

Teleco Oilfield Services Inc.

10 Feb 1988

DIRECTIONAL SURVEY LISTING

Company: AGIP SpA

Well: CLARA W 9 DIR

Field: CLARA OVEST

Job No: TIY 073/00

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

Proposal Azimuth:	79.75
Total Azimuth Correction:	-.50
Proposal Origin North:	0.00
Proposal Origin East:	0.00



DIRECTIONAL SURVEY LISTING

Company: AGIP SpA

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Well: CLARA W 9 DIR

M. Depth Meters	Inc Deg	Azt Deg	NORTH Meters	EAST Meters	TVD Meters	DLS Deg/30m	VS Meters
TIE-ON COORDINATES							
0.00	0.00	79.75	0.00	0.00	0.00	0.00	0.00
94.00	.75	345.00	.59	-.16	94.00	.24	-.05
124.00	1.50	340.00	1.15	-.34	123.99	.77	-.13
154.00	2.50	340.00	2.14	-.70	153.97	1.02	-.31
184.00	2.50	355.00	3.40	-.90	183.94	.66	-.36
214.00	3.00	58.00	4.47	-.37	213.92	2.95	.43
244.00	5.00	80.00	5.11	1.58	243.84	2.53	2.46
274.00	7.50	82.00	5.61	4.81	273.66	2.55	5.73
304.00	10.50	85.00	6.12	9.47	303.29	3.08	10.41
327.00	11.10	85.30	6.48	13.76	325.88	.60	14.70
355.00	15.80	82.10	7.23	20.23	353.11	5.18	21.19
383.00	21.10	79.70	8.66	28.97	379.66	5.83	30.05
412.00	25.80	80.40	10.65	40.33	406.26	4.95	41.59
440.00	27.40	80.00	12.78	52.69	431.29	1.75	54.12
468.00	26.40	80.00	14.98	65.16	456.26	1.09	66.79
497.00	28.30	77.90	17.54	78.24	482.82	2.24	80.11
525.00	33.70	77.90	20.56	92.33	506.01	5.88	94.52
553.00	36.40	80.70	23.54	108.13	528.93	3.42	110.59
582.00	34.70	81.10	26.20	124.78	552.53	1.80	127.45
610.00	34.50	80.00	28.81	140.46	575.57	.71	143.35
639.00	34.00	79.70	31.69	156.53	599.55	.55	159.67
667.00	33.50	79.00	34.56	171.81	622.83	.69	175.22
696.00	33.20	79.00	37.61	187.46	647.05	.32	191.16
723.00	33.00	77.50	43.94	217.94	694.80	.45	222.28
810.00	33.10	79.30	50.19	248.39	742.58	.53	233.35
867.00	32.40	77.90	56.28	278.61	790.52	.55	284.18
924.00	32.30	77.20	62.86	308.39	838.67	.21	314.66
981.00	31.70	77.20	69.55	337.85	887.01	.32	344.83
1038.00	30.00	78.60	75.69	366.42	935.95	.99	374.84
1099.00	30.10	79.00	81.62	396.39	988.75	.11	404.59
1145.00	30.70	79.00	86.06	418.24	1028.42	.40	427.86
1202.00	31.10	79.00	91.65	447.97	1077.33	.21	457.13
1259.00	28.80	80.00	96.84	475.95	1126.72	1.26	485.58
1287.00	28.50	80.40	99.13	489.18	1151.29	.39	499.01
1345.00	25.00	77.90	104.00	514.81	1203.08	1.93	525.10
1400.00	16.90	76.80	108.27	533.99	1254.40	4.49	544.74
1457.00	14.20	76.50	111.80	548.86	1309.31	1.44	559.99
1478.00	13.10	75.10	113.01	553.66	1329.71	1.67	564.94



DIRECTIONAL SURVEY LISTING

Company: AGIP SpA

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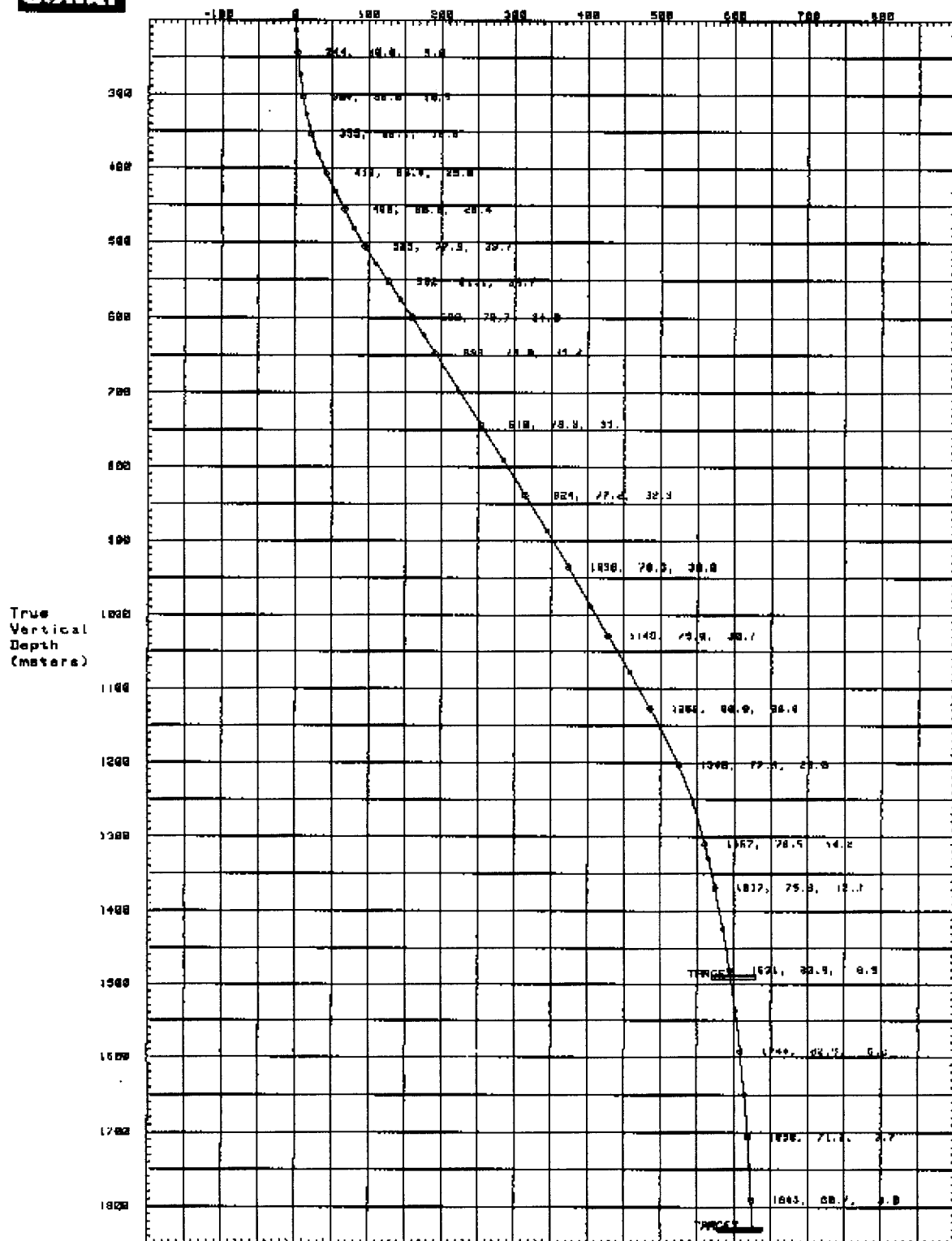
Well: CLARA W 9 DIR

M. Depth Meters	Inc Deg	Azt Deg	NORTH Meters	EAST Meters	TVD Meters	DLS Deg/30m	VS Meters
1517.00	12.30	75.80	115.17	561.96	1367.76	.64	573.49
1574.00	10.30	79.00	117.63	572.85	1423.65	1.12	584.64
1631.00	8.50	83.90	119.05	582.04	1479.88	1.05	593.94
1688.00	7.60	87.00	119.69	590.00	1536.32	.53	601.88
1744.00	6.20	82.50	120.28	596.69	1591.92	.82	608.57
1801.00	5.00	80.40	121.10	602.19	1648.64	.65	614.13
1858.00	3.70	71.20	122.10	606.38	1705.48	.79	618.43
1898.00	3.30	68.40	122.54	608.68	1745.40	.33	620.84
1943.00	3.00	60.70	124.00	610.91	1780.34	.35	623.22
1980.00	2.70	57.90	124.93	612.49	1827.29	.27	624.95





Horizontal Distance (meters)

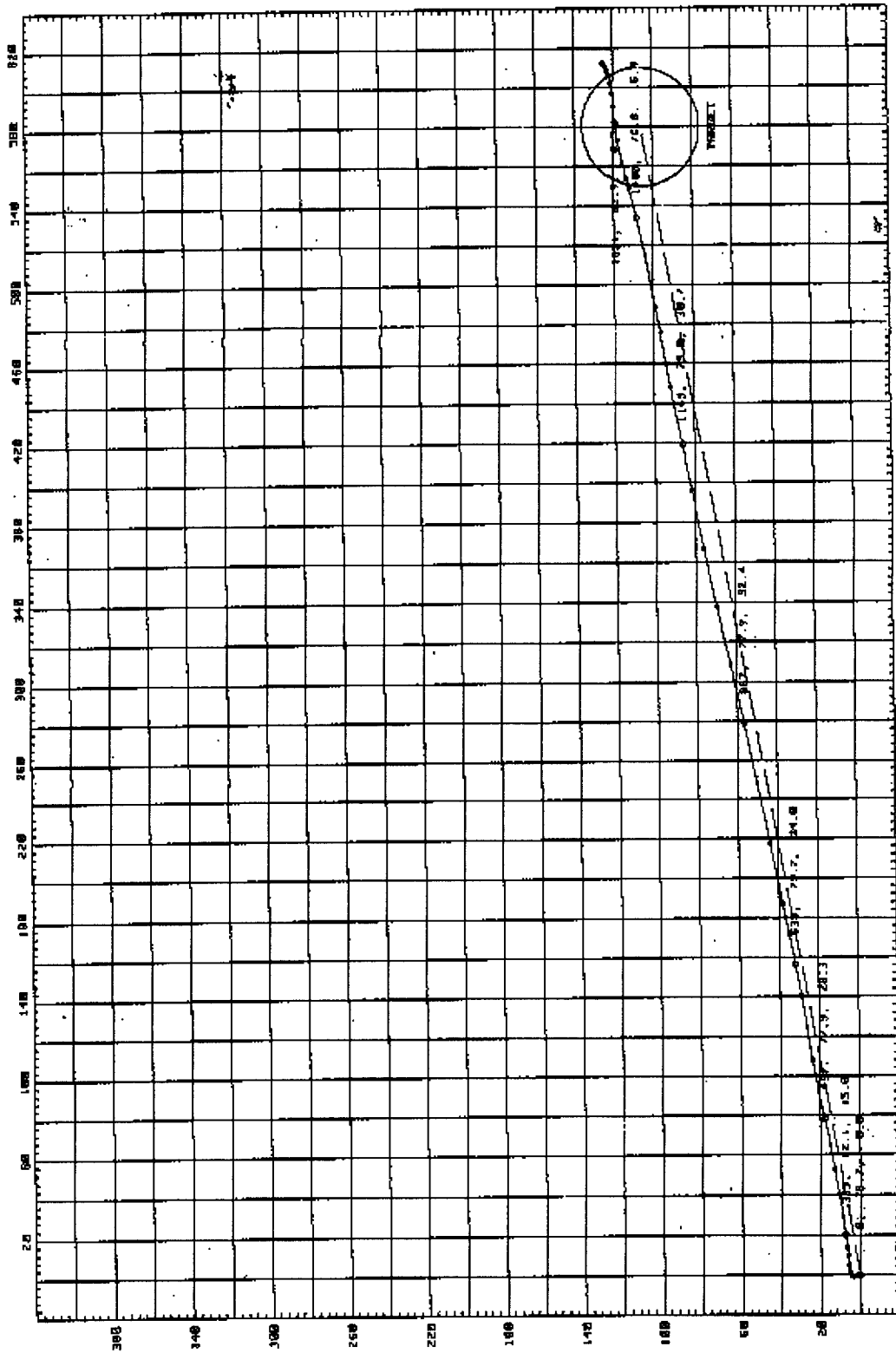


VERTICAL SECTION
 Date: 18 Feb 1988
 Company: AGIP SpA
 Well: CLARA W 9 DIR

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



East (meters)





TELECO INC., RAVENNA, ITALY

PERFORMANCE REPORT

Teleco MWD services were employed in the 12 $\frac{1}{2}$ " and 8 $\frac{1}{2}$ " hole sections only, with Directional services used in both hole sizes and MWD Resistivity logging in the 8 $\frac{1}{2}$ " hole section.

12 $\frac{1}{2}$ " Hole Section (311m - 1056m)

No problems occurred during this hole section which was completed in one bit run using a Smith LS2000 steerable system in a rotary hold assembly in conjunction with a Teleco 8 $\frac{1}{2}$ " Directional collar.

With 10.6 degrees inclination at the bottom of the 17 $\frac{1}{2}$ " section, the build up was continued to 35 degrees before being dropped back to 30 degrees at the end of this section. Final azimuth was 078.6 degrees.

8 $\frac{1}{2}$ " Hole Section (1056m - 1990m)

All Teleco equipment operated correctly during this hole section. However some gaps in the MWD Resistivity log were caused by inadequate flow rate during the first 150 metres of this hole section. The Teleco signal decoding system requires a minimum flow rate. If flow rates below this threshold are used then the system must be reset to a lower threshold. Thus it is important that the driller maintains flow rates above this value for a good signal decode by the computer.

Other causes to this problem were continued wear in the fluid end of the mud pumps which were being continuously switched on and off during this period.



TELECO INC., RAVENNA, ITALY.

MAINTENANCE REPORT

EQUIPMENT DESCRIPTION: TR2300 Surface Decoding and Data Processing System (Number 017)

OPERATIONAL PROBLEM: None

FAULT FOUND: -

COMMENTS: -

—oOo—

EQUIPMENT DESCRIPTION: 8K" Directional MWD Collar (Number 884-14)

OPERATIONAL PROBLEM: None-operated to Teleco specifications

FAULT FOUND: -

COMMENTS: This tool completed the 12K" hole section with no problems.

—oOo—

EQUIPMENT DESCRIPTION: 6K" Resistivity-Directional MWD Collar (Number 1592-7)

OPERATIONAL PROBLEM: None-operated to Teleco specifications

FAULT FOUND: -

COMMENTS: This tool successfully completed the 8K" hole section with no problem.

—oOo--



TELECO INC., RAVENNA, ITALY.

ENGINEER DEPLOYMENT SUMMARY

<u>ENGINEER</u>	<u>DEPARTURE TIME/DATE</u>	<u>RETURN TIME/DATE</u>
G. SODEN	08.00 02.02.88	10.00 11.02.88
S. JOHNSTON	08.30 06.02.88	10.00 11.02.88



TELECO INC., RAVENNA, ITALY.

TOOL DEPLOYMENT SUMMARY

<u>TOOL NO:</u>	<u>O.D.</u>	<u>SERVICE TYPE</u>	<u>TOTAL CIRC. HOURS</u>
884-14	8 1/4"	DIR	28.4
886-20	8 1/4"	DIR	0.0 (Back-up only)
1592-7	8 1/4"	RES/DIR	27.4
1543-5	8 1/4"	RES/DIR	0.0 (Back-up only)



TELECO INC., RAVENNA, ITALY

BHA RECORD LISTING

TELECO RUN NUMBER	1	2	3		
BIT TYPE	SMITH FDS	SMITH PS971	HUGHES J1		
HOLE SIZE	12 $\frac{1}{4}$ "	8 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "		
JETS/TFA	4.88	4.03	2.95		
DEPTH START	311	1056	1495		
DEPTH END	1056	1495	1990		
MIN/MAX/WOB	3/10	5/95	7/19		
MIN/MAX/RPM	150/210	180/290	86/113		
ROTARY DRILLING HRS	13.8	26.8	22.9		
MONEL ABOVE DIR SENSOR	18.19	19.49	19.49		
MONEL BELOW DIR SENSOR	6.15	9.92	8.03		
PREDOMINANT FORMATION	CLAYSTONE	CLAYSTONE	CLAYSTONE		



TELECO INC., RAVENNA, ITALY

MUD PROPERTIES LISTING

DATE:	03.02.88	03.02.88	04.02.88	07.02.88	07.02.88
TIME:	07.15	21.30	10.15	06.50	15.00
DEPTH:	486	801	1056	1185	1296
MW:	1.200	1.200	1.200	1.360	1.370
PV:	12	14	12	15	15
YP:	7.5	8	7	8	8
GELS:	1.5/5	2/5	1.5/4	3/8	3/8
FILTRATE:	6.8	6.7	6.4	4.6	4.6
CHLORIDES:	4.7	5.6	5.9	6.2	6.1
pH:	9.5	9.5	9.5	10	10
SOLIDS:	9	10	10	13	13
SAND:	0.25	0.25	TRACE	TRACE	TRACE
OIL:	-	-	-	-	-
WATER:	91	90	90	87	87
TYPE					



TELECO INC., RAVENNA, ITALY

MUD PROPERTIES LISTING

DATE:	08.02.88	08.02.88	09.02.88	10.02.88	
TIME:	07.00	14.30	07.00	07.00	
DEPTH:	1427	1490	1569	1879	
NW:	1.370	1.370	1.370	1.370	
PV:	15	16	15	20	
YP:	8	8	7	9	
GELS:	3/8.5	3/8	2/7	3/18	
FILTRATE:	4.8	5.0	5.0	5.0	
CHLORIDES:	5.9	6.1	6.2	6.4	
pH:	9.5	9.0	9.5	9.0	
SOLIDS:	15	15	13	17	
SAND:	TRACE	TRACE	TRACE	-	
OIL:	-	-	-	-	
WATER:	85	85	87	83	
TYPE					



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 began below the 9 $\frac{1}{2}$ " casing shoe and ended at 1990 metres.

A 16" short normal MWD resistivity device was used with readings being corrected for downhole mud resistivity (R_m), collar and borehole sizes.

The freshwater mud system used resulted in minimal resistivity corrections. A complete log of the 8 $\frac{1}{2}$ " hole section was created in two bit runs with no problems. Correlation with offset well logs was successful in identifying the various reservoir levels.

Run Number 2 (1056m - 1495m)

Resistivity readings during this run exhibited a shale trend-line from approximately 2.8 ohm-m beneath the 9 $\frac{1}{2}$ " casing shoe to 2.0 ohm-m at the end of the run. This thick Claystone section was relieved by a few thin, water-saturated Sand stringers with resistivity values down to 0.63 ohm-m.

Run Number 3 (1495m - 1990m)

The Resistivity trend at the start of this bit run was as above - a thick Claystone sequence with a few water-saturated Sand stringers. From 1755 metres to 1840 metres and from 1940 metres to 1955 metres this Claystone section was interrupted by a more mixed lithology of Claystone and Sands. The Sands were indicated by the Resistivity log to be both gas and water-saturated with resistivities varying from 1.3 ohm-m to 8.5 ohm-m, the latter corresponding to 5.2% Methane and Ethane (Courtesy of Exploration Logging).

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

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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.

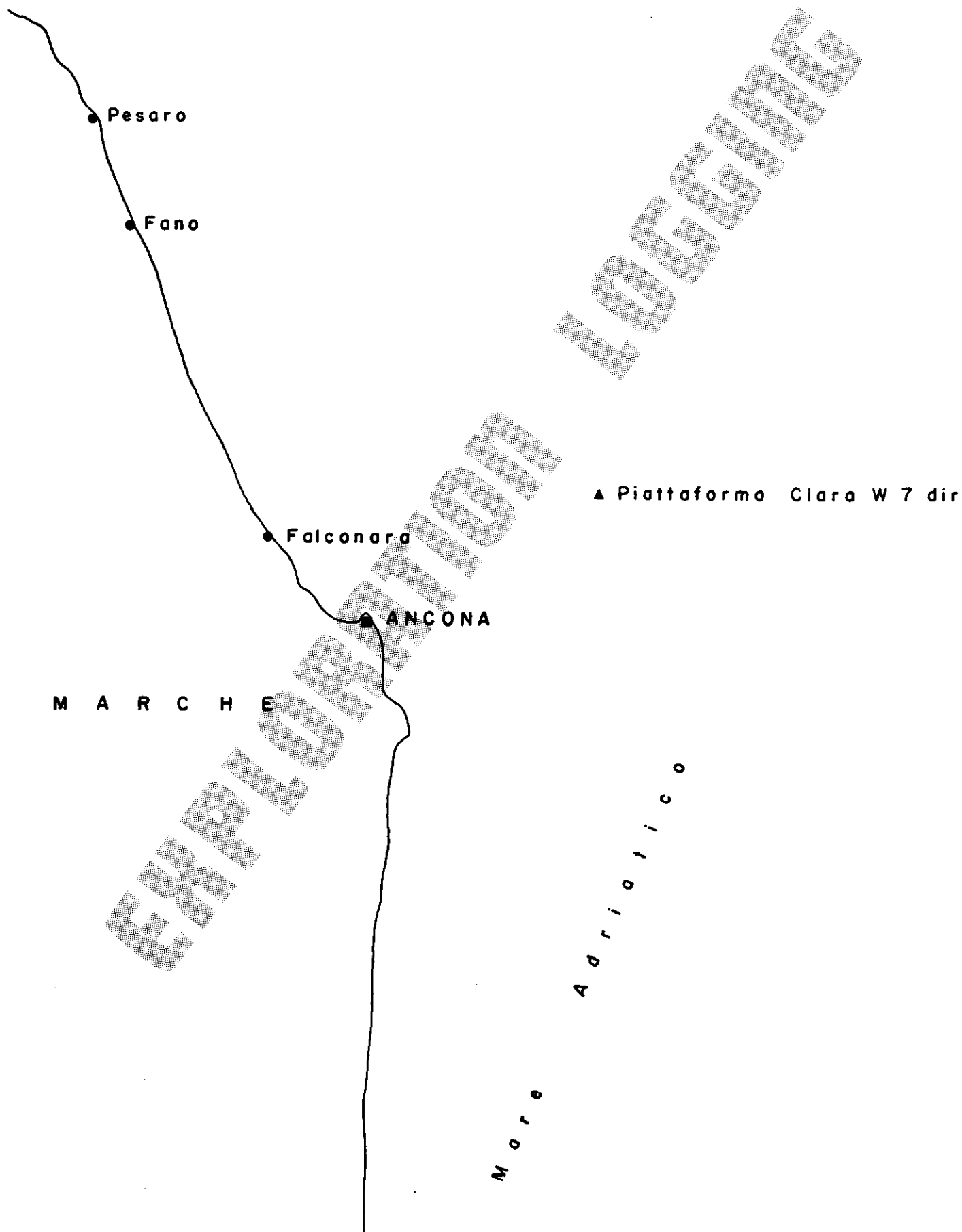
Wells 4, 5, 6 and 7 were to be drilled regardless of what information they provided about other possible areas of mineralisation, with the provision of drilling two further wells (8 and 9) depending upon the outcome of well 7, (that which was to investigate the mid upper part of block D). Two extra slots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

EXPLORATION LOGGING

LOCATION MAP

WELL: Piattaforma Clara W 7 dir



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.

EXPLORATION LOGGING

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

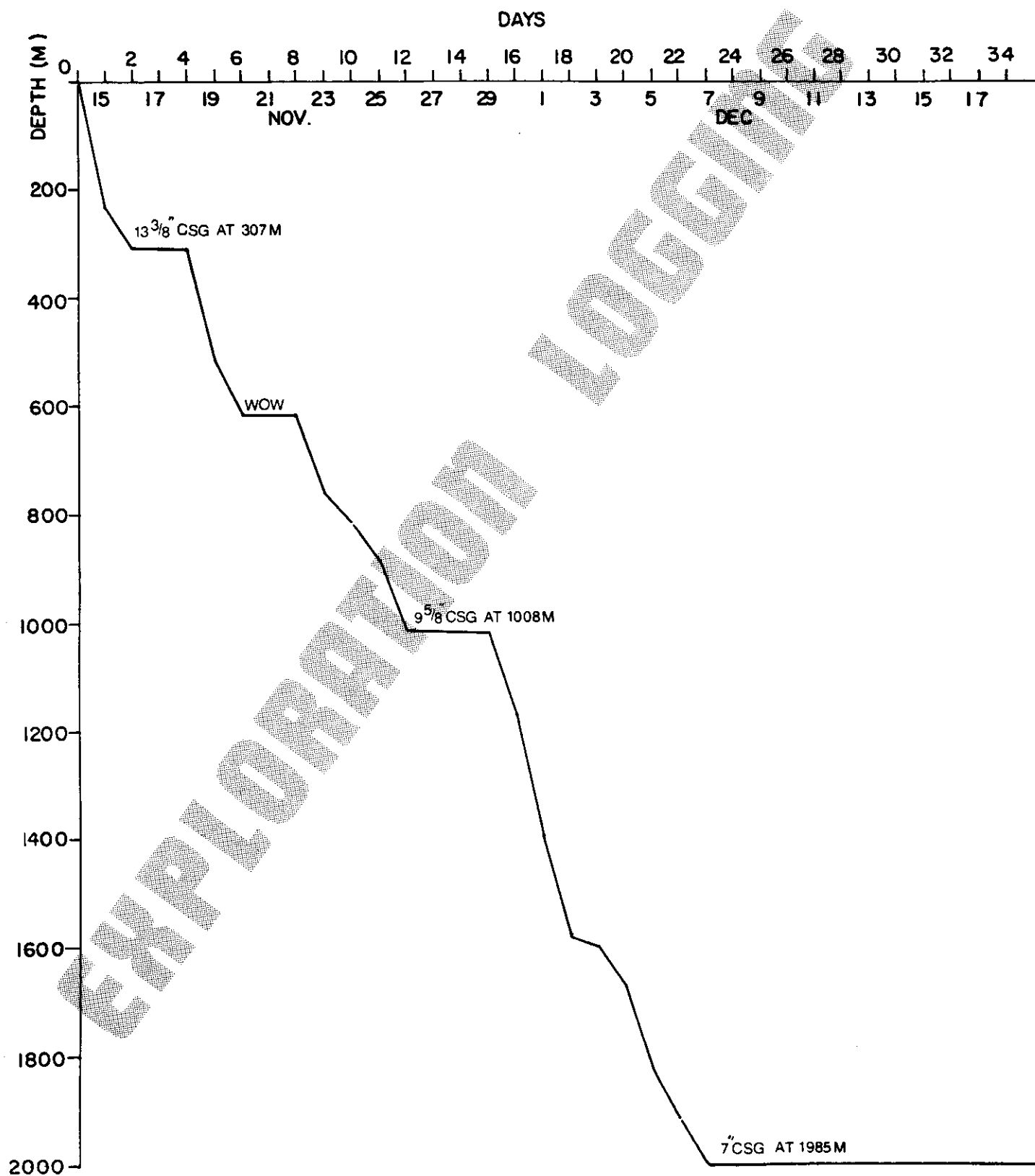
LDL : 1550 m - 1990 m

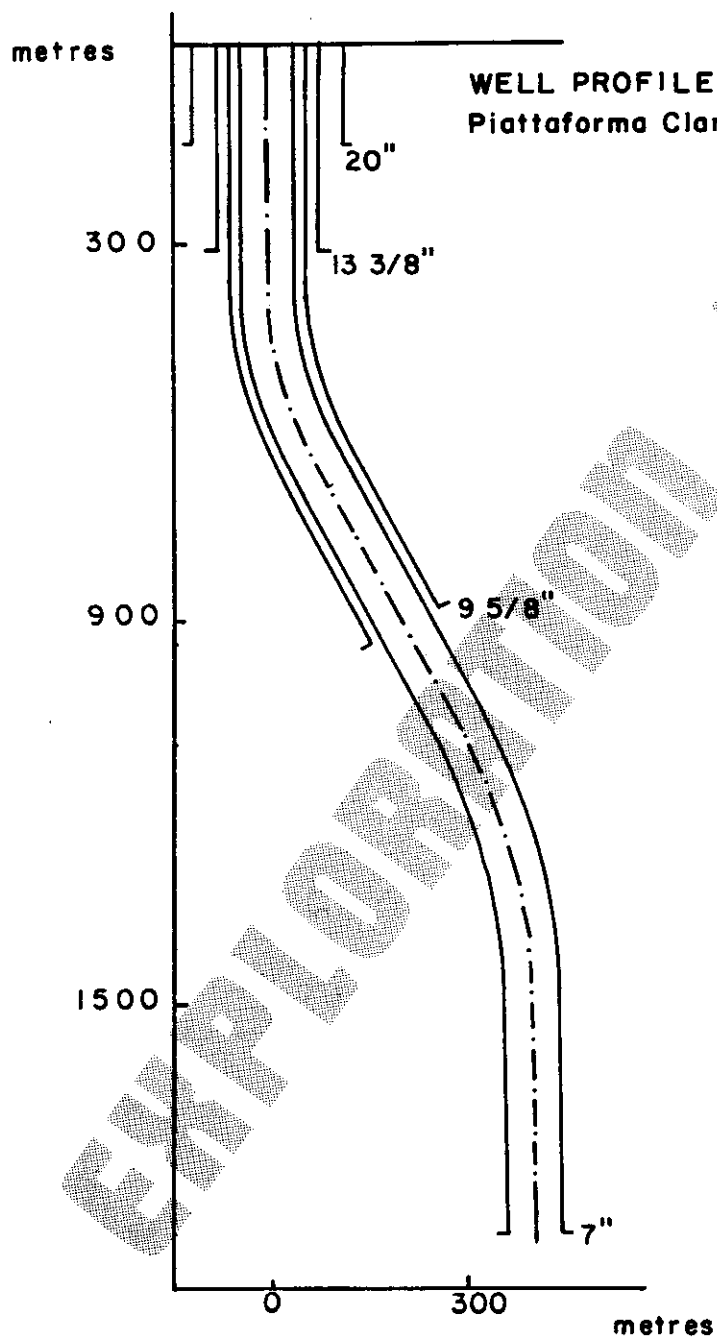
CNL : 1550 m - 1977 m

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.

EXPLORATION LOGGING

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

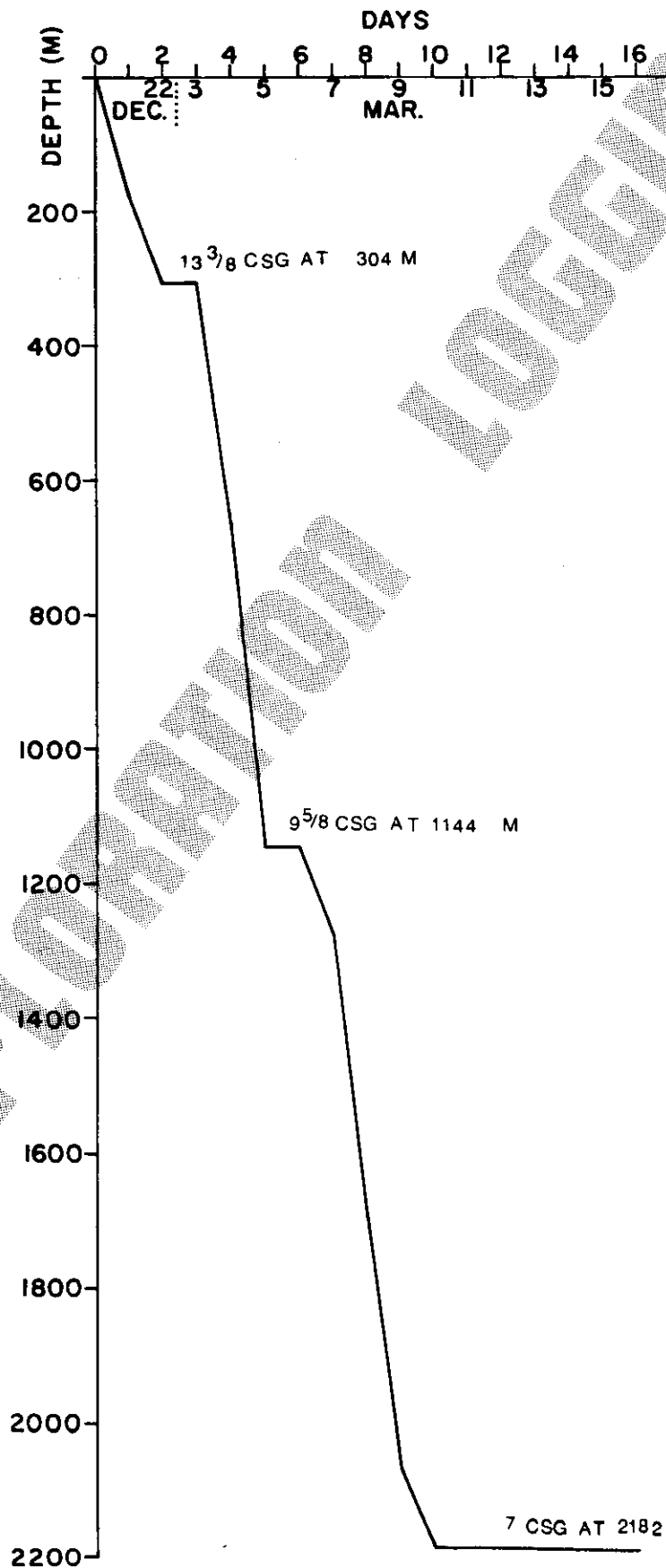
LDL : 1800 m - 2181 m

SHDT : 1142 m - 2178 m

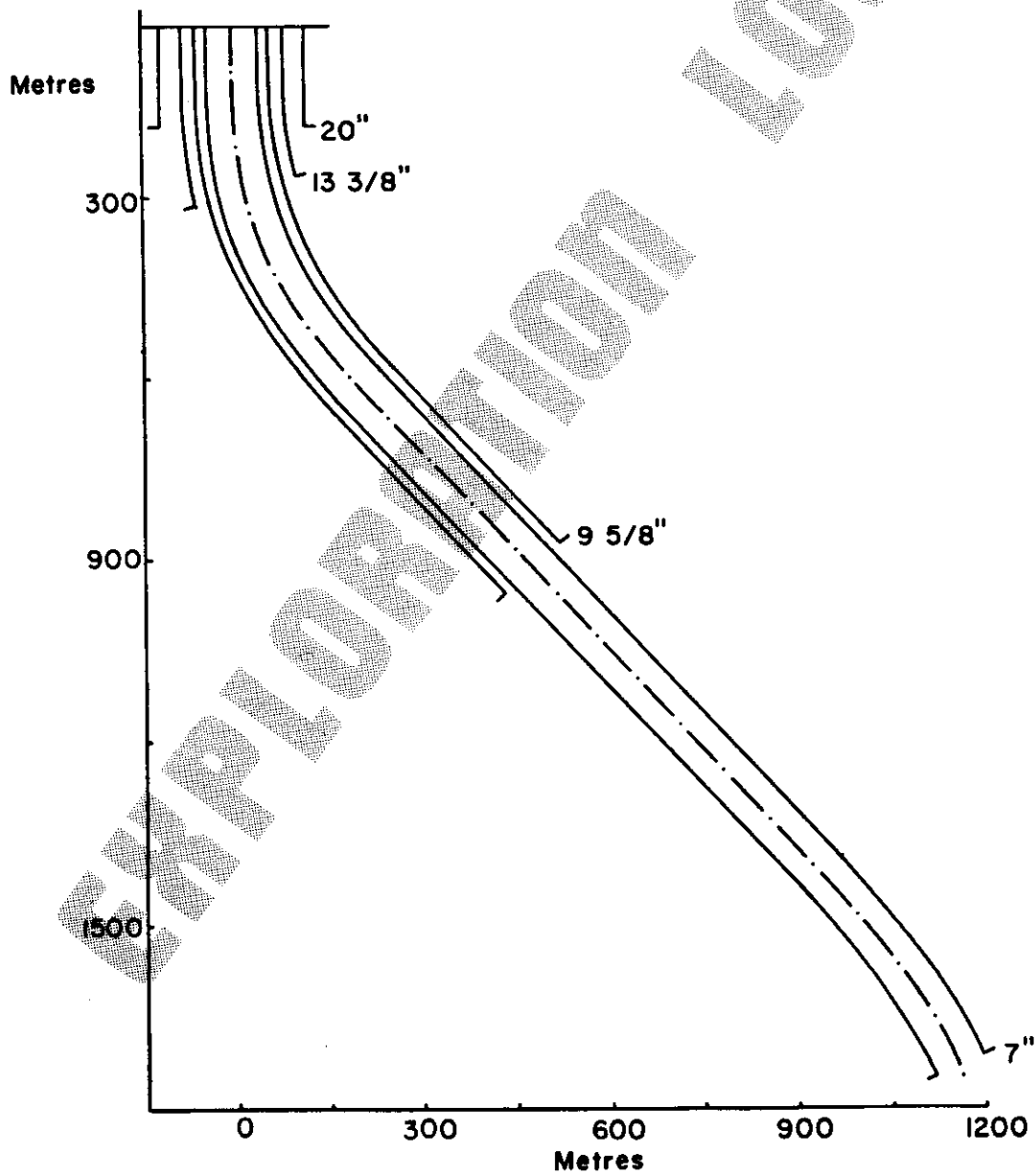
CBL/VDL : 350 m - 1139 m

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

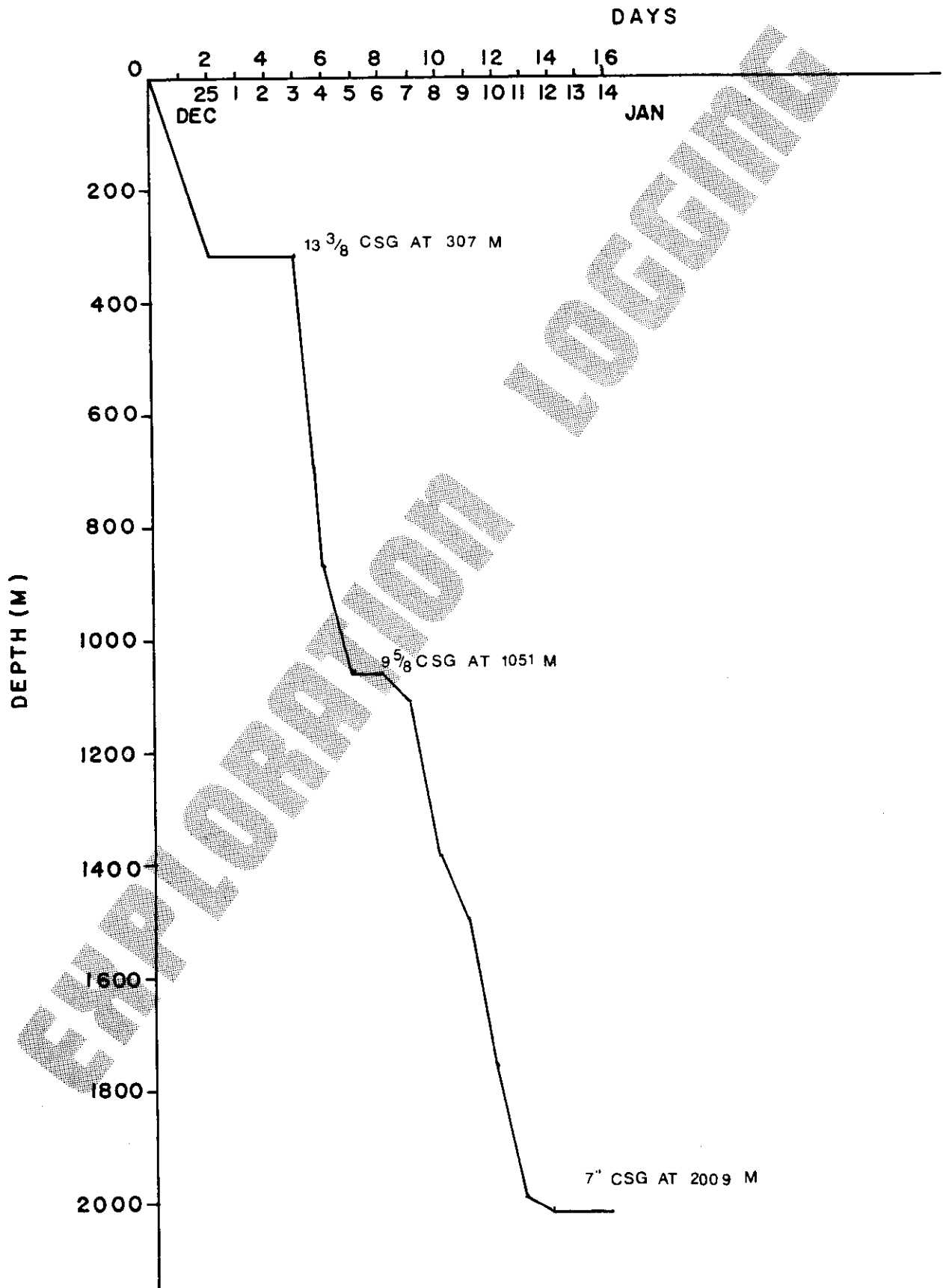
EATT : 1597 m - 1978 m

SHDT : 1045 m - 1989 m

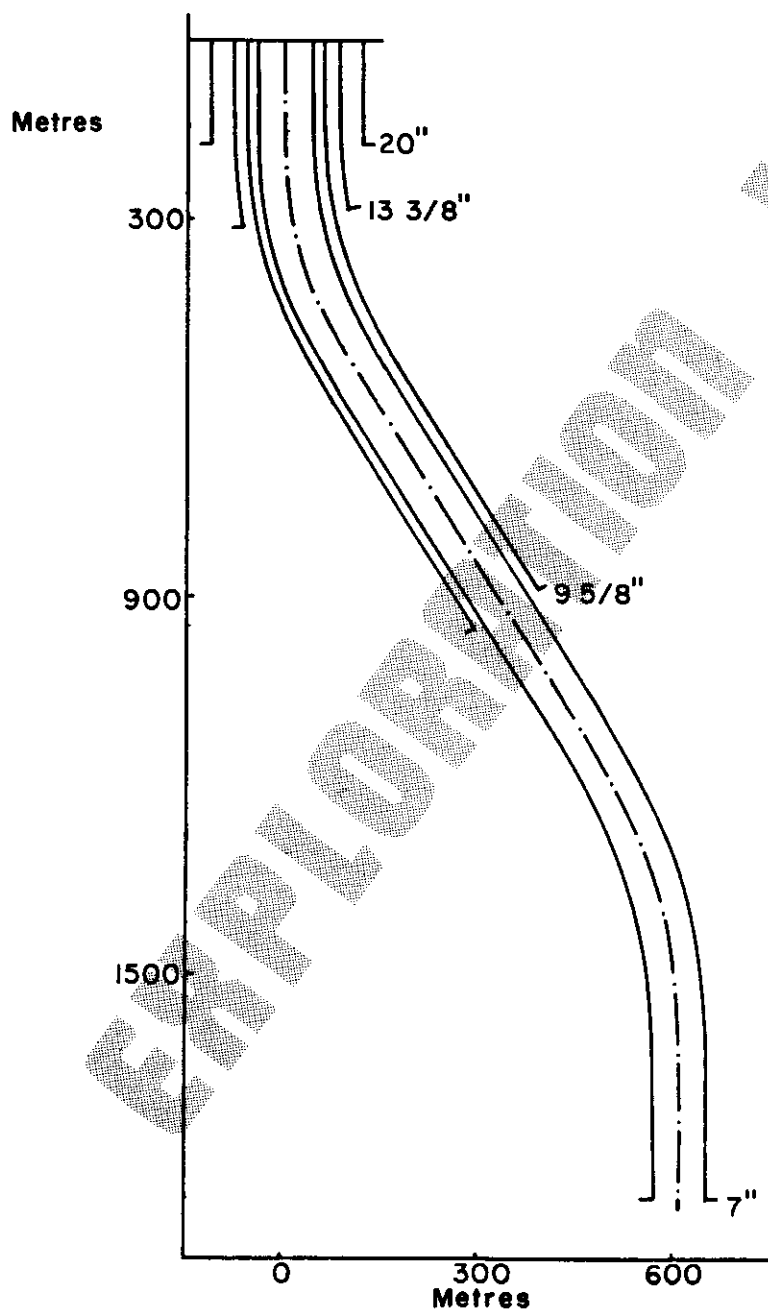
CBL/VDL : 450 m - 1047 m

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

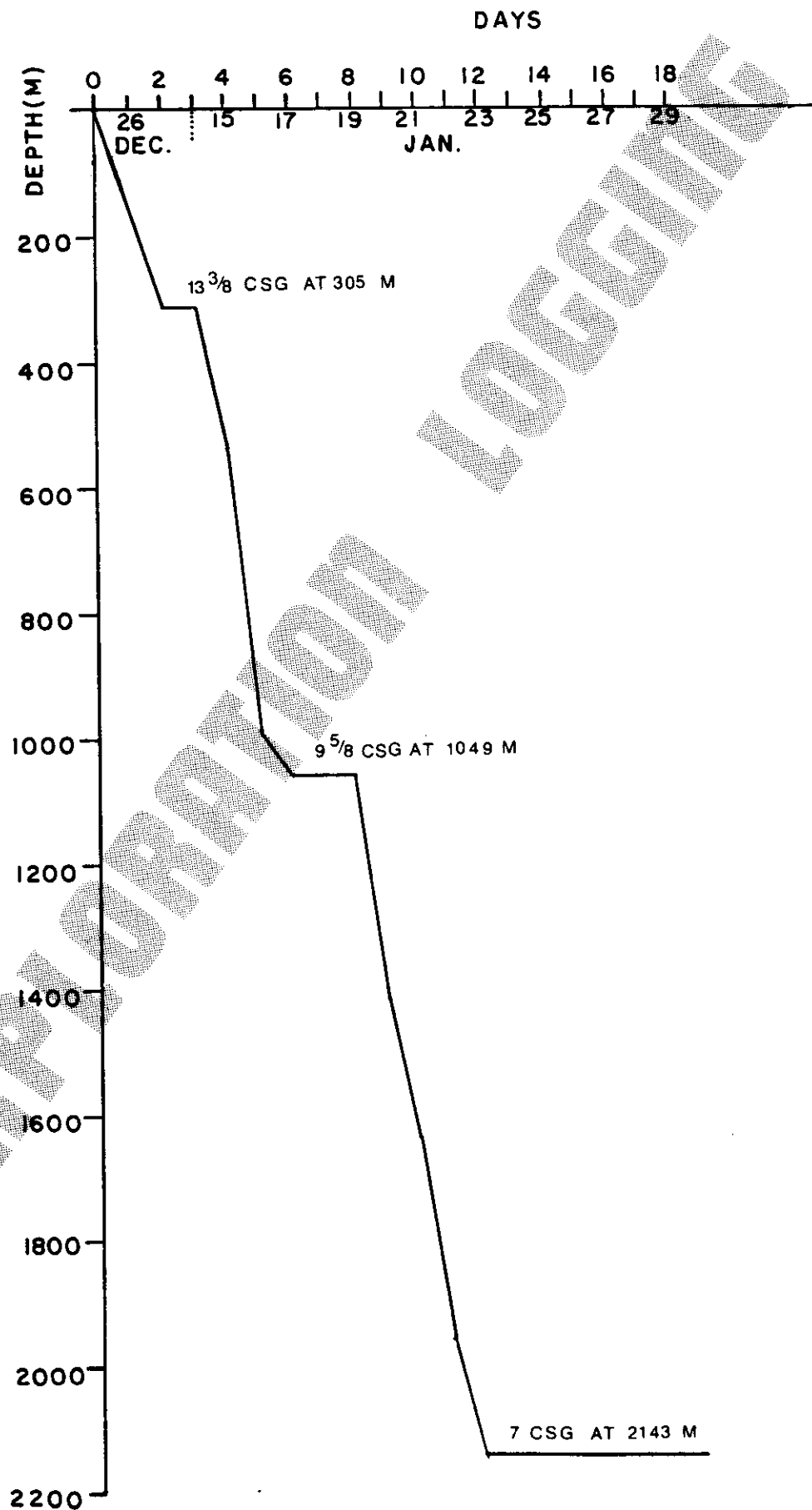
LDL - CNL - EATT : 1600 m - 2145 m

EXPLORATION

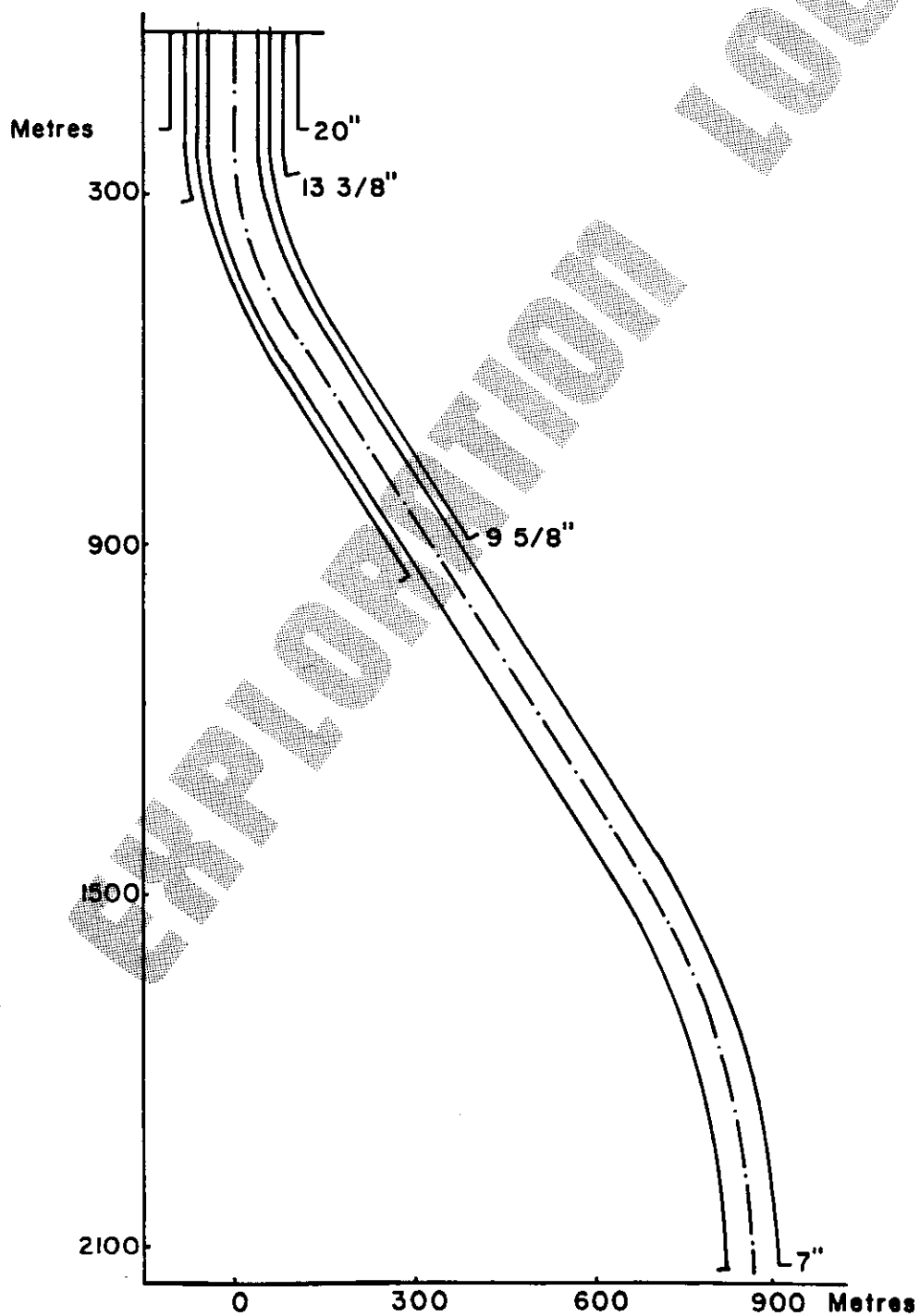
LOGGING

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

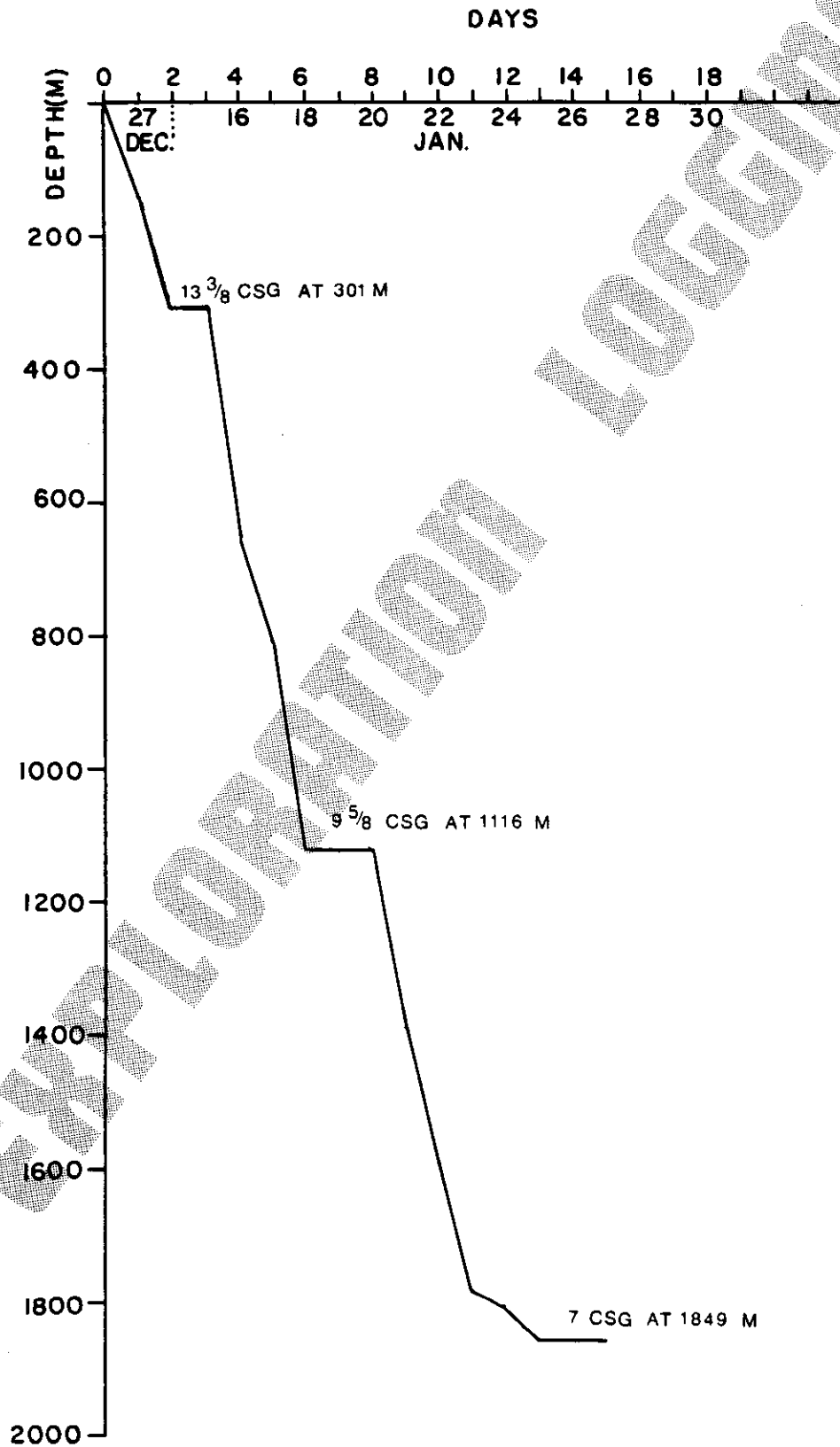
LDL - CNL - EATT : 1445 m - 1801 m

ISF - SLS - SP : 1116 m - 1802 m

CBL - VDL - CCL : 405 m - 1116 m

CLARA OVEST 6(DIR.)

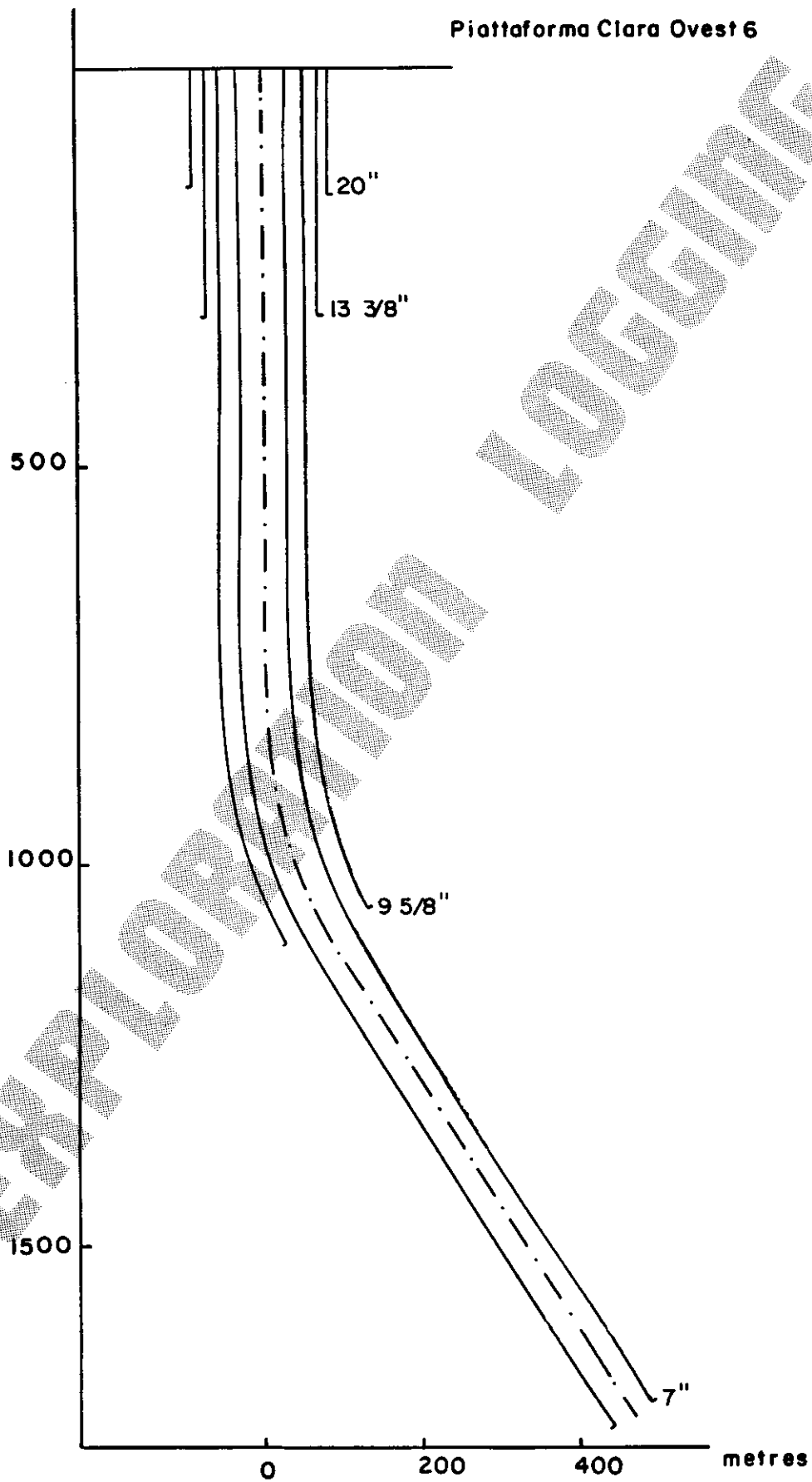
DRILLING PROGRESS CHART (MIDNIGHT DEPTHS)



WELL PROFILE

Piattaforma Clara Ovest 6

metres



metres

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

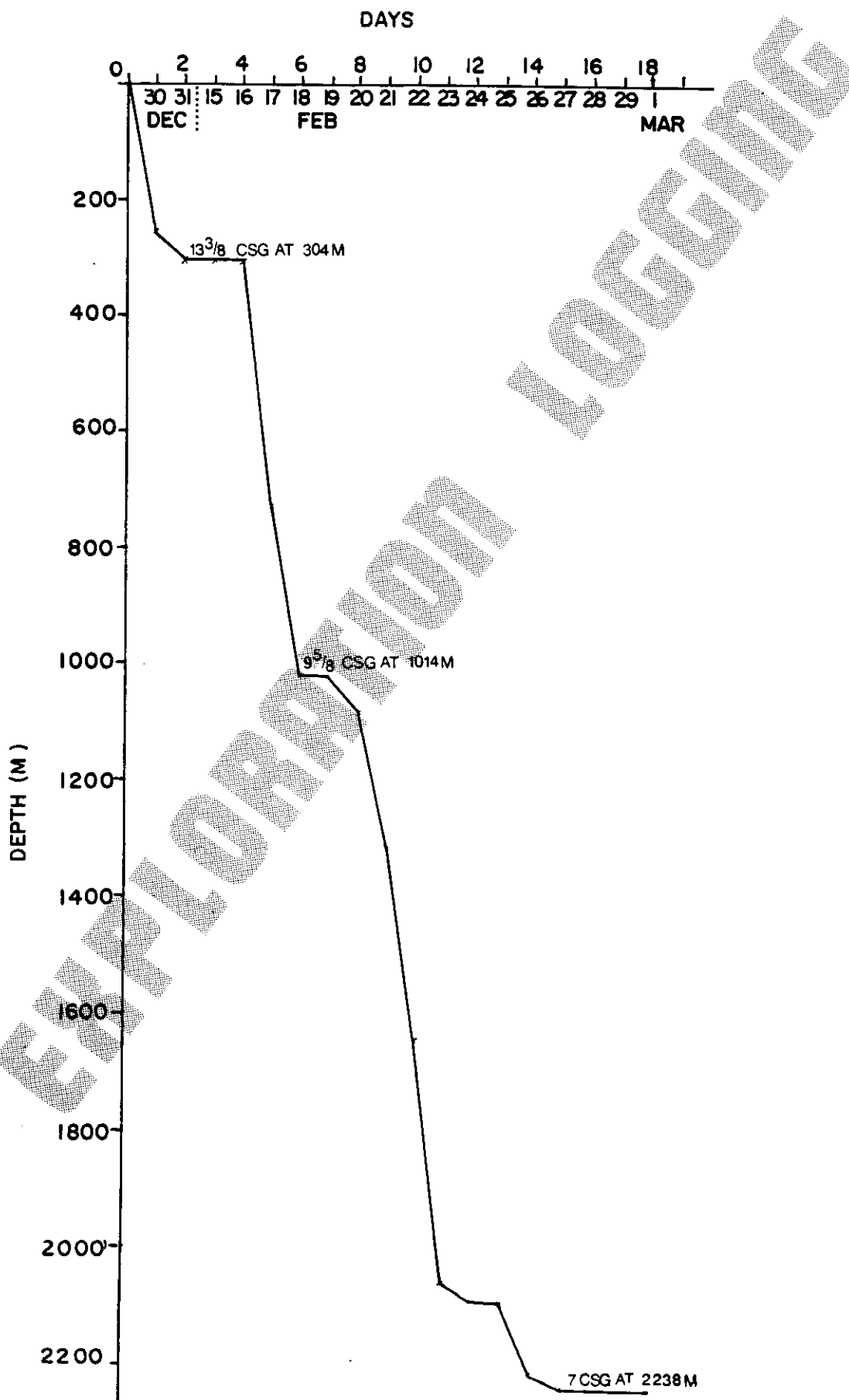
2. At 2024 m :

DITE - SLS - SP : 1850 m - 2237.5 m

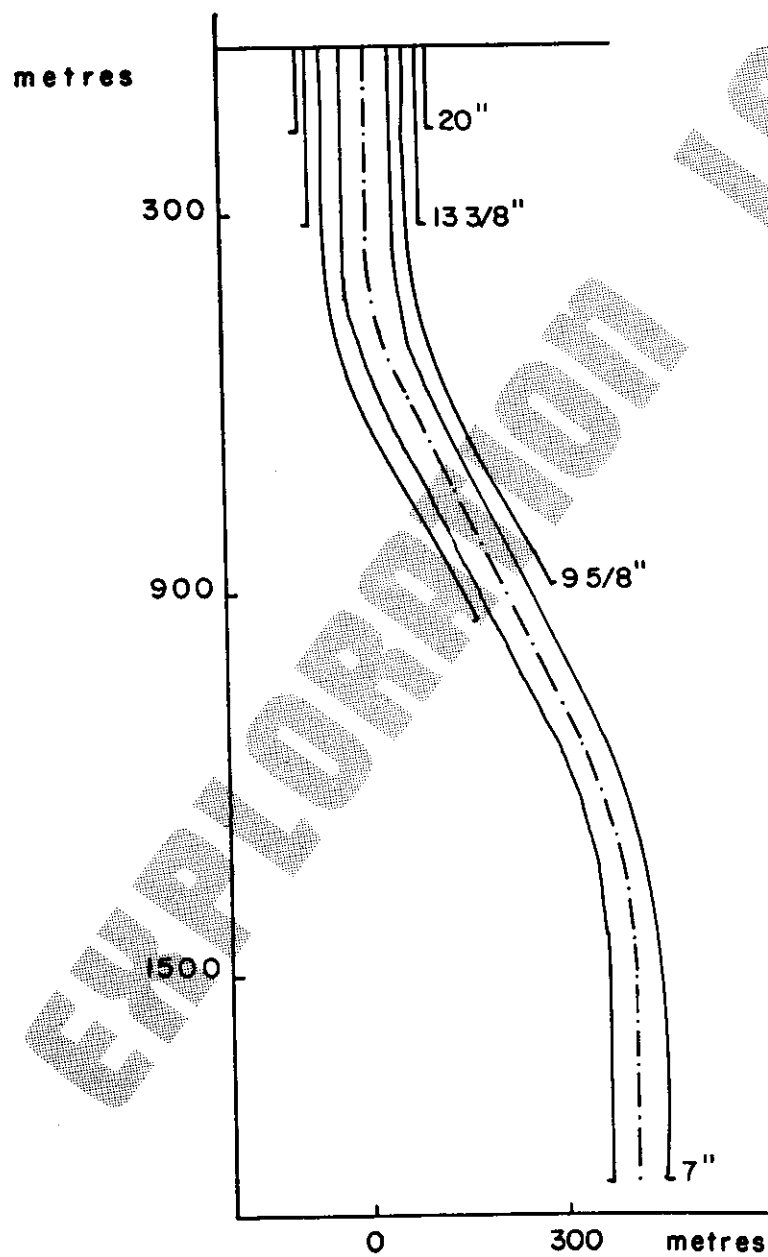
LDL - EPT - CNL : 1500 m - 2238 m

CLARA OVEST 8 (DIR)

DRILLING PROGRESS CHART (AT MIDNIGHT DEPTHS)



WELL PROFILE
Piattaforma Clara Ovest 8



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.

EXPLORATION LOGGING

ELECTRIC LOGS

The following E-Logs were run by Schlumberger:

ISF - SLS - SP : 1442 m - 2644 m

LDL - CNL - EATT : 2100 m - 2450 m

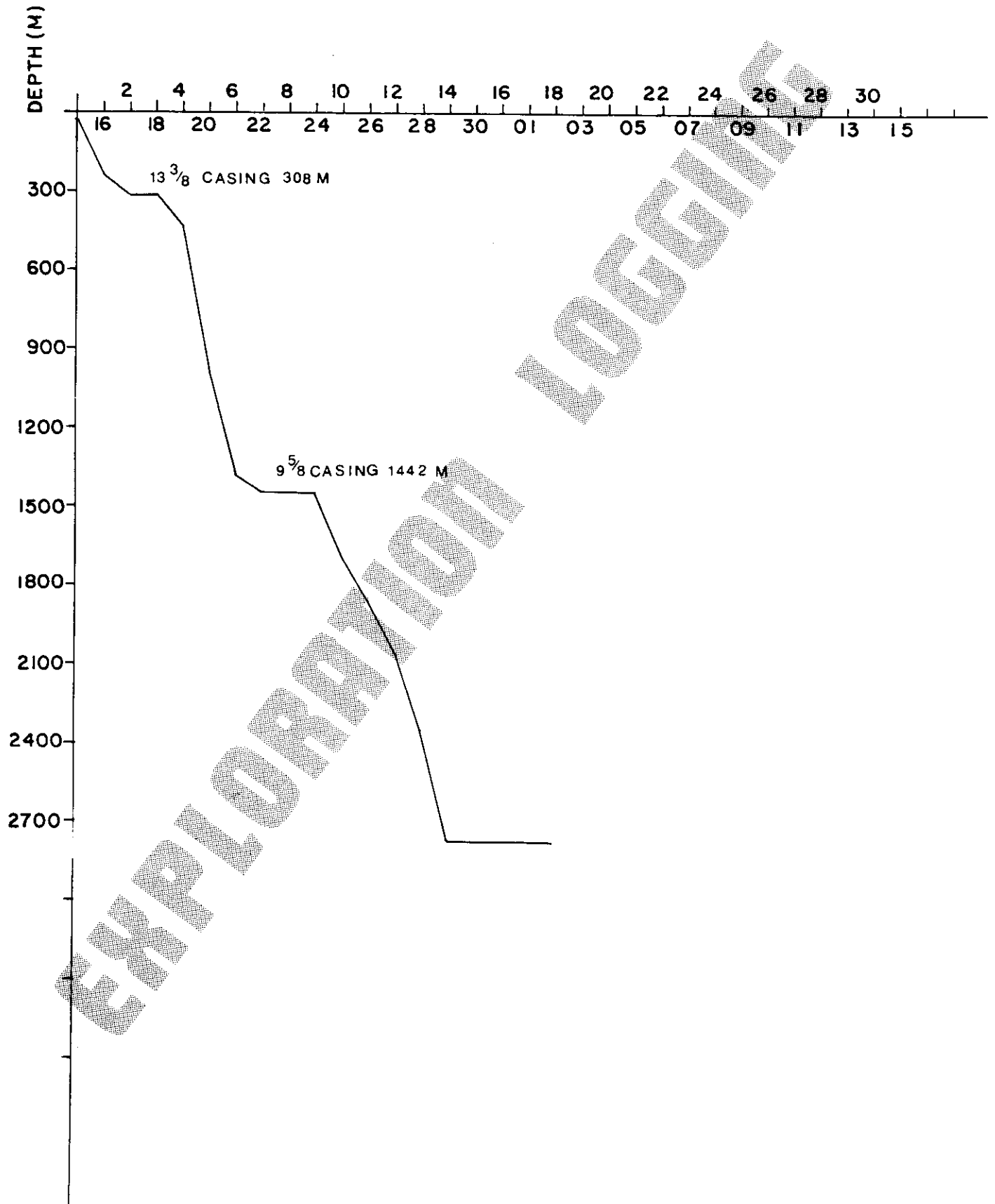
SHDT : 1442 m - 2655 m

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.

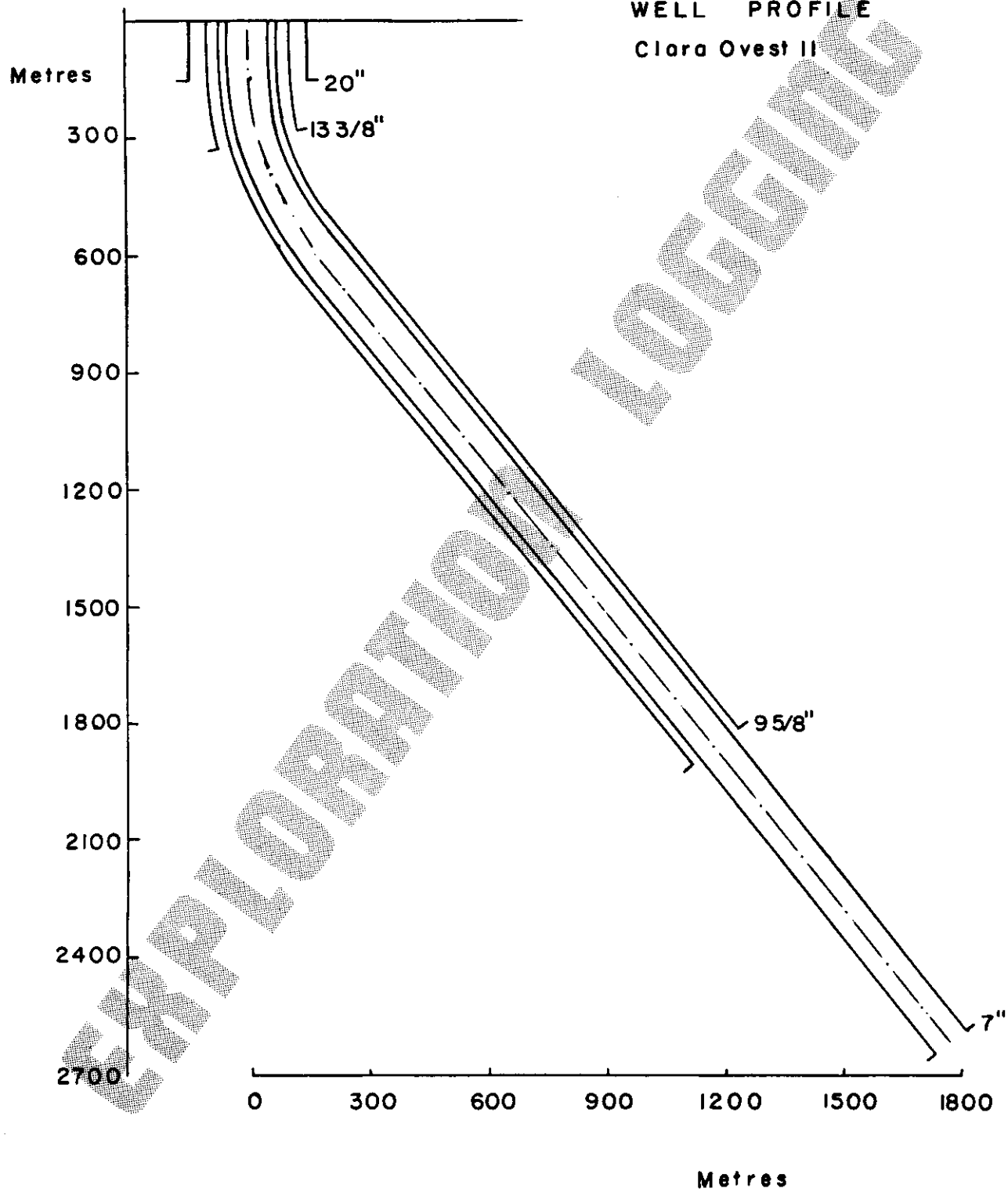
CLARA OVEST II (DIR)

DRILLING PROGRESS CHART (AT MIDNIGHT DEPTHS)



WELL PROFILE

Clara Ovest II



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

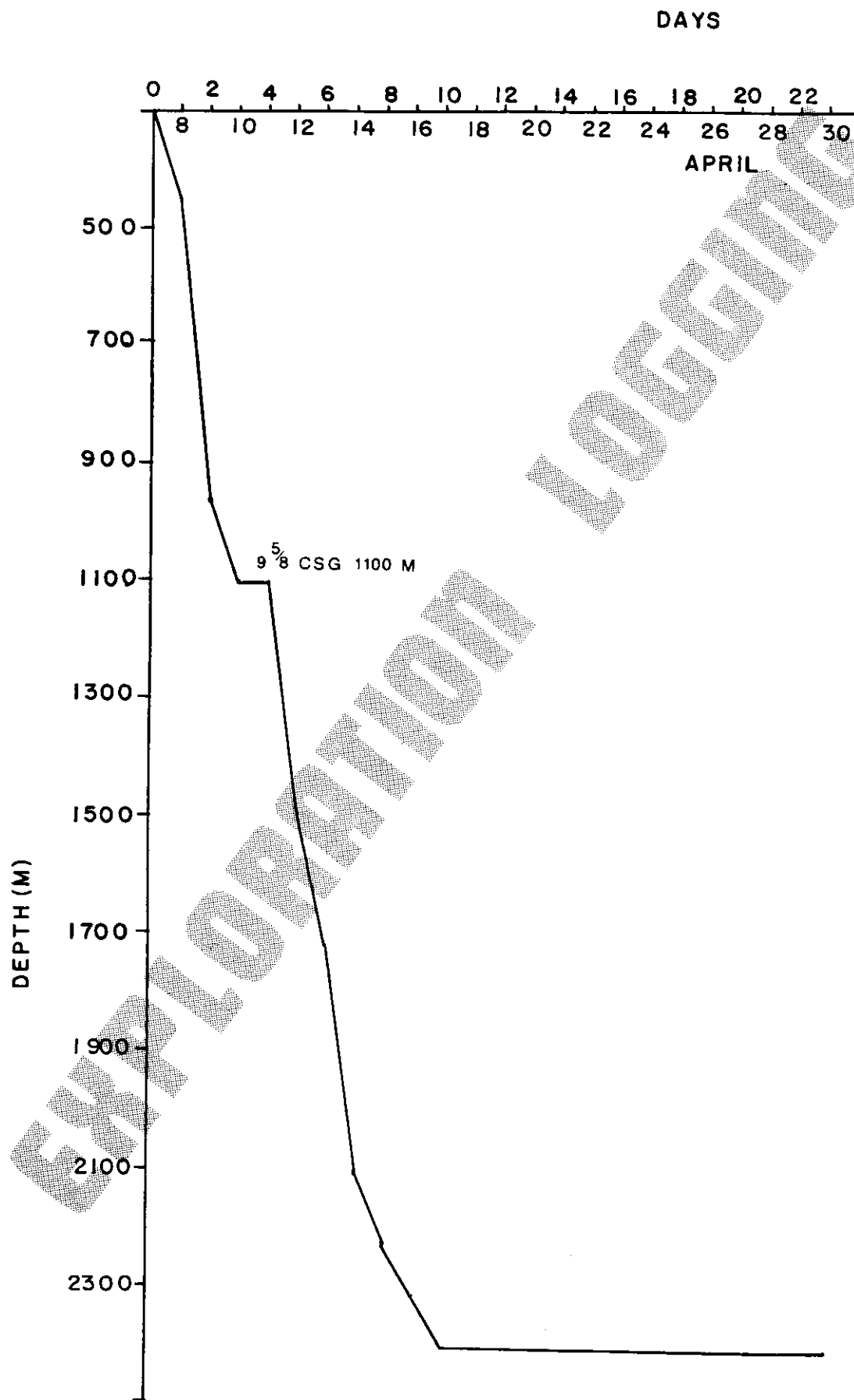
The following E-Logs were run by Schlumberger:

ISF - SLS - SP : 1600 m - 2315 m

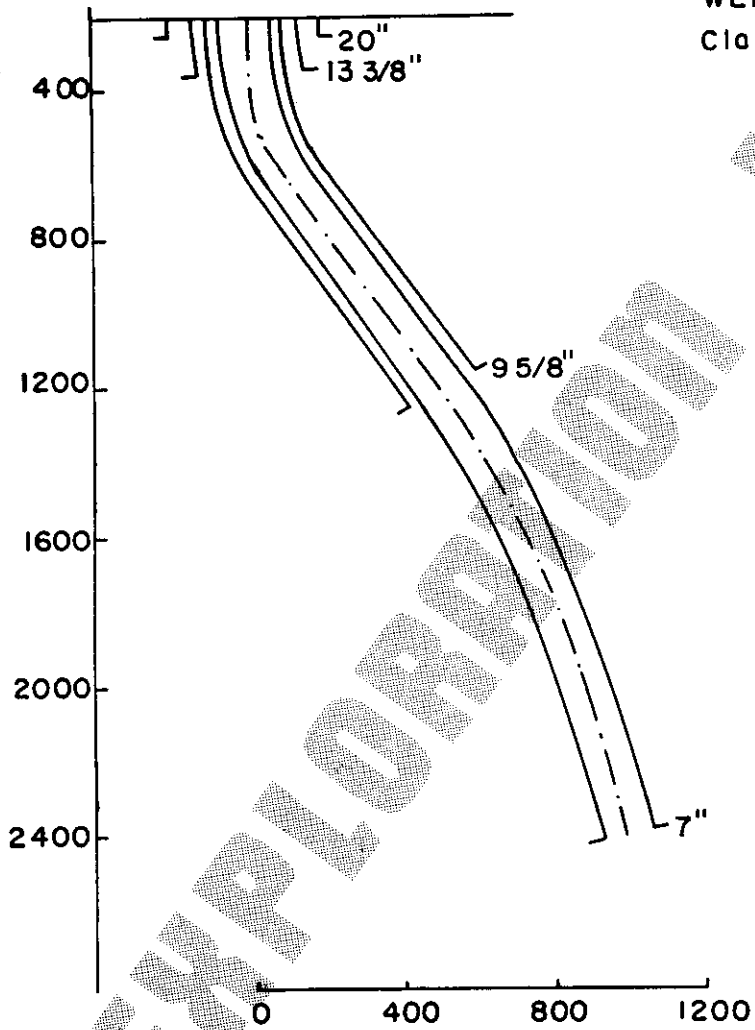
SHDT : 1600 m - 2317 m

CBL - VDL - CCL : 425 m - 1100 m

CLARA W II DIR A
DRILLING PROGRESS CHART (AT MIDNIGHT DEPTH)



Metres



WELL PROFILE
Clara Ovest II A

Metres

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

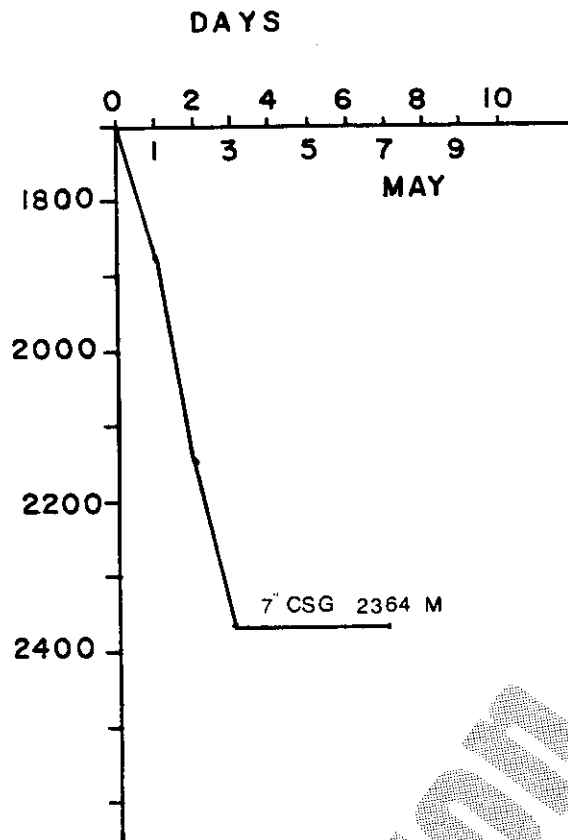
LDL - CNL - EATT - GR : 1770 m - 2366 m

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

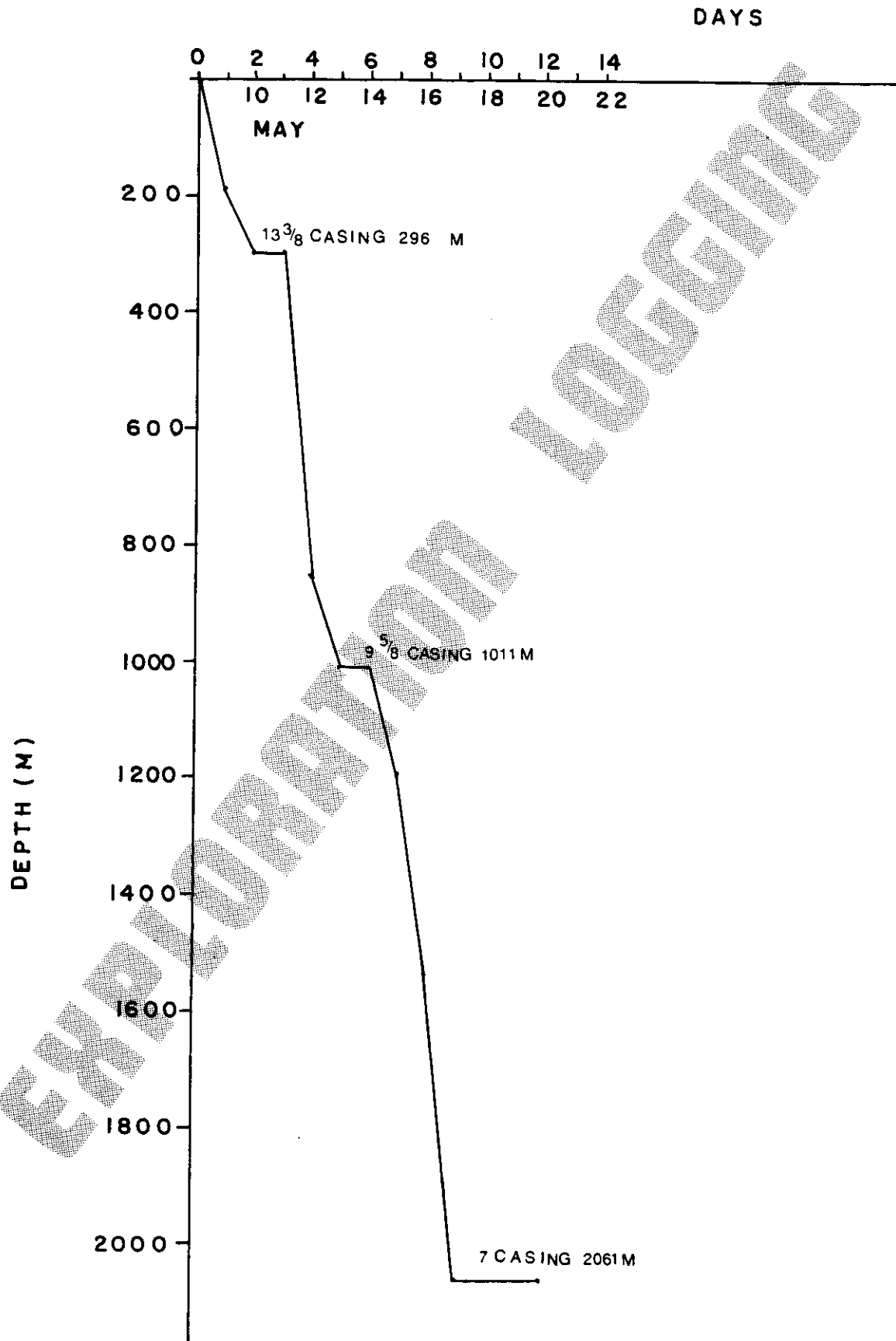
SHDT : 1011 m - 2063 m

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.

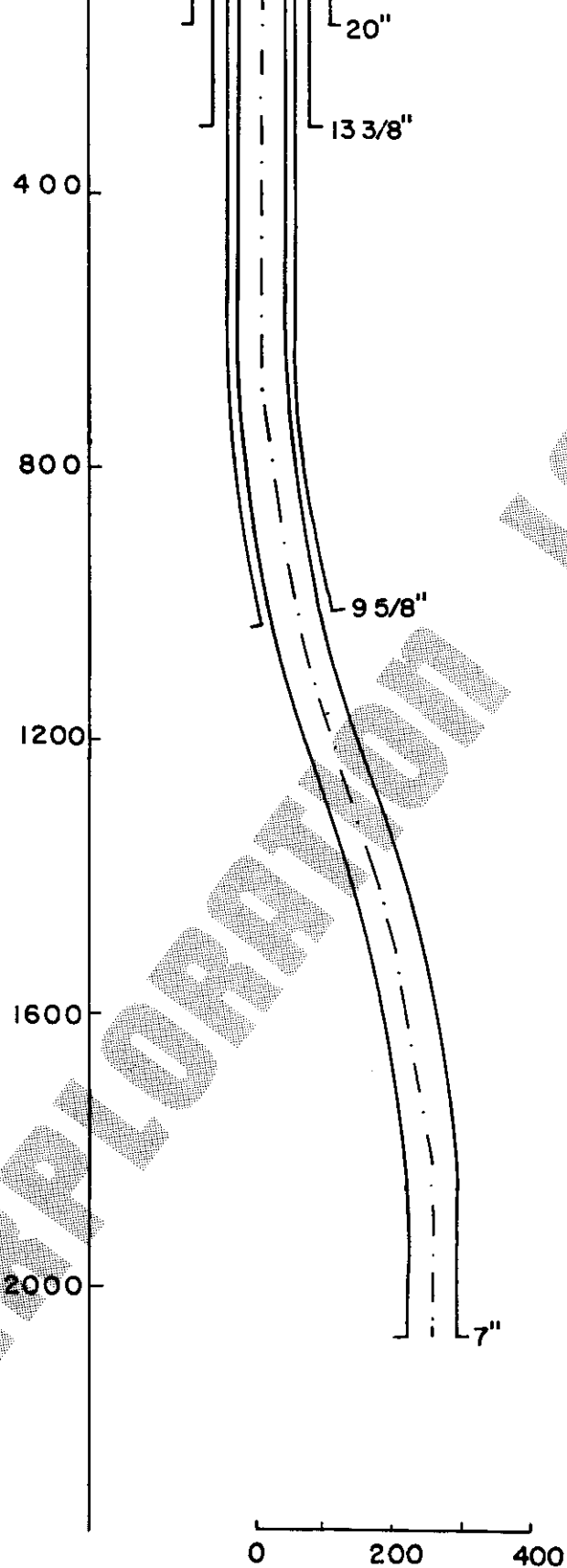
CLARA OVEST 10 DIR
DRILLING PROGRESS CHART (AT MIDNIGHT DEPTHS)



Metres

WELL PROFILE

Clara Ovest 10



Metres

A G I P
GEOL/SNOR

CLARA W 9 DIR

RELAZIONE FINALE

RAVENNA, GIUGNO 1990

REDATTORE

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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 DATADRIL)
- 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 1050-1988
- 5- DIT-SLS m 1049,5-1988
- 6- LDL-CNL m 1600-1989
- 7- FDC-CNL-CCL m 1640-1955
- 8- Interpretazione logs (CPI-SCHLUMBERGER - Aprile 1988)
- 9- PROVA DI PRODUZIONE m 1939,5-1953,5

PARTE I --- DATI GENERALI ED UBICAZIONE

1.01 POZZO

=====

Codice : 04670
Nome : CLARA W 9 DIR
Sigla : B.C14.AS/9

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)

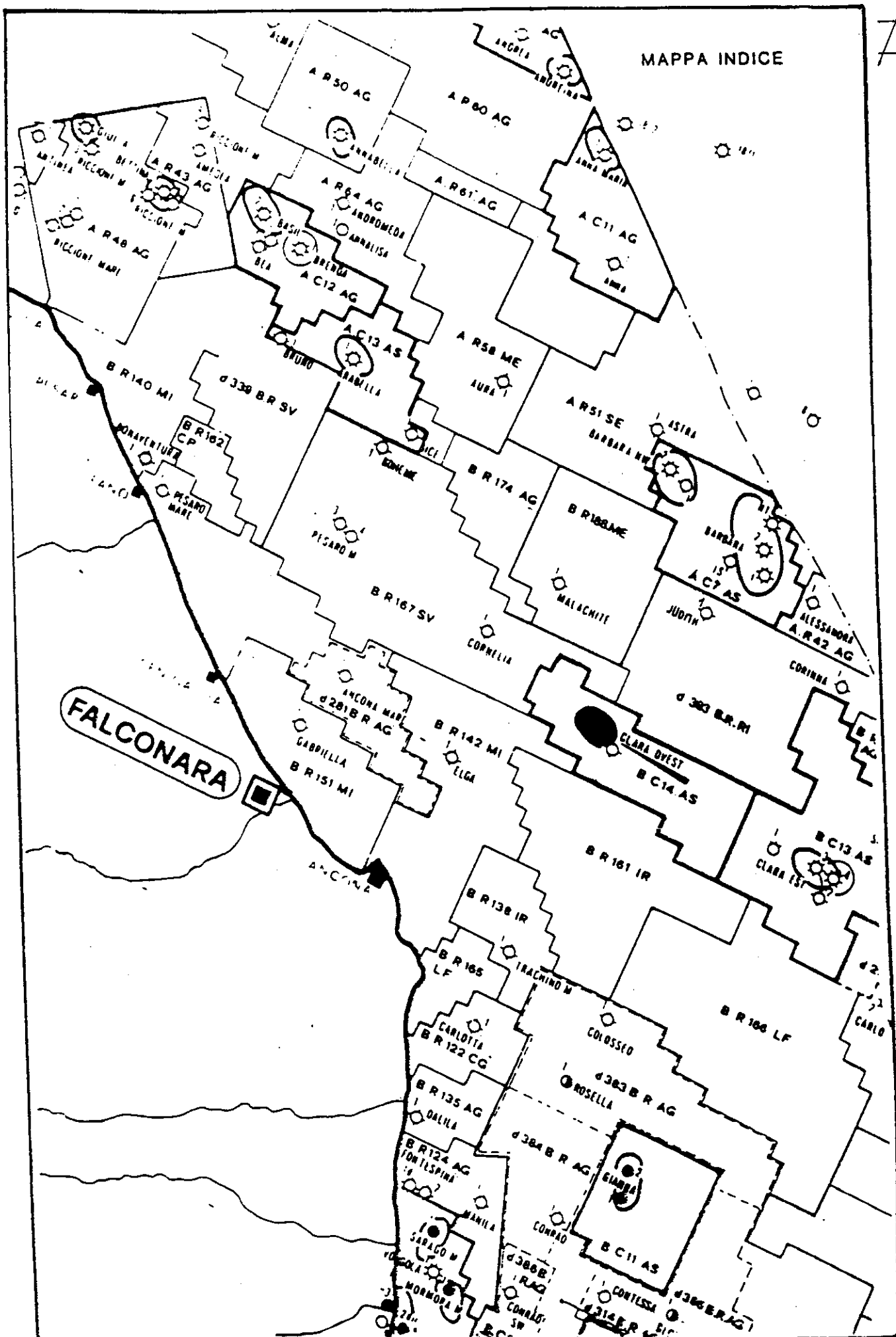
1.07 UBICAZIONE

=====

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

Fig. 1

MAPPA INDICE



1.08 COORDINATE FONDO POZZO
=====

Geogr. Long :E 013*43'09".5 Lat.:N 43*49'45".0 GREENWICH
 Geogr. Long :E 001*16'01".1 Lat.:N 43*49'45".0 MONTE MARIO

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 una struttura anticlinalica con asse WNW - ESE, suddivisa trasversalmente in diversi blocchi separati da faglie dirette. Il campo presenta la mineralizzazione a gas metano distribuita, su una 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 6 pozzi deviati. Il pozzo Clara Ovest 9 dir si proponeva lo sfruttamento nella zona centro-orientale del campo (blocco "D4") dei livelli PLQ "H" e PL3 "B" con completamento doppio. La perforazione doveva arrestarsi a m. 1979 (v.1830).

1.11 CLASSIFICAZIONE INIZIALE
=====

DEVELOPMENT WELL O POZZO DI COLTIVAZIONE

1.12 CLASSIFICAZIONE FINALE
=====

DEVELOPMENT WELL

1.13 PROFONDITA' FINALE (da perforazione)
=====

2015.0 (v. 1862.0)

1.14 ESITO MINERARIO
=====

GAS

1.15 SITUAZIONE ATTUALE
=====

COMPLETATO

1.16 GIACIMENTO
=====

CLARA OVEST

1.17 INIZIO PRODUZIONE
=====

28/02/89

1.18 INTERVALLO IN PRODUZIONE
=====

1795-1815

PARTE II --- DATI GEOLOGICI

2.01 CAMPIONATURA IN FORMAZIONE

CUTTINGS

Nr. Fr.	Top	Bottom	Freq. Camp.	Tipo
1	110.0	2015.0	10.0	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	1056.0	1983.0	06/02/88	TELECO
1	2	1	ISF	1	1049.5	1988.0	11/02/88	SCHLUMBERGER
1	2	1	SLS	1	1049.5	1977.5	11/02/88	SCHLUMBERGER
1	2	1	SP	1	1049.5	1987.5	11/02/88	SCHLUMBERGER
1	2	2	CNL	1	1597.0	1979.0	11/02/88	SCHLUMBERGER
1	2	2	LDL	1	1597.0	1988.0	11/02/88	SCHLUMBERGER
1	2	3	SHDT	1	1049.5	1989.0	11/02/88	SCHLUMBERGER
1	2	4	CBLVDL	1	450.0	1047.0	11/02/88	SCHLUMBERGER
1	3	1	CBLVDL	2	1325.0	1955.0	19/06/88	SCHLUMBERGER
1	3	2	CNLCCL	1	1640.0	1950.0	19/06/88	SCHLUMBERGER
1	3	2	FDC	1	1640.0	1954.5	19/06/88	SCHLUMBERGER
1	4	1	TDT-P	1	1639.0	1940.0	23/06/88	SCHLUMBERGER
1	5	1	TDT-K	1	1635.0	1935.0	28/06/88	SCHLUMBERGER

2.03 TEMPERATURE DAI LOGS

Fr.	Nr.	D.	Prof. Mis.	Prof. V.	T. Misur.	t.	Dt.	T. Calc.
1	2	1	1980.0	1827.2	46.0	1.30	8.20	50.0
1	2	1	1980.0	1827.2	46.0	1.30	8.20	50.0
1	2	1	1980.0	1827.2	46.0	1.30	8.20	50.0

Fr.	Nr.	D.	Prof.Mis.	Prof.V.	T.Misur.	t.	Dt.	T.Calc.
1	2	2	1980.0	1827.2	48.0	1.30	13.20	50.0
1	2	2	1980.0	1827.2	48.0	1.30	13.20	50.0
1	2	3	1980.0	1827.2	48.0	1.30	17.15	50.0

2.04 FORMAZIONI - ETA'

INTERVALLO	-1- FORMAZIONE	-2- ETA'
1049.5		
	-1-ARGILLE DEL SANTERNO	
	-2-PLEISTOCENE	
1642.0		
	-1-ARGILLE DEL SANTERNO	
	-2-PLIOCENE SUPERIORE	
1696.0		
	-1-PORTO GARIBALDI	
	-2-PLIOCENE SUPERIORE	
2015.0		

2.05 DESCRIZIONE LITOLOGICA DELLE FORMAZIONI

Intervallo : 1049.5 - 1696.0
 Formazione : ARGILLE DEL SANTERNO
 Descrizione :
 Argille ed argille siltose grigie, con qualche livello di sabbia a grana da fine a finissima.

Intervallo : 1696.0 - 2015.0
 Formazione : PORTO GARIBALDI
 Descrizione :
 Sabbia a grana medio-fine e finissima con intercalazioni di argille e argille siltose-sabbiose grigie.

2.06 RISULTATI GEOLOGICI

Il giacimento di Clara Ovest e' costituito da una struttura anticlinale, con asse principale diretto WNW - ESE, divisa in vari blocchi da una serie di faglie dirette, ad orientamento NE - SW.
 Il pozzo Clara Ovest 9 dir ha interessato il blocco "D3" fino a m. 1696 (faglia fra i livelli PLQ "I" e "J") indi il blocco "D4" fino al fondo.
 La serie litostratigrafica attraversata dal sondaggio e' costituita da sabbie ed 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 fa-

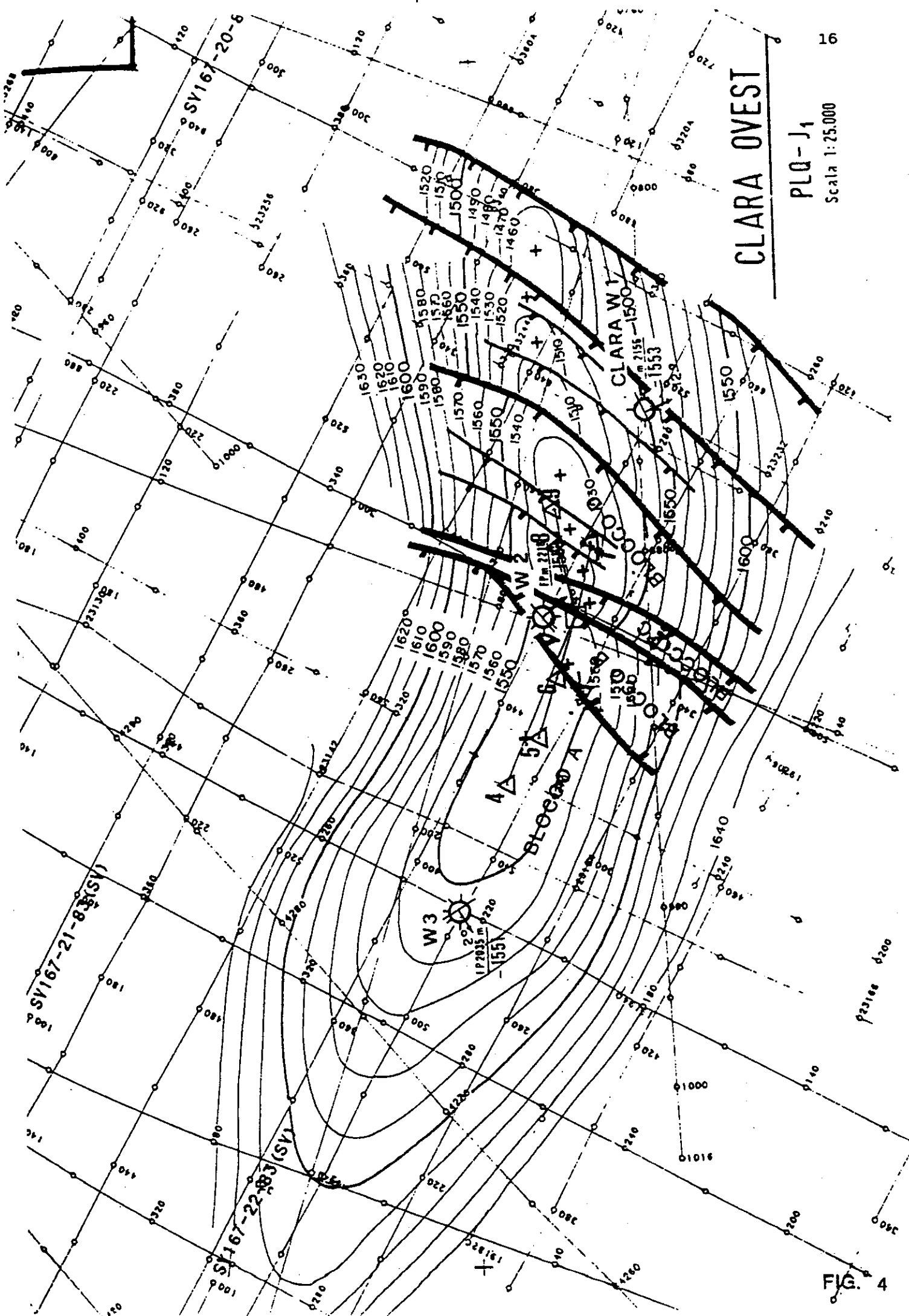
vore di quest'ultima. Le correlazioni elettriche con i pozzi vicino sono buone e permettono di riconoscere con buona approssimazione tutti i livelli del campo, evidenziandone nel contempo la loro continuit  laterale.

Eta' e formazioni sono state desunte da correlazioni elettriche con i pozzi precedenti. L'interpretazione dello SHDT, registrato da m. 1049.5 a m. 1989 mostra una situazione strutturale in armonia con quanto esposto. I responsi sono di buona qualita' e ben organizzati su tutto l'intervallo.

Da m. 1049.5 a m. 1394 le pendenze vanno da 3 a 10* e l'azimut mantiene una direzione preferenziale verso NE. Da m. 1394 a m. 1520 pendenze da 0 a 4* e azimut di direzione preferenziale SSE, si nota qualche modesto pattern rosso. Da m. 1520 a m. 1620 pendenze 0-5* azimut molto variabili con piu' frequenza nel quadrante NE. Da m. 1620 a m. 1696 pendenze in graduale aumento verso il basso da 0 a 13* (grande pattern rosso) azimut di direzione SE. Da m. 1696 a m. 1700 patter blu che indica la faglia di separazione fra i blocchi "D3" e "D4". Da m. 1700 a m. 1989 pendenze da 0 a 10* azimut di direzione preferenziale SE. In conclusione si puo' dedurre che il sondaggio Clara Ovest 9 dir ha interessato il fianco SE del blocco "D4" in posizione molto vicina al culmine di struttura.

PLQ-J,
Scale 1: 25,000

CLARA OVEST



PARTE III --- DATI MINERARI

3.01 MANIFESTAZIONI

- Foro : 1
 Intervallo : 100.0 - 2015.0
 Operazione in corso : Perforazione
 Descrizione :
 Durante la perforazione al detector continuo EXLOG sono state registrate diverse manifestazioni a gas. I valori piu' significativi di gas totale, rilevati sono i seguenti: m. 1704-1712 = 4.5%; m. 1759-1770 = 2-4%; m. 1780 = 2.8%; m. 1802-1806 = 3.2%; m. 1819-1824 = 2-3%; m. 1879-1884 = 3%; m. 1941-1946 = 3-7%; m. 1950-1952 = 5.2%; m. 2004 = 3.7%.

3.02 MINERALIZZAZIONI

Intervallo	-1- Mineralizzazione -2- Formazione
1049.5 - 1088.5	- ***** Codice mineralizzazione non presente
1088.5 - 1097.0	-1- TRACCE D'ACQUA SALATA -2-ARGILLE DEL SANTERNO
1103.0 - 1117.0	-1- TRACCE D'ACQUA SALATA -2-ARGILLE DEL SANTERNO
1420.0 - 1442.0	-1- TRACCE D'ACQUA SALATA -2-ARGILLE DEL SANTERNO
1459.0 - 1472.0	-1- TRACCE D'ACQUA SALATA -2-ARGILLE DEL SANTERNO
1545.0 - 1565.5	-1- TRACCE D'ACQUA SALATA -2-ARGILLE DEL SANTERNO
1648.0 - 1655.0	-1- TRACCE DI GAS -2-ARGILLE DEL SANTERNO -Zona PLQ -Livello H
1663.0 - 1668.0	-1- GAS -2-ARGILLE DEL SANTERNO -Zona PLQ -Livello H1
1673.5 - 1680.0	-1- GAS -2-ARGILLE DEL SANTERNO -Zona PLQ -Livello H2

1685.0 - 1696.0	-1- TRACCE DI GAS E TRACCE DI ACQUA SALATA -2-ARGILLE DEL SANTERNO -Zona PLQ -Livello I
1696.5 - 1702.5	-1- GAS E TRACCE DI ACQUA SALATA -2-PORTO GARIBALDI -Zona PLQ -Livello J
1702.5 - 1712.5	-1- ACQUA SALATA E TRACCE DI GAS -2-PORTO GARIBALDI -Zona PLQ -Livello J
1716.5 - 1717.5	-1- GAS -2-PORTO GARIBALDI -Zona PLQ -Livello J1
1717.5 - 1725.0	-1- GAS E TRACCE DI ACQUA SALATA -2-PORTO GARIBALDI -Zona PLQ -Livello J1
1727.0 - 1740.0	-1- GAS -2-PORTO GARIBALDI -Zona PLQ -Livello K
1740.0 - 1744.5	-1- GAS E TRACCE DI ACQUA SALATA -2-PORTO GARIBALDI -Zona PLQ -Livello K
1744.5 - 1746.5	-1- ACQUA SALATA -2-PORTO GARIBALDI -Zona PLQ -Livello K
1757.5 - 1770.0	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello A
1770.0 - 1776.5	-1- GAS E TRACCE DI ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello A
1777.5 - 1784.5	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello A1
1784.5 - 1786.0	-1- ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello A1
1791.5 - 1801.0	-1- TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello B

1801.0 - 1803.0	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello B
1803.0 - 1819.0	-1- GAS E TRACCE DI ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello B
1819.0 - 1836.5	-1- ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello B
1843.0 - 1846.0	-1- ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello C
1848.0 - 1853.5	-1- GAS E TRACCE DI ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello C1
1854.5 - 1871.0	-1- ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello C2
1877.0 - 1883.0	-1- TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello C3
1887.0 - 1894.5	-1- TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello D
1894.5 - 1898.5	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello D
1898.5 - 1922.5	-1- GAS E TRACCE DI ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello D
1924.0 - 1926.5	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello D1
1939.5 - 1953.5	-1- GAS -2-PORTO GARIBALDI -Zona PL3 -Livello E
1955.0 - 1970.0	-1- TRACCE DI GAS -2-PORTO GARIBALDI -Zona PL3 -Livello E1

Intervallo	-1- Mineralizzazione	-2- Formazione
1983.0 - 1990.0	-1- ACQUA SALATA -2-PORTO GARIBALDI -Zona PL3 -Livello F	

3.03 STIMOLAZIONI

Nessuna

3.04 PROVE DI STRATO

Nessuna

3.05 PROVE DI PRODUZIONE

- Prova nr. : 1
 Data : 14/07/88
 Foro nr. : 1
 Intervallo : 1939.5 - 1953.5
 Tipo : Prova in colonna
 Scopo : RILEV. PRESSIONI E PORTATE
 Durata : 2gg 22hh 40min
 Misurat. P fondo: CTH a 1930.0 (v. 1777.0) Rif. 1

Andamento prova :

Oper	n.	Dusi di Testa	Pressioni			Fluido P	Volume mc	Portata	Durata
			Testa	Fondo	R				
STRT	1		194.8	222.4	1				0.00
						GAS F			
FLOW	1	00-01/08	188.0	220.3	1				7.00
						GAS F		24270 M	
SHIN	1		188.5	220.3	1				0.30
FLOW	2	00-01/08	188.1	219.9	1				0.30
						GAS F		24270 M	
FLOW	3	00-03/16	182.5	216.4	1				8.00
						GAS F		65222 M	
SHIN	2		194.5	221.9	1				28.30
FLOW	4	00-03/16	185.1						8.20
						GAS F		65839 M	
SHIN	3		193.8						4.40
FLOW	5	00-03/16	184.8						0.30
						GAS F			
FLOW	6	00-01/04	176.8						2.30
						GAS F		118490 M	
						SW F	0.13		

SHIN	4	193.3			2.00
FLOW	7 00-01/04	174.5			6.00
			GAS	F	117913 M
SHIN	5	192.7			2.10
END	1				0.00

RISULTATI DELLA PROVA

Mineralizzazione a gas.

Dai risultati della prova lo strato ha dimostrato una buona capacita' produttiva. Nell' interpretazione della BUILD-UP viene evidenziata una barriera di permeabilita' a circa 30 metri dal pozzo, fenomeno per altro confortato dall' interpretazione sismica.

INTERPRETAZIONE DELLA PROVA

Pressione statica di giacimento		223.44 Kg/cm ²
Trasmiss. Kh/u	5367 md/m/cpd	Capacita' produttiva Kh 103 mdm
Permeabilita' K	11 md	Fattore di complet. C.F 100%

3.06 BOLLETTINI ANALISI FLUIDI

Nessuno

3.07 WIRELINE FORMATION TESTS

Nessuno

3.08 RISULTATI MINERARI

1049.50 - 2015.00

Dall'analisi dei log elettrici il pozzo Clara Ovest 9 dir e' risultato mineralizzato a gas metano in diversi livelli torbiditici della formazione Porto Garibaldi (PLQ "J1", "K", PL3 "A", "A1", "B", "D", "D1", "E") e delle Argille del Santerno (PLQ "H", "H1", "H2"), indizi di gas sono presenti anche nei livelli PLQ "I", "J", PL3 "C1", "C3", "E1".

La zona interessata da mineralizzazione a gas va da m. 1648 a m. 1970 ed e' costituita da alternanze di livelli da metrici a centimetrici di Sabbie ed argille. Le sabbie presentano saturazioni in acqua che vanno dal 35 al 75% e porosita' del 30-35%. Il pozzo e' stato completato in doppio selettivo. La string corta e' stata aperta sui livelli PL3 "A+A1" che hanno prodotto dal 28-02-89 al 30-06-89 quando sono stati chiusi per venuta di acqua e pareggio di pressione al colettore. Dopo aver fissato un tappo PX nella string a m. 1746 per isolare i livelli PL3 "A+A1", il 18-08-89 e' stato aperto alla produzione il livello PLQ "K", chiuso il 18-09-89 per forte venuta di sabbia. Il 29-11-89 escluso il livello PLQ "K" con un tappo PX a m. 1730 e' stato aperto alla produzione il livello PLQ "J"+"J1" che ha prodotto per poche ore poi e' stato chiuso per forte produzione di acqua (circa 7000 l/g). Attualmente la string corta e' chiusa.

La string lunga e' stata aperta sul livello PL3 "E" che ha prodotto dal 01-03-89 al 06-09-89 quando e' stato chiuso per elevata venuta di acqua e sabbia. Il 16-03-90 il livello PL3 "E" e' stato escluso con un tappo FWG a m. 1932 ed e' stato aperto alla produzione il livello PL3 "D+D1".

Agip

SITUAZIONE DEL POZZO

Fig. 2

Settore **SNOR**

Aggiornata al

1-6-90

Campo **CLARA / W**

Pozzo N. **9 DIR.**

UNITÀ TECNICA PRODUZIONE

Fine completamento ☐

Fine intervento ☒

Completamento singolo ☐

Selettivo ☐

Completamento doppio ☒

Selettivo ☒

Informazioni generali

Pozzo perforato nel periodo **31.01.88 / 15.02.88**
 Impianto usato per la perforazione **CORRODANT**
 Altezza p.l.r. sulla 1ª flangia mt. **14.63**
 Profondità max raggiunta **2015**
 Tappi di cementazione a mt. **1964**
 Tappi di cemento **/**
 Bridge Plug a mt. **/**
 Densità **BRINE** casing **XoBt** - **1390** gr/lt + **1.5%** **CB**
 Controllo fondo **mt. 1964 - 21.06.88**

Colonne Tubate	13 3/8	9 5/8	7"	
Testa a mt.	SUP.	SUP.	SUP.	
Scarpe a mt.	307	1051	2009	
CEMENT	1ª Rialita mt.	GIORNO	SHS CRL	1386 CRL
	2ª Rialita mt.			
	D.V. collar mt.			

☐ liner hanger a mt. **/**
 Foro scoperto a da mt. a mt. **/**

Profilo diametri interni

a nom.	fino a mt.	grado	spess.	lbs/ft	a interno
7"	1494	J55	8.05	23	161.7
7"	2009	N.80	8.05	23	161.7

INTERVALLI APERTI

STRING LUNGA			STRING CORTA		
PL	1795	1809.5	PL	1696	1702
3	1805.5	1806.5	Q	1708.5	1717.5
B	1810	1815	J		
			J4		
PL	1906	1911.5	PL		
3	1919.5	1925	Q	1735	1743.5
D			K		
PL	1939.5	1944	PL	1757	1762
3	1950	1953.5	Q	1764	1769.5
E			A	1774	1782

INTERVENTI	DATA	Scopo
	16-3-90	S/L ESCL. PL3E (FWG)
		APERTO PL3D (SSD MT 1898)
	27-3-90	FISSATO 3 MT SPSA MT 1898 (SL)
	19-5-90	3/C FISSATO 3 MT SPSA MT 1753

NOTE: VERIFICATO QUOTE CON CORR.
 SCHUMBERGER: ALLUNCAHENTO ~ 0.7m.

Caratteristiche

STRING LUNGA

STRING CORTA

TUBING	a nom. - Giunto	2 3/8 IPS	2 3/8 IPS
	Grado acciaio	P-105	P-105
	lbs/ft	4.710	4.710
	fino a mt.	1732.33	1753.74
PACKER	a	7"	7"
	MODELLO	A5	A5
	- tipo	L7C2	L7C2
	Casa costrutt.	BAKER	BAKER
Fissato a mt.		1628.74	1725.35

Attrezzi in pozzo

I.D. mm

O.D. mm

a mt.

TBU HANGER DP14	BPV 02" TSB		
L.N. OTIS "X" + 2F.C.	47.6	71.0	1044.70
L.N. OTIS "X" + 2F.C.	47.6	71.0	1149.20
SAFETY JOINT (51000lbs)	50.0	78.4	1635.16
BLAST JOINT 2 3/8 IPS D	47.6	71.0	1722.64
SAFETY JOINT (51000lbs)	50.0	78.4	1730.88
BLAST JOINT 2 3/8 IPS D	47.6	71.0	1745.69
SSD OTIS "XA"	47.6	78.5	1751.67
BLAST JOINT 2 3/8 IPS D	47.6	71.0	1752.56
SSD OTIS "XA"	47.6	78.5	1790.58
SSD OTIS "XA"	47.6	78.5	1898.07
S.N. BAKER F (181")	45.9	78.4	1931.93
SCARPA: MULE SHOE 2 3/8 CU			1932.33

STRING CORTA

TBU HANGER BREDAD DP14	BPV 02" TSB		
L.N. OTIS "X" + 2FC	47.6	71.0	951.73
L.N. OTIS "X" + 2FC	47.6	71.0	1047.02
SWAP LATCH mod S268		73.3	1629.53
TELESCOPIC JOINT		78.4	1632.96
SSD OTIS "XA"	47.6	78.5	1645.18
ANCHOR S.R. (20000lbs)		78.4	1723.90
TELESCOPIC JOINT		78.4	1726.93
SSD OTIS "XA"	47.6	78.5	1729.96
L.N. OTIS "X"	47.6	71.0	1746.29
ANCHOR S.R. (20000lbs)		78.4	1748.53
S.N. BAKER F (181")	45.9	73.2	1753.43
SCARPA: BOTTOM S.U.F			1753.74

Assistente W.O.
 BALBONI - BELLA LUCIA
 GALLI - INFECCIA

Respons. Unità Tecnica

11

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 : 23/12/87
 Fine perforazione : 11/02/88
 Fine completamento : 01/07/88
 Rilascio impianto : 21/07/88

4.04 PROFONDITA' FINALE POZZO (da perforazione)

=====

Misurata : 2015.0
 Verticale : 1862.0

4.05 PROFONDITA' FINALE POZZO (da log)

=====

Misurata : 0.0

4.06 TOTALE METRI PERFORATI

=====

1915.0

4.07 FASI DI PERFORAZIONE

=====

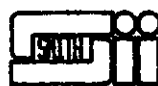
Nr.Fr.	Nr.Fase	Top	Bottom	Diametro
1	1	94.0	311.0	17"1/2
1	2	311.0	1056.0	12"1/4
1	3	1056.0	2015.0	8"1/2

4.08 MISURE DI VERTICALITA' E DEVIAZIONI

Foro Nr.	Profondita Misurata	Profondita Verticale	Inclinaz. Foro	Direzione Geografica	Scostamento	
					Metri	Azinut
1	94.0	94.0	0.75	N15*00W	0.6	N15*00W
1	124.0	124.0	1.50	N20*00W	1.2	N16*36W
1	154.0	154.0	2.50	N20*00W	2.2	N18*05W
1	166.0	166.0	2.50	N10*00W		
1	184.0	183.9	2.50	N05*00W	3.5	N16*01W
1	193.0	193.0	2.00	N05*00W		
1	212.0	211.9	2.50	N55*00E		
1	214.0	213.9	3.00	N58*00E	4.6	N04*31W
1	221.0	220.9	3.00	N55*00E		
1	244.0	243.8	5.00	N80*00E	5.6	N16*73E
1	248.0	248.0	4.75	N83*00E		
1	274.0	273.6	7.50	N82*00E	7.6	N39*56E
1	276.0	275.6	7.15	N83*00E		
1	304.0	303.3	10.50	N85*00E	11.4	N56*13E
1	327.0	325.9	11.10	N85*30E	15.3	N63*96E
1	355.0	353.1	15.80	N82*10E	21.6	N69*78E
1	383.0	379.6	21.10	N79*70E	30.3	N72*99E
1	412.0	406.2	25.80	N80*40E	41.8	N74*94E
1	440.0	431.3	27.30	N80*00E	54.3	N76*15E
1	468.0	456.3	26.40	N80*00E	66.9	N76*88E
1	497.0	482.0	28.30	N77*90E	80.2	N77*22E
1	525.0	506.0	33.70	N77*90E	94.6	N77*32E
1	553.0	528.9	36.40	N80*70E	110.7	N77*61E
1	582.0	552.5	34.70	N81*10E	127.5	N78*05E
1	610.0	575.6	34.50	N80*00E	143.4	N78*32E
1	639.0	599.6	34.00	N79*70E	159.7	N78*48E
1	667.0	622.8	33.50	N79*00E	175.3	N78*56E
1	696.0	647.1	33.20	N79*00E	191.2	N78*59E
1	753.0	694.8	33.00	N77*50E	222.4	N78*55E
1	810.0	742.6	33.10	N79*30E	253.4	N78*53E
1	867.0	790.5	32.40	N77*90E	284.3	N78*54E
1	924.0	838.7	32.30	N77*20E	314.8	N78*44E
1	981.0	887.0	31.70	N77*20E	345.0	N78*33E
1	1038.0	935.9	30.00	N78*60E	374.2	N78*30E
1	1099.0	988.7	30.10	N79*00E	404.7	N78*34E
1	1145.0	1028.4	30.70	N79*00E	428.0	N78*37E
1	1202.0	1077.3	31.10	N79*00E	457.3	N78*41E
1	1259.0	1126.7	28.80	N80*00E	485.7	N78*48E
1	1288.0	1152.2	28.50	N80*40E	499.6	N78*52E
1	1345.0	1203.1	25.00	N77*90E	525.3	N78*56E
1	1402.0	1256.2	16.90	N76*80E	545.6	N78*51E
1	1458.0	1310.2	14.20	N76*50E	560.6	N78*46E
1	1478.0	1329.6	13.10	N75*10E	565.4	N78*44E
1	1517.0	1367.7	12.30	N75*80E	573.9	N78*40E
1	1574.0	1423.6	10.30	N79*00E	585.1	N78*38E
1	1631.0	1479.8	8.50	N83*90E	594.4	N78*42E
1	1687.0	1535.2	7.60	N87*00E	602.2	N78*51E

15 FEB 1988 @ 10:48

Compagnia: AGIP
 Pozzo: CLARA OVEST 9
 Direzione proposta: N 79.75 E
 Declinazione magnetica: 0.50 W



DATA DRILL

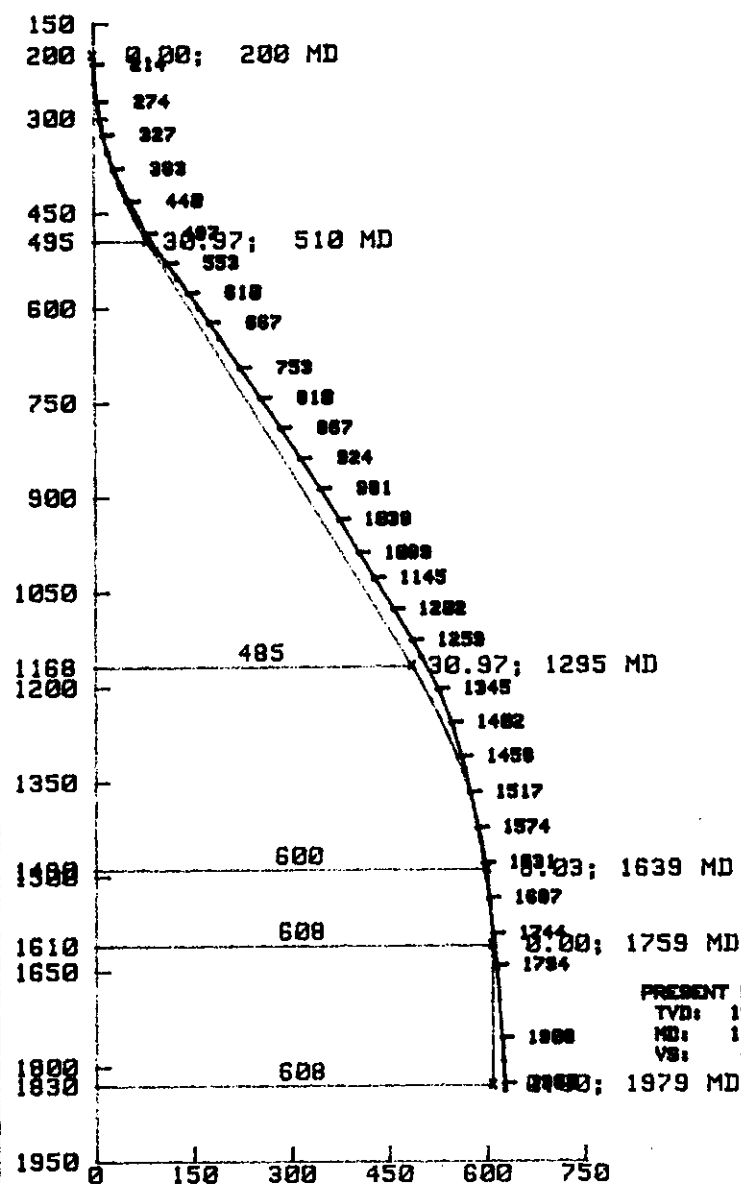
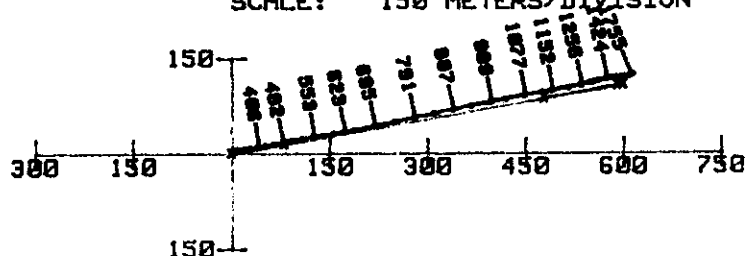
Division of Smith International, Inc.

VERTICAL PLANE

SCALE: 150 METERS/DIVISION

HORIZONTAL PLANE

SCALE: 150 METERS/DIVISION



PRESENT LOCATION:
 TVD: 1837.18 M
 MD: 1800.00 M
 VS: 625.82 M

VERTICAL SECTION PLANE: N 79.75 E

Foro Nr.	Profondita Misurata	Profondita Verticale	Inclinaz. Foro	Direzione Geografica	Scostamento	
					Metri	Aziut
1	1744.0	1591.8	6.20	N82*50E	609.0	N78*58E
1	1801.0	1648.6	5.00	N80*40E	614.5	N78*61E
1	1858.0	1705.4	3.70	N71*20E	618.8	N78*59E
1	1898.0	1745.3	3.30	N68*40E	621.3	N78*56E
1	1944.0	1791.2	3.00	N60*70E	623.7	N78*50E
1	1980.0	1827.2	2.70	N57*90E	625.4	N78*45E

4.09 FANGO DI PERFORAZIONE

Nr. Fr.	Top	Bottom	Tipo	Densita'	P.V.	Cloruri	Olio%
1	100.0	195.0	AR	1170		7.0	
1	195.0	311.0	AR	1200		7.0	
1	311.0	316.0	LS	1150		4.9	
1	316.0	486.0	LS	1200		4.7	
1	486.0	693.0	LS	1220		5.4	
1	693.0	1056.0	LS	1200		5.8	
1	1056.0	1189.0	LS	1360		6.2	
1	1189.0	1569.0	LS	1370		6.2	
1	1569.0	1700.0	LS	1360		7.8	
1	1700.0	1940.0	LS	1370		6.4	
1	1940.0	2015.0	LS	1360		6.4	

4.10 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)	20.2 t.
1	Additivo	Attapulgit	2.0 %
2	Cemento	Geocem "G" (Densita' malta 1900 g/l)	21.7 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	: 450.0	
Bottom	: 1047.0	
Top cemento	: 545.0	
Press.testa colonna	: 0.0	
Bond	: 545.0 - 561.0	SCARSA
	561.0 - 650.0	DISCRETA
	650.0 - 700.0	BUONA
	700.0 - 761.0	OTTIMA
	761.0 - 800.0	DISCRETA
	800.0 - 1047.0	BUONA

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

 Cementazione n. : 1
 Stadio n. : 1
 D.V. a : 0.0
 Risal.Teorica : 1400.0

Composizione malta :

N.	Elemento	Descrizione	Quantita'
1	Cemento	Geocem "G" (Densita' malta 1900 g/l)	13.6 t.
1	Additivo	D60	0.7 %
1	Additivo	D65	0.3 %
1	Additivo	D47	0.1 %

Controllo Cementaz. :

Log	:	CBLVDL	
Top	:	1325.0	
Bottom	:	1955.0	
Top cemento	:	1403.0	
Press.testa colonna	:	0.0	
Bond	:	1403.0 - 1460.0	SCARSA
		1460.0 - 1510.0	BUONA
		1510.0 - 1750.0	OTTIMA
		1750.0 - 1955.0	BUONA

4.11 VACUUM TEST

=====

Nessuna

4.12 LEAK OFF TEST

=====

Nessuno

4.13 PERFORAZIONE RIVESTIMENTI

=====

- Foro n.	:	1
Rivestimento n.	:	4
Diametro	:	7"
Tipo Rivestimento	:	Casing
Intervallo spari	:	1696.0 - 1702.0
N. totale colpi	:	
N. colpi/piede	:	12
Tipo Carica	:	HYPERJET II D.P
Tipo e diam fucile	:	H.S.D. 5"
Scopo	:	PRODUZIONE
Status spari	:	Aperti
Intervallo spari	:	1708.5 - 1717.5
N. totale colpi	:	
N. colpi/piede	:	12
Tipo Carica	:	HYPERJET II D.P
Tipo e diam fucile	:	H.S.D. 5"
Scopo	:	PRODUZIONE
Status spari	:	Aperti
Intervallo spari	:	1735.0 - 1743.5
N. totale colpi	:	
N. colpi/piede	:	12
Tipo Carica	:	HYPERJET II D.P
Tipo e diam fucile	:	H.S.D. 5"
Scopo	:	PRODUZIONE
Status spari	:	Aperti

Intervallo spari : 1757.0 - 1762.0
N. totale colpi :
N. colpi/piede : 12
Tipo Carica : HYPERJET II D.P
Tipo e diam fucile : H.S.D. 5"
Scopo : PRODUZIONE
Status spari : Aperti

Intervallo spari : 1764.0 - 1769.5
N. totale colpi :
N. colpi/piede : 12
Tipo Carica : HYPERJET II D.P
Tipo e diam fucile : H.S.D. 5"
Scopo : PRODUZIONE
Status spari : Aperti

Intervallo spari : 1774.0 - 1782.0
N. totale colpi :
N. colpi/piede : 12
Tipo Carica : HYPERJET II D.P
Tipo e diam fucile : H.S.D. 5"
Scopo : PRODUZIONE
Status spari : Aperti

Intervallo spari : 1805.5 - 1806.5
N. totale colpi : 39
N. colpi/piede : 12
Tipo Carica : HYPERJET II D.P
Tipo e diam fucile : H.S.D. 5"
Scopo : PRODUZIONE
Status spari : Aperti

Intervallo spari : 1810.0 - 1815.0
N. totale colpi :
N. colpi/piede : 12
Tipo Carica : HYPERJET II D.P
Tipo e diam fucile : H.S.D. 5"
Scopo : PRODUZIONE
Status spari : Aperti

Intervallo spari : 1906.0 - 1911.5
N. totale colpi :
N. colpi/piede : 12
Tipo Carica : HYPETJET II D.P
Tipo e diam fucile : H.S.D. 5"
Scopo : PRODUZIONE
Status spari : Aperti

Intervallo spari : 1919.5 - 1925.0
 N. totale colpi :
 N. colpi/piede : 12
 Tipo Carica : HYPERJET II D.P
 Tipo e diam fucile : H.S.D. 5"
 Scopo : PRODUZIONE
 Status spari : Aperti

Intervallo spari : 1939.5 - 1947.0
 N. totale colpi :
 N. colpi/piede : 12
 Tipo Carica : HYPERJET II D.P
 Tipo e diam fucile : H.S.D. 5"
 Scopo : PRODUZIONE
 Status spari : Aperti

Intervallo spari : 1950.0 - 1953.5
 N. totale colpi :
 N. colpi/piede : 12
 Tipo Carica : HYPERJET II D.P
 Tipo e diam fucile : H.S.D. 5"
 Scopo : PRODUZIONE
 Status spari : Aperti

Intervallo spari : 1795.0 - 1802.5
 N. totale colpi :
 N. colpi/piede : 12
 Tipo Carica : HYPERJET II D.P
 Tipo e diam fucile : H.S.D. 5"
 Scopo : PRODUZIONE
 Status spari : Aperti

4.14 TAPPI =====

Nr. Foro	Nr. Tappo	Tipo Tappo	Top	Bottom	Classe Cemento	Q. ta'	Scopo del Tappo
1	1	CEMENTO	1964.0	2009.0	"G"	0.0	CEMENTAZIONE

4.15 SQUEEZING =====

Nessuno

4.21 BRIDGE PLUG =====

Nessuno

4.17 PERDITE ED ASSORBIMENTI

Fr. Top	Bottom	Evento	MC	Note
1	150.0	311.0 PERDITE DI CIRCOLAZIONE	8	Controllo foro per tubaggio

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

Variabile	Codice	Decodifica
	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
	QTR	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