

PEIROTECH
PERUANA S.A.



Geología
HC ✓
MCH ✓ 11.03.98
EGON ✓ 12.3.98
MD ✓ 10/3/98
MHA ✓
File

PTP-PERF-028-98

February 24, 1998

WELL FILE

TO : Operations Manager
FROM : Drilling Manager
SUBJECT : ATTACHED MEMO: PTP-PERF-006-98
DRILLING PROGRAM (SIDE TRACK)
Z-2B-21-059-D-LO16 (LO16-24)

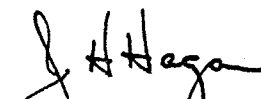
por ineficiencia!! mucho

The purpose of this side track in the well LO16-24 is to abandon the fish left (top:10,084 feet) during the drilling the Basal Salina formation and drill a new 8 1/2" hole in order to reach the top main pay zone that will be located at 10140 MD in direction S 69.58° W with maximum angle 49.16°

The KOP recommended for this well will be out from under the 9 5/8" casing shoe at 6807 ft.(40.5°) previous set two cement plugs (10,000' - 9500') and (7200' - 6700'). The drilling will be accomplished using a steerable motor and MWD to approximately 300 ft. in build up. After the final direction and angle are attained the power pack will be laid down and stabilized rotary assemblies will be used in to reach the projected TD of 11,200 feet.

The estimated time to drill this section is 18 days plus 5 days for completion.

The expenditure estimated to drill this section will be \$ 595,210 and added charged to AFE No. 2210202.


Jerome H. Hagan
Drilling Manager

GENERAL INFORMATION

Area : Lobitos
Official Number : Z-2B-21-059-D-LO16
Well Type : Development
AFE : 2210202
Well : LO16-24

GEOLOGICAL RECOMMENDATION

<u>FORMATION</u>	<u>MEASURE DEPTH</u> (MD)	<u>VERTICAL</u> <u>DEPTH</u> (VD)	<u>OBSERVATIONS</u>
TALARA	AT SURFACE		
CHACRA	2750	2400	
PARIÑAS	4230	3240	
PALEGREDA	5065	3740	
MOGOLLON	7330	5340	SECONDARY
SAN CRISTOBAL	8610	6130	
BASAL SALINA	10,140	7175	MAIN TARGET
BALCONES	11,050	7810	
T.D	11,200	7850	

COORDINATES

SURFACE N: 9°506,365.92 mts. E: 459,711.14mts.
OBJECTIVE N: 9°505,741.08 mts. E: 457,943.30mts.

DIRECTIONAL

Kick off point : ± 6,850 ft.
Rate of build : 3.5° / 100 ft.
Maximum Angle 49.16°
Direction : S 69.58° W
Drilled Depth to Target : 10,140 ft.
Vertical Depth to Target : 7175 ft.
Horizontal Distance to Target : 6410 ft.
Drilled Depth Programmed : 11,200 ft.
Estimated Drilling Days : 18
Completion Days : 5

DRILLING RIG

Contractor : PETREX
Rig : 3
Drawworks Type : OILWELL-840E
Traveling Blocks Type : OILWELL-500 TN
Pump N° 1 : OILWELL-1100 (10" x 6 ½")
Pump N° 2 : OILWELL-11000 (10" x 6 ½")

ELEVATIONS

KB : 50 ft.
Water Depth : 309 ft.

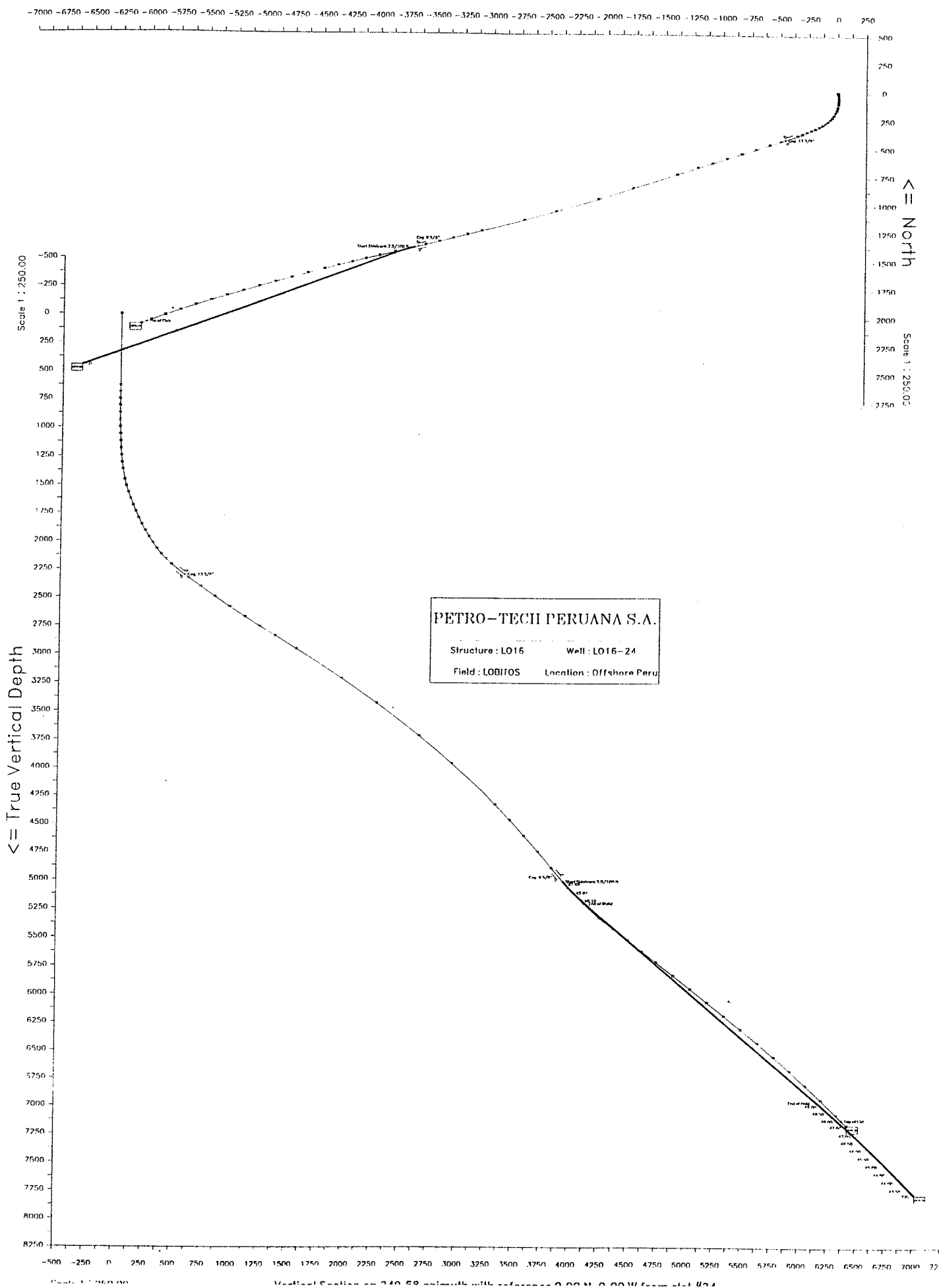
PETRO-TECH PERUANA S.A.
LO16 <not named>, LO16-24
LOBITOS, Offshore Peru

PROPOSAL LISTING Page 1
Your ref : Sidetrack #1 Rev. 4
Last revised : 23-Feb-98

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	R E C T A N G U L A R C O O R D I N A T E S		Dogleg Deg/100Ft	Vert Sect	
6850.00	40.90	256.33	5004.33	1392.61 S	3687.37 W	0.00	3941.54	Start Sidetrack 3.5/100
6900.00	42.40	254.97	5041.69	1400.85 S	3719.56 W	3.50	3974.58	
7000.00	45.44	252.48	5113.72	1420.33 S	3786.11 W	3.50	4043.74	
7100.00	48.53	250.23	5181.94	1443.74 S	3855.36 W	3.50	4116.80	
7120.32	49.16	249.80	5195.31	1448.96 S	3869.73 W	3.50	4132.10	
7500.00	49.16	249.80	5443.59	1548.16 S	4139.32 W	0.00	4419.36	
8000.00	49.16	249.80	5770.55	1678.78 S	4494.33 W	0.00	4797.64	
8500.00	49.16	249.80	6097.50	1809.41 S	4849.35 W	0.00	5175.92	
9000.00	49.16	249.80	6424.46	1940.04 S	5204.36 W	0.00	5554.20	
9500.00	49.16	249.80	6751.42	2070.66 S	5559.38 W	0.00	5932.48	
9803.68	49.16	249.80	6950.00	2150.00 S	5775.00 W	0.00	6162.23	
9836.19	49.00	249.80	6971.29	2158.48 S	5798.05 W	0.50	6186.80	
9936.19	48.50	249.80	7037.23	2184.44 S	5868.61 W	0.50	6261.98	
10036.19	48.00	249.80	7103.82	2210.21 S	5938.63 W	0.50	6336.59	
10136.19	47.50	249.80	7171.05	2235.77 S	6008.10 W	0.50	6410.61	
10236.19	47.00	249.80	7238.93	2261.12 S	6077.01 W	0.50	6484.04	
10336.19	46.50	249.80	7307.45	2286.28 S	6145.37 W	0.50	6556.88	
10436.19	46.00	249.80	7376.60	2311.22 S	6213.16 W	0.50	6629.11	
10536.19	45.50	249.80	7446.38	2335.95 S	6280.39 W	0.50	6700.74	
10636.19	45.00	249.80	7516.78	2360.48 S	6347.04 W	0.50	6771.76	
10736.19	44.50	249.80	7587.80	2384.79 S	6413.11 W	0.50	6842.16	
10836.19	44.00	249.80	7659.43	2408.88 S	6478.59 W	0.50	6911.94	
10936.19	43.50	249.80	7731.67	2432.76 S	6543.49 W	0.50	6981.09	
11000.00	43.18	249.80	7778.07	2447.89 S	6584.59 W	0.50	7024.88	T.D.

All data is in feet unless otherwise stated
Coordinates are from slot #24 and TVDs are from wellhead.
Vertical section is from wellhead on azimuth 249.58 degrees.
Calculation uses the minimum curvature method.

East =>



GENERAL DRILLING PROGRAM

Run in hole drill pipe w/opened end to 10,000' and pump 01 bbl fresh water, 06 bbls injectrol 21, 01 bbl fresh water, 75 bbls cement (350 sx cement "A" 15.6 ppg), 01 bbl fresh water following 166 bbl mud (11.5 ppg). Pull out string slowly at 9000' circulate and POOH at 7400' pump 40 bbls viscous pill, 90 bbls mud and continue pull out to 7200'. Pump 01 bbl fresh water, 05 bbls injectrol 21, 01 bbl fresh water, 85 bbls cement (480 sx cement "H" 16.5 ppg), 02 bbl fresh water following 116 bbl mud (11.5 ppg). Pull out string slowly at 6500' circulate and POOH. WOC 12 hours.

8 ½ " PHASE

1. RIH w/ slick assembly and to clean out cement plug to 6850'. Circulate POOH
2. PU motor and steerable assembly and start build up to 6850 (40.90°) holding dog leg severity to no more than 3.5°/100' in the direction S 69.58 W (7120'). Circulate POOH.
3. RIH w/PDC bit and continue drilling maintain direction & angle at TD 11,200'. Circulate, make short trip in order to condition hole. POOH for logs.
4. Run electrical logs according to the attached logging program.
5. RIH with slick assembly. Circulate POOH. Laying down drill pipe.
6. Run 5 1/2," N-80, 17#/ft casing, cement and set casing hanger according to program.
7. Install 11" x 7 1/16"- 3000 x 5000 psi tubing head.

MUD PROGRAM

PRODUCTION HOLE

INTERVAL

6807' - 11,200'

MUD TYPE

Dowell FLR XL/ KCL

Is very important that the solid control equipment it work to maximum efficiency, in orden to increase the drilling rate of penetration as necessary to unload hole of cutting Due to gas presence observed in some of the offset wells, the density should be increased carefully according to requirements. Enough weighted materials must be stocked at the rig to raise the mud weight by two pounds if necessary.

PROPERTIES

Interval (feet)	Weight Lbs/gl	Visc. Sec/qt	Vp Cps	Yp Lb/100ft ²	Sol %	Filt. cc/30'
6807' - 8800'	10.5 - 10.8	55	26 - 30	30 - 40	9	5
8800' - 11200'	10.8 - 11.5	60 - 65	28 - 32	30 - 40	12	4

PH	PM cc	PF cc	CALCIUM PPM	POTASIMUM PPM
9.5	1 - 1.3	0.22 - 0.32	100	16,000-18,000

CEMENT PROGRAM

5 1/2 O.D. CASING AT 11,200 feet (Hole Average: 10")

1. POOH. laying down string. Fill the hole with mud to keep hydrostatic pressure.
2. Maximum speed for casing run in hole: 40 sec/ft.
3. Install the equipment float Super Seal II. Apply thread lock compound.
4. Place centralizers (total: 30), the first 15 in each tube starting from the first couple, interval: 8200' - 7800' (10) and the remaining between: 6750' - 6350' (5).
5. Run one flag joint (± 25 feet) on the # 35 position of the casing string.
6. Reciprocate during the circulating. Condition mud rheology - $\bar{Y}_p \pm 15$ Lbs/ 100 ft².
7. Make-up cementing head, lines and test with 2500 psi. Release bottom wiper plug (red) and reload the cement with the top plug (black) and pump the following slurries:

Slurries	Density (lb/ gl)	Rend. (ft3/ sx)	Water (gls/ sx)
Mud Flush (30 bbls)	8.9	---	---
Dual Spacer (30 bbls)	11.6		
1st. Slurry			
800 sx (4% Gel) + 0.5% Halad- 9 + 0.5 Gl/Mga Air II I	14.1	1.55	7.8
2nd. Slurry			
600 sx neat cmt. + 0.8% Halad- 322 + 0.1% HR-7 + 0.5 gal/ Mgal D Air II.	15.6	1.20	5.33

Release top plug (black) and displace with 257 Bbls diesel. Bump plug with 2800 psi. Hold for 5 minutes and then bleed pressure off to see if floats hold.

Run temperature survey after 08 hours of WOC.

ELECTRICAL LOGS PROGRAM

1) OPEN HOLE LOGS:

- DLL - MSFL - GR
- FDC - CNL - GR

2) CASED-HOLE LOGS:

- GR - CCL

LO16 - 24

Bar-B-Que Curve

