



TELECO INC., RAVENNA, ITALY.

END OF WELL REPORT

CLIENT: AGIP S.P.A.

RIG: CORMORANT

FIELD: CLARA OVEST

LOCATION: MARE ADRIATICO

WELL NO: CLARA W 11 DIR

HOLE SECTIONS: 12 1/4", 8 1/2"

OPERATING DEPTHS: 12 1/4" SECTION: 311m - 1445m
8 1/2" SECTION: 1445m - 2675m

DATES START: 19 MARCH 1988

END: 30 MARCH 1988

TELECO JOB NO: TIY 076/00

PREPARED BY: G. SODEN / A. HIGGS

CHECKED BY:



TELECO INC., RAVENNA, ITALY

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TELECO INC., RAVENNA, ITALY.

RIG REPORT

DRILLING CONTRACTOR:	<u>FORAMER S.A.</u>
RIG NAME:	<u>CORMORANT / NATIONAL N110 UE</u>
RIG TYPE:	<u>PLATFORM</u>
MUD PUMP TYPE:	<u>TRIPLEX</u>
MUD PUMP MAKE:	<u>NATIONAL 12-P-60</u>
MUD COMPANY:	<u>AVA S.P.A.</u>
SPUD DATE:	<u>16 MARCH 1988</u>
DIRECTIONAL DRILLING COMPANY:	<u>SMITH INTERNATIONAL ITALIA</u>
SURVEY COMPANY:	<u>SMITH INTERNATIONAL ITALIA</u>
ELECTRIC LOGGING COMPANY:	<u>SCHLUMBERGER</u>
MUD LOGGING COMPANY:	<u>EXPLORATION LOGGING</u>



TELECO INC., RAVENNA, ITALY.

MEASUREMENT SPECIFICATIONS

MEASUREMENT UNITS:	METRIC
DEPTH UNITS:	METRES
DEPTH REFERENCED TO:	DRILL FLOOR
REF. POINT TO SEA LEVEL:	28 METRES
REF. POINT TO SEA BED:	100 METRES
REF. POINT TO DRILL FLOOR:	-
FLOW RATE:	LITRES PER MINUTE
MUD WEIGHT:	SPECIFIC GRAVITY
PLASTIC VISCOSITY:	CENTIPOISE
YELD POINT:	GRAMMES PER SQUARE CENTIMETRE
GEL STRENGTHS:	GRAMMES PER SQUARE CENTIMETRE
FILTRATE:	MILLILITRES
CHLORIDES:	GRAMMES PER LITRE NaCl
MUD RESISTIVITY:	OHM - METRES
TEMPERATURE:	CENTIGRADE
WEIGHT ON BIT:	TONNES
JET SIZE/TFA:	SQUARE CENTIMETRES



TELECO INC., RAVENNA, ITALY.

OPERATIONS SUMMARY

RUN NUMBER:	1	2	3	4	
HOLE SIZE:	12½	8½	8½	8½	
ASSEMBLY TYPE:	STEERABLE SYSTEM	ROTARY HOLD	ROTARY HOLD	ROTARY HOLD	
DEPTH START	311	1445	1787	2059	
DEPTH END:	1445	1787	2059	2675	
TIME/DATE IN HOLE:	14.00 19.03.88	00.00 25.03.88	17.00 26.03.88	22.30 27.03.88	
TIME/DATE OUT HOLE:	17.00 23.03.88	16.00 26.03.88	20.00 27.03.88	09.30 30.03.88	
TOOL NUMBER:	884-14	1543-5	1543-5	1592-7	
TOOL TYPE:	D-MTF	RD-MTF	RD-MTF	RD-MTF	
DATA RATE: BITS/SECOND	0.4 BPS	0.4 BPS	0.4 BPS	0.4 BPS	
NO. TELECO SURVEYS:	47	11	9	23	
SERVICE TYPE:	DIR	RES/DIR	RES/DIR	RES/DIR	
TIME/DATE FAILURE:	-	-	12.40 27.03.88	-	
CONFIRMED TELECO FAILURE:	-	-	YES	-	
TIME/DATE LOST IN HOLE:	-	-	-	-	



TELECO INC., RAVENNA, ITALY.

RUN DETAIL SUMMARY

RUN NUMBER:	1	2	3	4	
MUD MOTOR TYPE:	SMITH F2000S	-	-	SMITH F2000S	
BENT SUB:	1°BH	-	-	¾°BH	
MUD MOTOR: DRLG HRS:	24.1	-	-	33.2	
ROTARY DRLG HRS:	15.1	18.5	12.0	22.7	
CIRC. HRS:	38.1	24.1	13.2	38.7	
AVERAGE FLOW RATE:	1900	1400	1600	1500	
MIN/MAX WOB:	4/8	10/32	12/18	8/20	
MIN/MAX RPM:	130/210	90/95	60/85	60/85	
PREDOMINANT FORMATION	CLAYSTONE	CLAYSTONE	CLAYSTONE	CLAYSTONE	
MUD TYPE:	LS	LS	LS	LS	
AVERAGE MUD WEIGHT	1.23	1.35	1.35	1.36	
MAX SAND CONTENT	1.0	0.5	0.5	0.5	
JARRING:	NO	YES	YES	NO	
DEPTH DRILLED:	1134	342	272	616	

Teleco Oilfield Services Inc.

6 Apr 1988

DIRECTIONAL SURVEY LISTING

Company: AGIP SpA

Well: CLARA W 11 DIR

Field: CLARA OVEST

Job No: TIY 076/00

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

Proposal Azimuth:	90.00
Total Azimuth Correction:	-.50
Proposal Origin North:	0.00
Proposal Origin East:	0.00



DIRECTIONAL SURVEY LISTING

Company: AGIP SpA

Well: CLARA W 11 DIR

Page: 1

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	90.00	0.00	0.00	0.00	0.00	0.00
166.00	.25	204.00	-.33	-.15	166.00	.05	-.15
184.00	4.50	301.00	-0.00	-.77	183.98	7.68	-.77
192.00	5.00	298.00	.32	-1.35	191.95	2.13	-1.35
208.00	3.50	315.00	1.00	-2.31	207.91	3.70	-2.31
220.00	3.00	331.00	1.53	-2.72	219.89	2.62	-2.72
238.00	4.50	38.00	2.50	-2.51	237.86	7.32	-2.51
256.00	5.50	66.00	3.41	-1.29	255.79	4.41	-1.29
275.00	8.50	69.00	4.28	.85	274.65	4.85	.85
284.00	9.00	62.00	4.85	2.10	283.54	3.98	2.10
302.00	8.50	66.00	6.05	4.56	301.34	1.33	4.56
327.00	10.20	79.30	7.21	8.42	326.01	3.34	8.42
355.00	13.70	89.50	7.70	14.17	353.40	4.44	14.17
383.00	18.50	100.00	6.96	21.87	380.30	6.09	21.87
412.00	23.50	94.10	5.75	32.18	407.37	5.70	32.18
440.00	28.90	89.50	5.41	44.52	432.48	6.28	44.52
469.00	32.80	93.00	5.06	59.38	457.38	4.51	59.38
497.00	35.20	92.70	4.28	75.02	480.59	2.62	75.02
525.00	41.00	91.60	3.64	92.27	502.61	6.36	92.27
554.00	45.10	93.00	2.84	112.05	523.80	4.42	112.05
582.00	47.20	92.70	1.83	132.21	543.20	2.30	132.21
610.00	53.70	90.60	1.23	153.78	561.02	7.29	153.78
639.00	57.00	89.50	1.22	177.63	577.50	3.60	177.63
696.00	53.60	90.60	1.18	224.49	609.95	1.88	224.49
753.00	53.40	90.60	.70	270.31	643.85	.11	270.31
810.00	55.40	90.60	.22	316.65	677.03	1.07	316.65
867.00	56.10	89.90	.01	363.76	709.11	.49	363.76
924.00	54.10	89.90	.10	410.51	741.72	1.07	410.51
982.00	55.30	88.80	.64	457.84	775.24	.79	457.84
1038.00	55.40	88.80	1.60	503.90	807.08	.05	503.90
1095.00	53.80	89.50	2.29	550.35	840.10	.91	550.35
1152.00	55.10	88.10	3.27	596.71	873.24	.92	596.71
1209.00	53.60	87.70	4.96	643.00	906.46	.82	643.00
1267.00	51.70	87.70	6.81	689.07	941.64	1.00	689.07
1324.00	53.40	87.40	8.75	734.28	976.30	.92	734.28
1381.00	52.60	87.00	10.97	779.74	1010.61	.46	779.74
1427.00	53.10	88.40	12.44	816.38	1038.39	.81	816.38
1474.00	52.00	90.20	12.90	853.68	1066.97	1.17	853.68



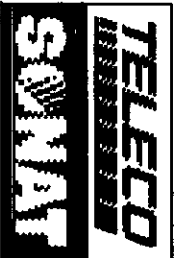
DIRECTIONAL SURVEY LISTING

Company: AGIP SpA

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Well: CLARA W 11 LIR

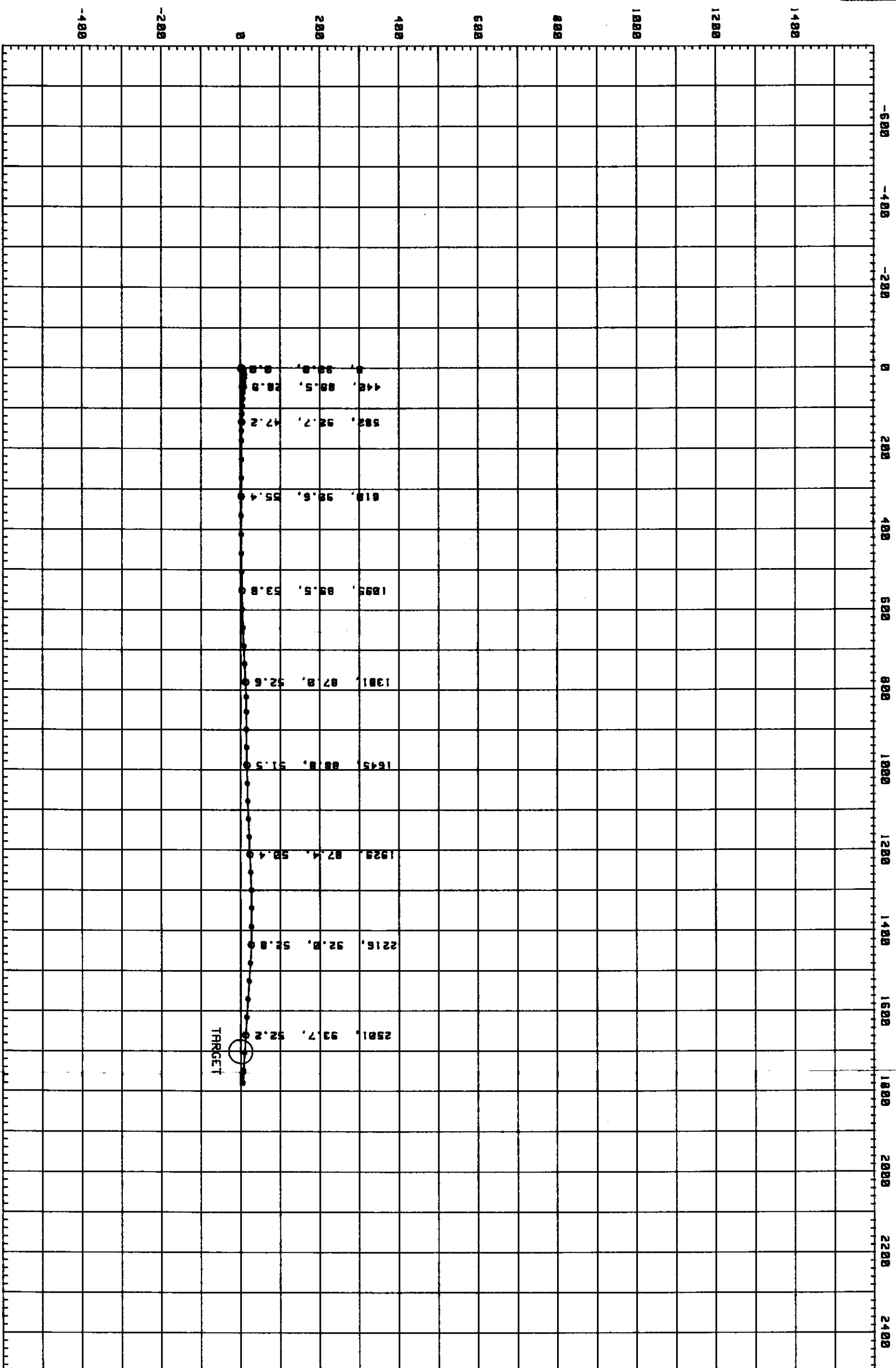
M. Depth Meters	Inc Deg	Azt Deg	NORTH Meters	EAST Meters	TVD Meters	DLS Deg/30m	VS Meters
1531.00	51.90	89.90	12.86	898.57	1102.10	.14	898.57
1588.00	51.80	88.80	13.37	943.39	1137.31	.47	943.39
1645.00	51.50	88.80	14.31	988.08	1172.68	.16	988.08
1703.00	51.70	88.80	15.26	1033.52	1208.70	.11	1033.52
1759.00	52.40	88.40	16.34	1077.67	1243.14	.42	1077.67
1815.00	52.50	87.70	17.85	1122.04	1277.27	.31	1122.04
1872.00	51.00	87.70	19.65	1166.77	1312.56	.80	1166.77
1929.00	50.40	87.40	21.53	1210.84	1348.66	.34	1210.84
1986.00	50.20	87.40	23.52	1254.65	1385.07	.11	1254.65
2044.00	49.50	87.40	25.53	1298.93	1422.47	.37	1298.93
2101.00	52.10	91.30	26.01	1343.08	1458.50	2.13	1343.08
2159.00	53.70	89.50	25.69	1389.34	1493.49	1.13	1389.34
2216.00	52.80	92.00	25.10	1435.00	1527.59	1.17	1435.00
2273.00	51.70	94.10	22.71	1480.00	1562.49	1.07	1480.00
2330.00	52.10	94.10	19.50	1524.74	1597.66	.21	1524.74
2387.00	52.20	93.70	16.44	1569.64	1632.64	.18	1569.64
2444.00	52.10	93.70	13.53	1614.56	1667.61	.05	1614.56
2501.00	52.20	93.70	10.63	1659.47	1702.53	.05	1659.47
2557.00	52.20	93.40	7.89	1703.64	1736.91	.13	1703.64
2613.00	51.30	93.00	5.43	1747.54	1771.58	.52	1747.54
2654.00	49.20	93.70	3.60	1779.01	1797.80	1.61	1779.01



East (meters)

North
(meters)

N



PLAN VIEW

Company: AGIP SpA

Well: CLARR W 11 DIR

Labeled Surveys: M.Depth Azimuth Inclination

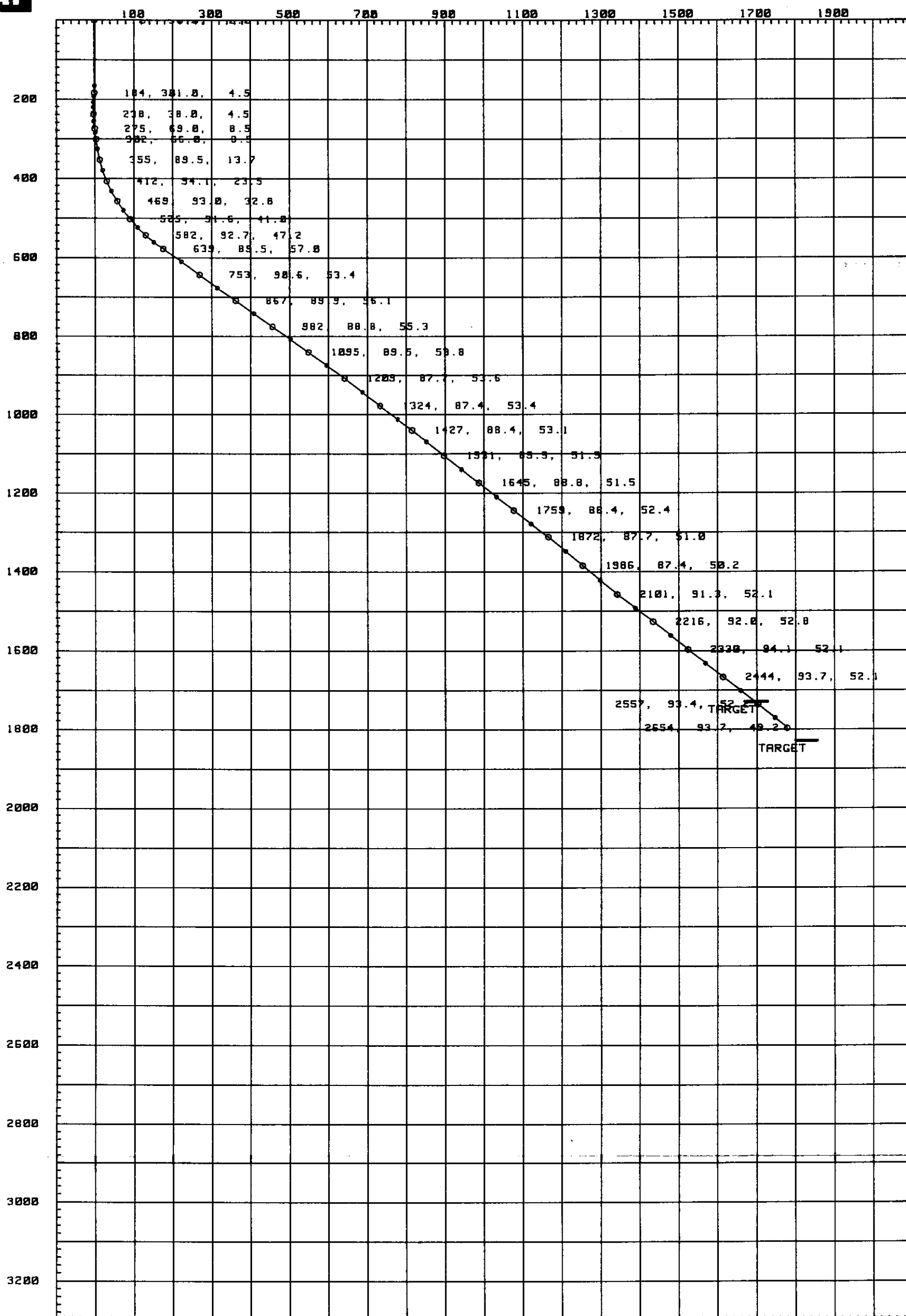
Date: 6 Apr 1988

Scale: 1cm=100(meters)



Horizontal Distance (meters)

True
Vertical
Depth
(meters)



VERTICAL SECTION

Date: 6 Apr 1988
Company: AGIP SpA
Well: CLARA W 11 DIR

Labeled Surveys: M.Depth Azimuth Inclination
V.S. Calc. Method: Overall
Scale: 1cm= 100(meters)



TELECO INC., RAVENNA, ITALY

PERFORMANCE REPORT

Introduction

Teleco MWD Services were utilised in the 12¼" and 8½" hole sections of Clara W 11 Dir with Directional-only MWD services in the 12¼" hole section and Resistivity-directional services in the 8½" hole section.

12¼" Hole Section (311m - 1445m)

A Teleco 8¼" directional tool run behind a Smith F2000S steerable motor system with 1° bent housing drilled this phase in one bit run without problems.

A gyro single shot was run at the first correction below the 13¾" casing shoe to orient the drilling assembly as Teleco magnetic surveys at this depth would have been subject to magnetic interference. Twenty metres below the casing shoe all interference had disappeared and drilling continued using Teleco MWD surveys.

Inclination was built from 8.7° at the casing shoe to a maximum of 56.1° for the tangent section at 5.5 to 6.5° per 30 metres and azimuth was held at approximately 090° throughout.

Occasional orienting was required in the rotary section to hold inclination and reduce the tendency to right-hand walk while rotary drilling. Casing was set at 1442 metres.

8½" Hole Section (1445m - 2675m)

A complete resistivity log was obtained through this section. Three runs were needed, tool 1543-3 failed at 2041m after 307 circulating hours. Prior to failure the tool was shocked repeatedly at connections due to overpull triggering lightly set downhole jars.

The first two assemblies run were of a rotary hold type; the last assembly comprised a Smith F2000S steerable system used in order to maintain control over a tendency to drop angle after 1780m. No significant losses of resistivity data occurred due to either wellbore conditions or drilling practice.



TELECO INC., RAVENNA, ITALY

MAINTENANCE REPORT

EQUIPMENT DESCRIPTION: TR 2300 Surface decoding and
processing equipment (Number 017)

OPERATIONAL PROBLEM: None - operated to Teleco specifications

FAULT FOUND: -

COMMENTS:

--oOo--

EQUIPMENT DESCRIPTION: 8 $\frac{1}{4}$ " Directional-only downhole tool
(Number 884-14)

OPERATIONAL PROBLEM: None - operated to Teleco specifications

FAULT FOUND: -

COMMENTS: This tool completed the
12 $\frac{1}{4}$ " hole section

--oOo--

EQUIPMENT DESCRIPTION: 6 $\frac{3}{4}$ " Resistivity-Directional downhole tool
(Number 1543-5)

OPERATIONAL PROBLEM: Tool stopped transmitting at 2041 metres

FAULT FOUND: -

COMMENTS: Jars fired at every connection during both
bit runs in which this tool was used due to
conditions causing unnecessary
wear on the drill string

--oOo--



TELECO INC., RAVENNA, ITALY

MAINTENANCE REPORT

EQUIPMENT DESCRIPTION: 6¾" Resistivity-directional downhole
tool (Number 1592-7)

OPERATIONAL PROBLEM: None - operated to Teleco specifications

FAULT FOUND: -

COMMENTS: This tool finished the 8½" hole section

—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 18.03.88	10.00 30.03.88
A. HIGGS	08.00 21.03.88	10.00 30.03.88



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	8¼	DIR	38.1
866-21	8¼	DIR	0.0 (Not used)
1543-5	6¾	RES-DIR	37.3
1592-7	6¾	RES-DIR	38.7



TELECO INC., RAVENNA, ITALY

BHA RECORD LISTING

TELECO RUN NUMBER	1	2	3	4	
BIT TYPE	SMITH FDS	HUGHES J1	HUGHES J1	HUGHES J1	
HOLE SIZE	12 $\frac{1}{4}$	8 $\frac{1}{2}$	8 $\frac{1}{2}$	8 $\frac{1}{2}$	
JETS/TFA	4.88	2.95	2.95	2.95	
DEPTH START	311	1445	1787	2059	
DEPTH END	1445	1787	2059	2675	
MIN/MAX/WOB	4/8	10/32	12/18	8/20	
MIN/MAX/RPM	130/210	90/95	60/85	60/85	
ROTARY DRILLING HRS	15.1	18.5	12.0	22.7	
MONEL ABOVE DIR SENSOR	17.4	18.59	18.59	18.34	
MONEL BELOW DIR SENSOR	6.1	9.23	9.23	9.23	
PREDOMINANT FORMATION	CLAYSTONE	CLAYSTONE	CLAYSTONE	CLAYSTONE	

MUD RECORD

DATE	20.03.88	21.03.88	22.03.88	25.03.88	26.03.88
TIME	04.30	06.00	05.00	13.00	07.30
DEPTH	572	1113	1445	1482	1742
MW	1.190	1.230	1.230	1.320	1.350
PV	14	11	14	22	20
YP	6.5	9	8.5	10.5	10
GELS	3/9	3/10	3/9	2.5/11	2.5/9
FILTRATE	8.4	8.2	7.0	6.5	5.0
CHLORIDES	7.3	6.4	8.1	10.2	5.5
PH/ES	9.0	9.0	9.0	10.5	9.5
SOLIDS	14	18	18	21	20
SAND	1.0	0.4	0.4	0.6	0.4
OIL	-	-	-	-	-
WATER	85	82	82	79	80
KcL	-	-	-	-	-
KOH	-	-	-	-	-
KLIGNITE	-	-	-	-	-
MUD TYPE	LS	LS	LS	LS	LS



TELECO INC., RAVENNA, ITALY

MUD RECORD

DATE	27.03.88	28.03.88	28.03.88	28.03.88	29.03.88
TIME	06.30	01.00	07.30	16.30	06.00
DEPTH	1974	2049	2113	2240	2492
MW	1.360	1.370	1.370	1.360	1.370
PV	19	18	21	20	22
YP	10.50	9.0	10.5	10	10.5
GELS	3/10	2.5/8.5	3/11	3/10	3/11
FILTRATE	4.5	4.6	4.7	4.6	4.8
CHLORIDES	6.4	5.8	5.8	5.6	5.8
PH/Mp	9.0	9.5	9.5	9.5	9.0
SOLIDS	22	22	22	22	22
SAND	0.3	0.5	0.6	0.6	0.5
OIL	-	-	-	-	-
WATER	78	78	78	78	78
KcL	-	-	-	-	-
KOH	-	-	-	-	-
KLIGNITE	-	-	-	-	-
MUD TYPE	LS	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

CASING SEAT DETECTION

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 service commenced at 1445m, just below the 9 $\frac{5}{8}$ " casing shoe, and ended at 2659m. A 16" short normal MWD resistivity device was used with readings being connected for downhole mud resistivity (Rm) collar and borehole size. A freshwater mud system resulted in minimum resistivity connections. A complete 8 $\frac{1}{2}$ " hole section log was created in three bit runs.

Run number 2 1445m - 1787m

A largely heatwhen Claystone section with a general shale trend line of approximately 2.8 ohm-m beneath the 9 $\frac{5}{8}$ " casing shoe to around 2.0 ohm-m at the end of the run. The section was relieved by two or three sandstone stringers. These stringers were all water saturated and had resistivity values falling between 1.6 and 1.8 ohm-m.

Run number 3 1787m - 2059m

Once again a heatwhen Claystone section interspersed with occasional water saturated sandstone stringers, none of which showed any evidence of hydrocarbons.

Run number 4 2059m - 2674m

The final run showed a varied interbedded Sand/Claystone succession. Some sands were quite thick, up to 25m (2370m - 2395m), all were water saturated. Only one thin stringer at 2345m showed any evidence of hydrocarbons both in log response (8.5 ohm-m) and the circulation to surface subsequent to drilling of 1.7% gas. In general the Claystones exhibited a resistivity of 2.5 ohm-m, the water wet sands 1.9 ohm-m. Gas readings courtesy of Exploration Logging.



TELECO INC., RAVENNA, ITALY.

END OF WELL REPORT

CLIENT: AGIP S.P.A.

RIG: CORMORANT

FIELD: CLARA OVEST

LOCATION: MARE ADRIATICO

WELL NO: CLARA W 11 D (DIR)

HOLE SECTIONS: 12¼", 8½"

OPERATING DEPTHS: 12¼" SECTION: 308m - 1105m
8½" SECTION: 1105m - 2320m

DATES START: 7th APRIL 1988

END: 16th APRIL 1988

TELECO JOB NO: TIY 076/01/01

PREPARED BY: B. STEWART / A. HIGGS

CHECKED BY:



TELECO INC., RAVENNA, ITALY

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TELECO INC., RAVENNA, ITALY.

RIG REPORT

DRILLING CONTRACTOR:	<u>FORAMER S.A.</u>
RIG NAME:	<u>CORMORANT/NATIONAL N110 UE</u>
RIG TYPE:	<u>PLATFORM</u>
MUD PUMP TYPE:	<u>TRIPLEX</u>
MUD PUMP MAKE:	<u>NATIONAL 12 - P - 60</u>
MUD COMPANY:	<u>AVA S.P.A.</u>
SPUD DATE:	<u>16th MARCH 1988</u>
DIRECTIONAL DRILLING COMPANY:	<u>SMITH INTERNATIONAL ITALIA</u>
SURVEY COMPANY:	<u>SMITH INTERNATIONAL ITALIA</u>
ELECTRIC LOGGING COMPANY:	<u>SCHLUMBERGER</u>
MUD LOGGING COMPANY:	<u>EXPLORATION LOGGING</u>



TELECO INC., RAVENNA, ITALY.

MEASUREMENT SPECIFICATIONS

MEASUREMENT UNITS:	METRIC
DEPTH UNITS:	METRES
DEPTH REFERENCED TO:	DRILL FLOOR
REF. POINT TO SEA LEVEL:	28 METRES
REF. POINT TO SEA BED:	100 METRES
REF. POINT TO DRILL FLOOR:	-
FLOW RATE:	LITRES PER MINUTE
MUD WEIGHT:	SPECIFIC GRAVITY
PLASTIC VISCOSITY:	CENTIPOISE
YELD POINT:	GRAMMES PER SQUARE CENTIMETRE
GEL STRENGTHS:	GRAMMES PER SQUARE CENTIMETRE
FILTRATE:	MILLILITRES
CHLORIDES:	GRAMMES PER LITRE NaCL
MUD RESISTIVITY:	OHM - METRES
TEMPERATURE:	CENTIGRADE
WEIGHT ON BIT:	TONNES
JET SIZE/TFA:	SQUARE CENTIMETRES



TELECO INC., RAVENNA, ITALY.

OPERATIONS SUMMARY

RUN NUMBER:	1	2	3	4	
HOLE SIZE:	12¼"	12¼"	8½"	8½"	
ASSEMBLY TYPE:	ROTARY DROP	KICK OFF	STEERABLE SYSTEM	STEERABLE SYSTEM	
DEPTH START	308	330	1105	1652	
DEPTH END:	330	1105	1652		
TIME/DATE IN HOLE:	880406 17.00	880407 15.00	880410 22.30	880412 15.40	
TIME/DATE OUT HOLE:	880407 14.00	880409 19.45	880412 15.00		
TOOL NUMBER:	B884-14	B884-14	E1592-7	E1592-7	
TOOL TYPE:	D-MTF	D-MTF	RD-MTF	RD-MTF	
DATA RATE: BITS/SECOND	0.4	0.4	0.4	0.4	
NO. TELECO SURVEYS:	3	K.O.	13	24	
SERVICE TYPE:	1	1	4	4	
TIME/DATE FAILURE:	-	-	-	-	
CONFIRMED TELECO FAILURE:	-	-	-	-	
TIME/DATE LOST IN HOLE:	-	-	-	-	



TELECO INC., RAVENNA, ITALY.

RUN DETAIL SUMMARY

RUN NUMBER:	1	2	3	4	
MUD MOTOR TYPE:	-	FS2000 SMITH	FS2000 SMITH	FS2000 SMITH	
BENT SUB:	-	1°BENT HOUSING MOTOR	1°BENT HOUSING MOTOR	1°BENT HOUSING MOTOR	
MUD MOTOR: DRLG HRS:	-	9.0	3.75	12.75	
ROTARY DRLG HRS:	4.0	8.0	23.25	27.25	
CIRC. HRS:	7.0	19.0	30.0	44.5	
AVERAGE FLOW RATE:	525	550	450	450	
MIN/MAX WOB:	3-5	3-8	5-15	5-20	
MIN/MAX RPM:	55-65	45-65	55-65	50-70	
PREDOMINANT FORMATION	CLAYSTONE	CLAYSTONE	CLAYSTONE	CLAYSTONE / SANDS	
MUD TYPE:	L.S.	L.S.	L.S.	L.S.	
AVERAGE MUD WEIGHT	1.84	1.84	1.84	1.36	
MAX SAND CONTENT	0.75	TRACE	TRACE	TRACE	
JARRING:	NO	NO	NO	NO	
DEPTH DRILLED:	22m	775m	547m	668m	

Teleco Oilfield Services Inc.

30 Apr 1988

DIRECTIONAL SURVEY LISTING

Company: AGIP SpA

Well: Clara W 11a DIR

Field: CLARA

Job No: TIY 076/01

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

Proposal Azimuth:	90.00
Total Azimuth Correction:	-.50
Proposal Origin North:	0.00
Proposal Origin East:	0.00



DIRECTIONAL SURVEY LISTING

Company: AGIP SpA

Well: Clara W 11a DIR

Page: 1

M. Depth Meters	Inc Deg	Azt Deg	NORTH Meters	EAST Meters	TVD Meters	DLS Deg/30m	VS Meters
TIE-ON COORDINATES							
302.00	8.50	66.00	5.81	4.37	301.33	0.00	4.37
325.00	7.60	70.20	7.02	7.35	324.10	1.42	7.35
354.00	6.90	79.00	8.00	10.87	352.87	1.38	10.87
382.00	9.00	96.90	8.06	14.69	380.61	3.51	14.69
410.00	9.50	100.40	7.38	19.14	408.24	.82	19.14
439.00	11.10	97.60	6.57	24.26	436.77	1.76	24.26
467.00	14.10	85.30	6.50	30.34	464.10	4.36	30.34
496.00	18.40	84.90	7.19	38.42	491.94	4.52	38.42
524.00	23.30	92.00	7.39	48.36	518.10	5.99	48.36
552.00	25.30	95.10	6.67	59.86	543.62	2.58	59.86
581.00	28.50	96.20	5.37	72.91	569.48	3.40	72.91
610.00	34.50	94.10	4.03	88.00	594.19	6.41	88.00
638.00	37.60	92.30	3.12	104.45	616.83	3.57	104.45
667.00	38.00	92.30	2.41	122.21	639.74	.42	122.21
695.00	38.60	95.50	1.23	139.51	661.72	2.26	139.51
724.00	39.20	94.40	-.34	157.66	684.29	.96	157.66
751.00	42.50	88.80	-.81	175.29	704.72	5.56	175.29
781.00	42.30	89.10	-.43	195.52	726.87	.29	195.52
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837.00	40.70	89.10	.02	232.61	768.82	.89	232.61
865.00	42.80	88.10	.48	251.25	789.71	2.40	251.25
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921.00	43.60	87.40	2.12	289.90	830.19	.65	289.90
950.00	42.80	88.10	2.90	309.74	851.33	.98	309.74
979.00	44.20	86.30	3.88	329.67	872.37	1.96	329.67
1007.00	43.80	86.70	5.06	349.09	892.51	.53	349.09
1036.00	43.20	86.30	6.28	369.01	913.55	.69	369.01
1064.00	43.10	86.70	7.45	388.13	933.97	.32	388.13
1086.00	42.70	86.70	8.31	403.08	950.09	.55	403.08
1131.00	41.20	89.50	9.32	433.13	983.56	1.62	433.13
1188.00	42.90	89.90	9.52	471.31	1025.88	.92	471.31
1245.00	43.00	90.20	9.48	510.15	1067.61	.12	510.15
1302.00	42.20	90.60	9.22	548.73	1109.56	.45	548.73
1330.00	42.10	90.60	9.02	567.52	1130.32	.11	567.52
1387.00	42.20	90.90	8.52	605.76	1172.58	.12	605.76
1416.00	40.50	90.60	8.27	624.92	1194.35	1.80	624.92
1473.00	40.10	92.00	7.43	661.78	1237.82	.53	661.78
1530.00	39.30	90.20	6.73	698.18	1281.68	.75	698.18



DIRECTIONAL SURVEY LISTING

Company: AGIP SpA

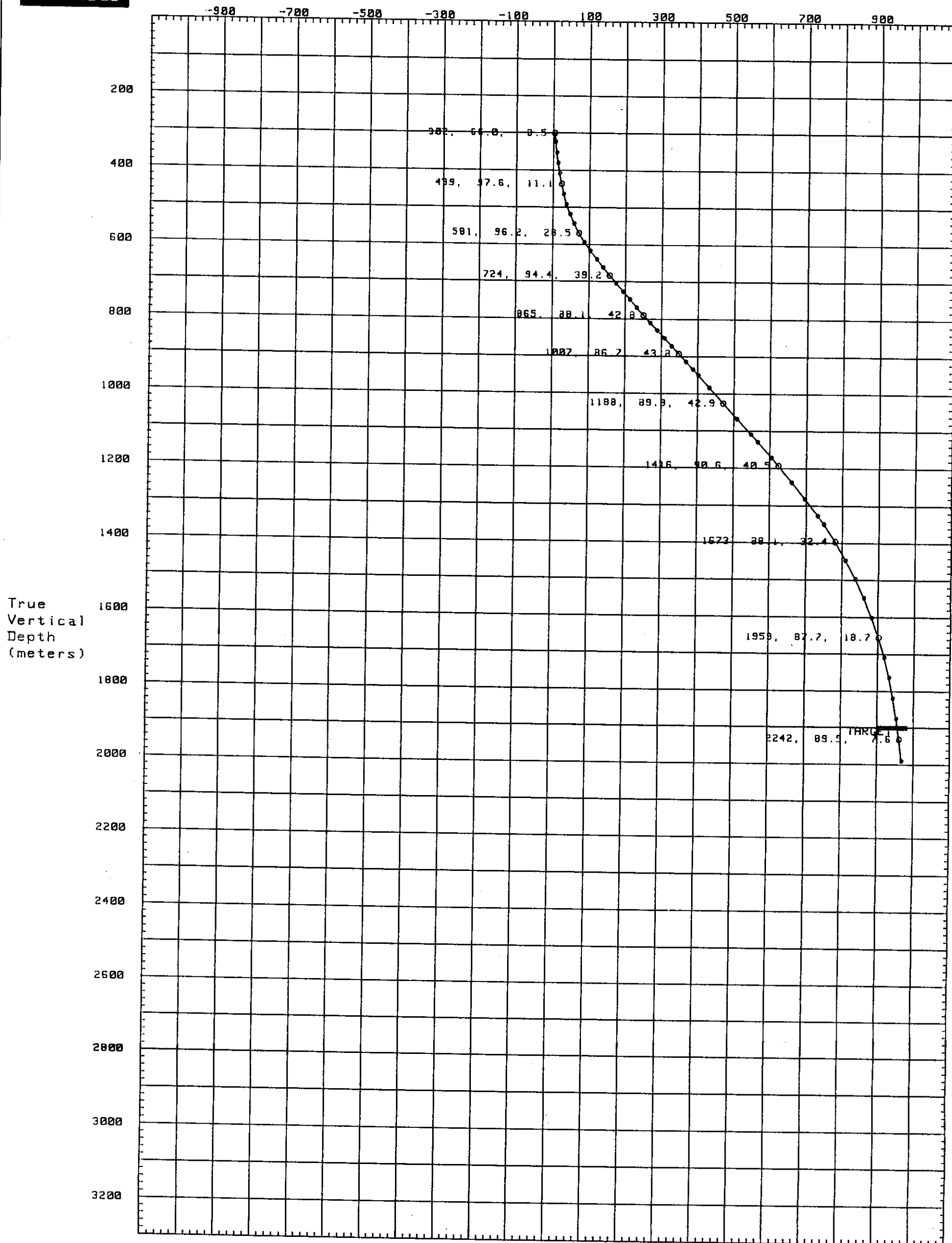
Well: Clara W 11a DIR

Page: 2

M. Depth Meters	Inc Deg	Azt Deg	NORTH Meters	EAST Meters	TVD Meters	DLS Deg/30m	VS Meters
1588.00	36.50	89.50	6.81	733.80	1327.44	1.49	733.80
1616.00	35.70	90.90	6.76	750.30	1350.07	1.25	750.30
1673.00	32.40	88.10	7.00	782.20	1397.29	1.95	782.20
1730.00	28.40	89.90	7.53	811.03	1446.44	2.19	811.03
1787.00	27.90	86.70	8.33	837.90	1496.71	.85	837.90
1844.00	24.60	82.80	10.58	862.99	1547.82	1.99	862.99
1901.00	20.30	84.90	12.95	884.62	1600.49	2.34	884.62
1959.00	18.70	87.70	14.22	903.94	1655.16	.97	903.94
2015.00	15.50	88.40	14.79	920.39	1708.68	1.75	920.39
2071.00	12.80	87.70	15.24	934.07	1762.98	1.47	934.07
2128.00	10.50	85.30	15.92	945.56	1818.80	1.26	945.56
2185.00	8.00	88.10	16.48	954.70	1875.06	1.36	954.70
2242.00	7.60	89.50	16.64	962.43	1931.53	.24	962.43
2300.00	7.10	88.40	16.78	969.85	1989.05	.27	969.85



Horizontal Distance (meters)



VERTICAL SECTION

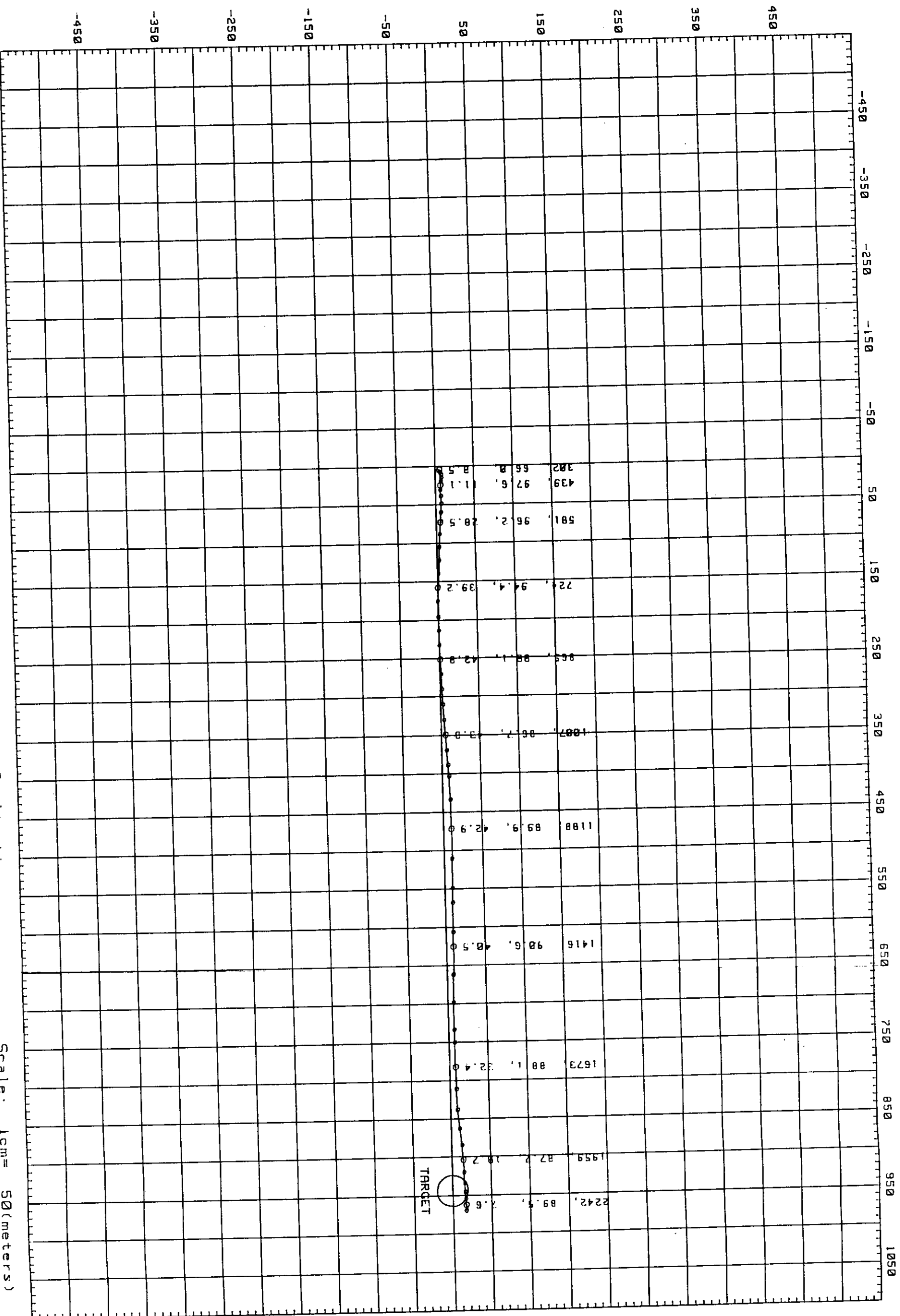
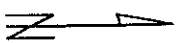
Date: 1 May 1988
Company: Agip SpA
Well: Clara W 11a DIR

Labeled Surveys: M.Depth Azimuth Inclination
V.S. Calc. Method: Overall
Scale: 1cm=100(meters)



East (meters)

North
(meters)



PLAN VIEW

Labeled Surveys: M.Depth Azimuth Inclination

Company: Agip SpA
Well: Clara W 11a DIR

Date: 1 May 1988



TELECO INC., RAVENNA, ITALY

PERFORMANCE REPORT

Teleco MWD services were employed in the 12¼" and 8½" hole sections only, with the Directional service used in both hole sizes and MWD Resistivity logging in the 8½" hole section.

12¼" Hole Section (308m - 1105m)

No problem occurred during this hole section, it was completed in two runs. The first run tagged and reamed cement below the 13¾" shoe set at 508m. A rotary drop assembly was used which deviated out of the low side of the hole to 8.4° at 320m. All azimuth readings were affected by the proximity of casing. The second run used a Smith 1° Bent Housing motor. The inclination was dropped to 6.3° at an azimuth of 073.0° before the assembly was orientated for maximum build. TD for this section was 1105m by which time the well had built to 42.7° at an azimuth of 086.7°.

8½" Hole Section (1105m - 2320m)

The first run used the Resistivity MWD tool. A good, complete log was obtained. Drilling was in rotary mode, the assembly hold angle and azimuth and finally towards the end of the run the assembly was orientated to institute some angle drop. A highside tool face of 180 - 200° was used and the inclination fell to 36.2° when we pulled out of the hole. As with other wells, we orientated for one joint, reamed the section for the resistivity data then rotary drilled the remainder of the stand. Finally pulled out of the hole due to nil progress. Bit found to be badly drilled at surface. The next bit run used the same assembly with a new bit. Again it held angle and azimuth in rotary mode so all the angle reduction had to be orientated away. One or two problems with the DAQ meant there was a loss of WOB and ROP data in places although no loss of resistivity data occurred.



TELECO INC., RAVENNA, ITALY

MAINTENANCE REPORT

EQUIPMENT DESCRIPTION: TR2300-017

OPERATIONAL PROBLEM: MRU did not decode even though tool pulse was excellent, no visible noise in valve offs, and moderate thresholds were used.

FAULT FOUND: None visible, back up MRU failed to boot. Used TR 400 for kick off.

COMMENTS: Lock up problems encountered on Clara W 11 Dir need to be rebooted frequently to continue to decode.

--oOo--

EQUIPMENT DESCRIPTION: 8 $\frac{1}{4}$ " Directional MWD Collar
(Number 884-14)

OPERATIONAL PROBLEM: None - operated to Teleco specifications

FAULT FOUND: -

COMMENTS: This tool completed the 12 $\frac{1}{4}$ " hole section with no problems

--oOo--

EQUIPMENT DESCRIPTION: 6 $\frac{3}{4}$ " Resistivity-Directional MWD Collar
(Number 1592-7)

OPERATIONAL PROBLEM: None

FAULT FOUND: -

COMMENTS: Performed to Teleco specifications

--oOo--



TELECO INC., RAVENNA, ITALY

MAINTENANCE REPORT

EQUIPMENT DESCRIPTION: TR 400-210

OPERATIONAL PROBLEM: Blew three fuses. F3, F4, 54 (.70 mAmps) whilst rig performing wiper trip. D3 locked up - had to power off and on before it would start to update again.

FAULT FOUND: No obvious faults, topaz fuse intact

COMMENTS: Suggest all fuse ratings are checked up in TUK

--oOo--

EQUIPMENT DESCRIPTION: 6¾" Resistivity-directional MWD collar (Number 1543-8)

OPERATIONAL PROBLEM: None

FAULT FOUND: -

COMMENTS: Used as back up only

--oOo--

EQUIPMENT DESCRIPTION:

OPERATIONAL PROBLEM:

FAULT FOUND:

COMMENTS:

--oOo--



TELECO INC., RAVENNA, ITALY.

ENGINEER DEPLOYMENT SUMMARY

<u>ENGINEER</u>	<u>DEPARTURE TIME/DATE</u>	<u>RETURN TIME/DATE</u>
A. HIGGS	08:30 06.04.88	10:30 16.04.88
B. STEWART	07:30 10.04.88	10:30 16.04.88



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 $\frac{1}{4}$ "	DIR	218.0 HRS.
866-20	8 $\frac{1}{4}$ "	DIR	0.0 (BACK-UP ONLY)
1592-7	6 $\frac{3}{4}$ "	RES/DIR	74.5 HRS.
1543-6	6 $\frac{3}{4}$ "	RES/DIR	0.0 (BACK-UP ONLY)



TELECO INC., RAVENNA, ITALY

BHA RECORD LISTING

TELECO RUN NUMBER	1	2	3	4	
BIT TYPE	SMITH FDS	SMITH FDS	SMITH FDS	SMITH FDS	
HOLE SIZE	12¼"	12¼"	8½"	8½"	
JETS/TFA	3x18	3 x 18	3 x 15	3 x 15	
DEPTH START	308	330	1105	1652	
DEPTH END	330	1105	1652	2320	
MIN/MAX/WOB	2-4	3-8	5-15	5-20	
MIN/MAX/RPM	60-70	45-65	55-65	50-70	
ROTARY DRILLING HRS	4.0	18.5	27.0	27.25	
MONEL ABOVE DIR SENSOR	18.20	18.20	20.7	20.7	
MONEL BELOW DIR SENSOR	4.73	6.15	9.0	9.0	
PREDOMINANT FORMATION	CLAYSTONE	CLAYSTONE	CLAYSTONE	CLAYSTONE	



TELECO INC., RAVENNA, ITALY

MUD RECORD

DATE:	07.04.88	08.04.88	09.04.88	10.04.88	11.04.88
TIME:	-	-	-	-	-
DEPTH:	-	380	869	1105	-
MW:	1.310	1.17	1.27	1.81	1.35
PV:	19	16	17	18	18
YP:	5	6	7.5	6.0	8.0
GELS:	2/6	2/5	2.5/9	8/6	3/9
FILTRATE:	4.8	7.1	6.8	6.2	5.4
CHLORIDES:	6	6.4	5.8	5.6	5.9
pH:	9.5	10.0	10.0	9.5	10
SOLIDS:	14	12	15	16	15
SAND:	TRACE	TRACE	TRACE	TRACE	TRACE
OIL:	-	-	-	-	-
WATER:	86	82	85	84	85
TYPE					



TELECO INC., RAVENNA, ITALY

MUD RECORD

DATE:	12.04.88	13.04.88	14.04.88	15.04.88	
TIME:	-	-	-	-	
DEPTH:	1410	1825	2197	2233	
MW:	1.36	1.36	1.37	1.37	
PV:	19	19	18	18	
YP:	8	9	9	9	
GELS:	2/9	3/9	3/9	3/9	
FILTRATE:	5.0	4.1	4.0	4.0	
CHLORIDES:	5.8	8.1	5.84	5.84	
pH:	10.0	9.0	9.0	9.0	
SOLIDS:	16	18	18	18	
SAND:	TRACE	TRACE	TRACE	TRACE	
OIL:	-	-	-	-	
WATER:	84	82	82	82	
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

CASING SEAT DETECTION

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 2320 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 resistivity log of the 8 $\frac{1}{2}$ " hole section was produced. Correlation with offset well logs was successful in identifying proposed target sands.

Run Number 2 (1105m - 1652m)

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 Claystone section was relieved by a number of thin water-saturated Sand stringers with resistivity values falling to 1.4 ohm-m.

Run Number 3 (1652m - 2320m)

The Resistivity trend continued as in previous run, indicating a predominantly Claystone formation intermixed with various water-saturated and gas Sands. During these Sandstone stringers the resistivity varied from 1.3 ohm-m to 6.5 ohm-m, the latter corresponding to 4.2% Methane and Ethane (Courtesy of Exploration Logging).



TELECO INC., RAVENNA, ITALY.

END OF WELL REPORT

CLIENT: AGIP S.P.A.

RIG: CORMORANT

FIELD: CLARA OVEST

LOCATION: MARE ADRIATICO

WELL NO: CLARA W 11 A DIR 2' FORO

HOLE SECTIONS: 8½"

OPERATING DEPTHS: 1680m - 2371m

DATES START: 30th APRIL 1988

END: 2nd MAY 1988

TELECO JOB NO: TIY 076/02

PREPARED BY: B. STEWART

CHECKED BY: _____



TELECO INC., RAVENNA, ITALY

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RIG REPORT

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SURVEY PLOTS

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MAINTENANCE REPORT

ENGINEER DEPLOYMENT SUMMARY

TOOL DEPLOYMENT SUMMARY

BHA RECORD LISTING

MUD RECORD

FORMATION EVALUATION SERVICE REPORT

MWD LOG REPORT



TELECO INC., RAVENNA, ITALY.

RIG REPORT

DRILLING CONTRACTOR:	<u>FORAMER S.A.</u>
RIG NAME:	<u>CORMORANT / NATIONAL N110 UE</u>
RIG TYPE:	<u>PLATFORM</u>
MUD PUMP TYPE:	<u>TRIPLEX</u>
MUD PUMP MAKE:	<u></u>
MUD COMPANY:	<u>AVA S.P.A.</u>
SPUD DATE:	<u>16th MARCH 1988</u>
DIRECTIONAL DRILLING COMPANY:	<u>SMITH INTERNATIONAL ITALIA</u>
SURVEY COMPANY:	<u>SMITH INTERNATIONAL ITALIA</u>
ELECTRIC LOGGING COMPANY:	<u>SCHLUMBERGER</u>
MUD LOGGING COMPANY:	<u>EXPLORATION LOGGING</u>



TELECO INC., RAVENNA, ITALY.

MEASUREMENT SPECIFICATIONS

MEASUREMENT UNITS:	METRIC
DEPTH UNITS:	METRES
DEPTH REFERENCED TO:	DRILL FLOOR
REF. POINT TO SEA LEVEL:	28 METRES
REF. POINT TO SEA BED:	100 METRES
REF. POINT TO DRILL FLOOR:	-
FLOW RATE:	LITRES PER MINUTE
MUD WEIGHT:	SPECIFIC GRAVITY
PLASTIC VISCOSITY:	CENTIPOISE
YIELD POINT:	GRAMMES PER SQUARE CENTIMETRE
GEL STRENGTHS:	GRAMMES PER SQUARE CENTIMETRE
FILTRATE:	MILLILITRES
CHLORIDES:	GRAMMES PER LITRE NaCl
MUD RESISTIVITY:	OHM - METRES
TEMPERATURE:	CENTIGRADE
WEIGHT ON BIT:	TONNES
JET SIZE/TFA:	SQUARE CENTIMETRES



TELECO INC., RAVENNA, ITALY.

OPERATIONS SUMMARY

RUN NUMBER:	1				
HOLE SIZE:	8 1/4"				
ASSEMBLY TYPE:	STEERABLE SYSTEM				
DEPTH START	1680				
DEPTH END:	2371				
TIME/DATE IN HOLE:	06:30 30.04.88				
TIME/DATE OUT HOLE:	11:30 03.05.88				
TOOL NUMBER:	1592-7				
TOOL TYPE:	RRD-MTF				
DATA RATE: BITS/SECOND	0.4 BPS				
NO. TELECO SURVEYS:	15				
SERVICE TYPE:	4				
TIME/DATE FAILURE:	-				
CONFIRMED TELECO FAILURE:	-				
TIME/DATE LOST IN HOLE:	-				



TELECO INC., RAVENNA, ITALY.

RUN DETAIL SUMMARY

RUN NUMBER:	1				
MUD MOTOR TYPE:	FS 2000 SMITH				
BENT SUB:	1° BENT HOUSING				
MUD MOTOR: DRLG HRS:	30.0				
ROTARY DRLG HRS:	13.0				
CIRC. HRS:	57.0				
AVERAGE FLOW RATE:	400				
MIN/MAX WOB:	5/20				
MIN/MAX RPM:	60/70				
PREDOMINANT FORMATION	CLAYSTONE				
MUD TYPE:	L.S.				
AVERAGE MUD WEIGHT	1.45				
MAX SAND CONTENT	TRACE				
JARRING:	NO				
DEPTH DRILLED:	691m				

Teleco Oilfield Services Inc.

3 May 1988

DIRECTIONAL SURVEY LISTING

Company: AGIP SpA

Well: Clara W 11a DIR 2'Foro

Field: Clara

Job No: TIY 076/02

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

Proposal Azimuth:	90.00
Total Azimuth Correction:	-.50
Proposal Origin North:	0.00
Proposal Origin East:	0.00



DIRECTIONAL SURVEY LISTING

Company: AGIP SpA

Well: Clara W 11a DIR 2'Foro

Page: 1

M. Depth Meters	Inc Deg	Azt Deg	NORTH Meters	EAST Meters	TVD Meters	DLS Deg/30m	VS Meters
TIE-ON COORDINATES							
302.00	8.50	66.00	5.81	4.37	301.33	0.00	4.37
325.00	7.60	70.20	7.02	7.35	324.10	1.42	7.35
354.00	6.90	79.00	8.00	10.87	352.87	1.38	10.87
382.00	9.00	96.90	8.06	14.69	380.61	3.51	14.69
410.00	9.50	100.40	7.38	19.14	408.24	.82	19.14
439.00	11.10	97.60	6.57	24.26	436.77	1.76	24.26
467.00	14.10	85.30	6.50	30.34	464.10	4.36	30.34
496.00	18.40	84.90	7.19	38.42	491.94	4.52	38.42
524.00	23.30	92.00	7.39	48.36	518.10	5.99	48.36
552.00	25.30	95.10	6.67	59.86	543.62	2.58	59.86
581.00	28.50	96.20	5.37	72.91	569.48	3.40	72.91
610.00	34.50	94.10	4.03	88.00	594.19	6.41	88.00
638.00	37.60	92.30	3.12	104.45	616.83	3.57	104.45
667.00	38.00	92.30	2.41	122.21	639.74	.42	122.21
695.00	38.60	95.50	1.23	139.51	661.72	2.26	139.51
724.00	39.20	94.40	-.34	157.66	684.29	.96	157.66
751.00	42.50	88.80	-.81	175.29	704.72	5.56	175.29
781.00	42.30	89.10	-.43	195.52	726.87	.29	195.52
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837.00	40.70	89.10	.02	232.61	768.82	.89	232.61
865.00	42.80	88.10	.48	251.25	789.71	2.40	251.25
893.00	44.20	87.40	1.24	270.51	810.02	1.61	270.51
921.00	43.60	87.40	2.12	289.90	830.19	.65	289.90
950.00	42.80	88.10	2.90	309.74	851.33	.98	309.74
979.00	44.20	86.30	3.88	329.67	872.37	1.96	329.67
1007.00	43.80	86.70	5.06	349.09	892.51	.53	349.09
1036.00	43.20	86.30	6.28	369.01	913.55	.69	369.01
1064.00	43.10	86.70	7.45	388.13	933.97	.32	388.13
1086.00	42.70	86.70	8.31	403.08	950.09	.55	403.08
1131.00	41.20	89.50	9.32	433.13	983.56	1.62	433.13
1188.00	42.90	89.90	9.52	471.31	1025.88	.92	471.31
1245.00	43.00	90.20	9.48	510.15	1067.61	.12	510.15
1302.00	42.20	90.60	9.22	548.73	1109.56	.45	548.73
1330.00	42.10	90.60	9.02	567.52	1130.32	.11	567.52
1387.00	42.20	90.90	8.52	605.76	1172.58	.12	605.76
1416.00	40.50	90.60	8.27	624.92	1194.35	1.80	624.92
1473.00	40.10	92.00	7.43	661.78	1237.82	.53	661.78
1530.00	39.30	90.20	6.73	698.18	1281.68	.75	698.18



DIRECTIONAL SURVEY LISTING

Company: AGIP SpA

Well: Clara W 11a DIR 2'Foro

Page: 2

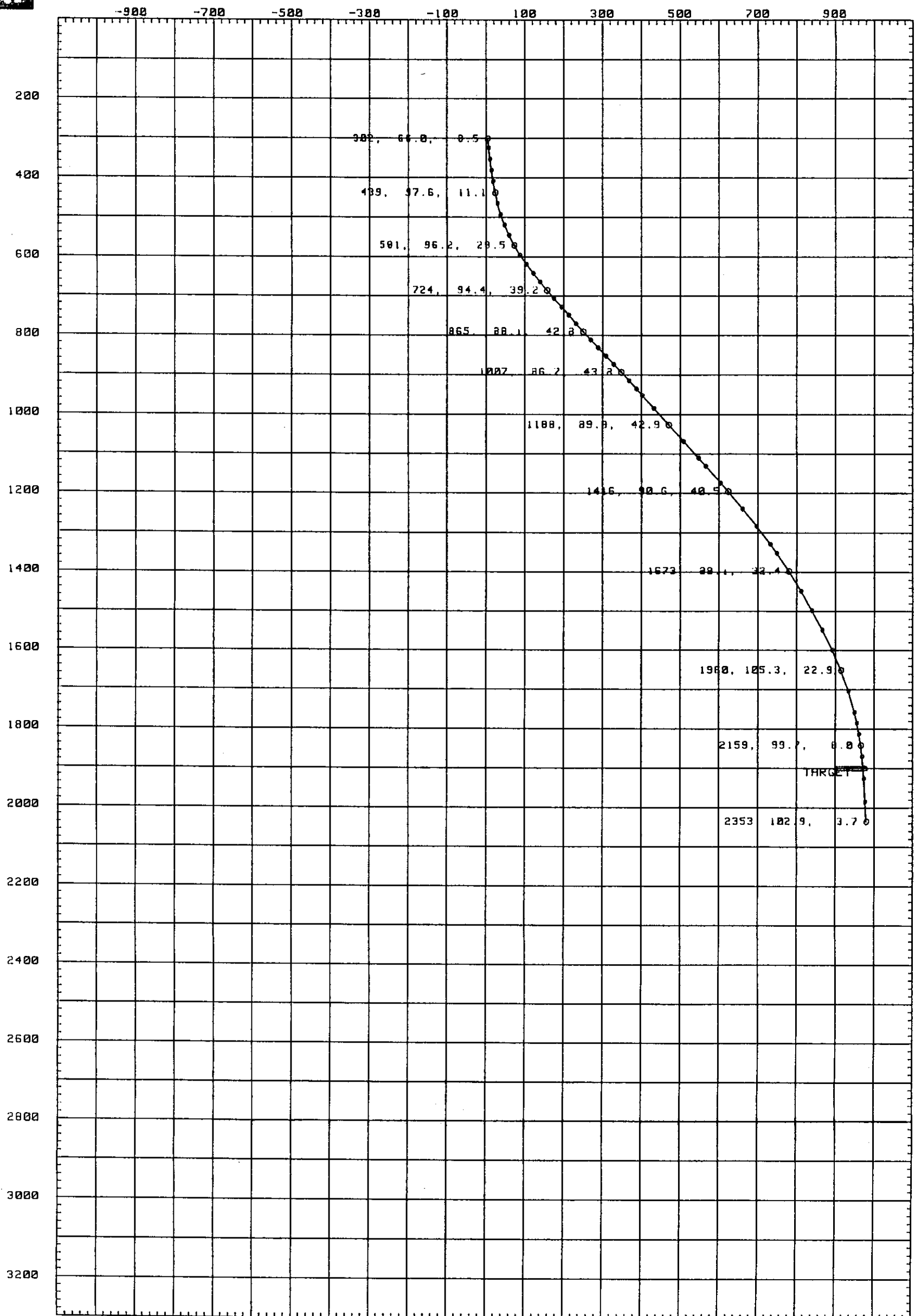
M. Depth Meters	Inc Deg	Azt Deg	NORTH Meters	EAST Meters	TVD Meters	DLS Deg/30m	VS Meters
1588.00	36.50	89.50	6.81	733.80	1327.44	1.49	733.80
1616.00	35.70	90.90	6.76	750.30	1350.07	1.25	750.30
1673.00	32.40	88.10	7.00	782.20	1397.29	1.95	782.20
1732.00	30.70	87.40	8.21	813.05	1447.57	.90	813.05
1789.00	28.90	97.20	7.14	841.27	1497.06	2.77	841.27
1846.00	29.10	100.40	2.92	868.56	1546.91	.84	868.56
1903.00	25.40	103.60	-2.46	894.09	1597.58	2.13	894.09
1960.00	22.90	105.30	-8.26	916.67	1649.59	1.39	916.67
2016.00	18.50	101.80	-12.96	935.89	1701.96	2.49	935.89
2073.00	14.50	100.80	-16.15	951.76	1756.61	2.14	951.76
2101.00	12.70	99.30	-17.30	958.24	1783.82	2.00	958.24
2130.00	10.30	99.00	-18.22	963.95	1812.24	2.52	963.95
2159.00	8.00	99.70	-18.97	968.50	1840.86	2.42	968.50
2187.00	6.20	108.50	-19.78	971.85	1868.65	2.28	971.85
2215.00	4.00	105.70	-20.52	974.22	1896.54	2.41	974.22
2244.00	3.60	103.60	-21.01	976.08	1925.47	.45	976.08
2303.00	3.80	105.00	-21.95	979.77	1984.35	.11	979.77
2353.00	3.70	102.90	-22.74	982.95	2034.24	.10	982.95





Horizontal Distance (meters)

True
Vertical
Depth
(meters)



VERTICAL SECTION

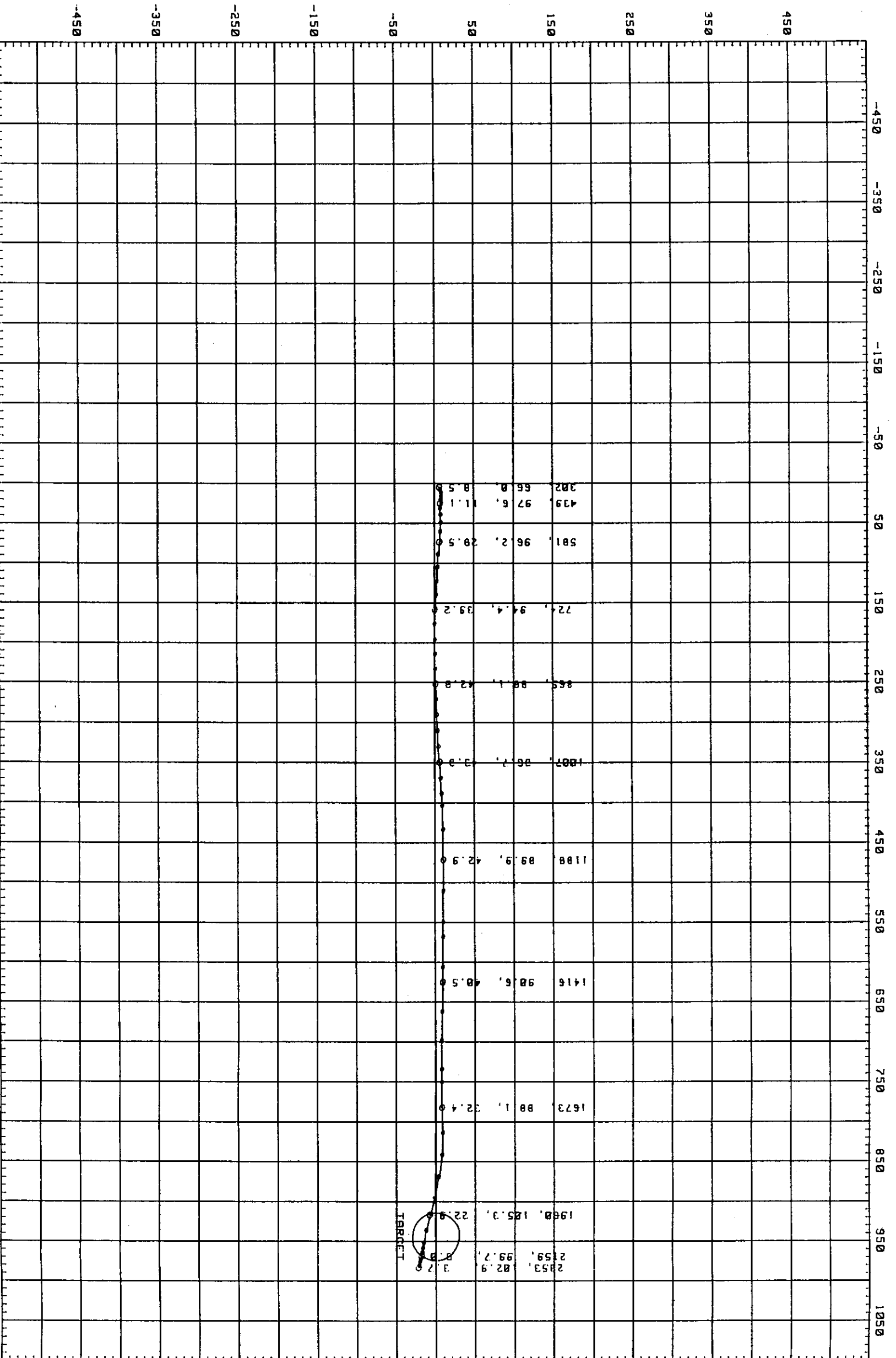
Date: 3 May 1988
Company: Agip SpA
Well: Clara W 11a DIR

Labeled Surveys: M.Depth Azimuth Inclination
V.S. Calc. Method: Overall
Scale: 1cm= 100(meters)



East (meters)

North
(meters)



PLAN VIEW

Company: Agip SpA

Well: Clara W 11a DIR

Labeled Surveys: M.Depth Azimuth Inclination

Scale: 1cm= 50(meters)

Date: 3 May 1988



TELECO INC., RAVENNA

PERFORMANCE REPORT

8½" Hole Section (1680m - 2371m)

A directional resistivity service was provided during the drilling of this 8½" hole section, to aid in correlation, lithology identification and casing point selection.

One downhole assembly (1592-7) was used to drill from 1680 to TD of well at 2371m with no problems experienced.

A good resistivity log was produced despite relatively high rates of logging, due to using a Smith steerable system, which was utilised predominantly in steering mode with the Teleco tool supplying tool face information only in non-rotary mode.

Therefore resistivity data had to be obtained using a technique of reaming after drilling.

One problem with the DAQ meant there was a loss of WOB and ROP over one area although no loss of resistivity occurred.



TELECO INC., RAVENNA, ITALY

MAINTENANCE REPORT

EQUIPMENT DESCRIPTION: TR2300-017 Surface equipment

OPERATIONAL PROBLEM: System unable to monitor hookload frequency, causing a loss of depth tracking and subsequently ROP and WOB. This is an intermittent problem.

FAULT FOUND:

COMMENTS:

---oOo---

EQUIPMENT DESCRIPTION:

OPERATIONAL PROBLEM: None - operated to Teleco specifications

FAULT FOUND: -

COMMENTS: Total circ. hrs. this run 57.0

---oOo---

EQUIPMENT DESCRIPTION: DHA : E 1543-6

OPERATIONAL PROBLEM: None

FAULT FOUND: -

COMMENTS: Used as back-up only

---oOo---



TELECO INC., RAVENNA, ITALY.

ENGINEER DEPLOYMENT SUMMARY

<u>ENGINEER</u>	<u>DEPARTURE TIME/DATE</u>	<u>RETURN TIME/DATE</u>
B. STEWART	13:00 29.04.88	13:00 04.05.88
A. BOLLINGER	13:00 30.04.88	11:00 02.05.88



TELECO INC., RAVENNA, ITALY.

TOOL DEPLOYMENT SUMMARY

<u>TOOL NO:</u>	<u>O.D.</u>	<u>SERVICE TYPE</u>	<u>TOTAL CIRC. HOURS</u>
E 1592-7	6 $\frac{3}{4}$	RD	57.0
E 1543-6	6 $\frac{3}{4}$	RD	0.0 (Back-up only)



TELECO INC., RAVENNA, ITALY

BHA RECORD LISTING

TELECO RUN
NUMBER

1

BIT TYPE

ROCK BIT

HOLE SIZE

8½"

JETS/TFA

15,15,15

DEPTH START

1680

DEPTH END

2371

MIN/MAX/WOB

5/20

MIN/MAX/RPM

60/70

ROTARY
DRILLING HRS

13.0

MONEL ABOVE
DIR SENSOR

19.51

MONEL BELOW
DIR SENSOR

10.22

PREDOMINANT
FORMATION

CLAYSTONE



TELECO INC., RAVENNA, ITALY

MUD RECORD

DATE:	30.04.88	01.05.88	02.05.88	03.05.88	
TIME:					
DEPTH:	1765	2000	2200	2371	
MW:	1.64	1.44	1.45	1.45	
PV:	24	18	19	19	
YP:	10	9	8	9	
GELS:	5/28	2/13	3/10	3/9	
FILTRATE:	8	5.4	5.0	4.5	
CHLORIDES:	7	6.4	7.88	6.2	
pH:	11.0	10.0	10.0	10.0	
SOLIDS:	27	18	18	18	
SAND:	TR	TR	TR	TR	
OIL:	-	-	-	-	
WATER:	73	82	82	82	
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

CASING SEAT DETECTION

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 at 1707 metres (kick point) and ended at 2371 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 being applied to the apparent resistivity (R_a). Correlation with offset well logs was successful in identifying proposed target sands and lithology tops.

Run Number 1 (1688m - 2371m)

Resistivity readings during this run indicated a predominantly Claystone formation with values starting at approximately 2.0 ohm-m and ending at approximately 3.5 ohm-m. This Claystone formation was inter-spaced with various water-saturated and gas Sands.

During these Sandstone stringers the resistivity values varied from 1.3 ohm-m (water wet) to 5.0 ohm-m (gas sand), with latter corresponding to 1.27% total gas (Courtesy of Exploration Logging).