2039.5 - 2059.5	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello H2
2068.5 - 2079.0	-1- ACQUA SALATA E TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello I
2079.0 - 2098.0	-1- TRACCE D'ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello I
2106.5 - 2152.0	-1- ACQUA SALATA E TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello J
2166.0 - 2171.0	-1- TRACCE DI GAS E TRACCE DI ACQUA SALATA -2-PORTO GARIBALDI
2183.0 - 2195.5	-1- ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello K

3.03 STIMOLAZIONI

Nessuna

3.04 PROVE DI STRATO

Nessuna

3.05 PROVE DI PRODUZIONE

- Prova nr. : 1
  Data : 08/07/88
  Foro nr. : 1
  Intervallo : 1976.0 - 2026.0
  Tipo : Prova in colonna
  Scopo : RILEV. PRESSIONI E PORTATE
  Durata : 3gg 20hh 45min
  Misurat. P fondo: CTD a 1877.0 (v. 1792.0) Rif. 1
  Andamento prova :

Oper	n.	Dusi di Testa	Pressioni Testa	Pressioni Fondo	R	Fluido	P	Volume mc	Portata	Durata
STRT	1	33.3						0.00		
						BRN	S	1.14		
						FW	B	3.98		
CLUP	1	00-03/16	179.7						7.30	
						FW	B	3.98		
						BRN	S	0.57		
						GAS	F		64363 M	
SHIN	1	202.3	231.0					15.45		
FLOW	1	00-01/08	166.6	224.5					12.00	
						BRN	S	0.08		
						GAS	F		19210 M	
FLOW	2	00-03/16	174.5	217.0					8.00	
						BRN+	S	1.64		
						GAS	F		63700 M	
SHIN	2	195.2	228.4					19.30		
SHIN	2	201.0						19.00		
FLOW	3	00-01/04	167.8						8.30	
						GAS	F		110270 M	
						SW	F	2.29		
SHIN	3	195.4						2.30		
END	1							0.00		

RISULTATI DELLA PROVA

Mineralizzazione a gas.
Lo strato ha erogato gas con tracce di acqua e sabbia.

INTERPRETAZIONE DELLA PROVA

Pressione statica di giacimento 232.04 kg/cmq a m 1882 v.1797.
Trasmiss. Kh/u 3446 md/m/cpd Capacita' produttiva Kh 50 mdm
Permeabilita' K 2 md Fattore di complet. C.F 63.97%
Skin effect.S.E. 3.3 E.D.R.

3.06 BOLLETTINI ANALISI FLUIDI

Nessuno

3.07 WIRELINE FORMATION TESTS

Nessuno

3.08 RISULTATI MINERARI

1011.00 - 2240.00

Dall'analisi dei log elettrici il pozzo Clara Ovest 8 dir e' risultato mineralizzato a gas metano in diversi livelli torbiditici della formazione Porto Garibaldi (PL3 A-B-C1-D-D1-E-F1-G-H-H1-H2) e delle Argille del Santerno livelli PL0 H1 e H2, indizi di gas sono presenti anche nei livelli PL3 C3-E1-F. La zona interessata da mineralizzazione a gas va da m 1692.5 a m 2059.5 ed e' costituita da alternanze di livelli da decimetrici a centimetrici di sabbie e argille.
Le sabbie presentano saturazioni in acqua che vanno dal 40% al 75% e porosita' del 22-35%.
Il pozzo e' stato completato in doppio selettivo nei livelli PL3 H+H1 (string lunga) e PL3-F1. I livelli PL3 H+H1 sono entrati in produzione il 24/02/89 e il 17/08/89 la produzione e' stata sospesa per venuta di acqua 3000-4000 l/g e dopo aver registrato un TDT-M e un PLT veniva escluso il livello PL3 H1 con un TTBP a m 1995 e tappo di cemento da m 1995 a m 1991.
Il 28/08/89 veniva riaperto alla produzione il livello PL3-H che e' stato chiuso definitivamente il 19/09/89 per venuta di acqua, indi e' stato aperto alla produzione il livello PL3 G.
Il livello PL3-F1 entrato in produzione il 27/02/89 e' stato chiuso il 19/06/89 e quindi escluso con un blanking plug FWG a m 1912 e il 05/07/89 veniva aperto il livello PL3 D che ha prodotto fino al 08/11/89 quando e' stato chiuso per pareggio di pressione al colettore. Il 17/03/90 il livello e' stato escluso fissando un tappo PX a m 1774 e quindi e' stato aperto alla produzione il livello PL3-B.

Agip

UNITÀ TECNICA PRODUZIONE

SITUAZIONE DEL POZZO

Aggiornata al LUGLIO 07/88

Fine completamento ☒ Fine intervento ☐

Settore SUD

Campo CLARA W

Pozzo N. 8 DIR

Completamento singolo ☐ Selettivo ☐ Completamento doppio ☒ Selettivo ☒

Informazioni generali

Pozzo perforato nel periodo 15.02.88 / 02.03.88

Impianto usato per la perforazione CORMORANT

Altezza p.t.r. sulla 1ª flangia mt. 14.63

Profondità max raggiunta 2240

Tappi di cementazione a mt. 2195.50

Tappi di cemento —

Bridge Plug a mt. —

Densità fango casing BRINE NaBr 1390 gr/lt

Controllo fondo mt 2195.50 3.07.88

Colonne Tubate	ø 13 3/8"	ø 9 5/8"	ø 7"	ø
Testa a mt.	SUP.	SUP.	SUP.	
Scarpa a mt.	304	1014	2238	
CEMENT 1ª Risalita mt.	CIRC	375 CBL	1525 CBL	
CEMENT 2ª Risalita mt.				
CEMENT D.V. collar mt.				

☐ liner hanger — a mt. —

Foro scoperto ø — da mt. — a mt. —

Profilo diametri interni

ø nom.	fino a mt.	grado	filetto	lbs/ft	ø interno
7"	384	N 80	AnTares	23	161 7
7"	1537	J 55	AnTares	23	161 7
7"	2238	N 80	AnTares	29	157 1

INTERVALLI APERTI

STRING LUNGA

	PL 3	G
1 - 12 c/ft D.P. 1	1949	1957,5
	~	
	PL 3	H
	1976	1983
	1997	2004
	2011	2015
	2019	2026

STRING CORTA

	PL 3	B
1 - 12 c/ft D.P. 1	1736.5	1743.5
	~	
	PL 3	D
	1819	1823
	~	
	PL 3	F
	1928	1932
	1934.5	1937

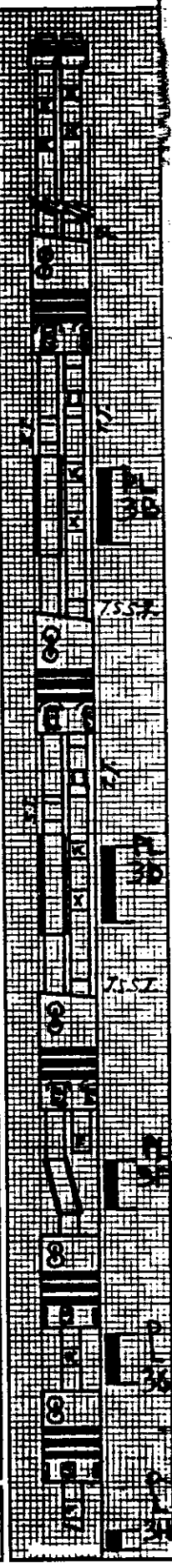
INTERVENTI

DATA	Scopo

NOTE: Verificate quote con correlazione Schlumberger TDT-P : allungamento ≈ 0,7m

Caratteristiche	STRING LUNGA			STRING CORTA		
TUBING ø nom. - Giunto	2 3/8 IPJ			2 3/8 IPJ		
TUBING Grado acciaio	P-105			P-105		
TUBING lbs/ft %	4.7	0		4.7	0	
TUBING fino a mt.	1971 SO			1913		
PACKER ø	7"	7"	7"	7"	7"	
PACKER MODELLO	RDH	RDH	RDH	FH	FH	
PACKER - tipo	23/29	23/29	23/29	47 B2	47 B2	
PACKER Casa costrutt.	OTIS	OTIS	OTIS	BAKER	BAKER	
PACKER Fissato a mt.	1647	1786	1909	1942	1967	

SCHEMA



Attrezzi in pozzo	I.D. mm	O.D. mm	a mt.
STRING LUNGA T&G HANGER DP 14	BPV	ø2 TSB	
L.N. OTIS "X" + 2 F.C	47.6	71.0	998 01
L.N. OTIS "X" + 2 F.C	47.6	71.0	1102 50
SAFETY JOINT (51000 lbs)	50°	784	1654 42
BLAST JOINT 2 3/8 IPJ da mt 1932.52 a mt 1747.34			
SAFETY JOINT (51000 lbs)	50°	784	1790 99
BLAST JOINT 2 3/8 IPJ da mt 1813.36 a mt 1825.24			
SSD OTIS "XA"	476	776	1921 09
BLAST JOINT 2 3/8 IPJ da m 1922 a mt 1939.82			
SSD OTIS "XA"	476	776	1945 24
S.N. BAKER "F" (1.81)	46°	784	1970 43
SCARPA = MULE SHOE 2 3/8 EU			1970.83
STRING CORTA			
T&G HANGER BREDA DP 14 BPV	ø2 TSB		
L.N. OTIS "X" + 2 FC	476	710	949 64
L.N. OTIS "X" + 2 FC	476	710	1045 09
SNAP LATCH OTIS	493		1648 70
TELESCOPIC JOINT	49	784	1654 23
SSD OTIS XA	476	776	1731 28
L.N. OTIS X	476	710	1774 30
TOP SUB OTIS	493		1784 31
TELESCOPIC JOINT	49	784	1790 54
SSD OTIS XA	476	776	1811 93
L.N. OTIS X	476	710	1898 18
TOP SUB OTIS	493		1907 20
S.N. BAKER F (181)	46 02	732	1911 95
SCARPA = BOTTOM S.N.F	46 02	732	1912 26

Assistente W.O. GALLI - TOFFOLO DELLA LUCA - SPORTELLI

Respons. Unità Tecn.

PARTE IV --- PERFORAZIONE

Nr. : 1
Tipo : IMPIANTO SU PIATTAFORMA FISSA E TENDER
Nome : NATIONAL 110 UE-CORMORANT

4.02 CONTRATTISTA

FORAMER

4.03 TEMPI DI ATTIVITA'

Arrivo impianto : 22/10/87
Inizio perforazione : 29/12/87
Fine perforazione : 26/02/88
Fine completamento : 12/07/88
Rilascio impianto : 12/07/88

4.04 PROFONDITA' FINALE POZZO (da perforazione)

Misurata : 2240.0
Verticale : 2154.0

4.05 PROFONDITA' FINALE POZZO (da log)

Misurata : 2240.5
Verticale : 2154.5

4.06 TOTALE METRI PERFORATI

2140.0

4.07 FASI DI PERFORAZIONE

Nr.Fr.	Nr.Fase	Top	Bottom	Diametro
1	1	80.0	306.0	17"1/2
1	2	306.0	1019.0	12"1/4
1	3	1019.0	2240.0	8"1/2

4.08 MISURE DI VERTICALITA' E DEVIAZIONI

Foro Nr.	Profondita Misurata	Profondita Verticale	Inclinaz. Foro	Direzione Geografica	Scostamento Metri	Scostamento Azimut
1	80.0	80.0	0.50	S70*00W	0.4	S70*00W
1	120.0	120.0	0.75	N80*00W	0.8	S78*85W
1	139.0	139.0	1.00			
1	150.0	150.0	0.50	S50*00W	1.1	S78*22W
1	167.0	167.0	1.00	S62*00W		
1	180.0	180.0	0.50	S70*00W	1.3	S74*74W
1	194.0	194.0	0.50	N85*00W		
1	210.0	210.0	0.25	S80*00W	1.5	S74*70W
1	240.0	240.0	0.50	S70*00W	1.7	S74*67W
1	248.0	248.0	0.25	S80*00W		
1	270.0	270.0	0.75	S80*00W	2.1	S74*78W
1	299.0	299.0	0.75	N18*00W		
1	300.0	300.0	0.50	N20*00W	2.3	S79*88W
1	327.0	327.0	1.40	N16*70W	2.4	N89*45W
1	355.0	355.0	4.00	N03*70W	2.9	N63*07W
1	383.0	382.8	7.60	N11*50E	2.6	N63*00W
1	412.0	411.4	11.60	N24*10E	5.8	N07*92W
1	440.0	438.7	14.20	N27*30E	11.6	N09*54E
1	469.0	466.7	15.60	N31*50E	18.7	N17*32E
1	497.0	493.6	17.50	N45*60E	26.3	N23*65E
1	525.0	520.2	18.10	N62*10E	33.9	N30*92E
1	553.0	546.6	20.50	N75*40E	41.6	N38*76E
1	582.0	573.4	24.60	N83*20E	50.6	N46*99E
1	610.0	598.6	27.30	N84*90E	60.8	N53*97E
1	639.0	624.3	27.60	N84*60E	72.6	N59*38E
1	667.0	649.1	27.60	N83*90E	84.5	N63*08E
1	696.0	674.8	27.80	N83*50E	97.3	N65*88E
1	724.0	699.5	28.70	N85*30E	109.9	N68*07E
1	753.0	724.9	28.70	N85*60E	123.3	N70*01E
1	781.0	749.5	28.70	N84*90E	136.3	N71*49E
1	810.0	774.9	28.60	N84*90E	149.9	N72*72E
1	839.0	800.3	29.10	N83*50E	163.6	N73*70E
1	895.0	849.3	29.00	N86*00E	190.4	N75*27E
1	953.0	900.4	27.40	N87*00E	217.3	N76*68E
1	1001.0	943.2	26.50	N86*00E	238.8	N77*57E
1	1059.0	994.8	27.90	N84*90E	265.1	N78*35E
1	1116.0	1045.4	26.60	N84*90E	291.0	N78*94E
1	1173.0	1097.3	22.20	N86*00E	314.4	N79*42E
1	1231.0	1151.9	17.40	N85*60E	333.9	N79*80E
1	1290.0	1208.8	12.70	N85*30E	349.2	N80*05E
1	1345.0	1262.7	11.20	N89*50E	360.5	N80*28E
1	1402.0	1318.8	8.80	S85*60E	370.2	N80*58E
1	1458.0	1374.2	7.60	S85*20E	377.9	N80*88E
1	1515.0	1430.8	6.20	S81*20E	384.5	N81*16E
1	1572.0	1487.5	5.20	S87*70E	390.0	N81*36E
1	1629.0	1544.3	4.30	S84*50E	394.6	N81*51E
1	1686.0	1601.2	3.90	S87*30E	398.6	N81*64E

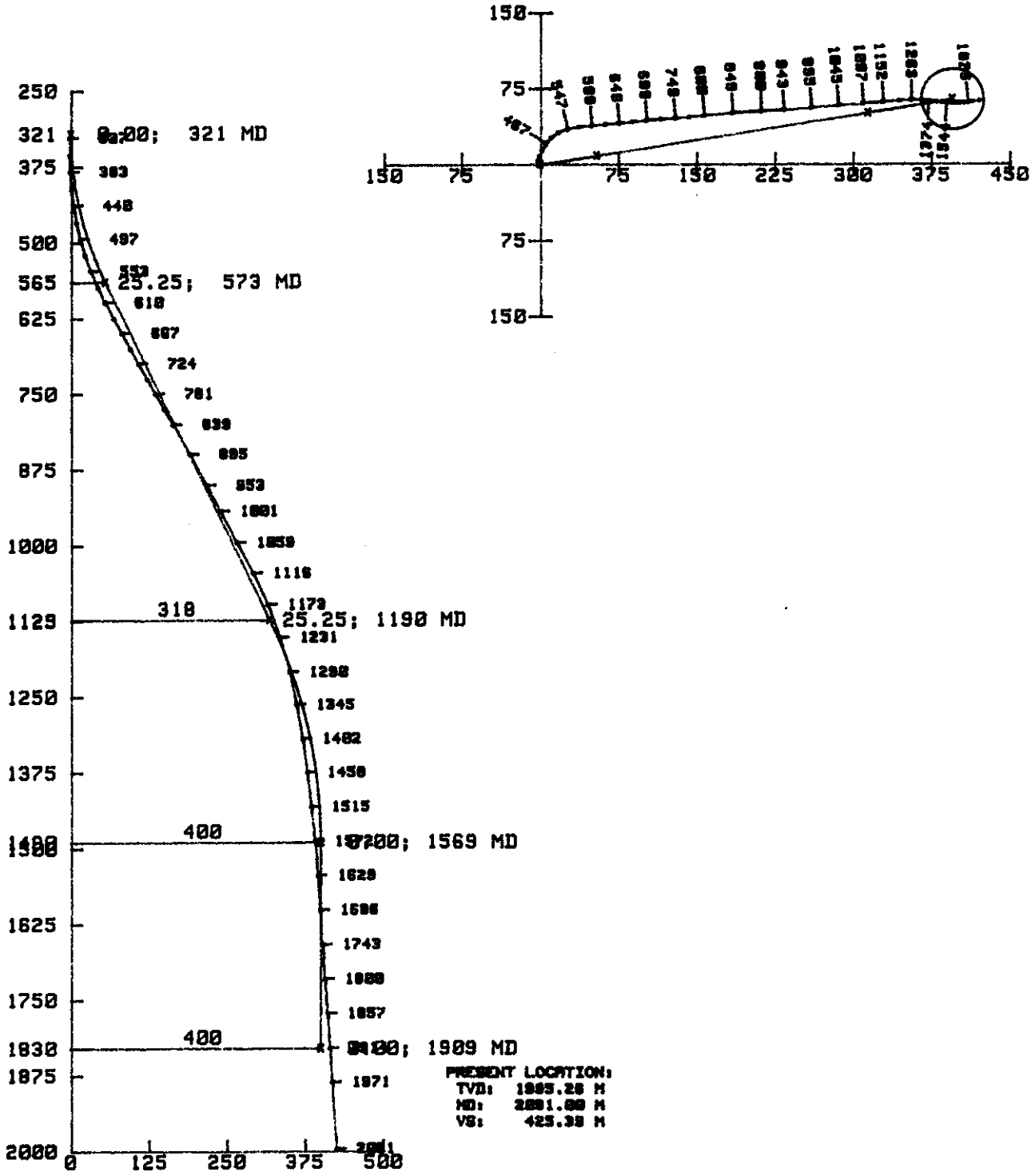
1 APR 1988 @ 10:32

Compagnia: AGIP
Pozzo: CLARA OVEST 8
Direzione proposta: N 80.75 E
Declinazione magnetica: 0.25 W

DATADRIL
Division of Smith International, Inc.

VERTICAL PLANE
SCALE: 125 METERS/DIVISION

HORIZONTAL PLANE
SCALE: 75 METERS/DIVISION



VERTICAL SECTION PLANE: N 80.75 E

Foro Nr.	Profondita Misurata	Profondita Verticale	Inclinaz. Foro	Direzione Geografica	Scostamento Metri	Scostamento Azimut
1	1743.0	1658.0	3.80	N88*40E	402.4	N81*72E
1	1800.0	1714.9	4.00	N88*40E	406.2	N81*79E
1	1857.0	1771.8	3.80	N87*70E	410.1	N81*85E
1	1914.0	1828.7	3.70	N83*90E	413.8	N81*88E
1	1971.0	1885.5	4.00	N81*80E	417.6	N81*89E
1	2081.0	1995.3	3.90	N79*70E	425.2	N81*87E

4.09 FANGO DI PERFORAZIONE

Nr. Fr.	Top	Bottom	Tipo	Densita'	P.V.	Cloruri	Olio%
1	100.0	180.0	AR	1130		6.0	
1	180.0	250.0	AR	1160		5.0	
1	250.0	306.0	AR	1190		7.0	
1	306.0	500.0	LS	1240	18	5.8	
1	500.0	700.0	LS	1250	19	5.8	
1	700.0	857.0	LS	1270	20	5.8	
1	857.0	970.0	LS	1250	19	5.8	
1	970.0	1019.0	LS	1200	16	5.6	
1	1019.0	1348.0	LS	1350	16	6.1	
1	1348.0	1983.0	LS	1360	17	5.8	
1	1983.0	2099.0	LS	1370	17	5.5	
1	2099.0	2192.0	LS	1380	20	6.4	
1	2192.0	2240.0	LS	1360	20	5.3	

4.10 RIVESTIMENTI

Nr.Fr.	Riv.Nr.	Diametro	Top	Bottom	Grado Acc.	Peso(LB/FT)	Filetto
1	2	13"3/8	89.0	304.0	J55	68.0	ANTARES
1	2	13"3/8	14.3	89.0	J55	61.0	ANTARES
1	3	9"5/8	14.3	1014.0	J55	40.0	ANTARES
1	4	7"	1537.0	2238.0	N80	29.0	ANTARES
1	4	7"	384.0	1537.0	J55	23.0	ANTARES
1	4	7"	14.3	384.0	N80	23.0	ANTARES

4.11 CEMENTAZIONI

- Foro N. : 1
  Rivestimento N. : 2
  Diametro Riv. : 13"3/8

Cementazione n. : 1
Stadio n. : 1
D.V. a : 0.0
Risal.Teorica : 14.6

Composizione malta :

N.	Elemento	Descrizione	Quantita'
1	Cemento	Geocem "G" (Densita' malta 1520 g/l)	20.1 t.
1	Additivo	Attapulgite	2.0 %
2	Cemento	Geocem "G" (Densita' malta 1850 g/l)	21.0 t.

Controllo Cementaz. : Nessuno

- Foro N. : 1
Rivestimento N. : 3
Diametro Riv. : 9"5/8

Cementazione n. : 1
Stadio n. : 1
D.V. a : 0.0
Risal.Teorica : 550.0

Composizione malta :

N.	Elemento	Descrizione	Quantita'
1	Cemento	Geocem "G" (Densita' malta 1950 g/l)	32.0 t.

Controllo Cementaz. :
Log : CBLVDL
Top : 317.0
Bottom : 1006.0
Top cemento : 375.0
Press.testa colonna : 0.0
Bond : 375.0 - 422.0 SCARSA
422.0 - 1006.0 BUONA

- Foro N. : 1
Rivestimento N. : 4
Diametro Riv. : 7"

Cementazione n. : 1
Stadio n. : 1
D.V. a : 0.0
Risal.Teorica : 1330.0

Composizione malta :

N.	Elemento	Descrizione	Quantita'
1	Cemento	Geocem "G" (Densita' malta 1900 g/l)	19.8 t.
1	Additivo	D60	0.7 %
1	Additivo	D65	0.3 %
1	Additivo	D47	0.1 %

Controllo Cementaz. :

Log	: CBLVDL		
Top	: 1270.0		
Bottom	: 2194.0		
Top cemento	: 1321.0		
Press.testa colonna	: 0.0		
Bond	: 1321.0 -	1437.0	SCARSA
	1437.0 -	1638.0	DISCRETA
	1638.0 -	2050.0	BUONA
	2050.0 -	2100.0	DISCRETA
	2100.0 -	2160.0	BUONA
	2160.0 -	2182.0	DISCRETA
	2182.0 -	2194.0	BUONA

4.12 VACUUM TEST

Nessuna

4.13 LEAK OFF TEST

Nessuno

4.14 PERFORAZIONE RIVESTIMENTI

- Foro n. : 1
  Rivestimento n. : 4
  Diametro : 7"
  Tipo Rivestimento : Casing

  Intervallo spari : 2019.0 - 2026.0
  N. totale colpi :
  N. colpi/piede : 12
  Tipo Carica : HYPERJET II DP
  Tipo e diam fucile : HSD 5"
  Scopo : PRODUZIONE
  Status spari : Chiusi

Intervallo spari	: 2011.0 - 2015.0
N. totale colpi	:
N. colpi/piede	: 12
Tipo Carica	: HYPERJET II DP
Tipo e diam fucile	: HSD 5"
Scopo	: PRODUZIONE
Status spari	: Chiusi

Intervallo spari	: 1997.0 - 2004.0
N. totale colpi	:
N. colpi/piede	: 12
Tipo Carica	: HYPERJET II DP
Tipo e diam fucile	: HSD 5"
Scopo	: PRODUZIONE
Status spari	: Chiusi

Intervallo spari	: 1976.0 - 1983.0
N. totale colpi	:
N. colpi/piede	: 12
Tipo Carica	: HYPERJET II DP
Tipo e diam fucile	: HSD 5"
Scopo	: PRODUZIONE
Status spari	: Aperti

Intervallo spari	: 1949.0 - 1957.5
N. totale colpi	:
N. colpi/piede	: 12
Tipo Carica	: HYPERJET II DP
Tipo e diam fucile	: HSD 5"
Scopo	: PRODUZIONE
Status spari	: Aperti

Intervallo spari	: 1934.5 - 1937.0
N. totale colpi	: 98
N. colpi/piede	: 12
Tipo Carica	: HYPERJET II DP
Tipo e diam fucile	: HSD 5"
Scopo	: PRODUZIONE
Status spari	: Aperti

Intervallo spari	: 1928.0 - 1932.0
N. totale colpi	:
N. colpi/piede	: 12
Tipo Carica	: HYPERJET II DP
Tipo e diam fucile	: HSD 5"
Scopo	: PRODUZIONE
Status spari	: Aperti

Intervallo spari	: 1819.0 - 1823.0
N. totale colpi	:
N. colpi/piede	: 12
Tipo Carica	: HYPERJET II DP
Tipo e diam fucile	: HSD 5"
Scopo	: PRODUZIONE
Status spari	: Aperti

Intervallo spari : 1736.5 - 1743.5
N. totale colpi :
N. colpi/piede : 12
Tipo Carica : HYPERJET II DP
Tipo e diam fucile : HSD 5"
Scopo : PRODUZIONE
Status spari : Aperti

4.15 TAPPI

Nr. Foro	Nr. Tappo	Tipo Tappo	Top	Bottom	Classe Cemento	Q. ta'	Scopo del Tappo
1	1	CEMENTO	2195.5	2238.0	"G"	0.0	CEMENTAZIONE
1	2	CEMENTO	1991.0	1995.0		0.0	CHIUSURA MINERARIA

4.16 SQUEEZING

Nessuno

4.17 BRIDGE PLUG

Nessuno

4.18 PERDITE ED ASSORBIMENTI

Nessuno

DECODIFICA PROVE DI STRATO-PRODUZIONE-VACUUM TEST

Variabile	Codice	Decodifica
Oper	CIRC	Circolazione inversa o diretta
	CLUP	Spurgo
	DISP	Spiazzamento
	END	Stato finale del pozzo
	FAOF	Fall-Off
	FIUP	Riempimento di aste e/o tubini
	FLOW	Erogazione
	INJ	Iniezione di fluidi
	LIFT	Lifting
	POUT	Pompaggio (estrazione con pompa sommersa
	RECO	Recupero dalle aste

	SHIN	Chiusura (Risalita)
	STIM	Stimolazione
	STRT	Stato iniziale del pozzo
	SWAB	Svuotamento aste e/o pistonaggio
	UNFI	Tappo non trovato
Fluido	ACD	ACIDO
	ACM	FANGO INQUINATO DA ACIDO
	ACT	TRACCE DI ACIDO
	ACW	ACQUA INQUINATA DA ACIDO
	AIR	ARIA
	BRN	BRINE
	BRT	TRACCE DI BRINE
	BT	BITUME
	BTT	TRACCE DI BITUME
	BW	ACQUA SALMASTRA
	BWT	TRACCE DI ACQUA SALMASTRA
	CON	CONDENSATO
	COT	TRACCE DI ANIDRIDE CARBONICA
	CO2	ANIDRIDE CARBONICA
	CTR	TRACCE DI CONDENSATO
	EDTA	ETILENDIAMMINOTETRACETICO
	EMU	EMULSIONE
	FLT	FILTRATO
	FORW	ACQUA DI STRATO
	FW	ACQUA DOLCE
	FWT	TRACCE DI ACQUA DOLCE
	GAS	GAS
	GEL	GEL
	GSL	GASOLIO
	GST	TRACCE DI GASOLIO
	GTR	TRACCE DI GAS
	HACE	ACIDO ACETICO
	HACF	MISCELA ACETICO/FORMICO
	HCLA	ACIDO CLORIDRICO
	HCLF	MISCELA CLORODRICO/FORMICO
	HFOR	ACIDO FORMICO
	HST	TRACCE DI ACIDO SOLFIDRICO
	H2S	ACIDO SOLFIDRICO
	MTR	TRACCE DI FANGO
	MUD	FANGO
	NIT	AZOTO
	OIL	OLIO
	OTR	TRACCE DI OLIO
	SEW	ACQUA DI MARE
	SW	ACQUA SALATA
	SWT	TRACCE DI ACQUA SALATA
	VAP	VAPORE
	WHO	ACQUA CALDA
	WTR	ACQUA IN GENERALE

P	B	Batteria
	P	Pozzo
	S	Sottopacker
	F	Formazione
Portata	A	LPM LITRI AL MINUTO
	B	BPD BARILI AL GIORNO
	E	CFM PIEDI CUBI AL MINUTO
	F	CFD PIEDI CUBI AL GIORNO
	G	GPM GALLONI AL MINUTO
	H	BPH BARILI ALL' ORA
	K	CMH METRI CUBI ALL' ORA
	L	LPS LITRI AL SECONDO
	M	CMD METRI CUBI AL GIORNO
	N	CFH PIEDI CUBI ALL' ORA
	O	LPH LITRI ALL' ORA
	R	BPM BARILI AL MINUTO
	T	CMM METRI CUBI AL MINUTO