Phillips Australian Oil Company

ATHENE No. 1

Geoservices Well Report

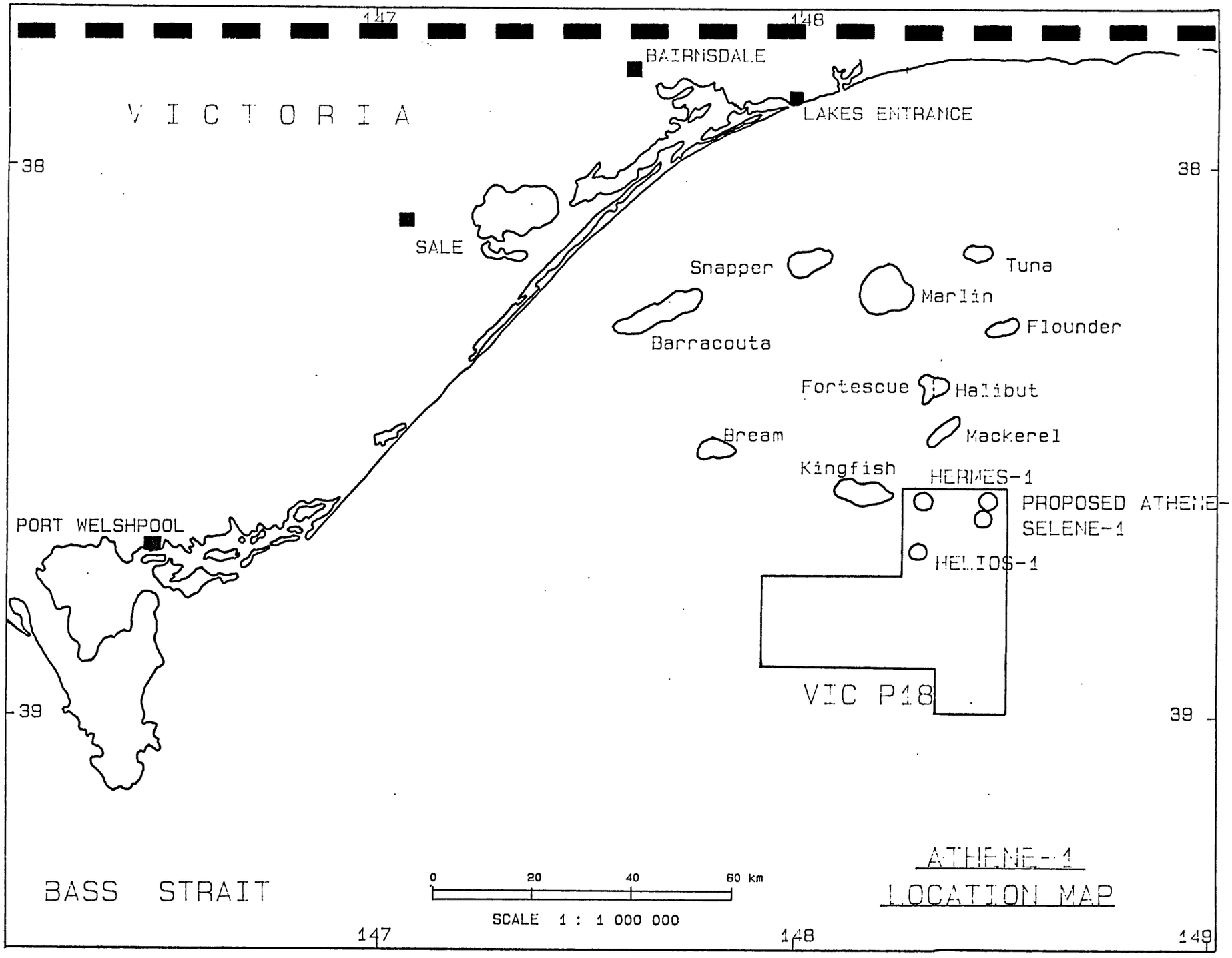
W817

ADDENDUM 2

CONTENTS

GENERAL WELL DATA

Company Name	:	Phillips Aust Oil Co.
Well Name	:	Athene # 1
Contract Area	:	VIC P18 Bass Straits.
Country	:	Australia
Location	:	Latitude 38 35 52.145" S
	:	Longitude 148 27 20.164" E
Water Depth	:	265.1 m
Elevation KB AMSL	:	22.2 m
Elevation KB	:	287.3 m
Total Depth	:	3385.0 m
Spud Date	:	22 May 1983
Reached TD on	:	7 July 1983
Plugged on	:	9 July 1983
Type of Well	:	Wildcat
Primary Objective	:	Top Latrobe and Intra-Latrobe
Drilling Contractor	:	Diamond "M"
Rig Name & Type	:	Diamond "M" Epoch - Semi-submersible
Engineers	:	Andy Buffin Nick Hardy
	:	Dave Andrew Chris Ruffle
	:	James Guy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0 20 40 60 km
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ATHENE # 1

WELL SUMMARY

ATHENE # 1 was a vertical exploration well drilled in the North-Eastern corner of Permit VIC/P18, near to SELENE # 1 a well drilled by Phillips in early 1983. The exact location was on Shot Point 1809, line G72A-601.

ATHENE # 1 was programmed to penetrate the large Intra-Latrobe sand body of Lower Palaeocene age.

The objectives of ATHENE # 1 were:

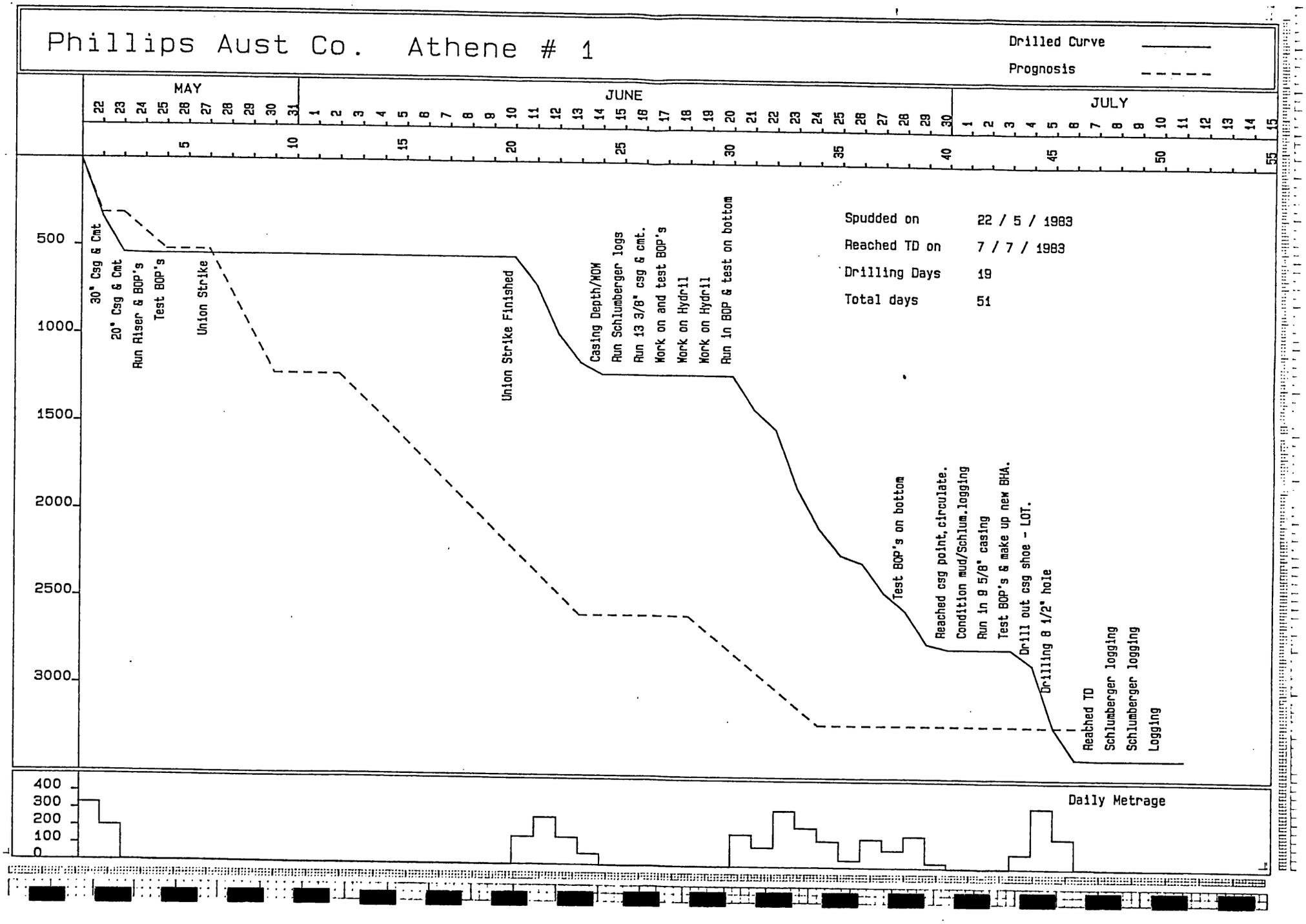
a) Evaluate the Hydrocarbon potential of the Latrobe sequences.
b) Evaluate the stratigraphic facies relatioships of the Latrobe.

Both of the above points were to be examined down to the Cretaceous seismic marker - the Upper Cretaceous unconformity. This information was then to be correlated with that obtained in SELENE # 1.

ATHENE # 1 was soudded on the 22 May 1983 and reached TD on the 7 July 1983, a total of 47 days (this included about 15 1/2 days of Union strike from the 25 May to 10 June). 10 bits were used to drill the entire well. No overpressure was detected (see overpressure section).

After having logged the 8 1/2" open hole, the well was plugged and abandonded in Mid July.

Phillips Aust Co. Athene # 1



Geoservices overseas S.A.

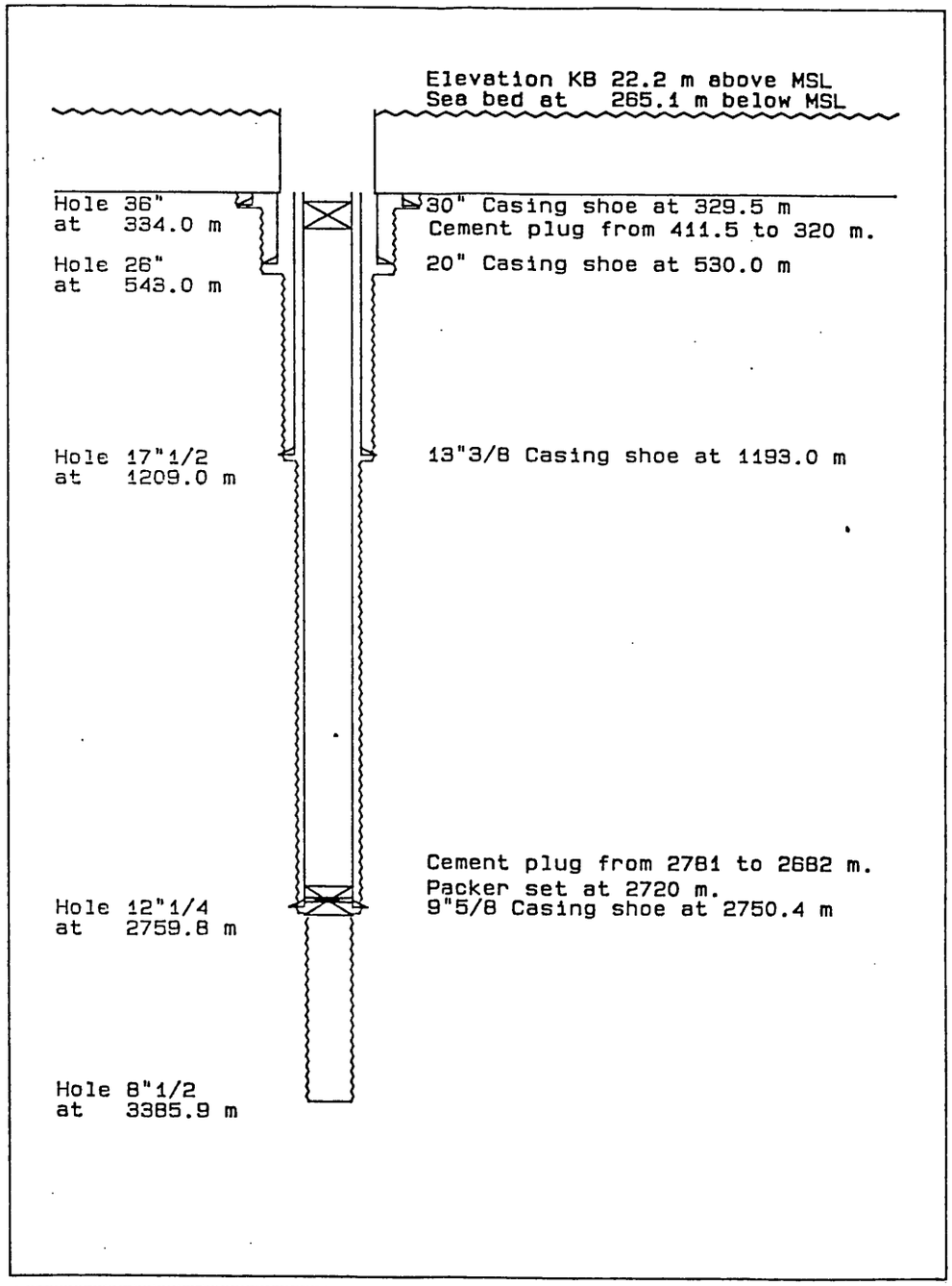
ZERO

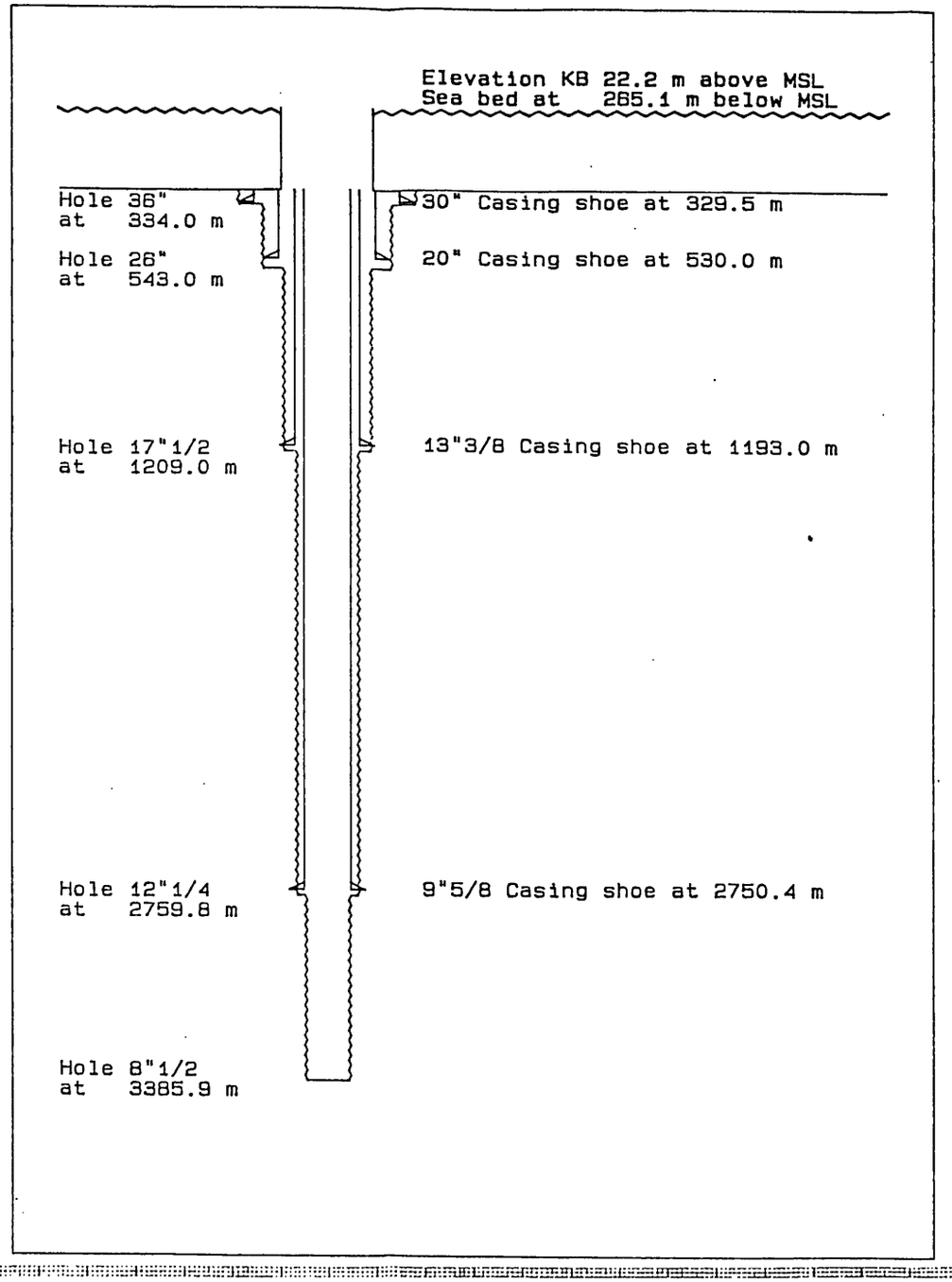
Phillips Aust Co. Athene # 1 BIT REPORT

BIT No	TYPE	SIZE	NOZZLES	DEP.IN	MTRGE	DRLNG HOURS	T/B/G	AVER COST/M /HR	WOB $	KLBS	RPM	FLOW	SPP	MW	HYDRO. POWER FPL	BIT /SI	Remarks
1	Hughes 3AJ	26	22 22 22	207.0	47.0	2.50	0/0/0	13.8	394	5.0	120	1005	2500	8.70	22530	3737	5.6	+ 30" U/O
1RR	Hughes 3AJ	26	22 22 22	334.0	209.0	8.00	0/0/0	25.1	503	10.0	120	1005	2000	8.70	25145	3737	5.6	
2	Smith SDT	14 3/4	24 24 24	543.0	420.0	10.58	2/2/I	30.7	283	30.0	96	383	2274	9.40	15534	1557	7.2	+ 17 1/2" U/R
2RR	Smith SDT	14 3/4	24 24 24	963.0	179.0	14.10	4/2/I	12.6	971	32.0	102	384	2370	9.50	17403	1579	7.3	+ 17 1/2" U/R
4	Smith SDT	14 3/4	24 24 24	1142.0	67.0	6.12	3/2/I	10.9	1530	36.0	96	949	2720	9.50	21443	1954	9.0	+ 17 1/2" U/R
5	Smith SDT	12 1/4	14 14 14	1208.0	281.0	20.23	4/3/O	13.9	375	45.0	106	620	2835	9.30	14505	4506	30.7	1/8" out gauge
6	Diamax ADS	12 1/4	T: 1.50	1439.0	768.0	57.90	0/0/I	13.3	773	25.8	700	778	3470	9.30	22432$$$$$$$$$			40% wear on bit
7	Smith SDS	12 1/4	14 14 14	2257.0	236.0	20.52	3/5/I	13.9	927	43.6	98	647	2930	10.00	15071	5629	37.5	
8	Smith SDT	12 1/4	15 15 15	2543.0	217.0	19.26	2/3/I	11.3	1327	47.0	101	686	3200	10.00	13240	5091	33.9	POOH @ csg point
9	Hughes HSJ	8 1/2	10 10 10	2760.0	2.0	1.00	1/1/I	2.05	6305	20.0	80	460	2600	9.00	9938	6003	96.8	
10	Smith F2	8 1/2	11 11 11	2762.0	623.9	46.42	7/4/O	13.4	737	35.7	59	434	2800	9.00	10007	4012	55.5	1/4 Out gauge

Phillips Aust Co. Athene # 1 MUD REPORT

DEPTH m	WEIGHT ppg	FV	PV	YP	Gels	WL cc	CAKE thks /32	pH	ALKALINITY fil	ALKALINITY mud	Cl- ppm	OIL %	Ca++ ppm		
604.0	9.20	33	6	4	3	8	0.0	2	10.0	0.6	1.0	12500	0.0	130	0.8023	0.0267
703.0	9.50	35	7	6	5	8	20.0	3	10.0	0.6	1.0	12000	0.0	160	0.8056	0.0280
1026.0	9.40	39	8	14	8	13	12.8	2	10.0	0.6	1.1	14500	0.0	640	0.6519	0.2402
1103.0	9.50	40	9	13	9	13	10.4	2	10.0	0.9	2.0	17000	0.0	520	0.7533	0.1145
1237.0	9.20	38	9	9	4	10	10.0	2	10.5	0.6	1.2	17500	0.0	80	0.7150	0.1610
1433.0	9.30	38	8	9	4	8	10.8	2	10.0	0.4	0.9	17500	0.0	100	0.6017	0.1740
1575.0	9.30	38	10	9	3	6	9.2	1	9.5	0.3	0.7	18000	0.0	670	0.7002	0.2030
1862.0	9.40	40	12	11	3	7	7.7	1	10.5	1.1	2.2	18000	0.0	100	0.6770	0.2013
2055.0	9.30	39	13	8	2	6	8.0	1	10.0	0.5	1.3	18000	0.0	100	0.7513	0.1747
2083.0	9.30	40	12	10	2	7	7.0	1	10.0	0.5	1.0	18000	0.0	100	0.6770	0.2013
2226.0	9.30	42	18	10	2	8	6.0	1	10.5	1.1	2.1	17000	0.0	120	0.7538	0.2280
2234.0	9.20	42	17	9	2	8	5.3	1	10.5	1.1	2.0	16800	0.0	120	0.7724	0.1042
2270.0	9.30	45	18	11	2	9	5.5	1	10.5	1.0	1.8	17000	0.0	120	0.7368	0.2720
2304.0	9.20	44	17	10	2	7	5.4	1	10.5	1.0	2.1	17500	0.0	120	0.7493	0.2352
2430.0	10.00	51	17	24	5	20	5.2	1	10.5	1.2	2.3	16000	0.0	80	0.5573	1.1103
2490.0	10.00	49	16	20	4	20	5.0	1	10.5	1.2	2.2	16500	0.0	80	0.5840	0.8342
2543.0	10.00	47	15	18	4	13	5.2	1	10.5	1.0	2.0	16500	0.0	100	0.5105	0.5413
2723.0	10.00	47	16	18	4	17	5.1	1	10.0	0.5	1.1	16500	0.0	100	0.5105	0.5413
2759.0	11.00	50	22	23	4	25	5.2	1	10.0	1.0	2.0	16500	0.0	100	0.5105	0.8605
2762.0	9.00	40	7	9	1	8	5.6	1	10.0	0.2	0.5	20000	0.0	400	0.5824	0.4735
2832.0	9.00	40	12	9	1	7	4.8	1	10.0	0.5	0.5	20000	0.0	80	0.6770	0.2013
2953.0	9.00	38	11	7	1	7	4.5	1	10.5	0.5	0.8	18000	0.0	100	0.7107	0.1011
3100.0	9.00	40	16	15	1	8	5.0	1	10.5	0.6	0.9	18000	0.0	100	0.5013	0.5321
3250.0	9.00	41	13	13	1	8	6.0	1	10.5	0.5	1.0	18000	0.0	90	0.6039	0.5785
3304.0	9.00	41	12	13	1	7	5.8	1	10.5	0.6	1.1	17500	0.0	80	0.5343	0.5255


Elevation KB 22.2 m above MSL
Sea bed at 265.1 m below MSL
Hole 36"
at 334.0 m
30" Casing shoe at 329.5 m
Cement plug from 411.5 to 320 m.
Hole 26"
at 548.0 m
20" Casing shoe at 530.0 m
Hole 17"1/2
at 1209.0 m
13"3/8 Casing shoe at 1193.0 m
Cement plug from 2781 to 2682 m.
Packer set at 2720 m.
Hole 12"1/4
at 2759.8 m
9"5/8 Casing shoe at 2750.4 m
Hole 8"1/2
at 3385.9 m



Drilling Day # 1 (22.5.83)

Run out anchors on piggy-back.
Make up BHA with hole opener and Bit # 1, HUGHES 3AJ 26" (3*22).
Rig up guide base for 36" hole.
Spud in at 287m (water depth).
Drill ahead from 287m to 321m.
Drop survey at 321m - 1 degree.
Drill ahead from 321m to 334m.
Circulate at casing point.
Drop survey at 334m - 3/4 degree.
Spot 450 bbls of high viscosity mud.
Pull out one stand and spot 150 bbls of high viscosity mud.
POOH.
Rig up and run 30" casing.

Drilling Day # 2 (23.5.83)

Pick up and run Stinger and Running tool.
Rig up circulating head and fill casing with water.
Land casing and circulate hole.
Cement 30" casing (Shoe @ 329.5m).
Break down running tool.
Make up 26" BHA with Bit # 1RR.
Wait on cement.
Tag cement at 326m.
Drill out cement.
Drill ahead from 334m to 433m.
Drop survey at 427m - 0 degree.
Drill ahead from 433m to 538m.

Drilling Day # 3 (24.5.83)

Drill ahead from 538m to 543m.
Circulate prior to spotting 450 bbls of high viscosity mud.
Drop survey at 543m - 3/4 degree.
Retrieve survey and RIH - no fill.
Spot 300 bbls of high viscosity mud.
POOH.
Rig up and run 20" casing.
Pick up and run 20" well head.
POOH with Running tool.
RIH with cement Stinger.
Make up cement head and circulate.
Cement casing (Shoe @ 530m).
Rig up to run Stack.

Drilling Day # 4 (25.5.83)

W.O. Weather before lowering Stack.
Work on B.O.P's - blue pod malfunction.
Lower and set Stack.
Start running Riser joints.

Drilling Day # 5 (26.5.83)

Continue running Riser.
Latch onto Well head.
RIH with testing tool.
Test B.O.P's - O.K.
POOH.
Pick up new BHA.
RIH with Bit # 2, SMITH SDT 14 3/4" (3 * 24).
Tag cement at 518m.
Drill out cement, float collar and shoe (@ 529m).
Drill down to 532m.
Wait on Union meeting.
POOH and secure rig.
Union workers on strike.

Drilling Day # 6 (27.5.83)

Union workers leave rig and are on strike.

Drilling Day # 7 (28.5.83)

Union workers on strike.

Drilling Day # 8 (29.5.83)

Union workers on strike.

Drilling Day # 9 (30.5.83)

Union workers on strike.

Drilling Day # 10 (31.5.83)

Union workers on strike.

Drilling Day # 11 (1.6.83)

Union workers on strike.

Drilling Day # 12 (2.6.83)

Union workers on strike.

Drilling Day # 13 (3.6.83)

Union workers on strike.

Drilling Day # 14 (4.6.83)

Union workers on strike.

Drilling Day # 15 (5.6.83)

Union workers on strike.

Drilling Day # 16 (6.6.83)

Union workers on strike.

Drilling Day # 17 (7.6.83)

Union workers on strike.

Drilling Day # 18 (8.6.83)

Union workers on strike.

Drilling Day # 19 (9.6.83)

Union workers on strike.

Drilling Day # 20 (10.6.83)

Waiting on result of strike.
Reposition the rig.
Screw onto string, pick up and circulate.
Hang off and wait on weather.
Union workers return to rig.

Drilling Day # 21 (11.6.83)

RIH and retrieve hang off tool.
RIH with Bit # 2,14 3/4".
Drill out cement from 532m to 542m.
Circulate and condition mud.

Drilling Day # 21 (11.6.83) /cont.

POOH to change BHA.
Pick up test plug and RIH.
Test BOP's and choke manifold.
POOH with test plug.
RIH with new BHA,Bit # 3 SMITH SDT and 17 1/2" Under-reamer.
Under-ream hole from 517m to 554m.
Circulate and condition mud.
Run LOT,test formation to 10.9 ppg Equivalent Mud Weight.
Pick up Kelly and drill ahead from 543m to 620m.
Circulate for 30 minutes and drill ahead from 620m to 706m.

Drilling Day # 22 (12.6.83)

Continue drilling ahead from 706m to 963m circulating every 10 singles.
Circulate and drop Totco survey.
POOH to change under-reamer arms.
Retrieve survey,1/2 deg. deviation.
RIH with Bit # 3RR SMITH SDT.
Ream last two singles to bottom.
Drill ahead from 963m to 932m.

Drilling Day # 23 (13.6.83)

Continue drilling ahead from 932m to 1001m.
Ream from 992m to 1001m.
Drill ahead from 1001m to 1121m.
Ream from 1102.5m to 1142m.
Drill from 1121m to 1142m.
Circulate,drop survey and POOH.
Retrieve survey,3/4 deg. deviation.
RIH with new Bit # 4 SMITH SDT.

Drilling Day # 24 (14.6.83)

Continue to RIH.
Drill ahead from 1142m to 1209m.
Circulate and pull out to 20" casing shoe.
Hang off at shoe.
RIH and circulate out fill.
POOH to 20" casing shoe and wait on weather.

Drilling Day # 25 (15.6.83)

RIH and circulate out fill.
Pull out to 20" casing shoe.
RIH,circulate and strap out of hole (1209m).
Rig up Schlumberger.
Run # 1: GR-DIL,SLS,CAL.
Rig down Schlumberger.

Drilling Day # 25 (15.6.83) /cont.

RIH for wiper trip,circulate and POOH.

Drilling Day # 26 (16.6.83)

Continue POOH.
RIH with 13 3/8" casing filling every fifth stand.
Circulate around casing prior to cementing.
Rig up and pump cement.
Displace cement with 3790 strokes.
Bump plug and hold for 15 minutes.
RIH to wash well head.

Drilling Day # 27 (17.6.83)

Pull out BOP stack and riser string.
Work on BOP stack and surface test.
Run in with BOP and riser string.

Drilling Day # 28 (18.6.83)

Continue running in with BOP and riser string.
Land BOP,nipple up diverter and flowline.
Make up test plug and test assembly,RIH.
Test plug hanging up in Hydril.
Pull out test plug.
Pull out riser string and Hydril assembly.

Drilling Day # 29 (19.6.83)

Continue pulling out riser and Hydril.
Work on Hydril assembly.
Run in with Hydril and riser.
Land and latch on Hydril assembly.
Run in with test plug.
Test tool hanging up in Hydril.
Pull out test plug.
Unlatch Hydril,pull out riser string and Hydril.

Drilling Day # 30 (20.6.83)

Continue to pull out riser string and Hydril.
Work on Hydril.
Run in with riser and Hydril.
Latch on Hydril,nipple up diverter and flowline.
Run in with test tool.
Test lower,middle and upper pipe rams to 5000 psi,tested okay.
Test inner and outer kill lines to 5000 psi,tested okay.
Test choke line to 5000 psi,tested okay.

Drilling Day # 30 (20.6.83) /cont.

Test upper and lower Hydril to 2500 psi,tested okay.
Test manifold to 5000 psi,tested okay.
Pull out of hole with test plug and run in with wear bushings.
Pull out of hole and test surface equipment to 5000 psi.
Make up new BHA.

Drilling Day # 31 (21.6.83)

Continue making up new BHA,and RIH with new Bit # 5,SMITH SDT 12 1/4".
Tag cement at 1180m (3872 ft).
Drill out float collar,cement and shoe.
Drill 15 ft new formation.
Circulate bottoms up and perform LOT.
Drill ahead from 1214m (3982 ft) to 1397m (4583 ft).

Drilling Day # 32 (22.6.83)

Continue drilling ahead from 1397m (4583 ft) to 1489m (4885 ft).
Pump slug and POOH with Bit # 5.
Make up new BHA and RIH with new Bit # 6,DIAMAX ADS II 12 1/4".
Change pump liners from 5 1/2" to 6" (=0.0995 bbl/stk @ 95% efficiency).
Continue running into hole.
Wash down to bottom.
Drill ahead from 1489m (4885 ft) to 1512m (4960 ft).

Drilling Day # 33 (23.6.83)

Continue drilling ahead from 1512m (4960 ft) to 1841m (6040 ft).
Drop survey at 1841m,3/4 deg. deviation.
POOH for 10 stand wiper trip.

Drilling Day # 34 (24.6.83)

Continue POOH.
RIH and drill ahead from 1841m to 2071m.

Drilling Day # 35 (25.6.83)

Continue drilling ahead from 2071m to 2209m.
Drop totco survey at 2209m,3/4 deg. deviation.
Drill ahead from 2209m to 2220m.
Pull out for 10 stand wiper trip.
Run back in hole.

Drilling Day # 36 (26.6.83)

Continue running in after wiper trip.

Drilling Day # 36 (26.6.83) /cont.

Drill ahead from 2225m to 2247m.
Work on pump # 1.
Drill ahead from 2247m to 2257m.
Pump slug and POOH with Bit # 6.
Make up new BHA and RIH with Bit # 7,SMITH SDS 12 1/4" (3*14).
Break down drill pipe.
Continue running in hole and wash down last singles.
Drill ahead from 2257m.

Drilling Day # 37 (27.6.83)

Continue drilling ahead from 2257m to 2370m.
Hole packed off (drilling with one pump),stuck pipe.
Wiper trip to 13 3/8" casing shoe.
Circulate 30 minutes at casing shoe.
Run in hole,70 ft. fill.
Ream and wash to bottom.
Drill ahead from 2370m to 2439m.

Drilling Day # 38 (28.6.83)

Continue drilling ahead from 2439m to 2530m.
Hole packed off,POOH and break down BHA.
RIH and drill ahead from 2530m to 2543m.
Circulate at 2543m and POOH with Bit # 7.
RIH with test plug and tool.
Test BOP stack and surface equipment,tested okay.
RIH with new Bit # 8,SMITH SDT 12 1/4" (3*15).
Hang off at casing shoe,slip and cut lines.

Drilling Day # 39 (29.6.83)

Continue cutting and slipping lines.
Continue RIH with Bit # 8.
Ream out tight spot,continue RIH to bottom.
Ream and wash out 60 ft. of fill.
On bottom and drill ahead from 2543m to 2722m.
Circulate to clean annulus of excessive cuttings.
Drill ahead from 2722m to 2730m.

Drilling Day # 40 (30.6.83)

Drill ahead from 2730m to 2760m.
Circulate and POOH to casing shoe with Bit # 8.
Work on draw-works.
RIH from casing shoe.
Ream out bridges whilst RIH,at 2544m (8349 ft),2575.7m (8450 ft), 2593m (8507 ft),2658m (8702 ft),2677m (8783 ft),2716m (8911 ft),2753m (9032 ft).

Drilling Day # 40 (30.6.83) /cont.

Circulate on bottom for 7 hrs to condition hole (mud wt to 11 ppg).

Drilling Day # 41 (1.7.83)

Drop Totco survey at 2760m - 1/2 deg deviation.
Pump slug and POOH with Bit # 9.
Rig up to run Schlumberger logs:
Run # 1 - DIL - BLS - GR - CNL
Run # 2 - SWC (21 shots - 100% recovery)
Rig down Schlumberger.
RIH for wiper trip.
Circulate 10 stands off bottom to work on Draw-works.
Continue RIH and circulate for 3 hrs.

Drilling Day # 42 (2.7.83)

Continue circulating.
POOH and wash down riser - pull wear bushings.
Run 9 5/8" casing and land casing shoe @ 2750.4m).
Circulate prior to cementation.

Drilling Day # 43 (3.7.83)

Rig up to cement casing.
Pump cement and displace with drill mud.
Bump plug and hold at 3000 psi for 15 min.
Test BOP stack and surface lines - O.K.
Make up new BHA with Bit # 9, HUGHES HSJ 8 1/2" (3*10).
RIH.

Drilling Day # 44 (4.7.83)

Continue RIH.
Tag cement at 2725m and circulate.
Drill cement and casing shoe to 2762m (slight pressure drop).
Perform LOT (no FIT).
Pump slug and POOH - to check for possible wash-out.
Make up new BHA with Bit # 10, SMITH F2 8 1/2" (3*11).
RIH with Bit # 10.
Circulate and drill ahead from 2762m.

Drilling Day # 45 (5.7.83)

Drilling ahead from 2847m to 3202m.
Slow pump rate test at 3202m.

Drilling Day # 46 (6.7.83)

Drilling ahead from 3202m to 3354m.
Pump slug and perform short wiper trip to shoe (no drag).
RIH to bottom - no fill.
Drill ahead from 3354m to 3380.8m.

Drilling Day # 47 (7.7.83)

Drilling ahead from 3380.8m to 3385m.
Attempt to relocate rig over well head.
Pull 35 stands and hang off.
Wait on weather.
Pull hang off tool.
RIH to tag bottom - no fill.
Circulate and condition mud.
Drop survey at 3385 - 4 degree deviation.
POOH to log.

Drilling Day # 48 (8.7.83)

Continue POOH.
Rig up to run Schlumberger.
Run Schlumberger logs:
DIL - SLS - GR
DTC - GR
HDT
CST
Velocity Survey
Rig up Geophone - malfunction.
Rerun Geophone.

Drilling Day # 49 (9.7.83)

Geophone malfunction - attempt to repair.
Slip and cut 45m of Dril line.
Start in hole with Bit # 10RR.
POOH.
Wait on SSL.
Rig up and run Geophone.
Lay down Geophone.
RIH with RZ Drill packer and set at 2720m.
Make up stinger and RIH.

Drilling Day # 50 (10.7.83)

Continue RIH to circulate and condition mud.
Sting into packer and pump cement plug.
Pull up 5 stands and test plug to 1000 psi for 15 mins.
Start laying down DP and DC.
Prepare to abandon well.

26" PHASE

SUMMARY

The rig was moved onto location and the well was spudded on 22nd May 1983. The depth of water was 265m (869.7 ft). Only one bit was used during this phase which was Bit # 1, a Hughes 3WJ, with 3*22 nozzles, 26" with a 36" Hole Opener attached. The sea bed was tagged at 287m (RKB) and drilled down to 321m, where a survey was performed giving a 1 degree deviation. Drilling was then resumed and TD was reached at 334m where the 30" casing was to be set.

Several complete circulations were performed to clean the hole of excess cuttings before 450 bbls of high viscosity mud were spotted to prevent excessive caving whilst running the casing. A survey dropped at this point gave a deviation of 3/4 degree.

WOB/RPM/ROP PRACTICE

The phase was drilled in a total time of 3 1/2 hours, with a total of 2 1/2 hours actual drilling. The WOB was generally near 0 klbs as the hole was jetted rather than drilled. The drilling practice is summarised below:

DEPTH INTERVAL m	ROP m/hr	WOB klbs	RPM	FR gpm
287 - 300	18.8	0-5	50	450
300 - 334	18.8	0-5	120	1035

HYDRAULICS

The flow rates, and the annular velocities, must be kept high during this phase to remove the large quantity of cuttings generated by the drilling. The optimum calculated velocity was considerably higher than that used, however this higher velocity would lead to even more hole erosion than that encountered. As can be seen from the cuttings transport tables only the smallest particles were removed whilst drilling. The use of high gel pills to remove the larger particles proved successful and little fill was encountered on running the casing.

The bit efficiency was lower than the optimum, but this is generally accepted at this stage of the hole. The choice of nozzles (3 * 22) was correct.

CASING AND CEMENTATION

3 joints of 30", Vetco (1" wall), 309 lb/ft casing were run in and set at 329.5m, together with a 7.3m Wellhead. The hole was circulated prior to cementation. The following was then pumped:

1. 1500 sacks of "G" class cement at 15.8 ppg with 1% calcium chloride.
2. This was then displaced with 28.5 bbls of drillwater at 5.7 bpm. (0.25 bbls was bled back)

Good cement returns were obtained throughout.

CUTTING TRANSPORT TABLES

The tables provide a quick look at hole cleaning and cuttings removal. By controlling the ROP, raising or lowering the flow rate or changing the rheological properties of the mud, one can decide the action necessary to provide the most efficient hole cleaning.

In the following tables the data has been calculated between DC and OH and also between DP and OH, with the specific flowrates and mud properties used over the selected interval. Cuttings sizes are in decimal inches.

The following is a brief explanation of the terms utilised :

Vs = slip velocity (ft/min)

Vc = annular velocity - slip velocity

Cf = cuttings generated at the bit (gallons/gallon of mud)

Ca = cuttings in annulus (gallons/gallon of mud)

Rct = cuttings transport ratio (decimal percentage)
= cutting velocity/annular velocity

Interval: 237 m. to 300 m. ROP: 18.80 m/hr.

Flow rate 450.0 gpm. Ann.Vel: 2.79 m/min (DC/OH)
MW: 8.7 ppg PV 1 YP 2 Gel (10 sec) 0 YP/PV 2.00
n = 0.415 K = 0.282

Cuttings Density: 2.20 (CLAY)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	20.90	-13.11			
0.750	15.67	-12.88			
0.500	10.45	-7.66			
0.250	5.22	-2.44			
0.100	1.32	1.47	0.5271	0.1208	0.2293

Cuttings Density: 2.55 (SAND/SANDSTONE)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	24.92	-22.13			
0.750	18.69	-15.90			
0.500	12.46	-9.67			
0.250	6.23	-3.44			
0.100	1.64	1.14	0.4106	0.1208	0.2943

Interval: 300 m. to 334 m. ROP: 18.80 m/hr.

Flow rate1085.0 gpm. Ann.Vel: 6.72 m/min (DC/OH)
MW: 8.7 ppg PV 1 YP 2 Gel (10 sec) 0 YP/PV 2.00
n = 0.415 K = 0.282

Cuttings Density: 2.20 (CLAY)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	29.75	-23.02			
0.750	18.61	-11.88			
0.500	12.40	-5.68			
0.250	6.20	0.52	0.0774	0.0501	0.6479
0.100	2.48	4.24	0.6309	0.0501	0.0794

Cuttings Density: 2.55 (SAND/SANDSTONE)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	33.95	-27.23			
0.750	22.19	-15.47			
0.500	14.79	-8.07			
0.250	7.40	-0.67			
0.100	2.96	3.76	0.5599	0.0501	0.0895

GEOSERVICES P.D.C. 22/5/83

PHILLIPS AUST Co Athene 1

CASING LIST

CASING SIZE: 30" TYPE: Vetco WEIGHT(lb/ft): 309

CASING SHOE DEPTH: 329.46
CASING LENGTH: 45.03

Jt #	LENGTH	CSG LENGTH	DEPTH R.T.	REMARKS
1	12.48	12.48	316.98	Shoe Joint
2	12.67	25.15	304.31	
3	12.56	37.71	291.75	
4	7.32	45.03	284.43	Well Head

26" PHASE

SUMMARY

After breaking 30" Casing running assembly, the new BHA was picked up with Bit # 1RR, a Hughes 3AJ with 3 * 22 nozzles. The cement was tagged at 326m and drilled to the shoe at 329.5m. The rest of the cement was then drilled out and drilling of the 26" Phase commenced. A survey was taken at 433m and gave a reading of no deviation. On returning to bottom little fill was encountered. The 26" phase was finished at 543m, and the hole was thoroughly circulated before spotting 450 bbls of high gel mud. A survey was then dropped which gave a reading of 3/4 degree. On returning to bottom no fill was found and another pill of high viscosity mud was spotted (300 bbls). The bit was then pulled to run the 20" Casing.

WOB/RPM/ROP PRACTICE

Only one bit was used whilst drilling this phase, Bit # 1RR. The total time taken for this phase was 12 1/2 hours, of which 8 hours was actual drilling. Drilling practices are as follows:

DEPTH INTERVAL m	ROP m/hr	WOB klbs	RPM	FR gpm
334 - 359	26.1	5-10	70	1085
359 - 543	26.1	10-15	120	1085

HYDRAULICS

As with the 36" Phase, the annular velocities must be kept as high as possible to remove the large quantities of cuttings generated. Hole cleaning, as seen on the cuttings transport tables, was slightly better during this phase only due to the fact that the hole was smaller. The pumping of high viscosity slug whilst drilling and good circulation upon completion of the phase ensured a good clean hole. Bit efficiency was again much lower than the optimum, but this is still expected at this stage of the hole.

CASING AND CEMENTATION

18 joints of 20", Cameron X-56, 133 lb/ft casing were run in and set at 529.95m (1738.69 ft). The casing was circulated with 500 bbls of seawater prior to cementation. The following was then pumped:

1. 1300 sacks of "G" class cement at 12.8 ppg (10.8 gal/sack drill water) with 2.5% pre-hydrated gel and 0.5% CFP-2.
2. 500 sacks of "G" class cement at 15.8 ppg (5 gal/sack of seawater) with no additives.
3. The cement was then displaced with 29.1 bbls of seawater at 7.3 bbl/min. (1 bbl was bled back).

80 bbls of the lead slurry were lost, but after this the cement returns were good.

CUTTING TRANSPORT TABLES

The tables provide a quick look at hole cleaning and cuttings removal. By controlling the ROP, raising or lowering the flow rate or changing the rheological properties of the mud, one can decide the action necessary to provide the most efficient hole cleaning.

In the following tables the data has been calculated between DC and OH and also between DP and OH, with the specific flowrates and mud properties used over the selected interval. Cuttings sizes are in decimal inches.

The following is a brief explanation of the terms utilised :

Vs = slip velocity (ft/min)

Vc = annular velocity - slip velocity

Cf = cuttings generated at the bit (gallons/gallon of mud)

Ca = cuttings in annulus (gallons/gallon of mud)

Rct = cuttings transport ratio (decimal percentage)
= cutting velocity/annular velocity

Interval: 344 m. to 359 m. ROP: 24.90 m/hr.

Flow rate1085.0 gpm. Ann.Vel: 13.84 m/min (DC/OH)
MW: 8.7 ppg PV 1 YP 2 Gel (10 sec) 1 YP/PV 2.00
n = 0.415 K = 0.282

Cuttings Density: 2.20 (CLAY)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	23.45	-2.62			
0.750	17.59	-3.75			
0.500	11.73	2.11	0.1526	0.0346	0.2269
0.250	5.86	7.97	0.5763	0.0346	0.0601
0.100	1.66	12.18	0.8800	0.0346	0.0393

Cuttings Density: 2.55 (SAND/SANDSTONE)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	27.97	-14.13			
0.750	20.98	-7.14			
0.500	13.99	-0.15			
0.250	6.99	6.85	0.4947	0.0346	0.0700
0.100	2.07	11.77	0.8504	0.0346	0.0407

Interval: 359 m. to 543 m. ROP: 24.90 m/hr.

Flow rate1085.0 gpm. Ann.Vel: 13.84 m/min (DC/OH)
MW: 8.8 ppg PV 1 YP 2 Gel (10 sec) 1 YP/PV 2.00
n = 0.415 K = 0.282

Cuttings Density: 2.20 (CLAY)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	23.20	-9.36			
0.750	17.40	-3.56			
0.500	11.60	2.24	0.1616	0.0346	0.2142
0.250	5.80	8.04	0.5808	0.0346	0.0596
0.100	1.64	12.19	0.8812	0.0346	0.0393

Cuttings Density: 2.55 (SAND/SANDSTONE)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	27.72	-13.83			
0.750	20.79	-6.95			
0.500	13.86	-0.02			
0.250	6.93	6.91	0.4993	0.0346	0.0694
0.100	2.05	11.79	0.8517	0.0346	0.0407

Phillips Aust Co. Athene # 1 BIT REPORT

BIT No	TYPE	SIZE	NOZZLES	DEP.IN	MTRGE	DRLNG HOURS	AVER COST/1 FT/HR	M/HR	JOB $	WOB	RPM	FLOW	SPP	%	HYDRO. POWER TFL	BIT /SI	Remarks
1	Hughes 3AJ	26	22 22 22	237.0	47.0	2.50	0/0/0	18.8	394	5.0	120	1035	2500	8.7	22539	3737	5.5 + 30" B/O
1RR	Hughes 3AJ	26	22 22 22	334.0	209.0	8.00	0/0/0	26.1	503	15.0	120	1035	2500	8.7	22539	3737	5.6

GEOSERVICES P.D.C

Phillips Aust Co. Athene # 1 24/5/83

CASING LIST

CASING SIZE: 20" TYPE: X56 WEIGHT(lbs/ft): 133

CASING LENGTH: 246.25
SHOE DEPTH : 529.95

Jt #	LENGTH	TOTAL LENGTH	Depth From KB	Remarks
	12.57	12.57	517.38	Shoe & Collar Jt
1	11.90	24.47	505.48	
2	11.88	36.35	493.60	
3	11.86	48.21	481.74	
4	11.90	60.11	469.84	
5	11.89	72.00	457.95	
6	11.85	83.85	446.10	
7	11.90	95.75	434.20	
8	11.89	107.64	422.31	
9	11.90	119.54	410.41	
10	11.90	131.44	398.51	
11	11.84	143.28	386.67	
12	11.90	155.18	374.77	
13	11.90	167.08	362.87	
14	11.90	178.98	350.97	
15	11.90	190.88	339.07	
16	11.89	202.77	327.18	
17	11.90	214.67	315.28	
18	11.90	226.57	303.38	
	11.76	238.33	291.62	Cross-over
	7.92	246.25	283.70	Well Head

GEOSERVICES I.D.C

Phillips Aust Co. Athene # 1 17.6.83

CASING LIST

CASING SIZE: 13 3/8" TYPE: K-80 Buttress WEIGHT(lbs/ft): 72

CASING LENGTH: 908.85
SHOE DEPTH : 1103.00

Jt #	LENGTH	TOTAL LENGTH	Depth From KB	Remarks
50	11.72	597.09	595.91	
51	11.89	608.98	584.02	
52	11.72	620.70	572.30	
53	11.84	632.54	560.46	
54	11.38	643.84	549.16	
55	11.86	655.70	537.30	
56	11.68	667.38	525.62	
57	11.97	679.35	513.65	
58	12.00	691.37	501.63	
59	11.85	703.22	489.78	
60	11.95	715.17	477.83	
61	11.79	726.96	466.04	
62	11.93	738.89	454.11	
63	11.63	750.52	442.48	
64	12.07	762.59	430.41	
65	12.08	774.67	418.33	
66	11.73	786.40	406.60	
67	11.80	798.20	394.80	
68	11.41	809.61	383.39	
69	11.48	821.09	371.91	
70	12.06	833.17	359.83	
71	11.53	844.70	348.30	
72	11.78	856.48	336.52	
73	11.99	868.47	324.53	
74	12.06	880.53	312.47	
75	11.62	892.15	300.85	
76	11.62	903.77	289.23	
	3.08	906.85	286.15	Hanger

17 1/2" PHASE REPORT

SUMMARY

The rig was repositioned and the BOP stack tested to the required specifications.The BHA was made up with Bit # 3,SMITH SDT 14 3/4" + 17 1/2" Under-reamer (3*24) and RIH.The cement and casing shoe were drilled out and a LOT performed to 10.9 ppg EMW.

Bit # 3 drilled from 543m to 963m,circulating for 30 minutes every ten singles.A survey at 963m was 1/2 deg.The bit was pulled out to change the under-reamer arms.

Bit # 3RR,SMITH SDT 14 3/4" + 17 1/2" under-reamer (3*24) was reamed to bottom and drilled ahead from 963m to 1142m.Tight spots were reamed out at 992m to 1001m and 1102m to 1142m.A survey at 1142m was 3/4 deg. Due to a slowing ROP the bit was pulled out at 1142m.

Bit # 4,SMITH SDT 14 3/4" + 17 1/2" under-reamer (3*24) drilled ahead from 1142m to the casing depth at 1209m.

The hole was then conditioned prior to running the Schlumberger logs. The logs run were ;

Run # 1; GR-DIL,SLS,CAL.

After rigging down Schlumberger a wiper trip was made to recondition The hole before running in and landing the 13 3/8" casing.

WOB/RPM/ROP PRACTICE

The phase was completed with three bits.The total drilling time was 30.9 hours,giving an average ROP of 21.5 m/hr.The total bottom time was 50 hours and an average ROP of 13.3 m/hr.

Drilling practice can be summarized as follows:

DEPTH INTERVAL m	ROP m/hr	WOB klbs	RPM	FR gpm
543-963	38.2	30	96	883
963-1142	12.5	32	102	884
1142-1209	10.7	36	96	949

HYDRAULICS AND SOLIDS CONTROL

All three bits were run with 3*24 nozzels.Flow rates varied over the phase.Bits # 3 and # 3RR,averaging 882 gpm and Bit # 4,950 gpm.Bit power ratios however throughout the phase were constantly low,27.2%, 26.5%,and 25% for Bits # 3,# 3RR,and # 4 respectivly.The HP/sqin value for all three bits averaged 1.25.

The high ROP values recorded with Bit # 3,and the large amount of cuttings generated at the bit were removed sucessfully by the high flow rates and high annular velocities.Cuttings removal was good except in the case of the larger cuttings (see cutting transport tables).

The mud exhibited high n-values during the bit run.Mud with high

HYDRAULICS AND SOLIDS CONTROL /cont.

n-values does not show good hole cleaning abilities and tend to cause some hole damage.

To further compensate for the muds reduced hole cleaning ability and the large quantity of cuttings generated, the hole was circulated for 30 minutes every ten singles.

ROP values and therefore the amount of cuttings generated, decreased throughout Bit # 3RR and # 4. Maintaining high flow rates, high annular velocities and a reduced n-value, resulted in good hole cleaning. This fact can be seen by referring to the cutting transport tables, and noting that only 2ft. of fill was tagged after circulating and tripping at the casing depth.

Flow was turbulent within the annulus during the phase, this resulted in hole damage, evident in reference to the Schlumberger Caliper Log.

CASING AND CEMENTATION

75 joints of N-80 Butress, (72 lb/ft) casing were run in and the set at 1192.9m.

The following was then pumped:

1) Pre-flush; 25 bbls of drill-water.
2) Lead slurry; 1200 sacks of Class "G" cement at 12.8 ppg, mixed with drill-water. 9.0 lbs/gal of 2.5% Pre-hydrated Gel and 1.3 lbs/ga of 0.5% CFR-2 were added.
3) Tail slurry; 500 sacks of Class "G" cement at 15.8 ppg, mixed with drill-water. 0.05 gal/bbl of 0.1% HR-6L was added.
4) Displacment; The cement was displaced with 463 bbls of drill mud.
5) Plug bumped; The plug was bumped at 1500 psi and held for 15 minutes. There was no bleed back.

The estimated top of good cement was at 428m (1404 ft) and the estimated top of contaminated cement was at 305m (1000 ft).

CUTTING TRANSPORT TABLES

The tables provide a quick look at hole cleaning and cuttings removal.By controlling the ROP,raising or lowering the flow rate or changing the rheological properties of the mud,one can decide the action necessary to provide the most efficient hole cleaning.

In the following tables the data has been calculated between DC and OH and also between DP and OH,with the specific flowrates and mud properties used over the selected interval.Cuttings sizes are in decimal inches.

The following is a brief explanation of the terms utilised :

Vs = slip velocity (ft/min)

Vc = annular velocity - slip velocity

Cf = cuttings generated at the bit (gallons/gallon of mud)

Ca = cuttings in annulus (gallons/gallon of mud)

Pct = cuttings transport ratio (decimal percentage)
= cutting velocity/annular velocity

Interval: 543 m. to 963 m. ROP: 33.20 m/hr.

Flow rate 880.0 gpm. Ann.Vel: 23.37 m/min (DP/CH)
MW: 9.4 ppg PV 7 YP 5 Gel (10 sec) 4 YP/PV 0.71
n = 0.663 K = 0.274

Cuttings Density: 2.40 (Calcarenite/Marl)

Cutting size	Vs	Vc	Fct	Cf	Ca
1.000	21.23	2.15	0.0919	0.0297	0.3229
0.750	15.92	7.45	0.3139	0.0297	0.0930
0.500	10.61	12.76	0.5459	0.0297	0.0543
0.250	5.31	18.07	0.7738	0.0297	0.0384
0.125	1.08	21.49	0.9194	0.0297	0.0323
0.063	0.67	22.71	0.9715	0.0297	0.0305

Cuttings Density: 2.45 (Calcarenite/Marl)

Cutting size	Vs	Vc	Fct	Cf	Ca
1.000	21.78	1.50	0.0683	0.0297	0.4347
0.750	16.33	7.04	0.3012	0.0297	0.0965
0.500	10.89	12.49	0.5341	0.0297	0.0555
0.250	5.44	17.93	0.7671	0.0297	0.0387
0.125	1.95	21.43	0.9163	0.0297	0.0324
0.063	0.69	22.69	0.9706	0.0297	0.0306

Cuttings Density: 2.50 (Calcarenite/Marl)

Cutting size	Vs	Vc	Fct	Cf	Ca
1.000	22.32	1.05	0.0449	0.0297	0.6603
0.750	16.74	6.63	0.2837	0.0297	0.1046
0.500	11.16	12.21	0.5225	0.0297	0.0568
0.250	5.58	17.79	0.7612	0.0297	0.0390
0.125	2.01	21.37	0.9142	0.0297	0.0325
0.063	0.71	22.67	0.9696	0.0297	0.0306

Interval: 963 m. to 1142 m. ROP: 12.47 m/hr.

Flow rate 885.0 gpm. Ann.Vel: 23.51 m/min (DP/OH)
MW: 9.5 ppg PV 7 YP 13 Gel (10 sec) 8 YP/PV 1.86
n = 0.433 K = 1.695

Cuttings Density: 2.40 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	15.57	7.94	0.3376	0.0096	0.0285
0.750	11.68	11.83	0.5032	0.0096	0.0191
0.500	7.79	15.72	0.6688	0.0096	0.0144
0.250	3.89	19.61	0.8344	0.0096	0.0115
0.125	1.02	22.43	0.9564	0.0096	0.0101
0.063	0.36	23.15	0.9846	0.0096	0.0098

Cuttings Density: 2.15 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	15.98	7.53	0.3202	0.0096	0.0301
0.750	11.99	11.52	0.4901	0.0096	0.0197
0.500	7.99	15.52	0.6601	0.0096	0.0146
0.250	4.00	19.51	0.8300	0.0096	0.0116
0.125	1.06	22.45	0.9550	0.0096	0.0101
0.063	0.37	23.13	0.9841	0.0096	0.0098

Cuttings Density: 2.50 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	16.38	7.12	0.3030	0.0096	0.0318
0.750	12.29	11.22	0.4772	0.0096	0.0202
0.500	8.19	15.32	0.6515	0.0096	0.0148
0.250	4.10	19.41	0.8257	0.0096	0.0117
0.125	1.09	22.42	0.9536	0.0096	0.0101
0.063	0.39	23.12	0.9836	0.0096	0.0098

Interval: 1142 m. to 1203 m. ROP: 10.70 m/hr.

Flow rate 950.0 gpm. Ann.Vel: 25.23 m/min (DP/OH
MW: 9.5 ppg PV 7 YP 13 Gel (10 sec) 8 YP/PV 1.86
n = 0.433 K = 1.695

Cuttings Density: 2.40 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	15.87	9.36	0.3710	0.0077	0.0208
0.750	11.90	13.33	0.5223	0.0077	0.0146
0.500	7.94	17.30	0.6855	0.0077	0.0112
0.250	3.97	21.27	0.8423	0.0077	0.0091
0.125	1.96	24.17	0.9578	0.0077	0.0080
0.063	0.38	24.36	0.9851	0.0077	0.0073

Cuttings Density: 2.45 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	16.29	8.95	0.3545	0.0077	0.0217
0.750	12.22	13.02	0.5159	0.0077	0.0149
0.500	8.14	17.09	0.6772	0.0077	0.0114
0.250	4.07	21.16	0.8386	0.0077	0.0092
0.125	1.10	24.14	0.9564	0.0077	0.0080
0.063	0.39	24.85	0.9846	0.0077	0.0078

Cuttings Density: 2.50 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	16.70	8.53	0.3382	0.0077	0.0228
0.750	12.53	12.71	0.5036	0.0077	0.0153
0.500	8.35	16.88	0.6691	0.0077	0.0115
0.250	4.18	21.06	0.8345	0.0077	0.0092
0.125	1.13	24.10	0.9551	0.0077	0.0081
0.063	0.40	24.83	0.9841	0.0077	0.0078

Phillips Aust Co. Athene # 1 BIT REPORT

BIT No	TYPE	SIZE	NOZZLES	DEP. IN	MTRGE	DRLNG HOURS	T/B/G	AVER COST/I M/HR	WOB US $	KLBS	RPM	FLOW	SPP	HW	HYDRO. POWER TTL	HYDRO. POWER BIT /SI	Remarks
3	Smith SDT	14 3/4	24 24 24	543.0	420.0	10.58	2/2/I	39.7	283	30.0	96	883	2274	9.40	16684	1557	7.2	+ 17-1/2" G/R
3PR	Smith SDT	14 3/4	24 24 24	963.0	179.0	14.19	4/2/I	12.6	971	32.0	102	884	2370	9.50	17403	1570	7.3	+ 17 1/2" G/R
4	Smith SDT	14 3/4	24 24 24	1142.0	67.0	6.12	3/2/I	10.9	1589	36.0	95	949	2720	9.50	21443	1954	9.0	+ 17 1/2" G/R

Phillips Aust Co. Athene # 1 17.6.83

CASING LIST

CASING SIZE: 13 3/8" TYPE: N-80 Butress WEIGHT(lbs/ft): 72

CASING LENGTH: 906.35
SHOE DEPTH : 1193.00

Jt #	LENGTH	TOTAL LENGTH	Depth From KB	Remarks
	12.35	12.30	1180.11	Shoe Joint
1	11.68	24.57	1169.43	
2	11.89	36.46	1156.54	
3	11.98	48.44	1144.56	
4	11.79	60.23	1132.77	
5	11.56	71.79	1121.21	
6	11.38	83.67	1109.33	
7	11.92	95.59	1097.41	
8	11.53	107.12	1085.88	
9	11.90	119.02	1073.98	
10	11.81	130.83	1062.17	
11	11.85	142.68	1050.32	
12	11.10	153.78	1039.22	
13	11.65	165.43	1027.57	
14	11.76	177.19	1015.81	
15	11.82	189.01	1003.99	
16	11.55	200.56	992.44	
17	11.90	212.46	980.54	
18	11.53	224.04	968.96	
19	11.62	235.66	957.34	
20	11.77	247.43	945.57	
21	11.48	258.91	934.09	
22	11.82	270.73	922.27	
23	11.77	282.50	910.50	
24	12.06	294.56	898.44	
25	11.48	306.04	886.96	
26	11.78	317.82	875.18	
27	11.85	329.67	863.33	
28	11.25	340.92	852.08	
29	11.77	352.69	840.31	
30	11.88	364.57	828.43	
31	11.99	376.56	816.44	
32	11.82	388.38	804.62	
33	11.83	400.21	792.79	
34	11.46	411.67	781.33	
35	11.19	422.86	770.14	
36	11.50	434.36	758.64	
37	11.39	445.75	747.25	
38	10.52	456.27	736.73	
39	11.53	467.80	725.20	
40	12.08	479.88	713.12	
41	11.77	491.65	701.35	
42	11.79	503.44	689.56	
43	11.88	515.32	677.68	
44	11.93	527.25	665.75	
45	11.84	539.09	653.91	
46	11.73	550.85	642.15	
47	11.88	562.73	630.27	
48	11.55	574.28	618.72	
49	11.09	585.37	607.63	

Phillips Aust Co. Athene # 1 3.7.83

CASING LIST

CASING SIZE: 9 5/8" TYPE: S-95/L-80 Butress WEIGHT(lbs/Ft): 47

CASING LENGTH: 2465.13
SHOE DEPTH : 2750.40

Jt #	LENGTH	TOTAL LENGTH	Depth From KB	Remarks
	3.34	2465.43	284.97	Ranger

Phillips Aust Co. Athene # 1 3.7.33

CASING LIST

CASING SIZE: 9 5/8" TYPE: S-95/L-80 Butress WEIGHT(lbs/ft): 47

CASING LENGTH: 2465.43
SHOE DEPTH : 2750.10

Jt #	LENGTH	TOTAL LENGTH	Depth From KB	Remarks
150	11.93	1382.03	863.31	
151	11.83	1393.92	856.48	
152	11.72	1905.64	841.76	
153	11.82	1917.46	832.94	
154	11.95	1929.41	820.99	
155	11.83	1941.24	809.16	
156	11.92	1953.16	797.24	
157	11.61	1964.77	785.63	
158	11.90	1976.67	773.73	
159	11.77	1988.44	761.96	
160	11.59	2000.03	750.37	
161	11.58	2011.61	738.79	
162	11.54	2023.15	727.25	
163	12.04	2035.19	715.21	
164	11.76	2046.95	703.45	
165	11.68	2058.63	691.77	
166	11.70	2070.33	680.07	
167	11.81	2082.14	668.26	
168	11.88	2094.02	656.38	
169	11.99	2106.01	644.39	
170	12.03	2118.04	632.36	
171	11.89	2129.93	620.47	
172	11.51	2141.44	608.96	
173	11.91	2153.35	597.05	
174	11.84	2165.19	585.21	
175	12.07	2177.26	573.14	
176	11.98	2189.24	561.16	
177	11.96	2201.20	549.20	
178	11.53	2212.73	537.67	
179	12.05	2224.78	525.62	
180	12.11	2236.89	513.51	
181	11.57	2248.46	501.94	
182	11.38	2260.34	490.06	
183	11.95	2272.29	478.11	
184	11.97	2284.26	466.14	
185	11.62	2295.88	454.52	
186	12.05	2307.93	442.47	
187	11.89	2319.82	430.58	
188	12.02	2331.84	418.56	
189	12.03	2343.87	406.53	
190	11.82	2355.69	394.71	
191	11.99	2367.68	382.72	
192	11.80	2379.48	370.92	
193	11.36	2390.84	359.56	
194	11.99	2402.83	347.57	
195	11.83	2414.66	335.74	
196	11.76	2426.42	323.98	
197	11.70	2438.12	312.23	
198	11.85	2449.97	300.43	
199	12.12	2462.09	288.31	

Phillips Aust Co. Athene # 1 3.7.83

CASING LIST

CASING SIZE: 9 5/8" TYPE: S-95/L-80 Butress WEIGHT(lbs/ft): 47

CASING LENGTH: 2465.13
SHOE DEPTH : 2750.40

Jt #	LENGTH	TOTAL LENGTH	Depth From KB	Remarks
100	11.55	1287.65	1462.75	
101	11.67	1299.32	1451.08	
102	11.90	1311.22	1439.18	
103	12.03	1323.25	1427.15	
104	11.99	1335.24	1415.16	
105	11.98	1347.22	1403.18	
106	11.55	1358.77	1391.63	
107	12.00	1370.77	1379.63	
108	12.06	1382.83	1367.57	
109	12.17	1395.00	1355.40	
110	11.96	1406.96	1343.44	
111	11.78	1418.74	1331.66	
112	11.69	1430.43	1319.97	
113	11.94	1442.37	1308.03	
114	11.75	1454.12	1296.28	
115	11.79	1465.91	1284.49	
116	11.70	1477.61	1272.79	
117	11.52	1489.13	1261.27	
118	12.02	1501.15	1249.25	
119	11.97	1513.12	1237.28	
120	12.06	1525.18	1225.22	
121	11.89	1537.07	1213.33	
122	11.88	1548.95	1201.45	
123	12.06	1561.01	1189.39	
124	12.01	1573.02	1177.38	
125	11.66	1584.68	1165.72	
126	12.02	1596.70	1153.70	
127	11.77	1608.47	1141.93	
128	12.00	1620.47	1129.93	
129	11.29	1631.76	1118.64	
130	11.82	1643.58	1106.82	
131	12.00	1655.58	1094.82	
132	11.58	1667.16	1083.24	
133	11.99	1679.15	1071.25	
134	12.01	1691.16	1059.24	
135	12.00	1703.16	1047.24	
136	11.97	1715.13	1035.27	
137	12.03	1727.16	1023.24	
138	11.56	1738.72	1011.68	
139	12.00	1750.72	999.68	
140	11.74	1762.46	987.94	
141	12.11	1774.57	975.83	
142	11.97	1786.54	963.86	
143	12.00	1798.54	951.86	
144	12.07	1810.61	939.79	
145	12.03	1822.64	927.76	
146	12.02	1834.66	915.74	
147	11.73	1846.39	904.01	
148	11.96	1858.35	892.05	
149	11.81	1870.16	880.24	

CONSERVATION D.O.C

Phillips Aust Co. Athene # 1 3.7.83

CASING LIST

CASING SIZE: 9 5/8" TYPE: S-95/L-80 Butress WEIGHT(lbs/ft): 47

CASING LENGTH: 2465.40
SHOE DEPTH : 2750.40

Jt #	LENGTH	TOTAL LENGTH	Depth From KB	Remarks
50	14.16	665.27	2085.13	
51	14.23	679.50	2070.90	
52	14.11	693.61	2056.79	
53	13.71	707.32	2043.08	
54	13.78	721.10	2029.30	
55	13.65	734.75	2015.65	
56	13.65	748.40	2002.00	
57	14.02	762.42	1987.98	
58	13.01	775.43	1974.97	
59	13.54	788.97	1961.43	
60	13.85	802.82	1947.58	
61	13.15	815.97	1934.43	
62	14.20	830.17	1920.23	
63	13.23	843.40	1906.95	
64	13.98	857.43	1892.97	
65	13.03	871.36	1879.04	
66	13.54	884.90	1865.50	
67	13.05	897.95	1852.45	
68	11.96	909.91	1840.49	
69	11.84	921.75	1828.65	
70	12.03	933.78	1816.62	
71	12.06	945.84	1804.56	
72	11.92	957.76	1792.64	
73	12.00	969.76	1780.64	
74	12.18	981.94	1768.46	
75	12.01	993.95	1756.45	
76	12.03	1005.98	1744.42	
77	12.02	1018.00	1732.40	
78	11.76	1029.76	1720.64	
79	11.87	1041.63	1708.77	
80	11.93	1053.56	1696.84	
81	12.07	1065.63	1684.77	
82	11.70	1077.33	1673.07	
83	11.87	1089.20	1661.20	
84	11.49	1100.69	1649.71	
85	11.56	1112.25	1638.15	
86	11.62	1123.87	1626.53	
87	12.03	1135.90	1614.50	
88	12.00	1147.90	1602.50	
89	12.02	1159.92	1590.48	
90	12.01	1171.93	1578.47	
91	11.48	1183.41	1566.99	
92	11.74	1195.15	1555.25	
93	11.54	1206.69	1543.71	
94	11.64	1218.33	1532.07	
95	11.48	1229.81	1520.59	
96	11.64	1241.45	1508.95	
97	11.50	1252.95	1497.45	
98	12.03	1264.98	1485.42	
99	11.12	1276.10	1474.30	

Phillips Rose Co. Athena # 1 3.7.83

CASING LIST

CASING SIZE: 9 5/8" TYPE: S-95/L-80 Butress WEIGHT(lbs/Ft): 47

CASING LENGTH: 2665.33
SHOE DEPTH : 2750.40

Jt #	LENGTH	TOTAL LENGTH	Depth From KB	Remarks
	21.84	24.34	2725.56	Float shoe/collar
1	13.00	37.84	2712.56	
2	13.85	51.69	2698.71	
3	13.27	65.56	2684.84	
4	14.01	79.57	2670.83	
5	13.57	93.14	2657.26	
6	13.53	106.72	2643.68	
7	11.37	118.09	2632.31	
8	12.61	130.70	2619.70	
9	12.91	143.61	2606.79	
10	12.29	155.90	2594.50	
11	11.97	167.37	2582.53	
12	10.83	178.70	2571.70	
13	14.10	192.80	2557.60	
14	13.91	206.71	2543.69	
15	13.65	220.36	2530.04	
16	13.79	234.15	2516.25	
17	13.40	247.54	2502.76	
18	14.18	261.62	2488.58	
19	14.18	276.00	2474.40	
20	13.65	289.65	2460.75	
21	12.75	302.40	2448.00	
22	11.34	313.74	2436.66	
23	11.35	325.09	2425.31	
24	11.31	336.90	2413.50	
25	13.14	350.04	2400.36	
26	13.01	363.05	2387.35	
27	13.23	376.23	2374.12	
28	14.16	390.44	2359.96	
29	12.34	402.78	2347.62	
30	11.25	414.03	2336.37	
31	12.50	426.53	2323.87	
32	12.77	439.30	2311.10	
33	11.87	451.17	2299.23	
34	11.61	462.78	2287.62	
35	11.80	474.58	2275.82	
36	11.55	486.13	2264.27	
37	11.64	497.77	2252.63	
38	13.68	511.45	2238.95	
39	13.65	525.10	2225.30	
40	14.17	539.27	2211.13	
41	13.05	552.32	2198.08	
42	11.39	563.71	2186.69	
43	10.51	574.22	2176.18	
44	10.62	584.84	2165.56	
45	13.08	597.92	2152.48	
46	13.72	611.64	2138.76	
47	12.93	624.57	2125.83	
48	13.34	637.91	2112.49	
49	13.20	651.11	2099.29	

Phillips Aust Co. Athene # 1 BIT REPORT

BIT No	TYPE	SIZE	NOZZLES	DEP.IN	FTAGE	DRLNG HOURS	T/B/C	AVER COST/M	WOB 000 $	RPM	FLOT	SPP	HYDRO. POWER IN	HYDRO. POWER FTL	HYDRO. POWER BIT /SI	Remarks
5	Smith SDT	12 1/4	14 14 14	1208.0	281.0	20.23	4/3/0	13.9	375	45.0	106	620	2835	9.30	14605	4506	30.7	1/8" out gauge
6	Diamax ADS	12 1/4	T: 1.50	1489.0	763.0	57.90	0/0/I	13.3	773	25.3	700	778	3470	9.30	22432$$$$$$$$$			40% wear on bit
7	Smith 3DS	12 1/4	14 14 14	2257.0	286.0	20.52	3/5/I	13.9	927	43.5	93	647	2900	10.00	15074	5523	37.5	
8	Smith SDT	12 1/4	15 15 15	2543.0	217.0	19.26	2/3/I	11.3	1327	47.0	101	693	3200	10.00	15240	5091	33.9	POOH to csg point

Interval: 2543 m. to 2750 m. ROP: 11.30 m/hr.

Flow rate 636.0 gpm. Ann.Vel: 40.38 m/min (DP/DH
MW: 10.0 ppg PV 16 . YP 10 Gel (10 sec) 4 YP/PV 1.13
n = 0.556 K = 1.426

Cuttings Density: 2.10 (Claystone/Siltstone)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	16.56	24.42	0.5959	0.0055	0.0093
0.750	12.42	28.56	0.6969	0.0055	0.0079
0.500	8.28	32.70	0.7973	0.0055	0.0069
0.250	4.14	36.84	0.8990	0.0055	0.0061
0.125	1.41	39.57	0.9657	0.0055	0.0057
0.063	0.50	40.48	0.9879	0.0055	0.0056

Cuttings Density: 2.20 (Claystone/Siltstone)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	17.76	23.22	0.5665	0.0055	0.0097
0.750	13.32	27.66	0.6749	0.0055	0.0082
0.500	8.88	32.10	0.7833	0.0055	0.0070
0.250	4.44	36.54	0.8916	0.0055	0.0062
0.125	1.53	39.44	0.9625	0.0055	0.0057
0.063	0.54	40.44	0.9868	0.0055	0.0056

Cuttings Density: 2.30 (Claystone/Siltstone)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	18.93	22.05	0.5381	0.0055	0.0103
0.750	14.19	26.73	0.6536	0.0055	0.0084
0.500	9.46	31.51	0.7691	0.0055	0.0072
0.250	4.73	36.25	0.8845	0.0055	0.0062
0.125	1.66	39.32	0.9595	0.0055	0.0057
0.063	0.59	40.39	0.9857	0.0055	0.0056

Interval: 2543 m. to 2750 m. ROP: 11.30 m/hr.

Flow rate 500.0 gpm. Ann.Vel: 56.04 m/min (DC/OH)
MW: 10.0 ppg PV 15 YP 13 Gel (10 sec) 4 YP/PV 1.13
n = 0.556 K = 1.426

Cuttings Density: 2.10 (Claystone/Siltstone)

Cutting size	Vs	Vc	Rct	CF	Ca
1.000	19.20	37.74	0.6528	0.0055	0.0033
0.750	14.40	42.54	0.7471	0.0055	0.0074
0.500	9.60	47.34	0.8314	0.0055	0.0056
0.250	4.80	52.14	0.9157	0.0055	0.0050
0.125	2.40	54.54	0.9578	0.0055	0.0053
0.063	1.07	55.27	0.9833	0.0055	0.0055

Cuttings Density: 2.20 (Claystone/Siltstone)

Cutting size	Vs	Vc	Rct	CF	Ca
1.000	20.60	36.34	0.6383	0.0055	0.0035
0.750	15.45	41.49	0.7287	0.0055	0.0076
0.500	10.30	46.64	0.8191	0.0055	0.0057
0.250	5.15	51.79	0.9096	0.0055	0.0051
0.125	2.57	54.37	0.9543	0.0055	0.0053
0.063	0.73	56.21	0.9872	0.0055	0.0056

Cuttings Density: 2.30 (Claystone/Siltstone)

Cutting size	Vs	Vc	Rct	CF	Ca
1.000	21.95	35.00	0.6146	0.0055	0.0030
0.750	16.46	40.48	0.7109	0.0055	0.0073
0.500	10.97	45.97	0.8073	0.0055	0.0063
0.250	5.49	51.46	0.9036	0.0055	0.0061
0.125	2.74	54.20	0.9518	0.0055	0.0058
0.063	0.79	56.15	0.9861	0.0055	0.0055

Interval: 2257 m. to 2543 m. ROP: 13.90 m/hr.

Flow rate 647.0 gpm. Ann.Vel: 53.71 m/min (DC/OH
MW: 10.0 ppg PV 17 YP 16 Gel (10 sec) 3 YP/Pv 0.94
n = 0.599 K = 1.083

Cuttings Density: 2.30 (Siltstone)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	27.07	26.64	0.4960	0.0072	0.0145
0.750	18.96	36.75	0.6843	0.0072	0.0105
0.500	11.30	42.40	0.7895	0.0072	0.0091
0.250	5.65	46.05	0.8948	0.0072	0.0080
0.125	2.83	50.38	0.9474	0.0072	0.0076
0.063	0.84	52.87	0.9844	0.0072	0.0073

Cuttings Density: 2.40 (Siltstone)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	28.27	25.43	0.4736	0.0072	0.0152
0.750	17.97	35.74	0.6654	0.0072	0.0108
0.500	11.98	41.73	0.7770	0.0072	0.0093
0.250	5.99	47.72	0.8885	0.0072	0.0081
0.125	2.99	50.71	0.9442	0.0072	0.0075
0.063	0.90	52.80	0.9832	0.0072	0.0073

Interval: 2257 m. to 2543 m. ROP: 13.90 m/hr.

Flow rate 647.0 gpm. Ann.Vel: 38.65 m/min (DP/OH
MW: 10.0 ppg PV 17 YP 16 Gel (10 sec) 3 YP/PV 0.94
n = 0.599 K = 1.083

Cuttings Density: 2.30 (Siltstone)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	19.75	18.90	0.4890	0.0072	0.0147
0.750	14.61	23.84	0.6168	0.0072	0.0117
0.500	9.87	28.77	0.7445	0.0072	0.0097
0.250	4.94	33.71	0.8723	0.0072	0.0082
0.125	1.81	36.84	0.9532	0.0072	0.0075
0.063	0.64	38.01	0.9835	0.0072	0.0073

Cuttings Density: 2.40 (Siltstone)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	20.93	17.72	0.4586	0.0072	0.0157
0.750	15.69	22.95	0.5939	0.0072	0.0121
0.500	10.46	28.19	0.7293	0.0072	0.0099
0.250	5.23	33.42	0.8646	0.0072	0.0083
0.125	2.62	36.03	0.9323	0.0072	0.0077
0.063	0.69	37.96	0.9822	0.0072	0.0073

Interval: 1430 m. to 2257 m. ROP: 13.30 m/hr.

Flow rate 773.0 gpm. Ann.Vel: 46.47 m/min (DP/OH
MW: 9.3 ppg PV 14 YP 10 Gel (10 sec) 2 YP/PV 0.71
n = 0.663 K = 0.548

Cuttings Density: 2.20 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	27.36	18.61	0.4004	0.0057	0.0143
0.750	17.96	28.51	0.6135	0.0057	0.0093
0.500	11.98	34.50	0.7423	0.0057	0.0077
0.250	5.99	40.49	0.8712	0.0057	0.0066
0.125	2.99	43.48	0.9356	0.0057	0.0061
0.063	0.91	45.56	0.9803	0.0057	0.0053

Cuttings Density: 2.30 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	29.12	17.36	0.3734	0.0057	0.0153
0.750	19.05	27.42	0.5901	0.0057	0.0097
0.500	12.70	33.77	0.7267	0.0057	0.0079
0.250	6.35	40.12	0.8634	0.0057	0.0066
0.125	3.13	43.30	0.9317	0.0057	0.0061
0.063	0.93	45.49	0.9788	0.0057	0.0053

Cuttings Density: 2.40 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	30.32	16.15	0.3476	0.0057	0.0165
0.750	20.11	26.37	0.5674	0.0057	0.0101
0.500	13.40	33.07	0.7116	0.0057	0.0080
0.250	6.70	39.77	0.8558	0.0057	0.0067
0.125	3.35	43.12	0.9279	0.0057	0.0062
0.063	1.05	45.42	0.9774	0.0057	0.0059

Interval: 1400 m. to 2257 m. ROP: 13.30 m/hr.

Flow rate 778.0 gpm. Ann.Vel: 64.58 m/min (DC/OH)
MW: 9.3 ppg PV 14 YP 10 Gel (10 sec) 2 YP/PV 0.71
n = 0.663 K = 0.548

Cuttings Density: 2.20 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	27.36	36.72	0.5635	0.0057	0.0101
0.750	24.13	40.45	0.6263	0.0057	0.0091
0.500	13.49	51.00	0.7912	0.0057	0.0072
0.250	6.74	57.84	0.8956	0.0057	0.0061
0.125	3.37	61.21	0.9478	0.0057	0.0060
0.063	1.16	63.42	0.9821	0.0057	0.0058

Cuttings Density: 2.30 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	29.12	35.46	0.5491	0.0057	0.0104
0.750	25.22	39.36	0.6095	0.0057	0.0094
0.500	14.30	50.28	0.7785	0.0057	0.0074
0.250	7.15	57.43	0.8893	0.0057	0.0064
0.125	3.58	61.00	0.9446	0.0057	0.0061
0.063	1.25	63.33	0.9807	0.0057	0.0058

Cuttings Density: 2.40 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	30.32	34.26	0.5305	0.0057	0.0108
0.750	26.26	38.32	0.5934	0.0057	0.0096
0.500	15.10	49.48	0.7662	0.0057	0.0075
0.250	7.55	57.03	0.8831	0.0057	0.0065
0.125	3.77	60.81	0.9416	0.0057	0.0061
0.063	1.33	63.24	0.9793	0.0057	0.0058

Interval: 1203 m. to 1489 m. ROP: 13.30 m/hr.

Flow rate 620.0 gpm. Ann.Vel: 37.04 m/min (DP/OH
MW: 9.3 ppg PV 9 YP 9 Gel (10 sec) 4 YP/Pv 1.00
n = 0.585 K = 0.641

Cuttings Density: 2.29 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	22.12	14.32	0.4028	0.0075	0.0186
0.750	16.59	20.45	0.5521	0.0075	0.0136
0.500	11.06	25.98	0.7014	0.0075	0.0107
0.250	5.53	31.51	0.8507	0.0075	0.0088
0.125	2.76	34.27	0.9253	0.0075	0.0081
0.063	0.78	36.26	0.9790	0.0075	0.0077

Cuttings Density: 2.30 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	23.46	13.58	0.3667	0.0075	0.0205
0.750	17.59	19.44	0.5250	0.0075	0.0143
0.500	11.73	25.31	0.6833	0.0075	0.0110
0.250	5.86	31.17	0.8417	0.0075	0.0089
0.125	2.93	34.10	0.9208	0.0075	0.0082
0.063	0.84	36.20	0.9774	0.0075	0.0077

Cuttings Density: 2.40 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	24.76	12.28	0.3315	0.0075	0.0226
0.750	18.57	18.47	0.4986	0.0075	0.0151
0.500	12.38	24.66	0.6658	0.0075	0.0113
0.250	6.19	30.85	0.8329	0.0075	0.0090
0.125	3.09	33.94	0.9164	0.0075	0.0082
0.063	0.90	36.14	0.9753	0.0075	0.0077

Interval: 1208 m. to 1409 m. ROP: 13.90 m/hr.

Flow rate 620.0 gpm. Ann.vel: 51.46 m/min (DC/DH
MW: 9.3 ppg PV 9 YP 9 Gel (10 sec) 4 YP/PV 1.00
n = 0.585 K = 0.641

Cuttings Density: 2.20 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	27.26	23.60	0.4586	0.0075	0.0164
0.750	19.55	31.02	0.6202	0.0075	0.0121
0.500	13.03	38.43	0.7468	0.0075	0.0101
0.250	6.52	44.35	0.8734	0.0075	0.0085
0.125	3.26	48.21	0.9367	0.0075	0.0080
0.063	1.09	50.39	0.9790	0.0075	0.0077

Cuttings Density: 2.30 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	29.12	22.35	0.4342	0.0075	0.0173
0.750	20.73	30.73	0.5972	0.0075	0.0126
0.500	13.82	37.64	0.7315	0.0075	0.0103
0.250	6.91	44.55	0.8657	0.0075	0.0087
0.125	3.46	48.01	0.9329	0.0075	0.0080
0.063	1.16	50.30	0.9774	0.0075	0.0077

Cuttings Density: 2.40 (Calcarenite/Marl)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	30.32	21.14	0.4108	0.0075	0.0183
0.750	26.20	25.20	0.4898	0.0075	0.0153
0.500	14.59	36.83	0.7156	0.0075	0.0105
0.250	7.29	44.17	0.8583	0.0075	0.0087
0.125	3.65	47.82	0.9291	0.0075	0.0081
0.063	1.25	50.22	0.9753	0.0075	0.0077

CUTTINGS TRANSPORT TABLES

The tables provide a quick look at hole cleaning and cuttings removal. By controlling the ROP, raising or lowering the flow rate or changing the rheological properties of the mud, one can decide the action necessary to provide the most efficient hole cleaning.

In the following tables the data has been calculated between PC and OH and also between DP and OH, with the specific flowrates and mud properties used over the selected interval. Cuttings sizes are in decimal inches.

The following is a brief explanation of the terms utilised :

Vs = slip velocity (ft/min)

Vc = annular velocity - slip velocity

Cf = cuttings generated at the bit (gallons/gallon of mud)

Ca = cuttings in annulus (gallons/gallon of mud)

Rct = cuttings transport ratio (decimal percentage)
= cutting velocity/annular velocity

HYDRAULICS /cont.

During a wiper trip at 2750m to the 13 3/8" casing shoe (prior to Schlumberger logging) several bridges were reamed out before reaching bottom.

The hole was finally conditioned with 11.0 ppg mud before Schlumberger logging, this seemed to contain the major problems and logging proceeded with no problems.

In summary it can be said that the Gippsland Limestone presents few problems with hole cleaning and solids control, the rheological and hydraulic parameters used keep the hole in good condition. However within the Lakes Entrance Formation problems with hole cleaning and solids control can arise, resulting in tight spots, stuck pipe, and an excessive amount of cuttings within the annulus.

CASING AND CEMENTING

67 joints, and two shoe joints of S-95 Butress (47 ft/lb) and 132 joints plus the well head of L-80 Butress (47 lb/ft) were run in the hole. The casing shoe was set at 2750.4m (9023.7 ft) and the following was then pumped:

1) 960 bbls of drill mud at 8 bbls/min.
2) Pre-flush; 25 bbls of drill mud. The bottom plug was then released at a pressure of 750 psi.
3) Lead slurry; 500 sacks of Class "G" cement at 12.0 ppg was mixed with 14.2 gal/sack of drill water. 3.7% gel at 13.0 lbs/bbl and 0.5% CFR-2 at 1.4 lbs/bbl were added.
4) Tail slurry; 500 sacks of Class "G" cement at 15.8 ppg was mixed with with 5.0 gal/sack of drill water. 0.5% CFR-2 at 4.0 lbs/bbl, 0.8% Halad 22A at lbs/bbl and 0.1% HR-5L at 0.08 gal/bbl were added.
5) The cement was displaced by 603 bbls of drillmud at a rate of 8 bbl/mi The pressure required to release the top plug was 3000 psi.

The plug was bumped using 3000 psi and held for 15 minutes. 2.5 bbls bled back after this time.

The estimated top of the cement, based on the caliper log was 888m (2913 ft) this is a 305m (1000 ft) overlap in the 13 3/8" casing.

WOB/ROP/RPM PRACTICE /cont.

The overall rate of penetration including circulating,wiper trips and surveys was 8.9 m/hr (173.92 bottom hours).
Drilling practices can be summarized as follows:

DEPTH INTERVAL m	ROP m/hr	WOB klbs	RPM	FR gpm
1208-1433	13.9	45.0	106	620
1433-2257	13.3	25.2	709	773
2257-2543	13.9	43.6	93	647
2543-2760	11.3	47.0	103	696

HYDRAULICS

The 12 1/4" phase was drilled with three conventional bits and one diamond bit (DIAMAX ADS II).
The average bit efficiencies of the conventional bits # 5,7 and 3 was 58% and an average HP/sqin value of 5.85.
The bit hydraulics of bit # 6 (diamond bit) however were difficult to determine due to the mud flow through the turbine thet was lost over the bit (an approximate TFA value of 1.5 was assumed).
Despite the high ROP values,high flow rates and high annular velocities helped in the removal of cuttings from the well.With the conventional bits an average flow rate of 550 gpm (15.5 bpm) was pumped,and an average annular velocity of 52 m/min between DP/OH,falling to 39 m/min between DC/OH was maintained.The flow rate was increased with the diamond bit to 730 gpm (18.6 bpm) and an increased annular velocity of 64.5 m/min between DP/OH and 46.5 m/min between DC/OH.
The initial stages of the phase caused few problems.From 1208m to 2370m the mud weight was maintained at 9.3-9.4 ppg.The hole was cleaned efficient-ly (see cutting transport tables),with little or no fill encountered after trips.
Although flow was turbulent in the annulus and n-values were high, averaging 0.7232 in the early stages,Schlumberger caliper logs showed the hole to be in good condition.In the latter stages however,hole fill, drag,tight spots and bridges were encountered.
At 2370m the well "packed off",accordingly the mud weight was raised to 10.0 ppg and the n-values were reduced to an average value of 0.5039.
After trips at 2371m and 2543m hole fill was tagged 70 ft and 60 ft off bottom respectivly.Drag was noted at many connections from 2600m,and large volumes of cuttings were seen over the shale shaker screens.The hole was circulated several times during this later stage to clean the annulus of cuttings.
Although annular flow was laminar,n-values were low,ROP reduced and annular velocities remained high,hole conditions were not good.This may be explained by the sloughing of "overpressured shales" or an under-balanced mud system.

12 1/4" PHASE REPORT

SUMMARY

The 12 1/4" hole was drilled from 1209m (3966 ft) to 2760m (9055 ft) a total of 1551m (5089 ft).Four bits were used.

After testing the BOP stack,Hydril and surface equipment,the float collar,cement and casing shoe were drilled out and a LOT performed in new formation.

Bit # 5,SMITH SDT 12 1/4" (3*14),drilled from 1209m (3966 ft) to 1483m (4332 ft),a total of 281m (922 ft).A totco survey was dropped at 1438m with 1 deg. deviation,and the bit was pulled out.

Bit # 6,DIAMAX ADS II 12 1/4" (Diamond Bit - PDA;approx. 1.5),drilled from 1483m (4882 ft) to 2257m (7405 ft),a total of 768m (2520 ft).A totco survey was dropped at 1841m (6040 ft) with 3/4 deg. deviation and a ten stand wiper trip made.A second survey at 2209m (7247 ft) was also 3/4 deg. A ten stand wiper trip was made at 2226m (7303 ft).At 2257m (7405 ft) the bit was pulled out.

Bit # 7,SMITH SDS 12 1/4" (3*14),drilled from 2257m (7405 ft) to 2543m (8343 ft),a total of 286m (938 ft).At 2370m (7775 ft) the hole packed off.The drill pipe was freed and a wiper trip made to the casing shoe.The hole was circulated for 30 minutes before running back to bottom 70 ft of fill was tagged and the hole was washed and reamed to bottom. At 2530m (8300 ft) the hole packed off a second time.Drilling continued to 2543m (8343 ft),a totco survey was dropped at this depth with 1/2 deg. deviation.After circulating bottoms up the bit was pulled out.

The BOP stack,Hydril and surface equipment were tested again (tested okay) and the lines slipped and cut before running in the hole.

Bit # 8,SMITH SDT 12 1/4" (3*15),drilled from 2543m (8343 ft) to 2760m (9055 ft),9 5/8" casing point.30 ft of fill was tagged and the bit washed and reamed to bottom.At 2722m (8930 ft) the hole was circulated to clean an excessive amount of cuttings out of the annulus.Drilling continued to 2760m (9055 ft) when the casing depth was reached.A wiper trip was made to the casing shoe and several bridges were reamed out whilst running back to bottom.The hole was circulated and conditioned for 7 hours whilst the mud weight was increased to 11.0 ppg.A totco survey was dropped at 2760m with 1/2 deg. deviation and the bit pulled out.

Schlumberger was rigged up and two logs were run;

Run # 1 ; DIL,SLS,GR,CAL.
Run # 2 ; SWC (21 shot-100% recovery).

After rigging down Schlumberger the hole was conditioned prior to running the 9 5/8" casing.

WOB/ROP/RPM PRACTICE

This phase was completed with a total of four bits,with an overall drilling time of 117.91 hours,the average rate of penetration was 13.5 m/hr

8 1/2" PHASE REPORT

SUMMARY

After running and cementing the 9 5/8" casing, the BOP's were tested sucessfully. The 8 1/2" BHA was then made up together with Bit # 9, a BIT88 HSJ (3 * 10) and run into the hole. The cement was tagged at 2725m. The float collar and casing shoe were then drilled out, together with 12m of cement to 2762m. A Leak Off Test was then performed which gave an equivalent mud weight of 14.5 ppg (no formation intake was recorded).

The 8 1/2" phase was drilled from 2760m to 3335.0m, a total of 575.0 m. The actual drilling time was 47.25 hours, which gives an average drilling rate of 12.25 m/hr. The bit runs made were as follows:

Bit # 9 - BURTON HSJ 8 1/2" (3*10) drilled from 2760m to 2762m, a total of only 2m. It also drilled out the cement and casing shoe before being pulled due to a malfunction in the shock subs.

Bit # 10 - SMITH F2 8 1/2" (3*11) drilled the bulk of the 8 1/2" phase from 2762m to 3335.0m, a total of 623.0m. It would probably have continued to drill sucessfully, but it was decided to call T.D. as the rig was waiting on weather. A short wiper trip was performed at 3304m to the shoe and no problems were found with the hole.

After reaching T.D. a complete wiper trip and circulation was performed to prepare the hole for Schlumberger logging. The following logs were then run:

DIL - BHC - GR
CDC - CNL - GR
HDT
CBT
Velocity Survey

WOB/ROP/RPM PRACTICE

This phase was completed with only 2 bits. The parameters used during this phase are summarised in the table below:

DEPTH INTERVAL m	ROP m/hr	WOB klb	RPM	FR gpm
2760 - 2773	5	35	62	440
2773 - 3102	20	35	60	435
3102 - 3112	4	30	58	430
3112 - 3220	20	35	55	430
3220 - 3320	10	37	60	435
3320 - 3336	8	35	57	430

8 1/2" PHASE /cont.

HYDRAULICS

The 8 1/2" Phase was drilled using a seawater-polymer mud with the weight kept at around 9.0 ppg. Bit # 10 did the bulk of the drilling and it had a high bit efficiency of 72% with an HP/sq in of 3.9. These values are higher than the optimum calculated values and the annular flow was turbulant. An increase in the nozzle size to 3 * 12 and a slight decrease in the flow rate would have prevented this. However, very little washing out of the hole was encountered (comparing the calculated lag time with that found by carbide testing) and no cavings were found.

Even though the n values were remans slightly on the low side, the cuttings transport tables show that the hole cleaning was very good and on the wiper trips little or no fill was encountered. Generally, the hydraulics of this phase were very good as is reflected by the speed of drilling and the condition of the hole.

CUTTINGS TRANSPORT TABLES

The tables provide a quick look at hole cleaning and cuttings removal. By controlling the ROP, raising or lowering the flow rate or changing the rheological properties of the mud, one can decide the action necessary to provide the most efficient hole cleaning.

In the following tables the data has been calculated between D2 and D1 and also between D2 and D1, with the specific flowrates and mud properties used over the selected interval. Cuttings sizes are in decimal inches.

The following is a brief explanation of the terms utilised :

Vs = slip velocity (ft/min)

Va = annular velocity - slip velocity

Cf = cuttings generated at the bit (gallons/gallon of mud)

Ca = cuttings in annulus (gallons/gallon of mud)

Rct = cuttings transport ratio (decimal percentage)
= cutting velocity/annular velocity

Interval: 2760 m. to 2773 m. ROP: 5.00 m/hr.

Flow rate 410.0 gpm. Ann.Vel: 33.05 m/min (32/83)
MW: 9.0 ppg PV 5 YP 3 Gel (10 sec) 1 YP/PV 1.33
n = 0.514 K = 0.745

Cuttings Density: 2.30 (SS\YSTD.3)

Cutting size	Vs	Vc	Rct	CE	Ca
1.000	23.79	70.26	0.7033	0.0013	0.0026
0.750	24.97	74.11	0.7433	0.0013	0.0021
0.500	22.36	78.59	0.7945	0.0013	0.0023
0.250	9.56	89.39	0.8995	0.0013	0.0026
0.125	1.33	94.22	0.9513	0.0013	0.0019
0.063	2.43	96.91	0.9764	0.0013	0.0019

Cuttings Density: 2.30 (SILTSTONE)

Cutting size	Vs	Vc	Rct	CE	Ca
1.000	30.05	69.80	0.6967	0.0013	0.0026
0.750	27.02	73.03	0.7373	0.0013	0.0025
0.500	21.25	77.30	0.7755	0.0013	0.0023
0.250	10.22	88.32	0.8858	0.0013	0.0026
0.125	5.11	93.93	0.9434	0.0013	0.0019
0.063	2.53	96.47	0.9743	0.0013	0.0019

Interval: 2773 m. to 3102 m. ROP: 20.00 m/hr.

Flow rate 435.0 gpm. Ann.Vel: 37.02 m/min (32/83)
MW: 9.0 ppg PV 5 YP 3 Gel (10 sec) 1 YP/PV 1.33
n = 0.514 K = 0.745

Cuttings Density: 2.30 (SAND/SANDSTONE)

Cutting size	Vs	Vc	Rct	CE	Ca
1.000	33.53	64.39	0.6576	0.0074	0.0113
0.750	29.04	68.88	0.7034	0.0074	0.0105
0.500	23.71	74.21	0.7579	0.0074	0.0093
0.250	11.31	86.11	0.8794	0.0074	0.0084
0.125	5.91	92.01	0.9397	0.0074	0.0079
0.063	2.93	94.94	0.9696	0.0074	0.0075

Cuttings Density: 2.30 (SILTSTONE)

Cutting size	Vs	Vc	Rct	CE	Ca
1.000	30.05	67.87	0.6932	0.0074	0.0107
0.750	26.02	71.90	0.7343	0.0074	0.0101
0.500	21.25	76.67	0.7830	0.0074	0.0095
0.250	10.20	87.72	0.8959	0.0074	0.0083
0.125	5.10	92.82	0.9479	0.0074	0.0073
0.063	2.57	95.35	0.9737	0.0074	0.0075

Interval: 3102 m. to 3112 m. ROP: 4.00 m/hr.

Flow rate 430.0 gpm. Ann.Vel: 96.79 m/min (DC/OH)
MW: 9.0 ppg PV 11 YP 7 Gel (10 sec) 1 YP/PV 0.64
n = 0.688 K = 0.356

Cuttings Density: 2.60 (SAND/SANDSTONE)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	33.53	63.26	0.6536	0.0015	0.0023
0.750	29.04	67.75	0.7000	0.0015	0.0021
0.500	23.71	73.03	0.7550	0.0015	0.0020
0.250	10.97	85.83	0.8867	0.0015	0.0017
0.125	5.48	91.31	0.9434	0.0015	0.0016
0.063	2.76	94.03	0.9715	0.0015	0.0015

Cuttings Density: 2.30 (SILTSTONE)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	30.05	66.75	0.6896	0.0015	0.0022
0.750	26.02	70.77	0.7312	0.0015	0.0021
0.500	21.25	75.55	0.7805	0.0015	0.0019
0.250	9.47	87.32	0.9021	0.0015	0.0017
0.125	4.74	92.06	0.9511	0.0015	0.0016
0.063	2.39	94.41	0.9753	0.0015	0.0015

Interval: 3112 m. to 3220 m. ROP: 20.00 m/hr.

Flow rate 430.0 gpm. Ann.Vel: 96.79 m/min (DC/OH)
MW: 9.0 ppg PV 11 YP 7 Gel (10 sec) 1 YP/PV 0.64
n = 0.688 K = 0.356

Cuttings Density: 2.30 (SILTSTONE)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	30.05	66.75	0.6896	0.0075	0.0109
0.750	26.02	70.77	0.7312	0.0075	0.0103
0.500	21.25	75.55	0.7805	0.0075	0.0096
0.250	9.47	87.32	0.9021	0.0075	0.0083
0.125	4.74	92.06	0.9511	0.0075	0.0079
0.063	2.39	94.41	0.9753	0.0075	0.0077

Cuttings Density: 2.20 (CLAYSTONE)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	28.79	68.00	0.7026	0.0075	0.0107
0.750	24.93	71.86	0.7424	0.0075	0.0101
0.500	20.36	76.44	0.7897	0.0075	0.0095
0.250	8.95	87.85	0.9076	0.0075	0.0083
0.125	4.47	92.32	0.9538	0.0075	0.0079
0.063	2.25	94.54	0.9767	0.0075	0.0077

Interval: 3220 m. to 3320 m. ROP: 10.00 m/hr.

Flow rate 435.0 gpm. Ann.Vel: 97.92 m/min (DC/DH
MW: 9.0 ppg PV 13 YP 13 Gel (10 sec) 1 YP/PV 1.00
n = 0.585 K = 0.926

Cuttings Density: 2.60 (SAND/SANDSTONE)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	33.53	64.39	0.6576	0.0037	0.0056
0.750	29.04	68.88	0.7034	0.0037	0.0053
0.500	19.43	78.49	0.8016	0.0037	0.0046
0.250	9.72	88.20	0.9008	0.0037	0.0041
0.125	4.86	93.06	0.9504	0.0037	0.0039
0.063	2.45	95.47	0.9750	0.0037	0.0038

Cuttings Density: 2.30 (SILTSTONE)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	30.05	67.87	0.6932	0.0037	0.0053
0.750	26.02	71.90	0.7343	0.0037	0.0050
0.500	16.78	81.14	0.8286	0.0037	0.0045
0.250	8.39	89.53	0.9143	0.0037	0.0041
0.125	4.20	93.72	0.9571	0.0037	0.0039
0.063	2.11	95.81	0.9784	0.0037	0.0038

Interval: 3320 m. to 3385 m. ROP: 7.50 m/hr.

Flow rate 430.0 gpm. Ann.Vel: 96.79 m/min (DC/C
MW: 9.0 ppg PV 13 YP 13 Gel (10 sec) 1 YP/PV 1.00
n = 0.585 K = 0.926

Cuttings Density: 2.60 (SAND/SANDSTONE)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	33.53	63.26	0.6536	0.0028	0.0043
0.750	29.04	67.75	0.7000	0.0028	0.0040
0.500	19.40	77.40	0.7996	0.0028	0.0035
0.250	9.70	87.10	0.8998	0.0028	0.0031
0.125	4.85	91.94	0.9499	0.0028	0.0030
0.063	2.44	94.35	0.9747	0.0028	0.0029

Cuttings Density: 2.20 (CLAYSTONE)

Cutting size	Vs	Vc	Rct	Cf	Ca
1.000	28.79	68.00	0.7026	0.0028	0.0040
0.750	24.93	71.86	0.7424	0.0028	0.0038
0.500	15.83	80.97	0.8365	0.0028	0.0034
0.250	7.91	88.88	0.9182	0.0028	0.0031
0.125	3.96	92.84	0.9591	0.0028	0.0029
0.063	1.99	94.80	0.9794	0.0028	0.0029

Phillips Aust Co. Athene # 1 BIT REPORT

BIT No	TYPE	SIZE	NOZZLES	DEP.IN	MTRGE	DRLNG HOURS	T/B/G	AVER M/HR	COST/M US $	WOB KLBS	RPM	FLOW	SPP	HYDRO. POWER MW	TFL	BIT /SI	Remarks
9	Hughes HSJ	8 1/2	10 10 10	2760.0	2.0	1.00	1/1/I	2.056305	20.0	80	450	2600	9.00	9933	6993	96.8	
10	Smith F2	8 1/2	11 11 11	2762.0	623.9	46.42	7/4/O	13.4	787	35.7	59	434	2300	9.00	10097	4012	55.5	1/4 Out gauge

ATHENE # 1

OVERPRESSURE SUMMARY.

Although no overpressure was expected during the drilling of ATHENE # 1, various indicators were used for the detection of abnormally compacted formations. These included:

a) DCS Exponent.
b) Flow-line Temperature.
c) Gas Shows.

DCS EXPONENT

The top section formations (to 2100m), being calcarenite, made it difficult to establish a good trend line. Also, the use of a diamond bit from 1439m to 2257m made trend setting difficult. From around 2300m to 2500m, the DCS curve showed a leftward trend. This was due to the Marl/Claystone formation acting like a transition zone between the Calcarenite formation above and the Claystone formation below. At 2500m the DCS curve kicked back to the right on entering the more silty formation. It then ran roughly parallel to the trend until about 2800m. Here, it again kicked to the left very sharply on entering the Latrobe Sand and Sandstone formation. This kick back indicated the unconsolidated nature of the rocks rather than a zone of overpressure. From here the curve gradually went back to the right, especially from about 3300m, where more siltstone and claystone began to appear.

GAS SHOWS

No significant amounts of gas were recorded during the drilling of the entire well. The highest levels were encountered in the top hole section down to about 1000m, where background gas was about 1% and a maximum reading of 4% was encountered.

For the rest of the well the background gas remained at about 0.1% - 0.2%, rarely going any higher. The maximum recorded being 0.6% at 2705m. This was deemed to be connection gas and a slight flow was also encountered. However, on performing a flow check no flow was found.

Traces of Ethane (C2) were recorded at certain depth, but no significant quantities found. There was no Propane (C3) or Butane (C4) found even in traces during the entire well.

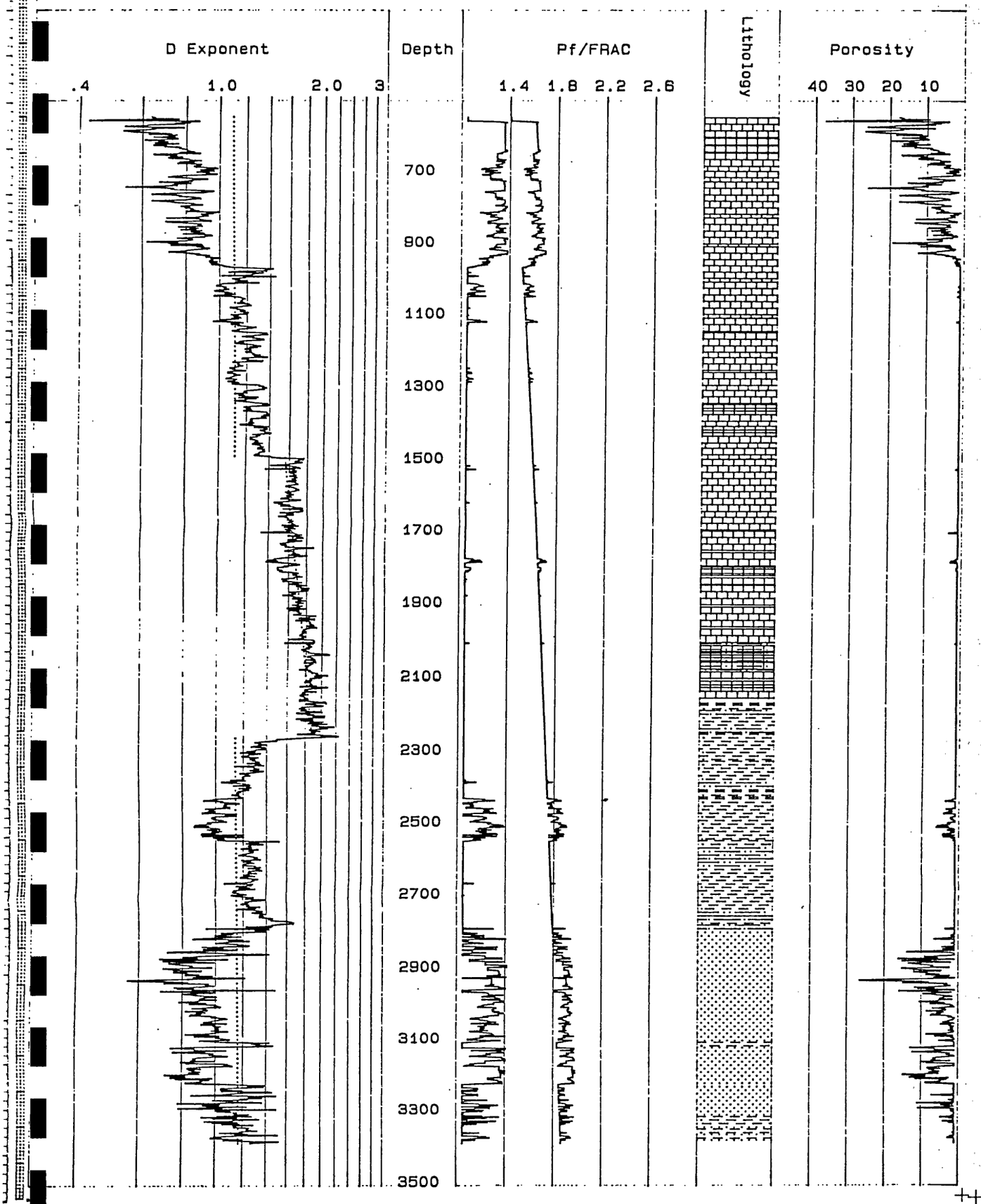
So, there was no real overpressure encountered whilst drilling ATHENE # 1. A slight hint of overpressure was given at 2705m. This comes from 4 pointers, as follows:

a) Connection gas of 0.6% (the only CG encountered).
b) Slight flow increase recorded on charts (check proved negative).
c) The Temperature gradient had increased in the preceeding 24 hours.
d) Some small cavings were found coming over the shakers.

If there was any overpressure present here it was of fairly insignificant amounts.

PHILLIPS ATHENE # 1

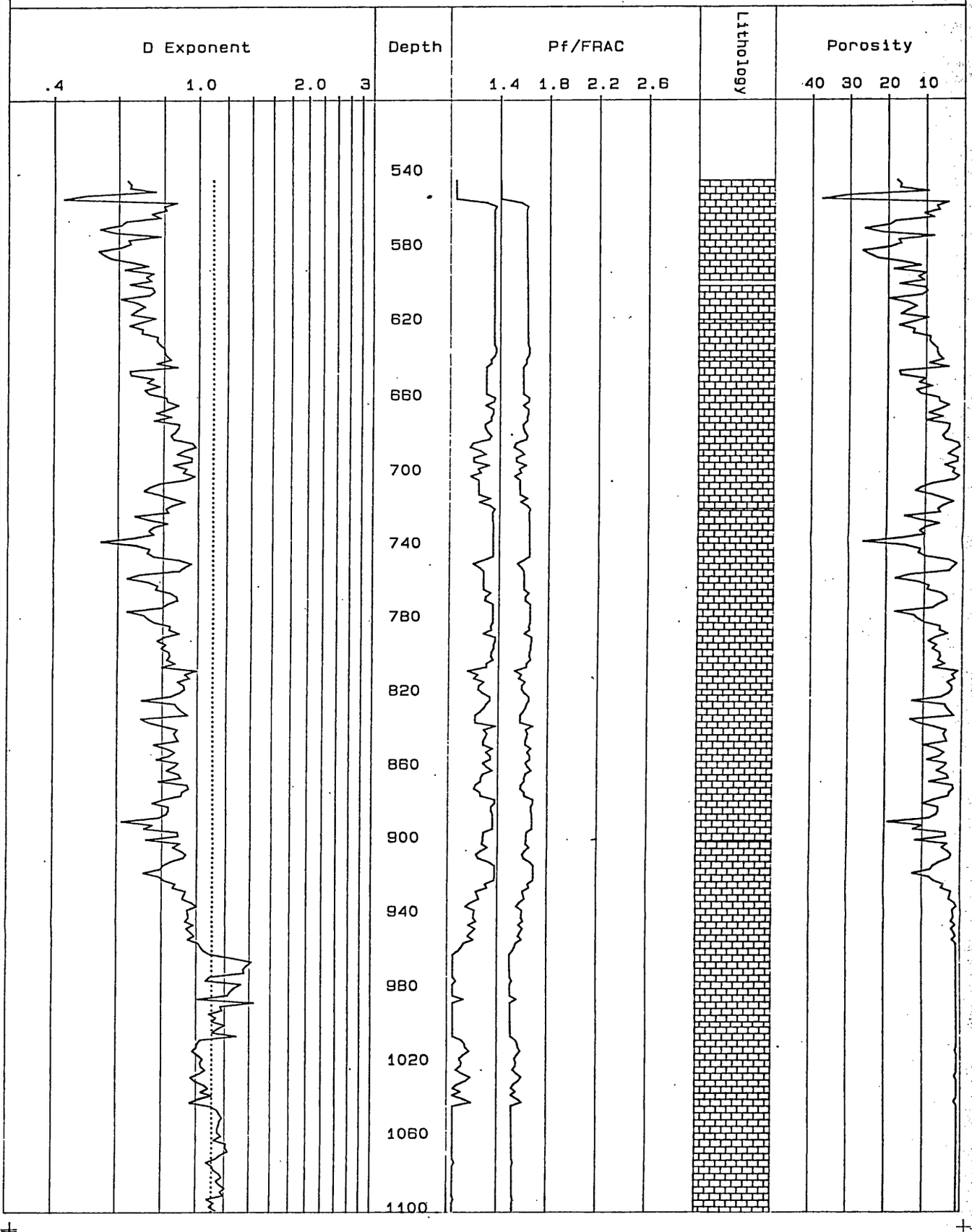
Scale 1/ 10000



Geoservices overseas S.A.

PHILLIPS ATHENE # 1

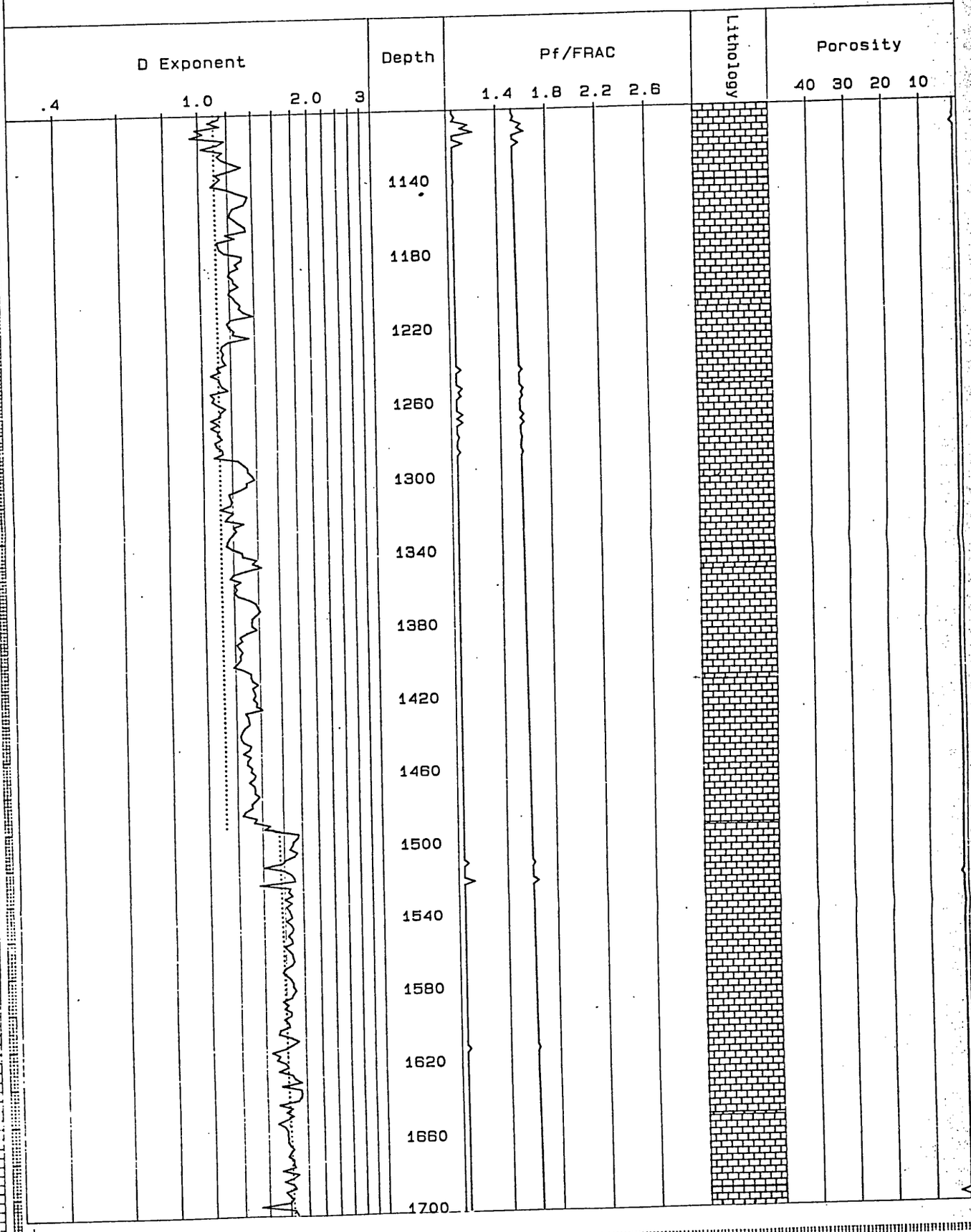
Scale 1/ 2000



Geoservices overseas S.A.

PHILLIPS ATHENE # 1

Scale 1/ 2000

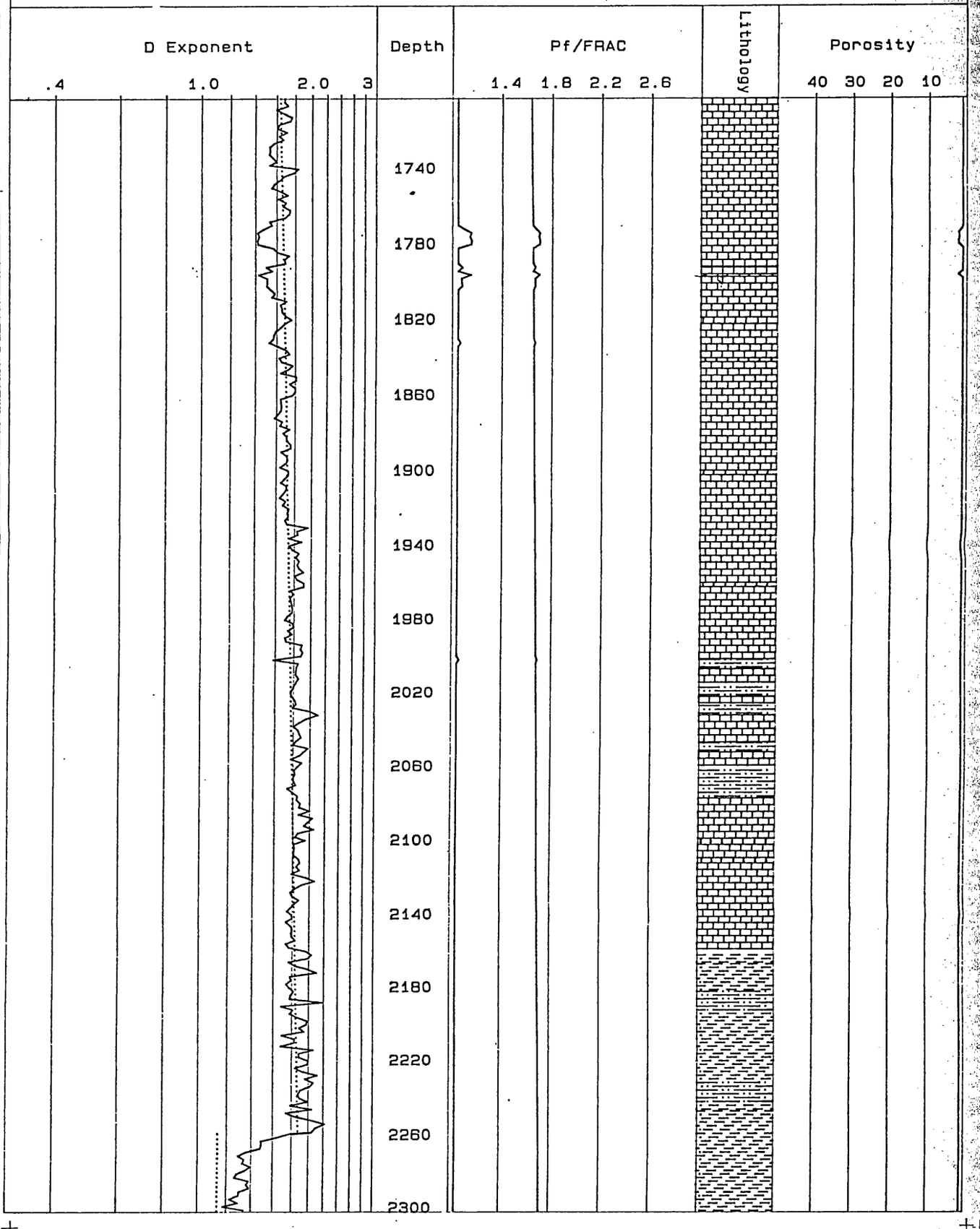


Geoservices overseas S.A.

ZERO

PHILLIPS ATHENE # 1

Scale 1/ 2000

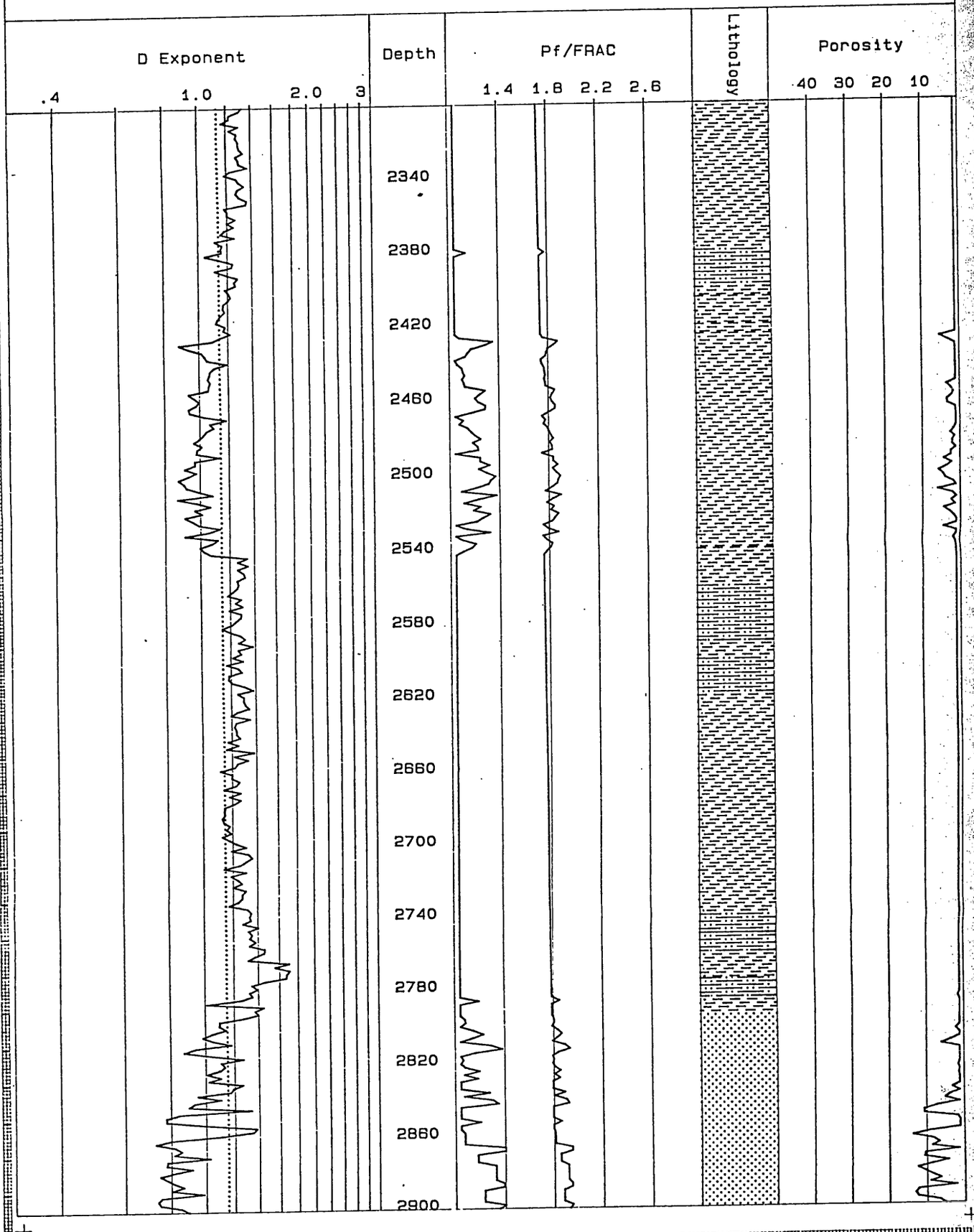


Geoservices overseas S.A.

ZERO

PHILLIPS ATHENE # 1

Scale 1/ 2000



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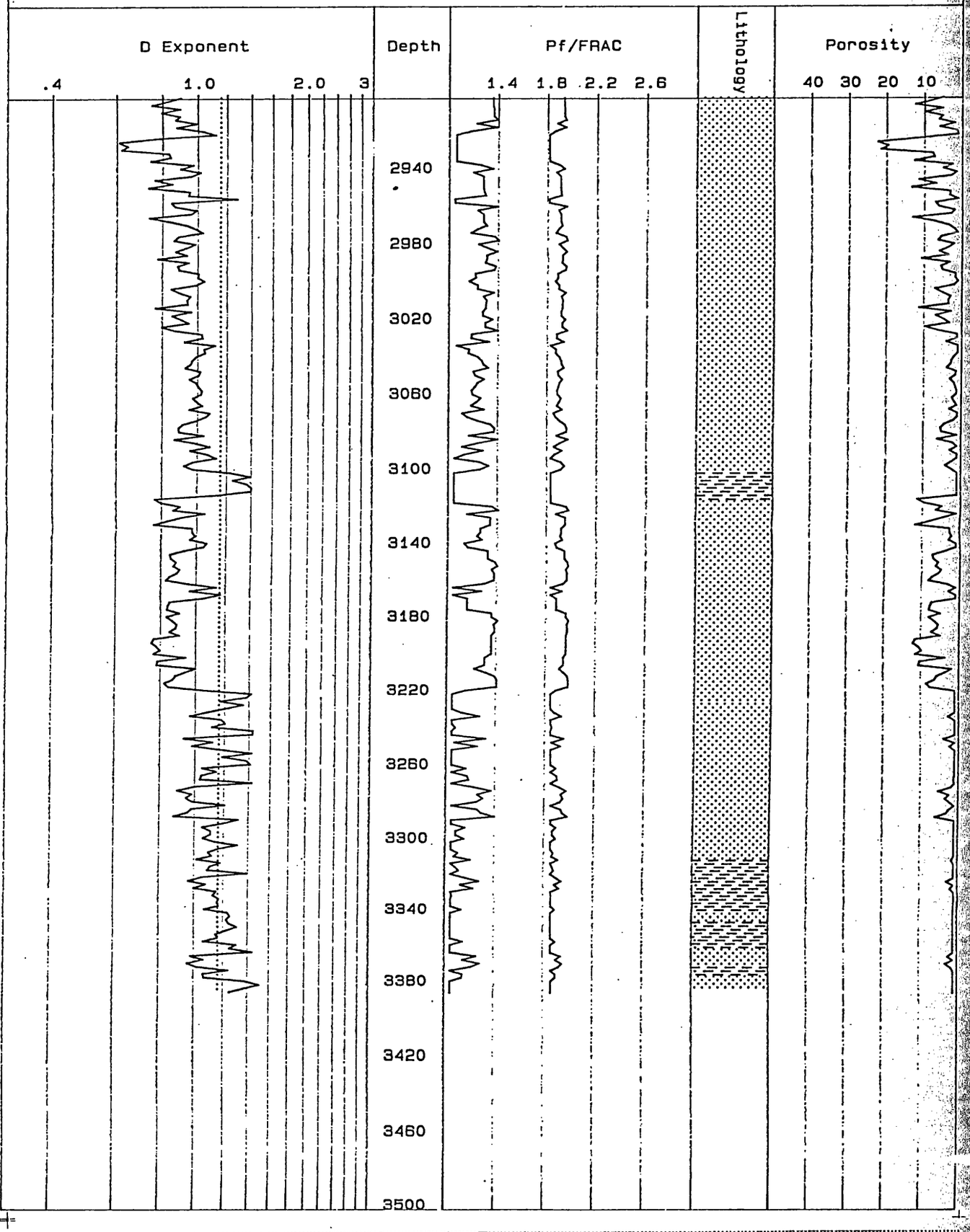
Geoservices overseas S.A.

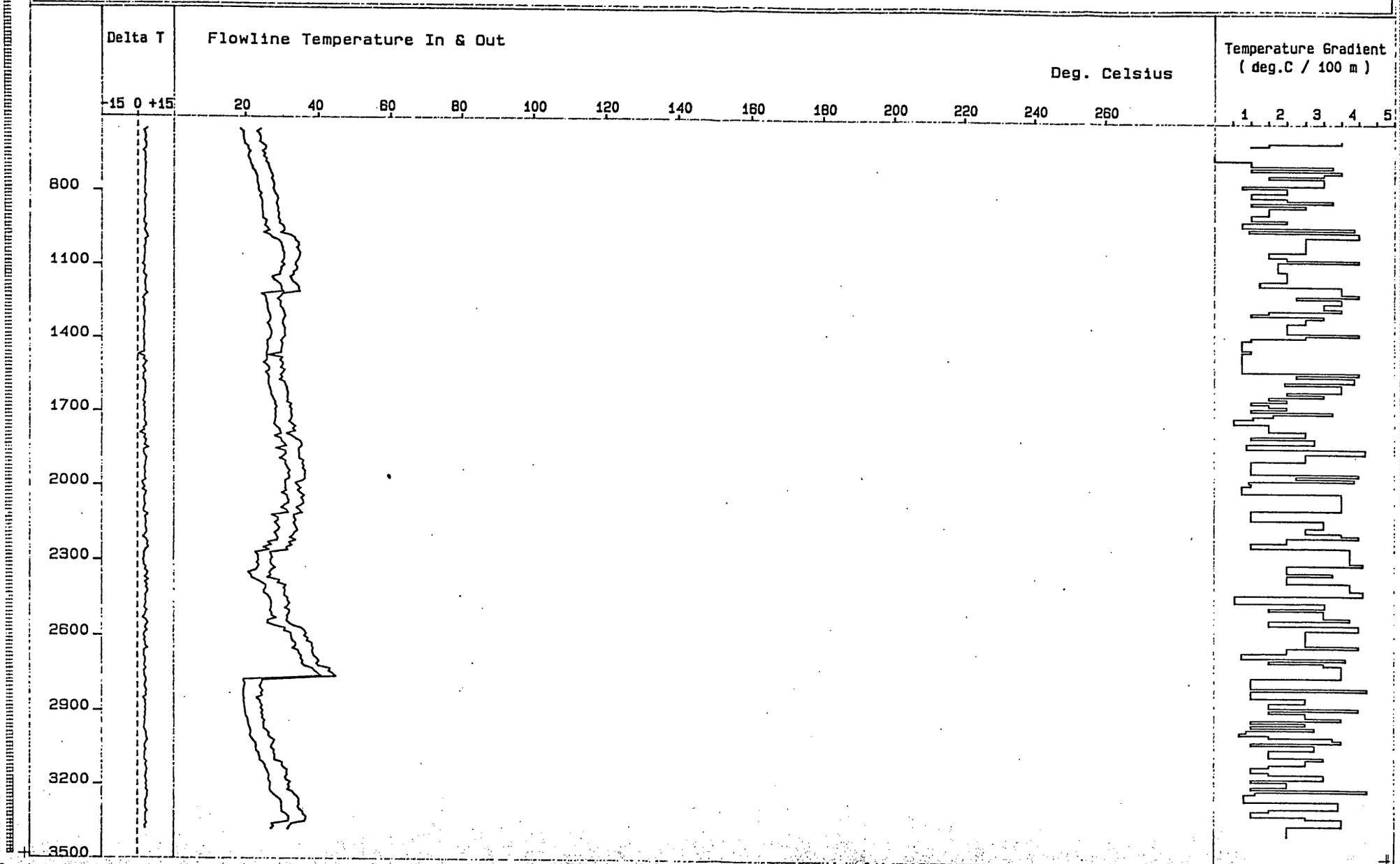
PHILLIPS ATHENE # 1

Scale 1/ 2000



Phillips Aust Co. Athene # 1

TEMPERATURE REPORT

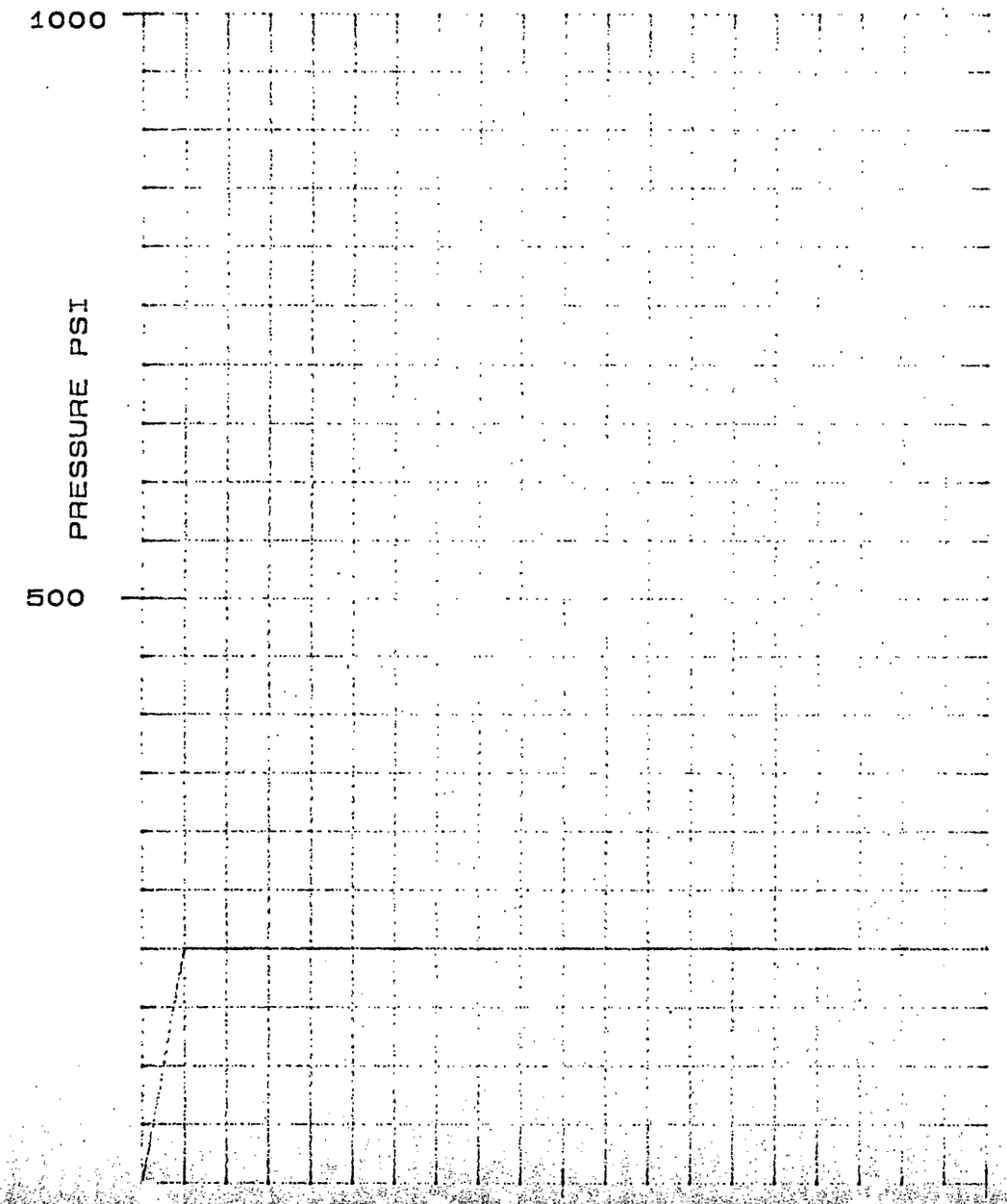


Geoservices overseas S.A.

ZERO

[redacted]

LEAK OFF TEST 20.00 'CASING



VOLUME	PRESSURE
0.50	200
1.00	200
2.00	200
3.00	200
4.00	200
5.00	200
6.00	200
7.00	200
8.00	200
9.00	200
10.00	200

CASING SHOE TVD

= 530 M

DEPTH TESTED TVD

= 548 M

MUD WEIGHT

= 8.7 PPG

PUMP PRESSURE AT LEAK OFF

= 200 PSI

BOTTOM HOLE PRESSURE

= 1013.42 PSI

FRACTURE GRADIENT

= 10.84 PPG

MATRIX STRESS

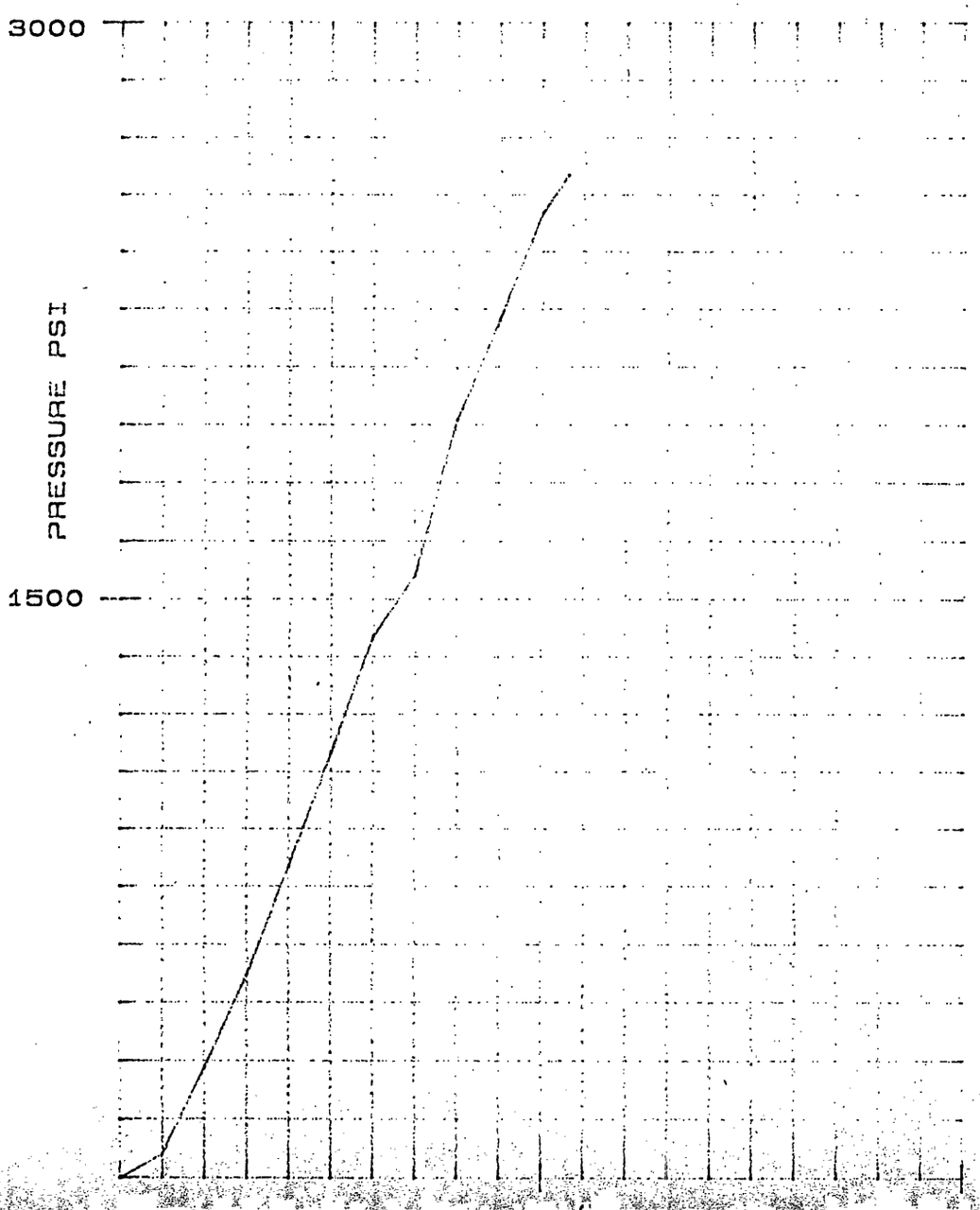
= 0.286

POISSONS RATIO

= 0.222

[redacted]

LEAK OFF TEST 9.63 CASING



VOLUME	PRESSURE
0.50	60
1.00	280
1.50	520
2.00	800
2.50	1100
3.00	1400
3.50	1560
4.00	1960
4.50	2220
5.00	2500
5.30	2600

CASING SHOE TVD

= 2751 M

DEPTH TESTED TVD

= 2762 M

MUD WEIGHT

= 9.0 PPG

PUMP PRESSURE AT LEAK OFF

= 2600 PSI

BOTTOM HOLE PRESSURE

= 6841.48 PSI

FRACTURE GRADIENT

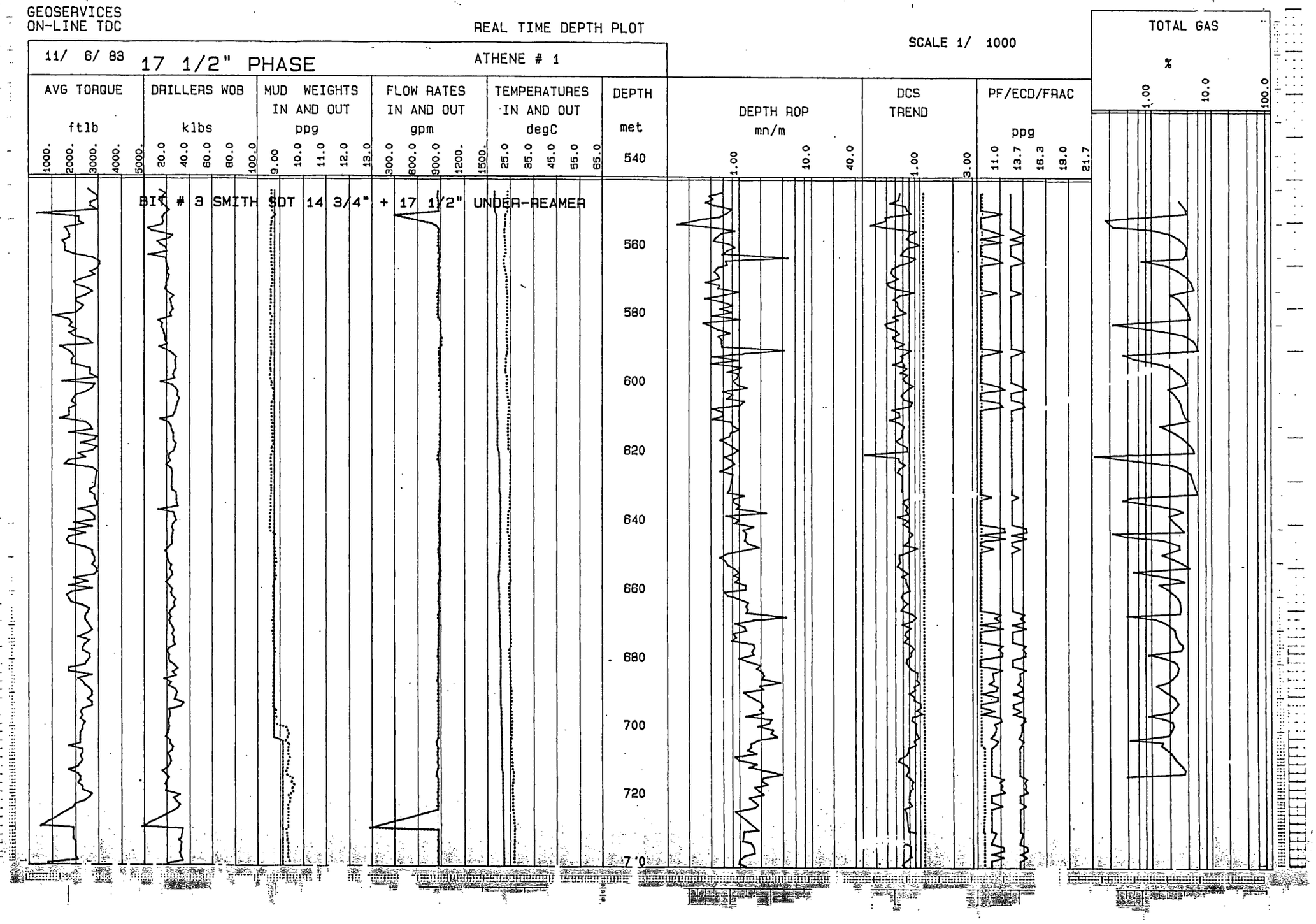
= 14.52 PPG

MATRIX STRESS

= 0.631

POISSONS RATIO

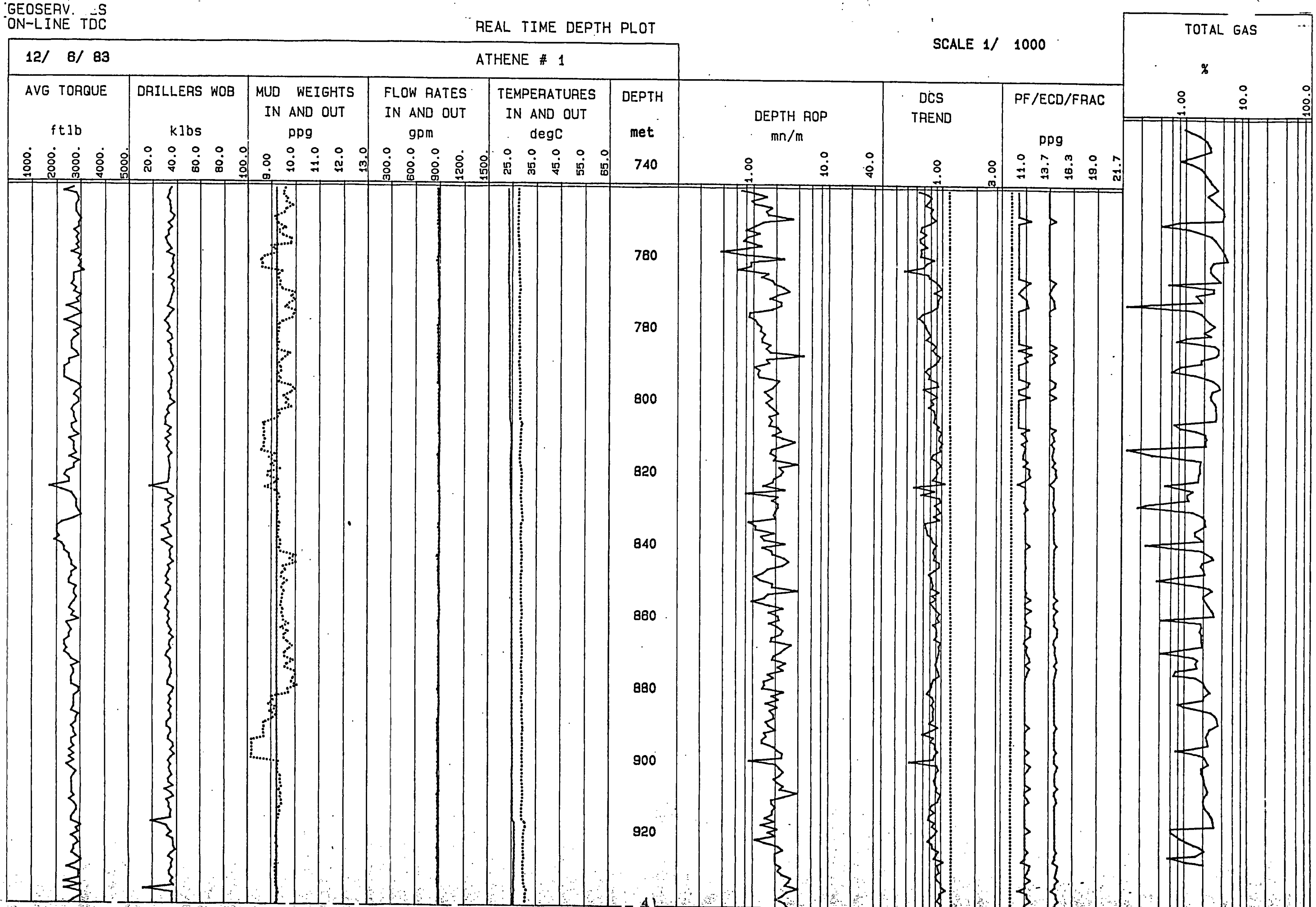
= 0.387


GEOSERVICES
ON-LINE TDC
REAL TIME DEPTH PLOT
SCALE 1/ 1000
11/ 6/ 83
17 1/2" PHASE
ATHENE # 1
AVG TORQUE
ftlb
1000.
2000.
3000.
4000.
5000.
DRILLERS WOB
klbs
20.0
40.0
60.0
80.0
100.0
MUD WEIGHTS
IN AND OUT
ppg
9.00
10.0
11.0
12.0
13.0
FLOW RATES
IN AND OUT
gpm
300.0
600.0
900.0
1200.
1500.
TEMPERATURES
IN AND OUT
degC
25.0
35.0
45.0
55.0
65.0
DEPTH
met
540
560
580
600
620
640
660
680
700
720
740
DEPTH ROP
mn/m
1.00
10.0
40.0
DCS
TREND
1.00
3.00
PF/ECD/FRAC
ppg
11.0
13.7
16.3
19.0
21.7
TOTAL GAS
%
1.00
10.0
100.0
BIT # 3 SMITH SDT 14 3/4" + 17 1/2" UNDER-REAMER
Geoservices overseas S.A.
ZER

GEOSERV. ..S
ON-LINE TDC

REAL TIME DEPTH PLOT

SCALE 1/ 1000



Geoservices overseas S.A.

ZERO

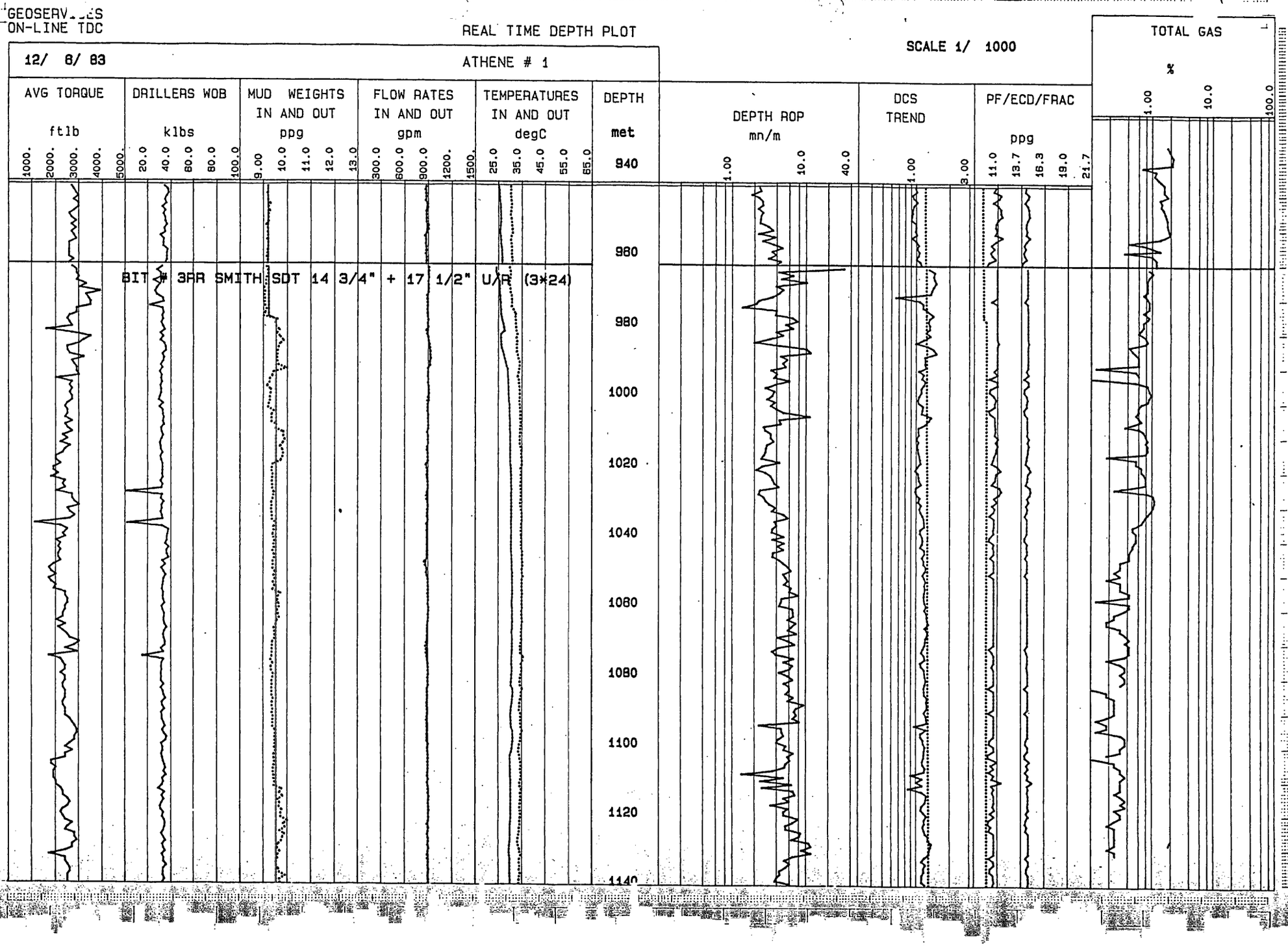
GEOSERVICES
ON-LINE TDC

REAL TIME DEPTH PLOT

12/ 6/ 83

ATHENE # 1

SCALE 1/ 1000



Geoservices overseas S.A.

ZERO

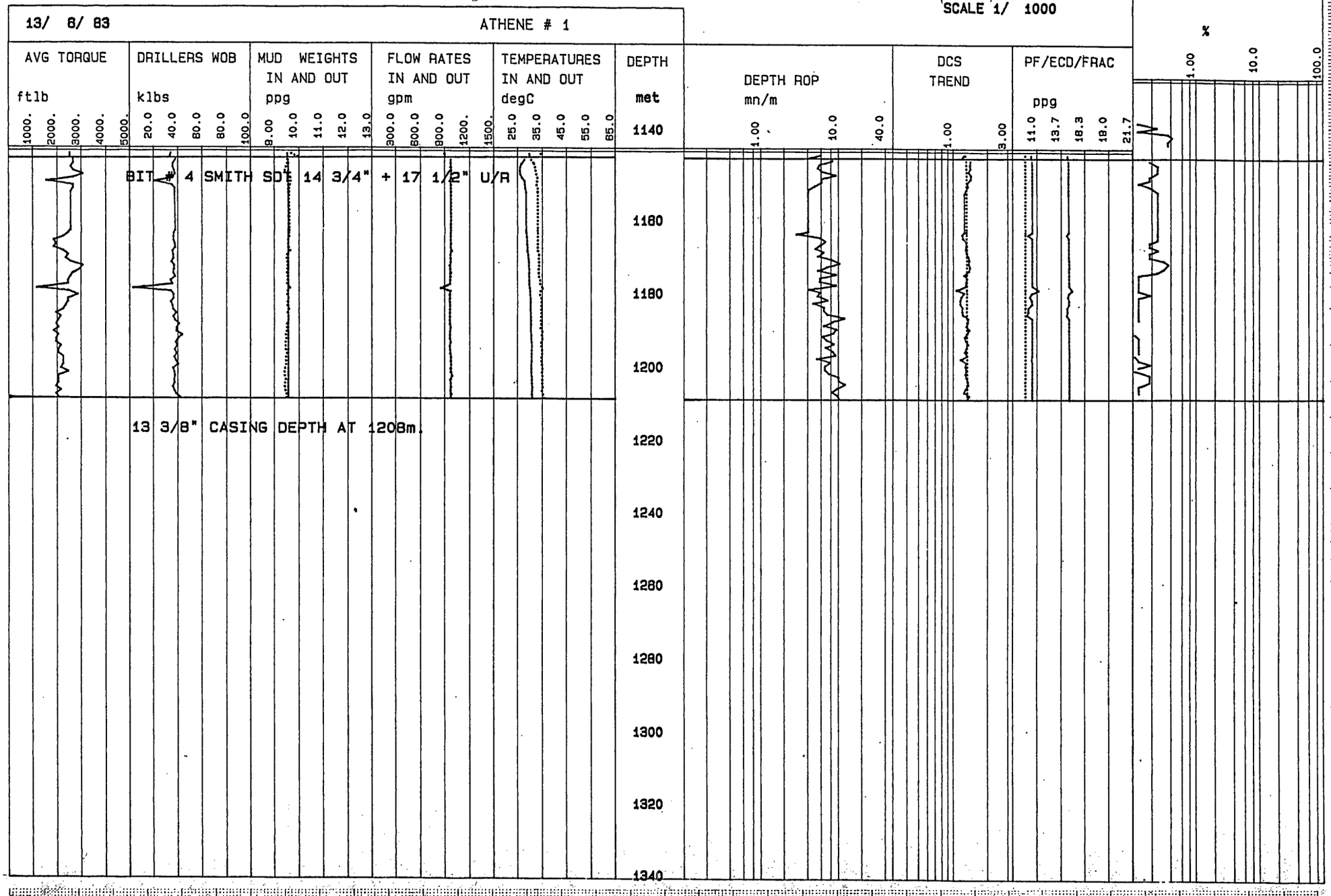
GEOSERV[illegible]S
ON-LINE [illegible]C

REAL TIME DEPTH PLOT

SCALE 1/ 1000

13/ 6/ 83

ATHENE # 1



Geoservices overseas S.A.

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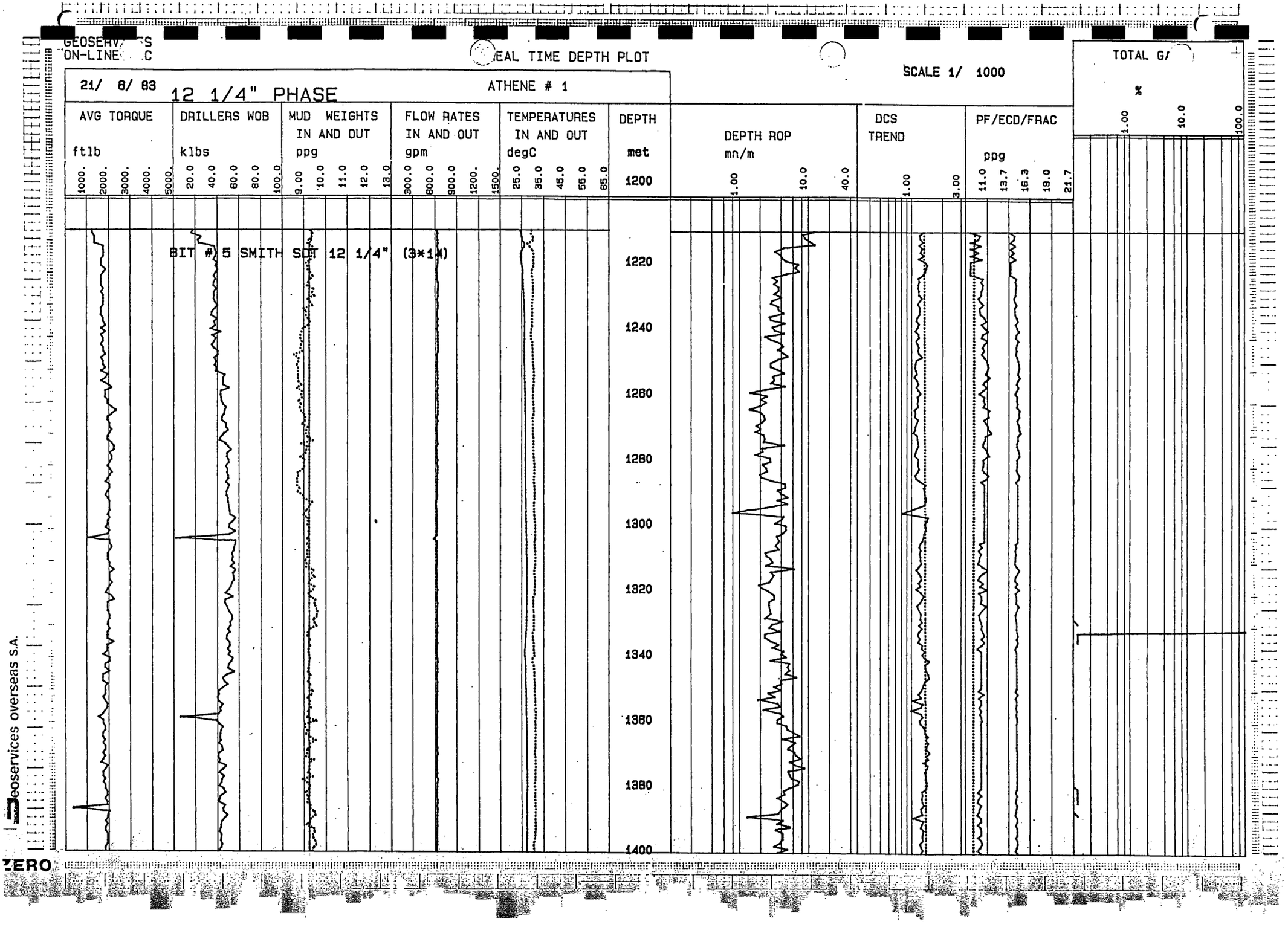
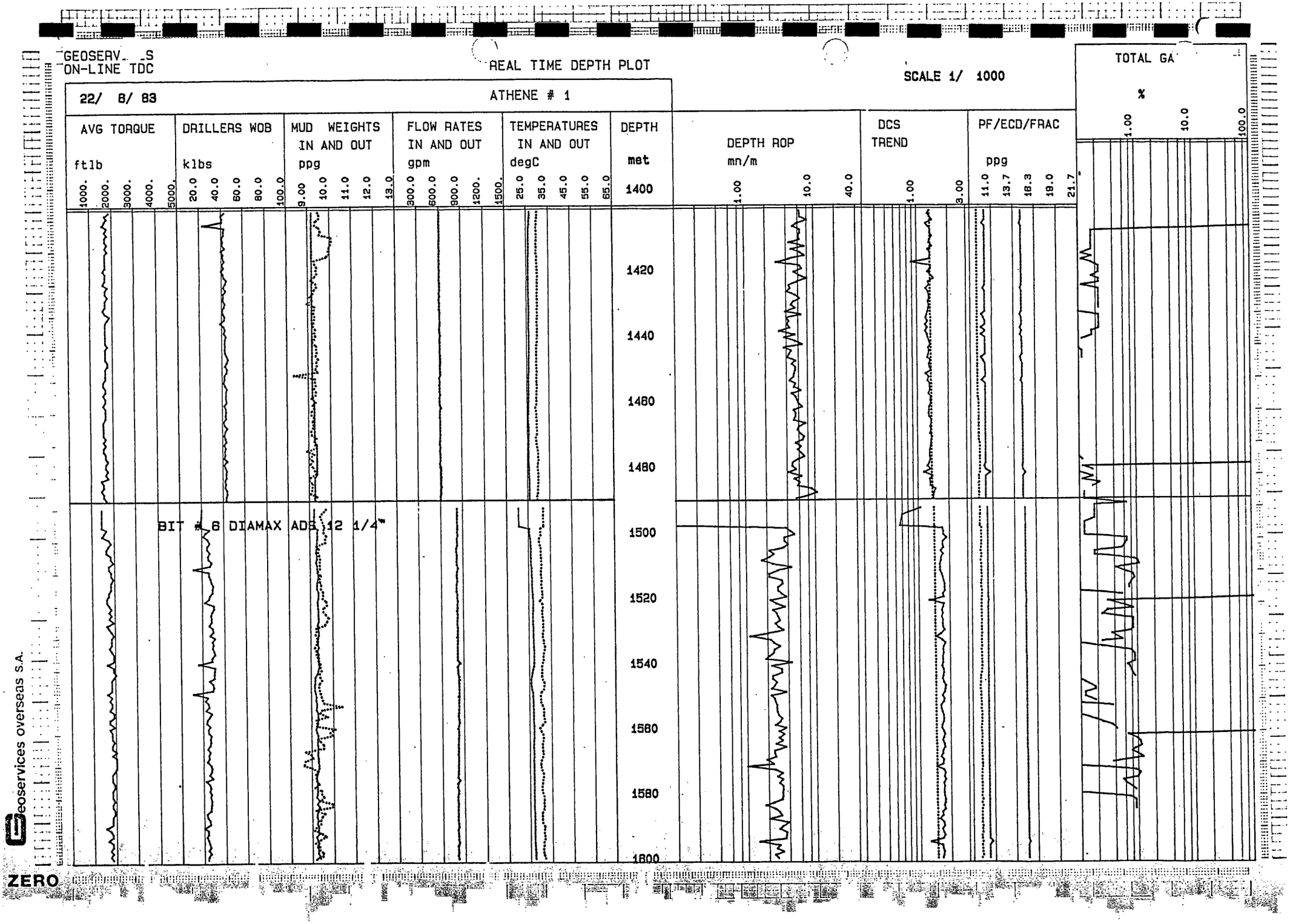

GEOSERV S
ON-LINE C
EAL TIME DEPTH PLOT
SCALE 1/ 1000
21/ 6/ 83
12 1/4" PHASE
ATHENE # 1
AVG TORQUE
ftlb
1000.
2000.
3000.
4000.
5000.
DRILLERS WOB
klbs
20.0
40.0
60.0
80.0
100.0
MUD WEIGHTS
IN AND OUT
ppg
9.00
10.0
11.0
12.0
13.0
FLOW RATES
IN AND OUT
gpm
300.0
600.0
900.0
1200.
1500.
TEMPERATURES
IN AND OUT
degC
25.0
35.0
45.0
55.0
65.0
DEPTH
met
1200
DEPTH ROP
mn/m
1.00
10.0
40.0
DCS
TREND
1.00
3.00
PF/ECD/FRAC
ppg
11.0
13.7
16.3
19.0
21.7
TOTAL G/
%
1.00
10.0
100.0
BIT # 5 SMITH SDT 12 1/4" (3*14)
1220
1240
1260
1280
1300
1320
1340
1360
1380
1400
eoservices overseas S.A.
ERO


GEOSERV... S
ON-LINE TDC
REAL TIME DEPTH PLOT
SCALE 1/ 1000
22/ 8/ 83
ATHENE # 1
AVG TORQUE
ftlb
1000.
2000.
3000.
4000.
5000.
DRILLERS WOB
klbs
20.0
40.0
60.0
80.0
100.0
MUD WEIGHTS
IN AND OUT
ppg
9.00
10.0
11.0
12.0
13.0
FLOW RATES
IN AND OUT
gpm
300.0
600.0
900.0
1200.
1500.
TEMPERATURES
IN AND OUT
degC
25.0
35.0
45.0
55.0
65.0
DEPTH
met
1400
1420
1440
1460
1480
1500
1520
1540
1560
1580
1600
DEPTH ROP
mn/m
1.00
10.0
40.0
DCS
TREND
1.00
3.00
PF/ECD/FRAC
ppg
11.0
13.7
16.3
19.0
21.7
TOTAL GA
%
1.00
10.0
100.0
BIT # 6 DIAMAX ADS 12 1/4"
Geoservices overseas S.A.
ZERO

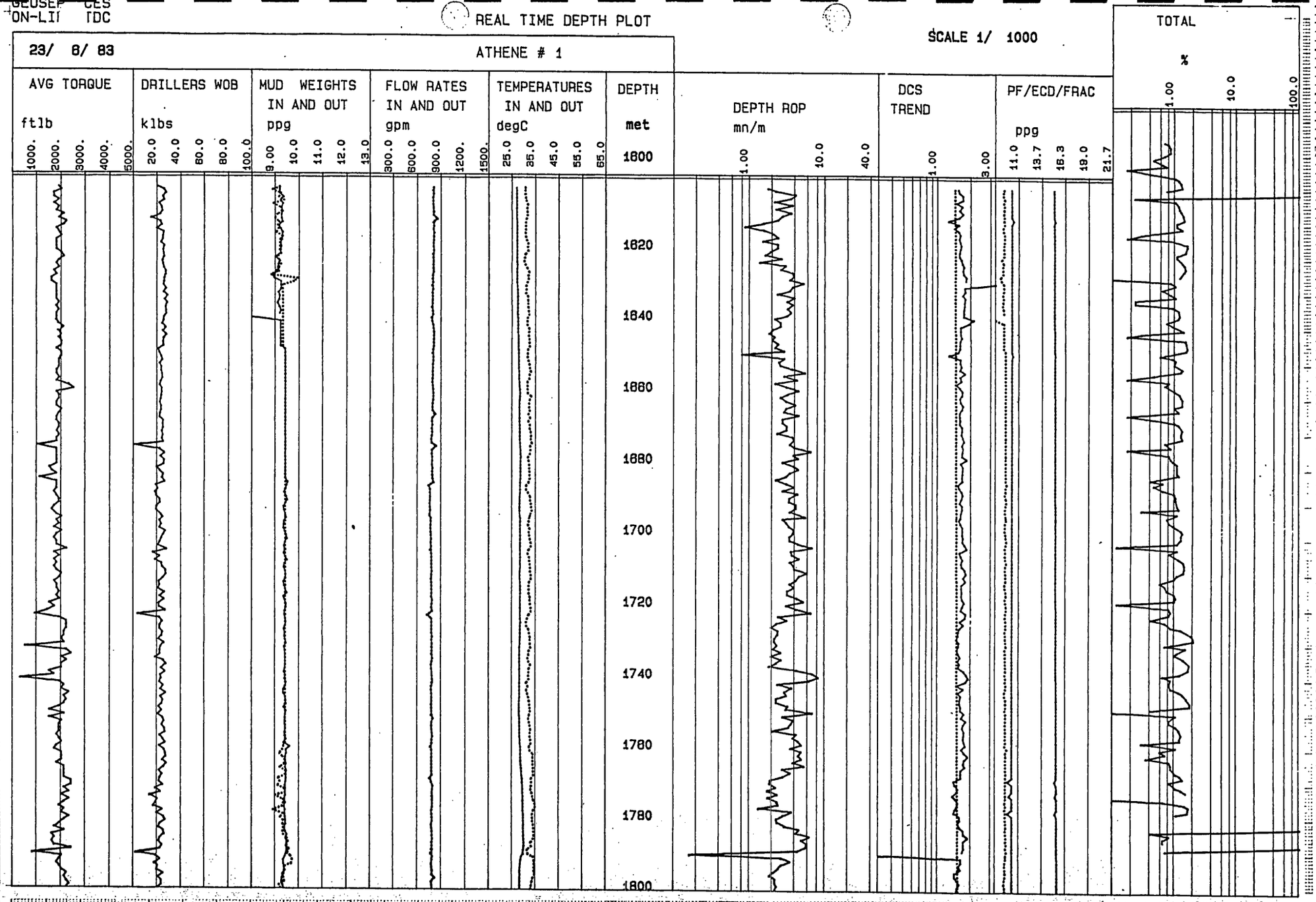
GEOSERVICES
ON-LINE TDC

REAL TIME DEPTH PLOT

23/ 8/ 83

ATHENE # 1

SCALE 1/ 1000



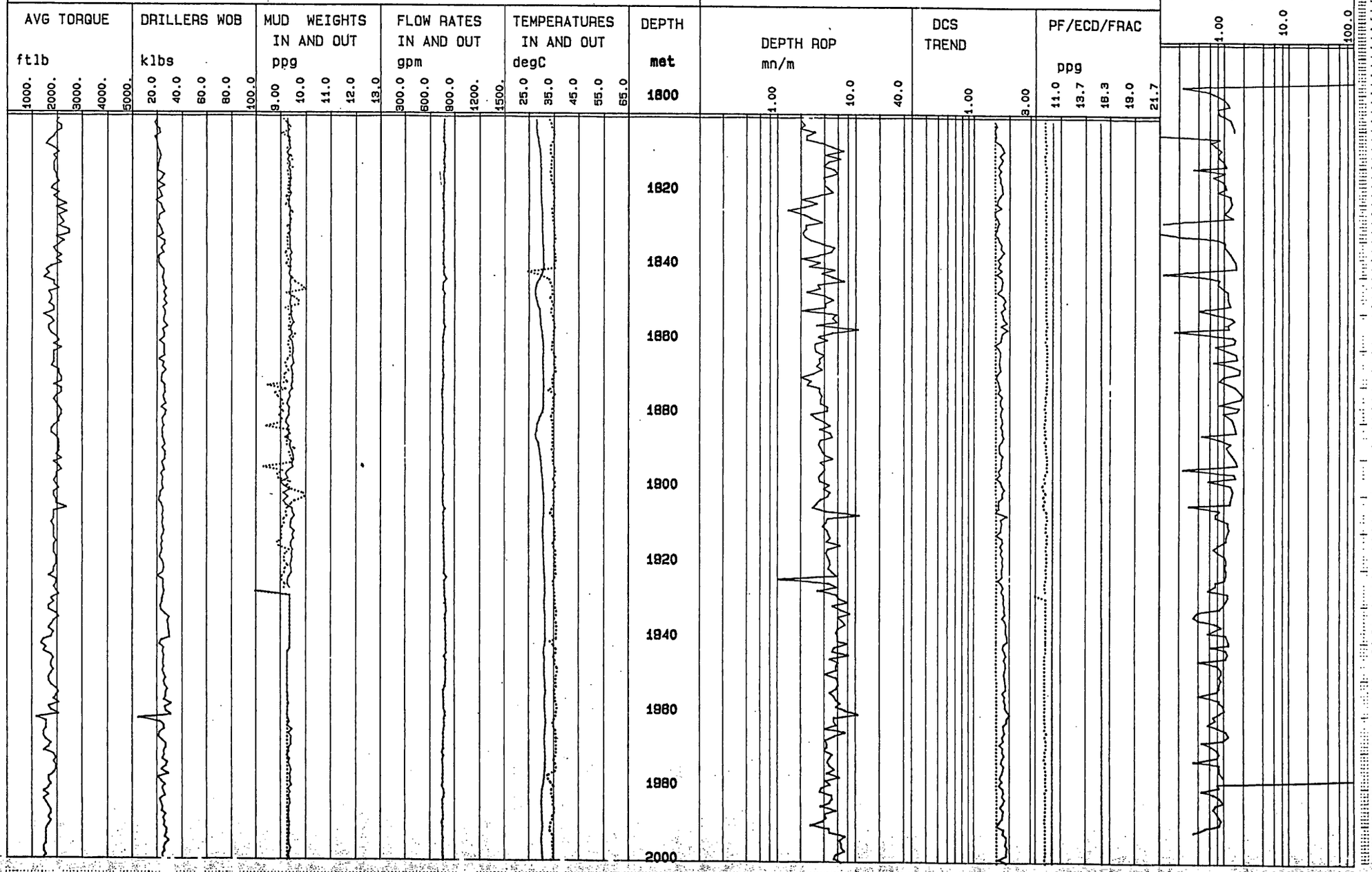
GEOSE CES
ON-LINE TDC

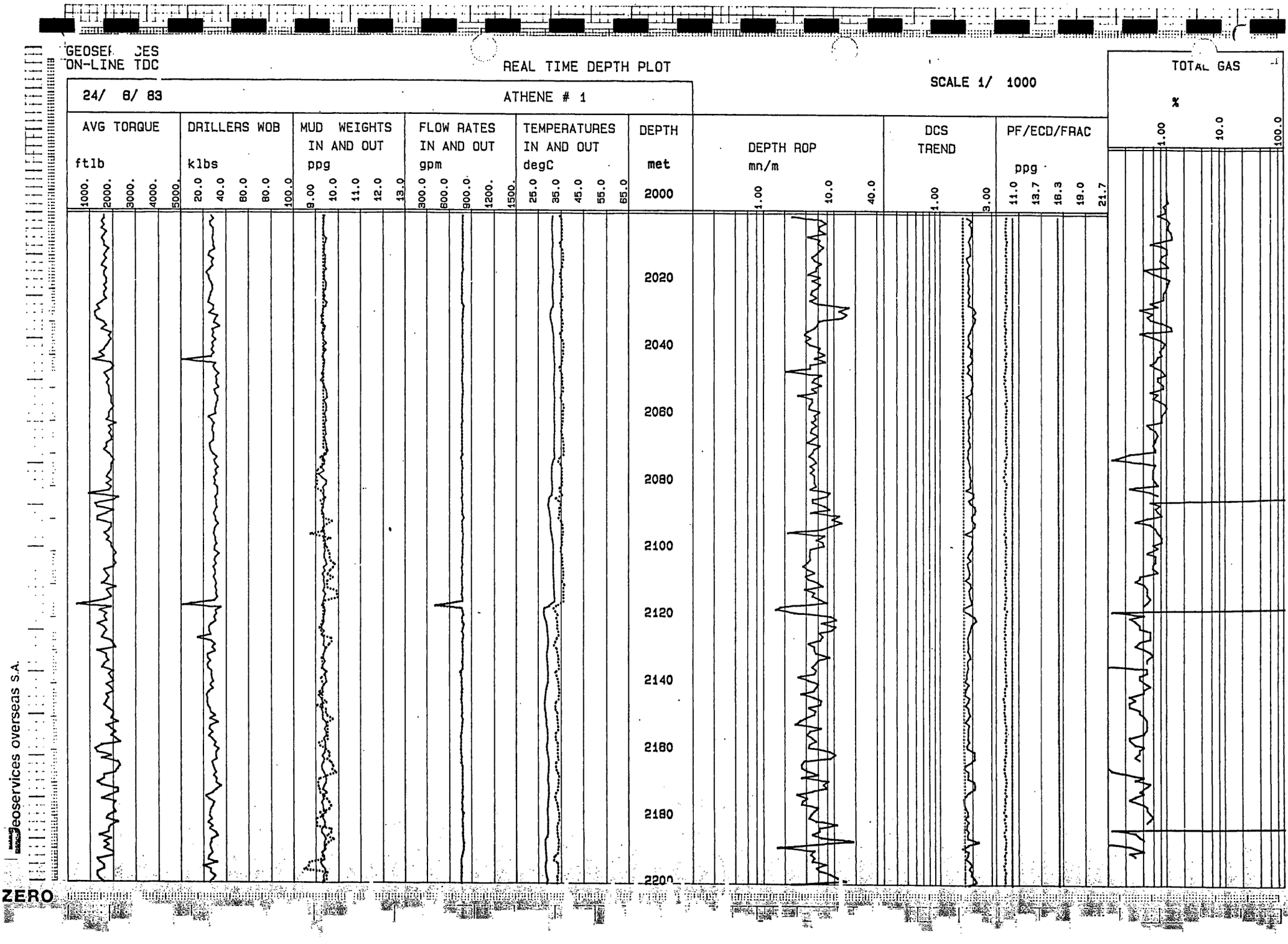
REAL TIME DEPTH PLOT

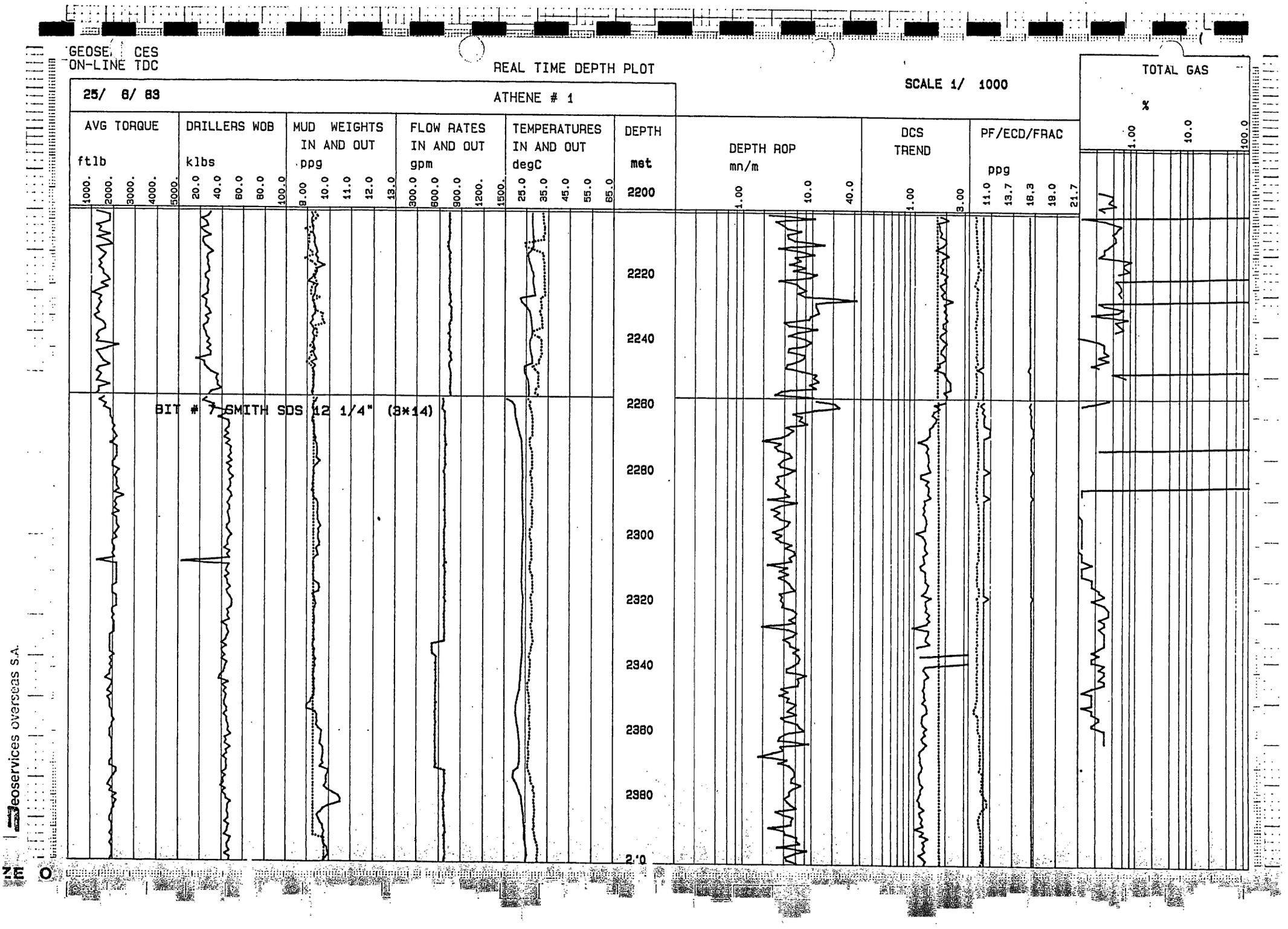
SCALE 1/ 1000

23/ 8/ 83

ATHENE # 1




GEOSERVICES
ON-LINE TDC
REAL TIME DEPTH PLOT
SCALE 1/ 1000
24/ 8/ 83
ATHENE # 1
AVG TORQUE
ftlb
1000.
2000.
3000.
4000.
5000.
DRILLERS WOB
klbs
20.0
40.0
60.0
80.0
100.0
MUD WEIGHTS
IN AND OUT
ppg
9.00
10.0
11.0
12.0
13.0
FLOW RATES
IN AND OUT
gpm
300.0
600.0
900.0
1200.
1500.
TEMPERATURES
IN AND OUT
degC
25.0
35.0
45.0
55.0
65.0
DEPTH
met
2000
2020
2040
2060
2080
2100
2120
2140
2160
2180
2200
DEPTH ROP
mn/m
1.00
10.0
40.0
DCS
TREND
1.00
3.00
PF/ECD/FRAC
ppg
11.0
13.7
16.3
19.0
21.7
TOTAL GAS
%
1.00
10.0
100.0
Geoservices overseas S.A.
ZERO


GEOSERVICES
ON-LINE TDC
REAL TIME DEPTH PLOT
25/ 6/ 83
ATHENE # 1
SCALE 1/ 1000
AVG TORQUE
ftlb
1000.
2000.
3000.
4000.
5000.
DRILLERS WOB
klbs
20.0
40.0
60.0
80.0
100.0
MUD WEIGHTS
IN AND OUT
ppg
9.00
10.0
11.0
12.0
13.0
FLOW RATES
IN AND OUT
gpm
300.0
600.0
900.0
1200.
1500.
TEMPERATURES
IN AND OUT
degC
25.0
35.0
45.0
55.0
65.0
DEPTH
met
2200
2220
2240
2260
2280
2300
2320
2340
2360
2380
2400
DEPTH ROP
mn/m
1.00
10.0
40.0
DCS
TREND
1.00
3.00
PF/ECD/FRAC
ppg
11.0
13.7
16.3
19.0
21.7
TOTAL GAS
%
1.00
10.0
100.0
BIT # 7 SMITH SDS 12 1/4" (3*14)
Geoservices overseas S.A.

GEOSE CES
ON-LI TDC

REAL TIME DEPTH PLOT

27/ 8/ 83

ATHENE # 1

SCALE 1/ 1000

AVG TORQUE	DRILLERS WOB	MUD WEIGHTS IN AND OUT	FLOW RATES IN AND OUT	TEMPERATURES IN AND OUT	DEPTH	DEPTH ROP	DCS TREND	PF/ECD/FRAC	TO GAS
ftlb	klbs	ppg	gpm	degC	met	mn/m		ppg	%
1000. 2000. 3000. 4000. 5000.	20.0 40.0 60.0 80.0 100.0	9.00 10.0 11.0 12.0 13.0	300.0 600.0 900.0 1200. 1500.	25.0 35.0 45.0 55.0 65.0	2400	1.00 10.0 40.0	1.00 3.00	11.0 13.7 16.3 19.0 21.7	1.00 10.0 100.0
					2420				
					2440				
					2460				
					2480				
					2500				
					2520				
					2540				
	BIT # 8 SMITH SDT 12 1/4" (3*15)				2560				
					2580				
					2580				
					2600				

Geoservices overseas S.A.

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GEOSE CES
ON-LINE TDC

REAL TIME DEPTH PLOT

ATHENE # 1

28/ 8/ 83

SCALE 1/ 1000

AVG TORQUE ft1b 5000. 4000. 3000. 2000. 1000.

DRILLERS WOB klbs 100.0 80.0 60.0 40.0 20.0

MUD WEIGHTS IN AND OUT ppg 13.0 12.0 11.0 10.0 9.00

FLOW RATES IN AND OUT gpm 1500. 1200. 900.0 600.0 300.0

TEMPERATURES IN AND OUT degC 65.0 55.0 45.0 35.0 25.0

DEPTH met 2800 2820 2840 2860 2880 2700 2720 2740 2760 2780 2800

DEPTH ROP mn/m 40.0 10.0 1.00

DCS TREND 3.00 1.00

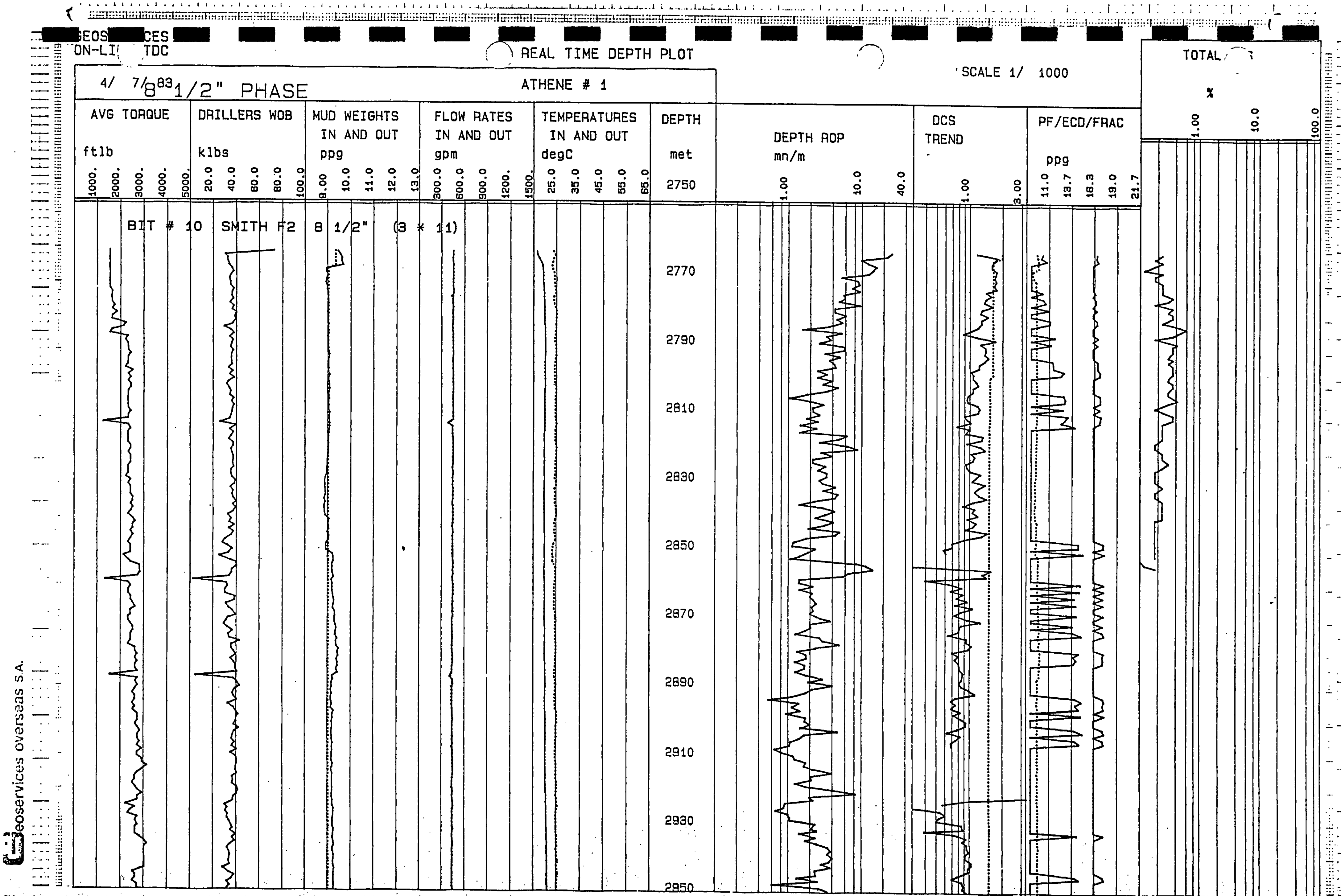
PF/ECD/FRAC ppg 21.7 19.0 18.3 13.7 11.0

TOTAL ...S % 100.0 10.0 1.00

CASING DEPTH AT 2759.8 m.

Geoservices overseas S.A.

ZERO



GEOS CES
ON-LI TDC
REAL TIME DEPTH PLOT
SCALE 1/ 1000
4/ 7/83 8 1/2" PHASE
ATHENE # 1
AVG TORQUE
ftlb
1000. 2000. 3000. 4000. 5000.
DRILLERS WOB
klbs
20.0 40.0 60.0 80.0 100.0
MUD WEIGHTS IN AND OUT
ppg
8.00 10.0 11.0 12.0 13.0
FLOW RATES IN AND OUT
gpm
300.0 600.0 900.0 1200. 1500.
TEMPERATURES IN AND OUT
degC
25.0 35.0 45.0 55.0 65.0
DEPTH
met
2750 2770 2790 2810 2830 2850 2870 2890 2910 2930 2950
DEPTH ROP
mn/m
1.00 10.0 40.0
DCS TREND
1.00 3.00
PF/ECD/FRAC
ppg
11.0 13.7 16.3 19.0 21.7
TOTAL
%
1.00 10.0 100.0
BIT # 10 SMITH F2 8 1/2" (3 * 11)
Geoservices overseas S.A.
ZERO

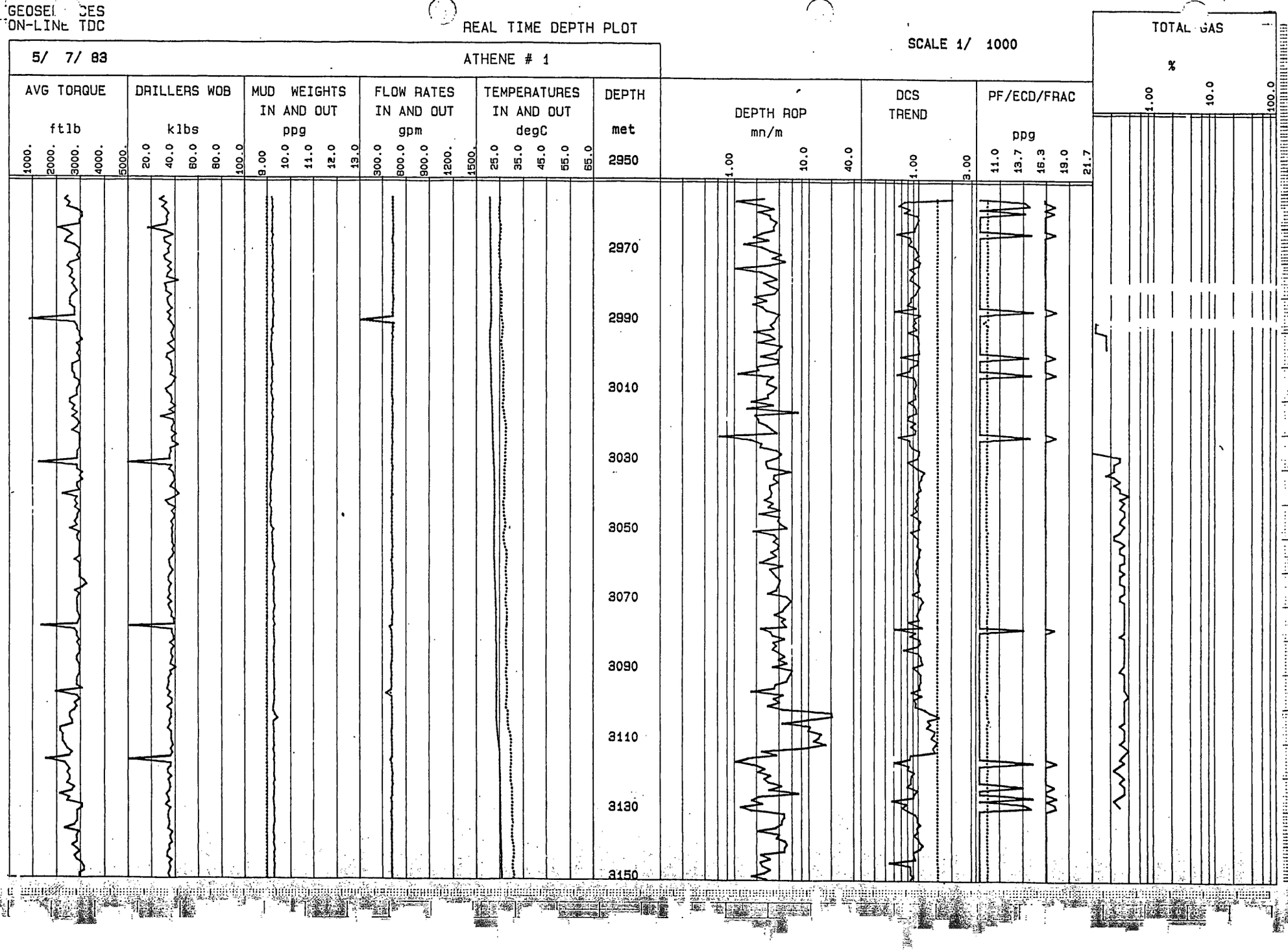
GEOSEI CES
ON-LINE TDC

REAL TIME DEPTH PLOT

SCALE 1/ 1000

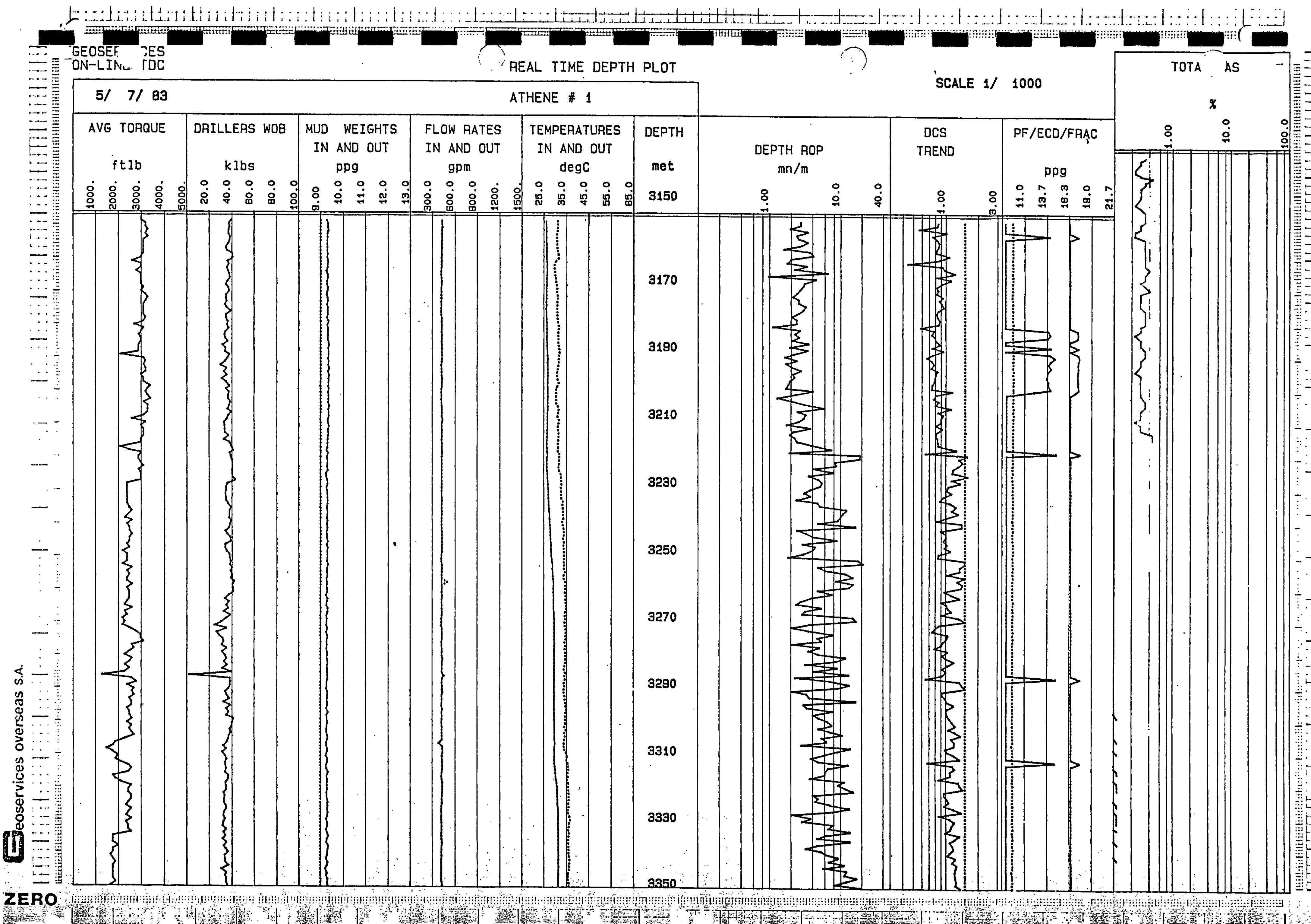
5/ 7/ 83

ATHENE # 1



Geoservices overseas S.A.

ZETA


GEOSEF CES
ON-LIN TDC
REAL TIME DEPTH PLOT
SCALE 1/ 1000
5/ 7/ 83
ATHENE # 1
AVG TORQUE
ftlb
1000. 2000. 3000. 4000. 5000.
DRILLERS WOB
klbs
20.0 40.0 60.0 80.0 100.0
MUD WEIGHTS
IN AND OUT
ppg
9.00 10.0 11.0 12.0 13.0
FLOW RATES
IN AND OUT
gpm
300.0 600.0 900.0 1200. 1500.
TEMPERATURES
IN AND OUT
degC
25.0 35.0 45.0 55.0 65.0
DEPTH
met
3150 3170 3190 3210 3230 3250 3270 3290 3310 3330 3350
DEPTH ROP
mn/m
1.00 10.0 40.0
DCS
TREND
1.00 3.00
PF/ECD/FRAC
ppg
11.0 13.7 16.3 19.0 21.7
TOTA AS
%
1.00 10.0 100.0
Geoservices overseas S.A.
ZERO

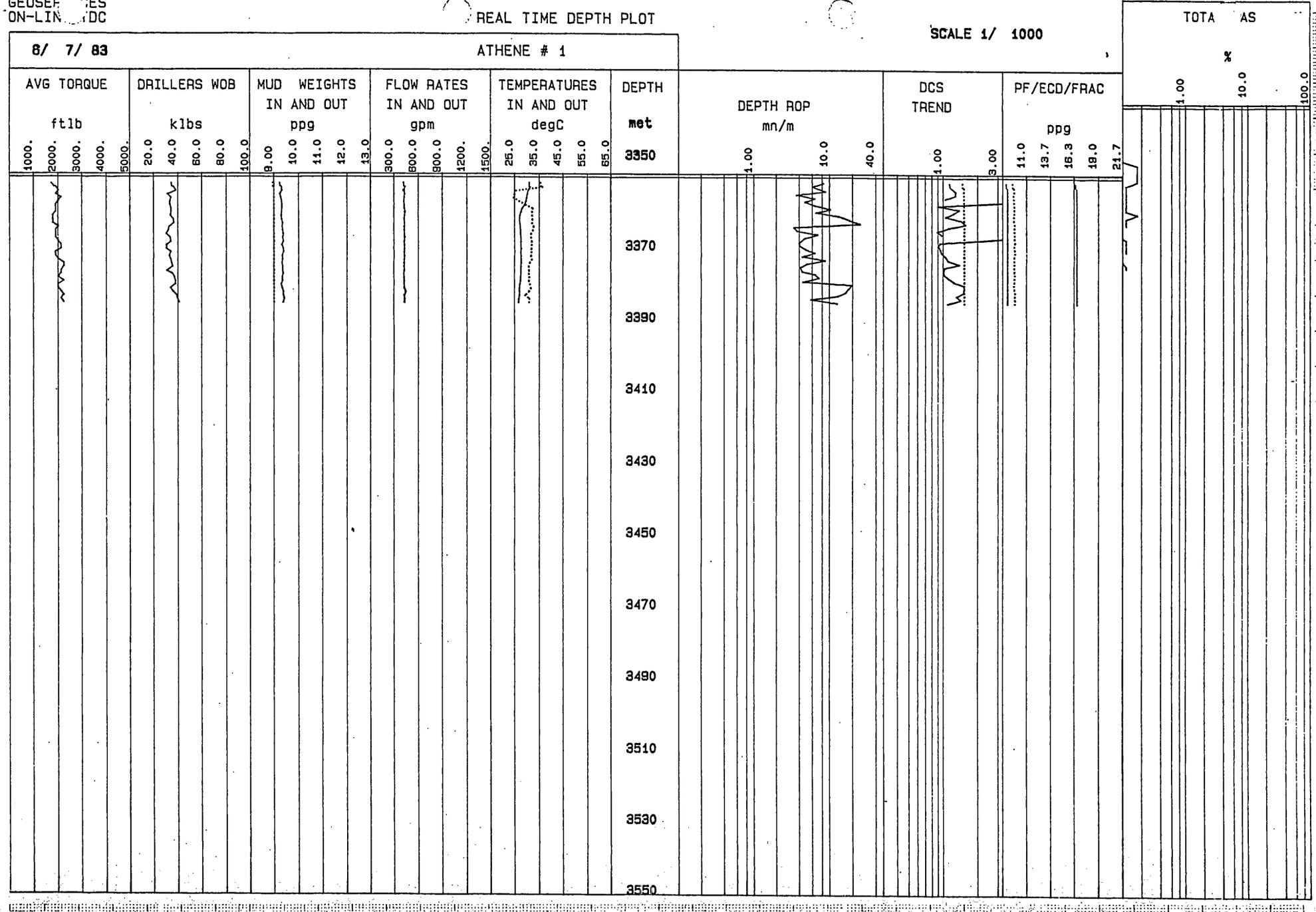
GEOSER CES
ON-LIN DC

REAL TIME DEPTH PLOT

SCALE 1/ 1000

8/ 7/ 83

ATHENE # 1

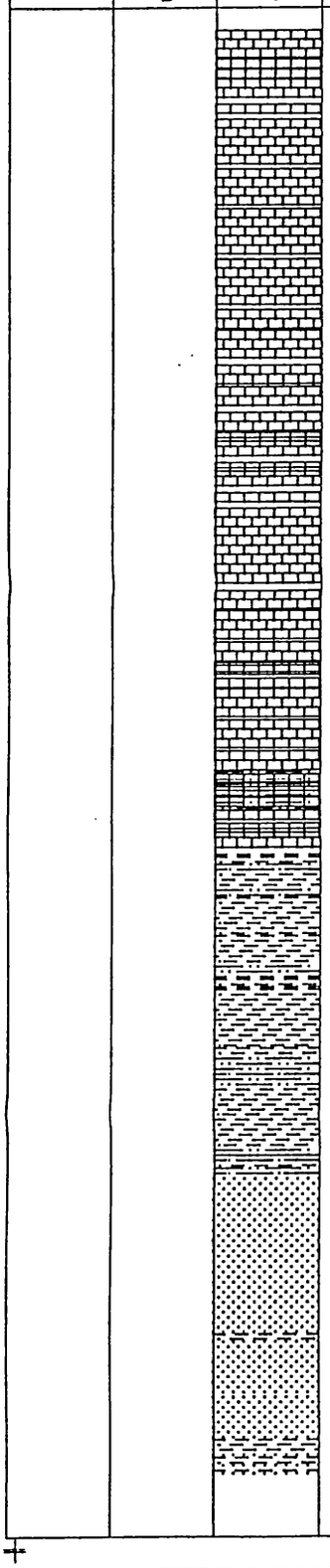


Geoservices overseas S.A.

ZERO

Phillips Aust Co. Athene # 1 — LITHOLOGY REPORT

Scale 1/ 10000



Depth	Description	
	Calcarenite; lt gy-gy, md hd, xline	
	Marl; lt gy-gy, sft, stky, fossils Marl/Calcarenite; a/a interbedded Calcarenite; gy, md hd, slty, marly	
700	Marl/Calcarenite; a/a interbedded Calcarenite; increasingly slty	
	Marl; lt gy-gy, sft, stky, fossils	
800	Marl; a/a	
	Marl; a/a	
1100	Marl; a/a	
	Marl; gy, stky. Calcarenite; gy, sft, argil.	
1300	Marl/Calcarenite; a/a	
	Marl/Calcarenite; a/a, foss frags Calcarenite; wh-gy-yel, frm, argil Shale; occ, dk brn, blk, fis, carb Marl/Calcarenite; a/a Marl/Calcarenite; a/a	
1500	Marl/Calcarenite; a/a with occ Sh	
	Marl/Calcarenite; a/a	
1700	Marl/Calcarenite; a/a with occ Sh	
	Marl; Marl; traces of Sltstn, blk-dk gy fis-sub fis, hd, calcareous. Marl; occ Sltstn, blky-sub fis, sft Marl; occ Sltstn/Calcarenite.	
1900	Marl; a/a.	
	Marl; Sltstn thinnly interbedded Sltstn; blk-dk gy, sub fis calc. Sltstn; becoming more fissil	BASE GIPPSLAND LIMESTONE
2100	Marl/Sltstn; interbedded. Marl; gy-lt gy, calc, sft, occ slty. Marl/Sltstn; interbedded a/a. Marl; becoming Claystone. Clystn; lt gy, sft-hd, calc, slty. Sltstn; dk gy-blk, sub fis, calc. Claystone/Siltstone; interbedded. Sltstn; gy-blk, hd, sub fis, calc.	BLUE HORIZON
2300	Clystn; lt gy-crm, sft, occ slty, calc, very occ glauc. Clystn; becoming slty, tr pyrite. Sltstn; lt-dk gy, sft, calc, forams. Clystn; wh-crm, v sft; qtz grns, calc, occ glauc, tr pyrite. Clystn; lt grn, sft-md hd, slty, occ glauconite.	
2500	Clystn; wh-crm, sft, slty. Sltstn; gy-grn, hd, sub fis-blky. Clystn; a/a Clystn; a/a, interbedded Sltstn.	BASE LAKES ENTRANCE FM ORANGE HORIZON
2700	Sltstn; gy, hd, sandy, tr glauc. Clystn; lt gy, sft-fm, slty, calc, py Sltstn; gy-brn, mod hd, glauc, carb. Snd; no clr, tr carb, lse, mod-p, py.	BROWN HORIZON GREEN HORIZON
2900		
3100	Clystn; gy-lt gy, frm, slty, tr glc. Snd; a/a + f-c, pr srt, tr py.	LATROBE CLASTICS FM
	Snd + Sst; gy, pr srt, tr py + glc	
3300	Clystn; gy, mod hd, calc, slty, glc Snd; a/a	
3500		