

PEIRO-TECH
PERLANA S.A.



PTP-DRLG-131-01

April 27, 2001

TO : Operations Manager

FROM : Drilling Manager

CC : P. Alarcón, M. Chávez, J. Suits, J. Meyers, E. Vega, J. Nakao, Drlg.
Foreman, Pepesa, Anadrill, M-I.

SUBJECT : **DRILLING PROGRAM FOR WELL**
Z-2B-24-081-D-LO6 (LO6-23)

Attached is the Drilling Program for well LO6-23 to be drilled by PEPESA Rig 48 as part of the 2001 Drilling Project in Lobitos area.

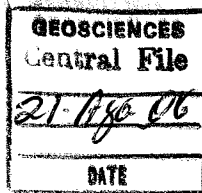
The purpose of this drilling project is to develop and confirm production in the Basal Salina reservoir to the southwest. This will be a new well conventionally drilled to a projected TD of 8,720 feet.

The geological top of the pay zone is expected at 7,870 ft MD (7,330' TVD) in direction S 33.76° W. The KOP for this well will be at 1,600 ft. and accomplished using a steerable motor and MWD to reach an angle of 24.64°. After the final direction and angle are attained the motor will be laid down and stabilized rotary assemblies will be used until the TD.

9 5/8" casing will be set on Palegreda formation. Special cautions will be taken when drilling Rio Bravo formation for control solids content and low mud weight. To drill Basal Salina formation mud weight will be increased due to gas presence as much as recorded on the last well LO6-25. Mud logging unit will be used to monitor gas and control mud weights. Sufficient weight material must be stocked at the Rig to raise the mud weight by two pounds.

The estimated time to drill this well is 30 days plus 5 days for completion. The expenditure estimated to develop this project will be \$ 1,451,680.00 and charged to AFE No. 2211101.


Guillermo Ruesta
Drilling Manager (i)



Drilling Prognosis
LO6-23

CENTRAL FILE
Geosciences

GENERAL INFORMATION

Area : Lobitos
Official Number : Z-2B-24-081-D-LO6 Well : LO6-23
Well Type : Development AFE : 2211101.

GEOLOGICAL RECOMMENDATION

<u>FORMATION</u>	<u>MEASURE DEPTH</u> (MD)	<u>VERTICAL</u> <u>DEPTH</u> (VD)	<u>OBSERVATIONS</u>
TALARA	AT SURFACE		
CHACRA.	2280	2250	
RIO BRAVO	3930	3750	
PALEGREDA	5090	4800	
MOGOLLON	5810	5450	SECONDARY OBJECTIVE
SAN CRISTOBAL	6250	5950	
BASAL SALINA UP.	7870	7330	MAIN OBJECTIVE
BASAL SALINA LO.	8280	7700	
BALCONES	8500	7900	
T. D.	8720	8100	

COORDINATES

SURFACE N: 9°508,657.07 mts. E: 459,054.52 mts.
OBJECTIVE N: 9°508,016.00 mts. E: 458,626.00 mts.

DIRECTIONAL

Kick off point : ± 1,600 ft.
Rate of build : 4° / 100 ft.
Maximum Angle : 24.64°
Direction : S 33.76° W
Drilled Depth to Target : 7,870 ft.
Vertical Depth to Target : 7,330 ft.
Horizontal Distance to Target : 2,530 ft.
Drilled Depth Programmed : 8,720 ft.
Estimated Drilling Days : 30
Completion Days : 5

DRILLING RIG

Contractor : PEPESA
Rig : 48
Drawworks Type : OIME-750
Traveling Blocks Type : IDECO - 265 TN
Pump N° 1 : IDECO - T - 1000 (10" x 7")
Pump N° 2 : IDECO - T - 1000 (10" x 7")

ELEVATIONS

KB : 50 ft.
Water Depth : 335 ft.

Drilling Prognosis
LO6-23

GENERAL DRILLING PROGRAM

Move PEPESA # 48 rig over conductor "loca" # 23 at the northwest of the platform.

18" (CONDUCTOR):

1. Set conductor on bottom and secure to platform. RIH with modified 17" bit w/3 Jets of (16/ 32"), drill 200 feet with seawater pumping high viscosity sweeps. POOH.
2. RIH w/Under reamer to open hole (+/- 24") to bottom. POOH. Add on conductor and run to bottom.
3. Secure conductor to the floor of the first level and weld adapter flange.
4. Install 21^{1/4}" Annular BOP, flow line and flow diverter. RIH with open ended string and cement conductor **according to attached program.**

17" PHASE

1. RIH with Pendulum Assembly and a tooth bit to drill cement and continue drilling to 1,500 feet vertical section. Take single shot surveys each 300 feet. At TD circulate, make short trip in order to condition well to run surface casing and POOH.
2. RIH and cement 13 3/8", K-55, 54.5 #/ ft. STC casing at 1,500 feet **according to attached program.**
3. Cut off casing, install ring between 18" & 13 3/8", welding wellhead 13 5/8" x 13 3/8"-2M and test same with 1200 psi. N/U and test BOP's (Blind rams with 1,200 psi).

12^{1/4}" PHASE

1. RIH w/ Pendulum assembly and tooth bit (RR). Test BOP's (Annular w/ 1,000 psi, Pipe Rams and Kill Manifold w/ 1,200 psi). To drill floating equipment, cement and 100 feet formation to 1,600 ft. TD. Circulate and POOH.
2. P/U Power Pak motor and Build assembly with a PDC bit and RIH to start KOP. Build angle to 24.64° in the direction of S 33.76° W holding dogleg severity to no more than 4°/100 ft. The angle should be established at +/- 2,120 feet. Continue drilling to 2,500 feet. Circulate and POOH.
3. RIH w/ Stabilized Assembly, MWD and PDC bit. Continue drilling maintaining direction and angle up to 5,200 feet. **Pump continuous low viscosity pills follow by heavy sweeps to get clean up hole.** Circulate make short trip in order to condition hole to run intermediate casing and POOH.
Note: Take care to maintain low mud weight and using seal material while drilling Rio Bravo formation due to possible reservoir depletion.
4. RIH and cement 9^{5/8}", N-80, 43.5 # / ft, LTC casing at 5,200 feet **according to attached program.**

5. Set casing hanger and cut off casing. Install wellhead 9 5/8" x 11" - 2000 x 3000. N/U and test BOP's. (Blind Rams w/ 1,500 psi).

Notes: * To Keep the Drilling String either in movement or rotation all time.
* Drill no more than 500 feet between short trips.
* Jars will be run in the HWDP. Make sure that the jars on location have to correct connections and that a backup is available.
* All components of the BHA should be correctly calipered and reported on a BHA form in IADC report.

8^{1/2}" PHASE

1. RIH with slick assembly and tooth bit. Test BOP's (Annular w/ 1,500 psi. Pipe Rams and kill manifold with 2,000 psi. Use "**Cup Tester**" and **Bowen Testing Pump**). To drill floating equip, cement and 10 feet formation. Circulate and POOH.
2. RIH with Packed Assembly, MWD and PDC bit. Continue drilling to TD. **Pump continuous low viscosity sweeps following by weighted pills to get good cleanness of the hole.** When the conditions exist that the target cannot be missed, POOH and lay down MDW. Circulate and make short trip in order to condition hole to run electric logs. POOH.
3. Run electrical logs according to program.
4. Make conditioning trip to run production casing. Circulate and POOH laying down drill pipe.
5. Run 5^{1/2}" N-80, 17#/ft casing, cement **according to program.**
6. Install 11" x 7^{1/16}" - 3000 x 5000 psi tubing head.

Proposed Well Profile

Report Date: April 22, 2001	Survey / DLS Computation Method: Minimum Curvature / Lubinski
Client: Petro-Tech Peruana S.A.	Vertical Section Azimuth: 213.800°
Field: Lobitos	Vertical Section Origin: N 0.000 ft, E 0.000 ft
Structure / Slot: Platform LO6 (WGS84) / Slot #23	TVD Reference Datum: KB
Well: Well LO6-23	TVD Reference Elevation: 50.0 ft relative to MSL
Borehole: Borehole LO6-23	Sea Bed / Ground Level Elevation: 0.000 ft relative to MSL
UWI / API#:	Magnetic Declination: 1.522°
Survey Name / Date: LO6-23 Rev#2 / April 22, 2001	Total Field Strength: 28877.905 nT
Tort / AHD / DDI / ERD ratio: 24.636° / 2883.29 ft / 4.883 / 0.356	Magnetic Dip: 14.827°
Grid Coordinate System: UTM Zone 17S - WGS84, Meters	Declination Date: April 22, 2001
Location Lat / Long: S 4 26 42.554, W 81 22 8.641	Magnetic Declination Model: BGGM 2000
Location Grid N/E Y/X: N 9508656.830 m, E 459054.520 m	North Reference: True North
Grid Convergence Angle: +0.02860485°	Total Corr Mag North -> True North: +1.522°
Grid Scale Factor: 0.99962075	Local Coordinates Referenced To: Well Head

Station ID	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	VSec (ft)	N-S (ft)	E-W (ft)	Closure (ft)	at Azim (°)	DLS (°/100ft)	TF (°)
Tie-In	0.00	0.00	213.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-146.2MTF
Csg. 13 3/8"	1450.00	0.00	213.80	1450.00	0.00	0.00	0.00	0.00	0.00	0.00	-146.2MTF
KOP	1500.00	0.00	213.80	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	-146.2MTF
	1600.00	4.00	213.80	1599.92	3.49	-2.90	-1.94	3.49	213.80	4.00	-146.2MTF
	1700.00	8.00	213.80	1699.35	13.94	-11.58	-7.75	13.94	213.80	4.00	0.0
	1800.00	12.00	213.80	1797.81	31.30	-26.01	-17.41	31.30	213.80	4.00	0.0
	1900.00	16.00	213.80	1894.82	55.49	-46.11	-30.87	55.49	213.80	4.00	0.0
	2000.00	20.00	213.80	1989.91	86.38	-71.78	-48.05	86.38	213.80	4.00	0.0
	2100.00	24.00	213.80	2082.61	123.84	-102.91	-68.89	123.84	213.80	4.00	0.0
Station Tangent Section	2115.90	24.64	213.80	2097.10	130.38	-108.35	-72.53	130.38	213.80	4.00	0.0
Chacra	2284.12	24.64	213.80	2250.00	200.51	-166.62	-111.54	200.51	213.80	0.00	0.0
Rio Bravo	3934.33	24.64	213.80	3750.00	888.40	-738.25	-494.20	888.40	213.80	0.00	0.0
Palegreda	5089.47	24.64	213.80	4800.00	1369.92	-1138.40	-762.06	1369.92	213.80	0.00	0.0
Csg. 9 5/8"	5200.00	24.64	213.80	4900.46	1416.00	-1176.68	-787.69	1416.00	213.80	0.00	0.0
Mogollon	5804.57	24.64	213.80	5450.00	1668.01	-1386.11	-927.88	1668.01	213.80	0.00	0.0
San Cristobal	7344.76	24.64	213.80	6850.00	2310.05	-1919.63	-1285.04	2310.05	213.80	0.00	0.0
LO6-23 Upper Basal	7872.83	24.64	213.80	7330.00	2530.17	-2102.56	-1407.49	2530.17	213.80	0.00	0.0
Salina	8279.88	24.64	213.80	7700.00	2699.85	-2243.56	-1501.88	2699.85	213.80	0.00	0.0
Lower Basal Salina	8499.91	24.64	213.80	7900.00	2791.57	-2319.78	-1552.90	2791.57	213.80	0.00	0.0
Balcones	8719.94	24.64	213.80	8100.00	2883.29	-2396.00	-1603.92	2883.29	213.80	0.00	0.0
T.D.											

Survey Error Model: Wolff & deWardt 1.0000 sigma

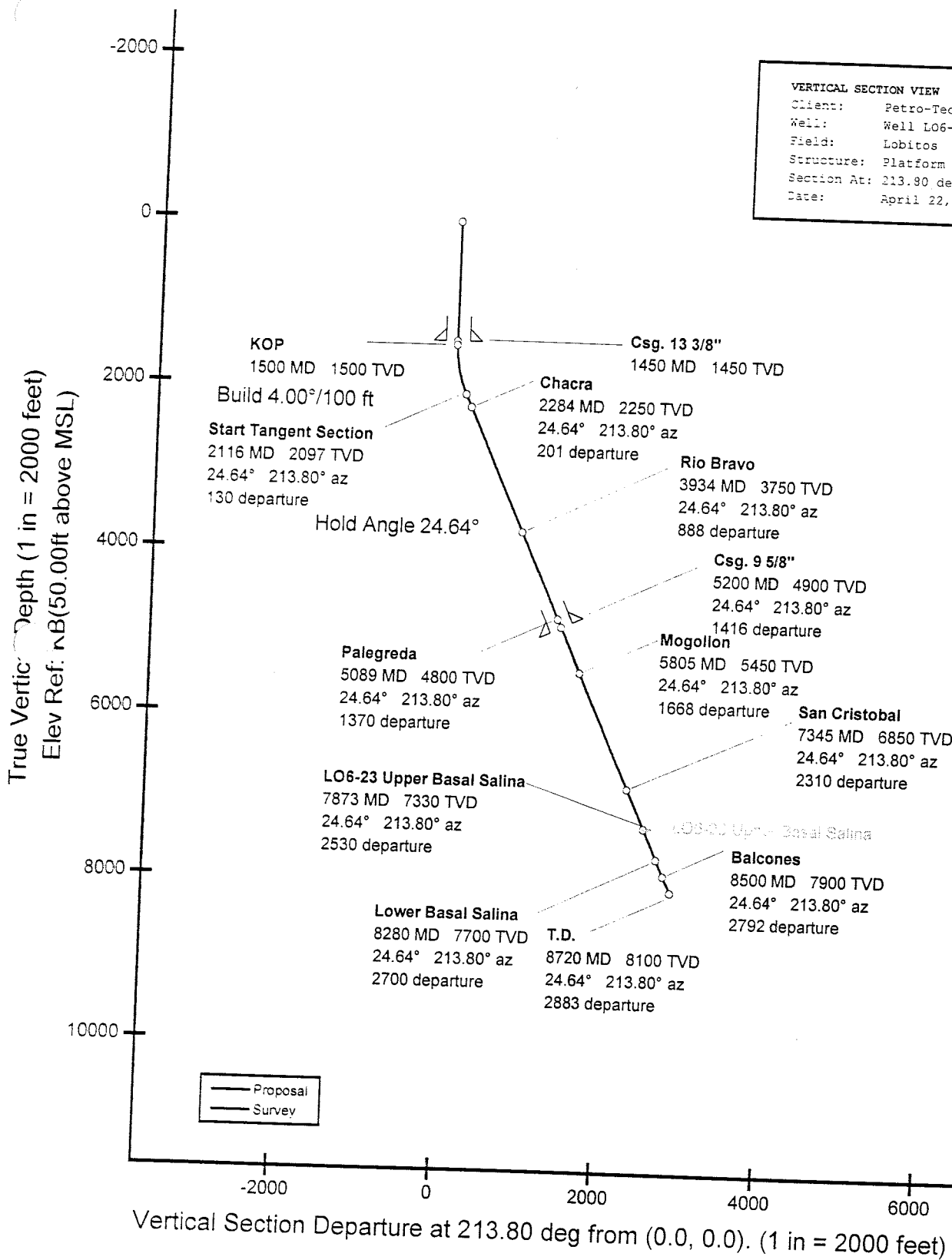
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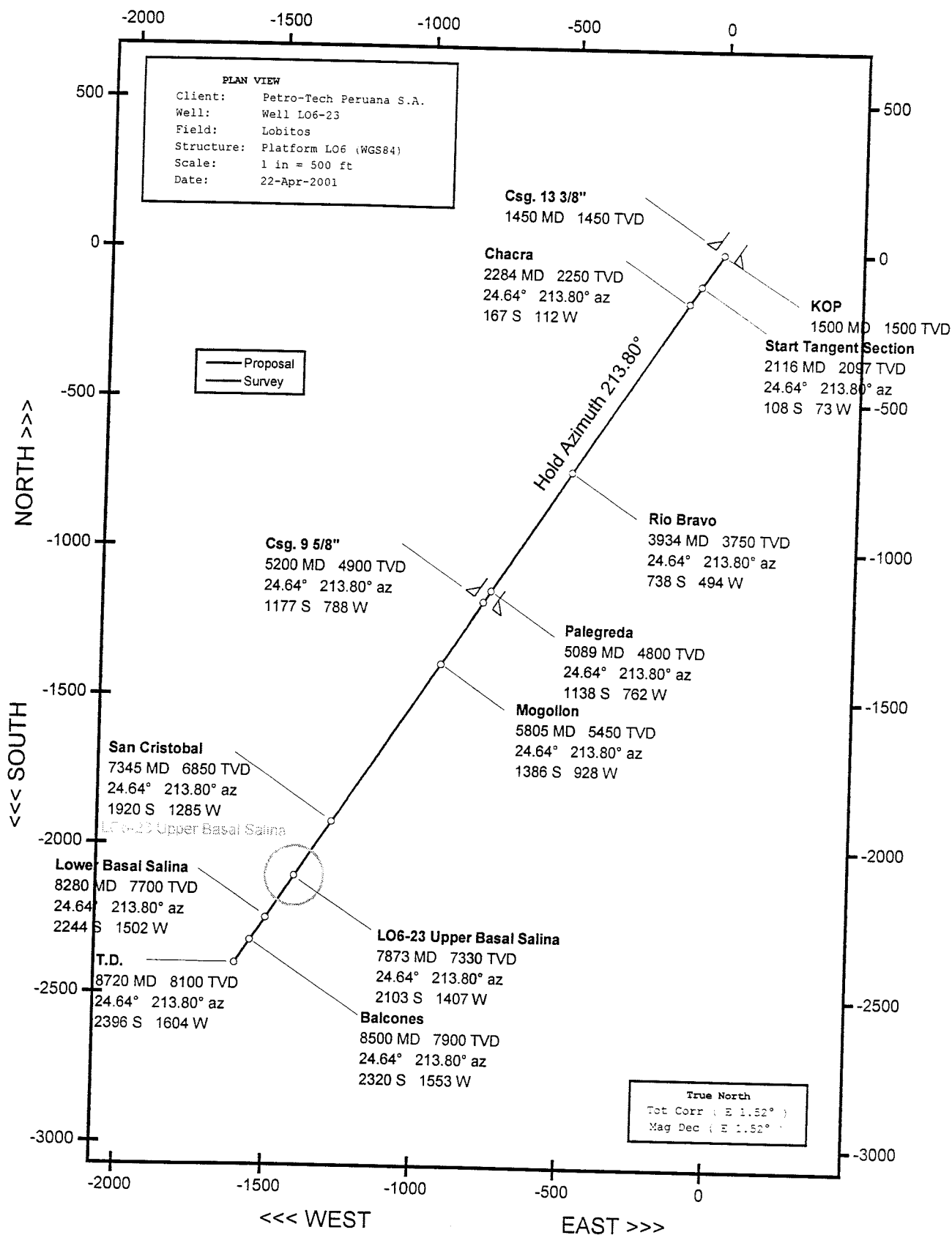
MD From (ft)

0.00

MD To (ft) EOU Freq Survey Tool Type

8719.94 1/100.00 ft Anadrill MWD





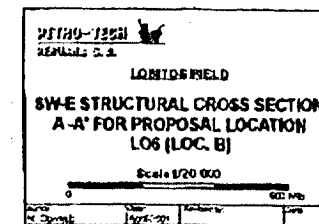
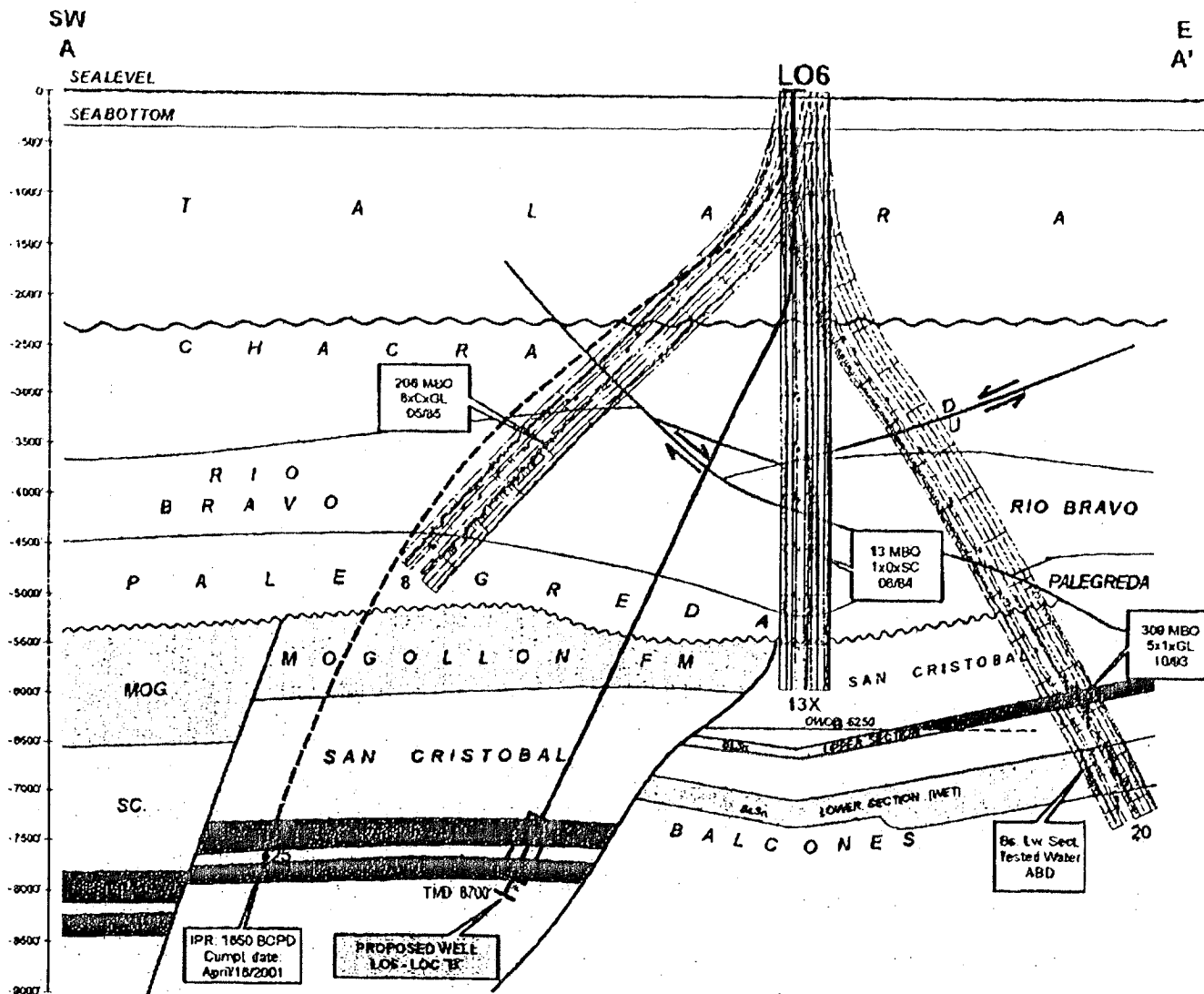
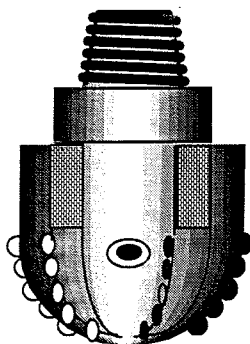


FIGURE 7



LO6 - 23 BIT PROGRAM

DEPTH	SIZE	TYPE	IADC CODE	W.O.B.	RPM
0-585	17	GTX-C1 (RR)	1-1-4	8/12	100
585-1500	17	GTX-C1(RR)	1-1-4	10-15	120
1600-2,500	12 1/4	S91VX	PDC	15-20	MM/40
2500-5200	12 1/4	S91VX	PDC	15-25	120
5200-7800	8 1/2	DS110SV	PDC	15/20	120
7800-8300	8 1/2	MX-18	5-1-7	25-30	90-80
8300-8700	8 1/2	MX-20	5-2-7	30-35	80

HYDRAULIC PROGRAM

DRILL STEM	PIPE		TOOL JOINT WEIGHT		
	O.D	I.D	O.D	I.D	lbs/pie
Drill pipe "S-135"	5.00	4.28	6.25	3.25	19.50
Heavy weight	5.00	3.00	6.50	2.875	53.00
Drill collar (two size)	8.00	3.00	6.25	2.813	150 / 92

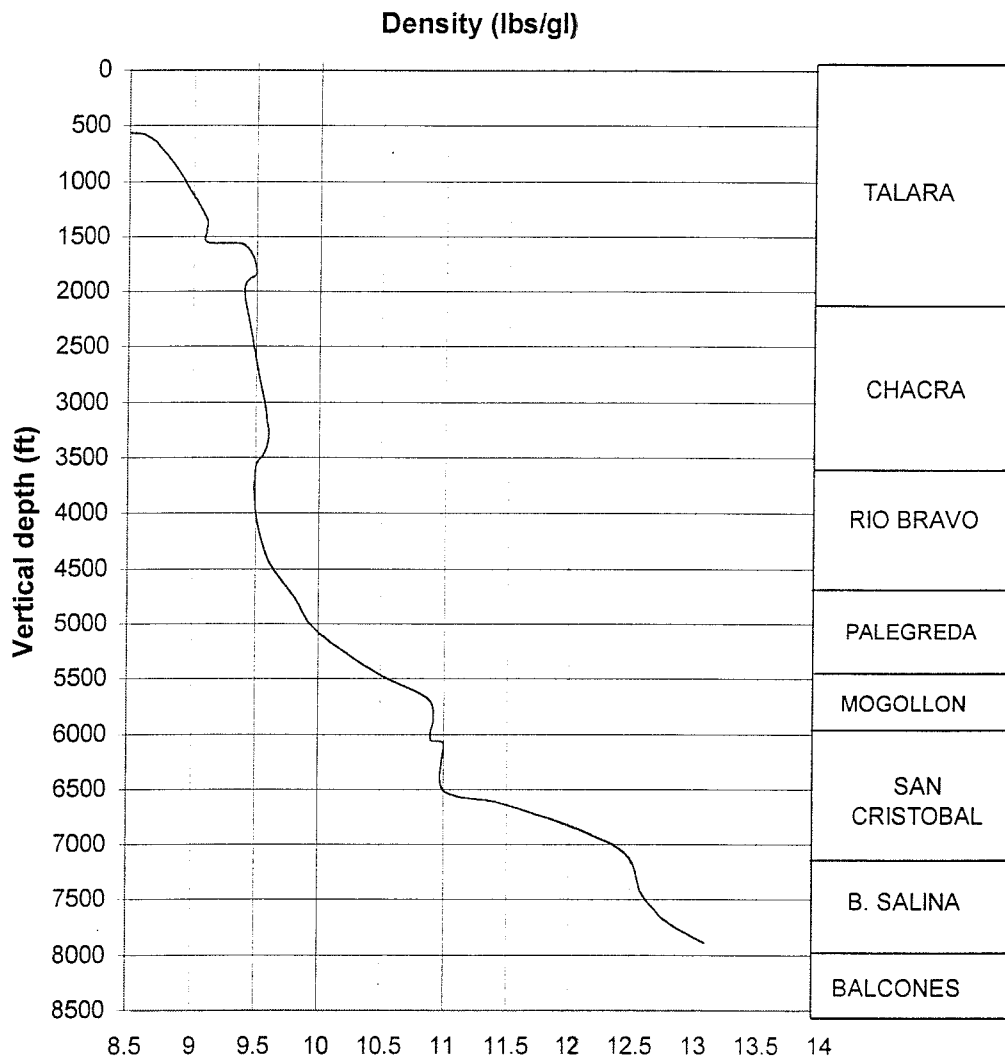
INTERVAL		NOZZLES						Flow	Pressure (psi)		Velocity (ft/min)			HSI	J. Vel	Impt	ECD	BHA
From	To	J-1	J-2	J-3	J-4	J-5	J-6	Gpm	Bit	System	D.p	D.c	Crit.		ft/seg	Force	ppg	
585	1550	18	18	18	18			474	174	690	44	52	274	0.2	153	328	9.2	1
1550	2500	18	18	18	18	18	18	703	174	2050	138	200	319	0.6	151	491	9.4	2
2500	5200	20	18	18	18	18	18	703	181	2060	138	200	296	0.6	151	512	9.8	3
5200	7800	14	16	16	16	16	16	500	183	2190	259	369	410	0.9	136	408	12.4	4
7800	8700	22	22	22				440	169	1910	228	325	349	0.8	127	356	13.2	4

BHA:

- B/ Xo / Dc1 / Dc1 / Stb / Dc1/ Xo/ 8Dc's/ Hw / Xo/ Jar/ Xo/ 19Hw's (1)
 B/ PP/ Stb / F Sub/ SNMDC/ UBHO/ 2NMDC/ Dc1/ Xo/ 3Dc's/ 6Hw's/ Xo/ Jar/ Xo/ 18Hw's (2)
 B/ NBstb/ F Sub/ SNMDC/ Stb/ UBHO /SNMDC/ NMDC/ Stb/ NMDC/ Dc1 /Xo/ 3Dc'S / 3Hw's/ Xo/ Jar/ Xo/ 18Hw's (3)
 B/ NBstb/ F Sub/ SNMDC/ Stb/ SNMDC/ UBHO/ NMDC/ Stb/ NMDC/ 6Dc's / 6Hw's/ Xo/ Jar/ Xo/ 18Hw's (4)

Drilling Prognosis
LO6-23

Profile of density behaviour LO6: 22R - 25



MUD PROGRAM

SURFACE HOLE

INTERVAL

585 - 1500

MUD TYPE

Bentonite Polymer

Cement 18" conductor. Prior to drilling, prehydrate bentonite with fresh water. Prepare the drilling fluid; mix seawater, Caustic Soda and small amounts of polymer. While drilling keep the fluid with low solids content, in order to increased the rate of penetration and clean the hole. Pump frequent sweeps as necessary to unload hole of cuttings.

PROPERTIES

Weight	: 8.8 - 9.2 lbs/gl
Visc	: 55 - 70 Sec/qt
pH	: 9.5
PV / YP	: 0.6 (Max Yp of 26)
Filt. API	: 8
K+	: 2000 mg/Lt

INTERMEDIATE HOLE

INTERVAL

1500 - 5200

MUD TYPE

FLO DRILL

After cleaning the tanks make the mud conversion according to the recommended rheological properties adjusting the levels of Calcium and Potassium Ions.

The Rio Bravo formation is highly porous and permeable might be depleted and shale pressurized. **Take care to maintain low mud weight and using seal material while drilling this formation.**

Pump frequent sweeps as necessary to unload hole of cuttings.

PROPERTIES

Interval (feet)	Weight Lbs/gl	Visc. Sec/qt	Vp Cps	Yp Lb/100ft ²	Sol %	Filt. cc/30'
1550 - 3800	9.4	55	22 - 26	30 - 32	7	8
3800 - 5200	9.4-9.6	56 - 55	22 - 26	32 - 36	8	7

PH	PM cc	PF cc	CALCIUM PPM	POTASIUM PPM
9.5	0.8 - 1.2	0.2 - 0.50	180	14,000

PRODUCTION HOLE

INTERVAL

5200 - 8700

MUD TYPE

FLO DRLL

After cleaning the tanks make the mud conversion according to the recommended rheological properties. YP and PV will be kept at levels that permit avoid excessive fluid losses by shakers and guarantee good hole cleanness, adjusting the levels of Calcium and Potassium Ions.

Pump frequent sweeps as necessary to unload hole of cuttings.

While drilling Basal Salina formation mud weight will be increased due gas presence as well as recorded on the last well LO6-25. Enough weighted material must be stocked at the Rig to raise mud weight by two pounds.

PROPERTIES

Interval (feet)	Weight Lbs/gl	Visc. Sec/qt	Vp Cps	Yp Lb/100ft ²	Sol %	Filt. cc/30'
5200 - 5700	9.6 - 10.5	55	22 - 26	28 - 32	8	8
5700 - 7600	10.5 - 12.0	56 - 55	24 - 28	32 - 36	10	6.5
7600 - 8700	12.0 - 13.0	56		38	12	5.5

PH	PM cc	PF cc	CALCIUM PPM	POTASIMUM PPM
9.5	0.8 - 1.2	0.2 - 0.50	180	14,000

Drilling Prognosis
LO6-23

CEMENT PROGRAM

18" O.D. CONDUCTOR (Hole Average: 24")

1. Reach the maximum penetration of 200 feet. POOH string.
2. Install 21 1/4" control.
3. RIH drilling string with diverter tool to the bottom and circulate for 25 minutes.
4. Pump 250 sxs of neat cement + 15 sx gilsonite+ 2% Cl_2Ca ($\rho = 15.6 \text{ \#/ gal}$)
5. Pull out the pipe slowly to 100 ft. Circulate.
6. Shut the BOP and displace with 20 bbls of mud (4 bpm). Leave pressurized.
7. After 5 hours open valve and preventor. POOH.
8. Cut off conductor and welding Braden head. WOC.14 hours.

13 3/8" O.D. CASING AT 1,500 feet (Hole average 20")

1. Maximum speed to run casing: 40 sec/ tube.
2. Install the guide shoe followed by one (01) joint, and Insert Float Valve.
Note: Use thread locking compound.
3. Install 10 centralizers. 08 between the first 15 joints starting from the float valve. Install the rest (2) at 700 and 350 feet.
4. Circulate $1^{1/2}$ casing volumes prior to pumping cement, condition mud during circulation to desired rheology. ($\text{Yp} \pm 15 \text{ lbs/ } 100 \text{ ft}^2$) Mix spacers and or mud flush at this time.
5. Test cement lines and head with pressure of 2500 psi.
6. Release bottom wiper plug (red) and reload the cement with the top plug (black) and pump the following slurries:

Slurries	Density (lb/ gl)	Rend. (ft ³ / sx)	Water (gls/ sx)
Sea Water (10 bbls)	8.5	---	---
1st. Slurry			
350 sx cement (6%gel) + 0.5 gl/10 bbl FP-6L	13.5	1.47	7.93
2nd. Slurry			
500 Net sx + 1% CaCl_2 +0.5 gls/ 10 bbl FP-6L	15.6	1.20	5.20

9^{5/8}" O.D. CASING AT 5200 feet (Hole Average: 13")

1. Maximum speed to run casing: 40 sec. / tube.
2. Install the guide shoe followed by two (02) joints, and Differential float collar.
Note: Use thread locking compound.
3. Install 20 centralizers, 15 between the first 30 joints starting from the float collar. Install the remaining between the interval: 2500 to 1000 ft one every other joint.
4. Circulate 1^{1/2} casing volumes prior to pumping cement, condition mud during circulation to desired rheology. ($Y_p \pm 18 \text{ lbs/ } 100 \text{ ft}^2$) Mix spacers and or mud flush at this time.
5. Test cement lines and head with pressure of 2500 psi.
6. Release bottom wiper plug (red) and reload the cement with the top plug (black) and pump the following slurries:

Slurries	Density (lb/ gl)	Rend. (ft ³ / sx)	Water (gls/ sx)
Sea Water (10 bbls)	8.5	---	---
1st. Slurry			
800 sx cement (6% Gel)+ 0.5 gl/10 bbls FP-6L	13.5	1.75	7.93
2nd. Slurry			
650 Net sx + 0.5 gls/ 10 bbls FP- 6L + 1% CaCl ₂	15.6	1.20	5.20

Release top plug (black) and displace with 380 bbls of drilling mud. Pump pressure approximately 1150 psi. Sit the casing a foot off bottom. Be careful to space out where there is no danger of a casing a casing collar in the well

Cement returns to surface are expected.

5^{1/2}" O.D. CASING AT 8700 feet (Hole Average: 10")

1. POOH. laying down string. Fill the hole with mud to keep hydrostatic pressure.
2. Maximum speed for running casing hole: 40 sec/ft.
3. Install the floating equipment Super Seal II. Apply thread lock compound.
4. Place centralizers (total: 30), the first 25 in each tube starting from the first couple and the remaining between: 1550'- 1200' (5).
5. Run a flag joint (± 25 feet) on the # 47 position of the casing string.
6. Reciprocate during the circulating. Condition mud rheology - $Y_p \pm 15 \text{ Lbs/ } 100 \text{ ft}^2$.
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:

Drilling Prognosis
LO6-23

Slurries	Density (lb/ gl)	Rend. (ft ³ / sx)	Water (gls/ sx)
Mud Clean (20 bbls)	8.9	---	---
Mud Sweep (40 bbls.)	13.8		
1st. Slurry			
550 sx cmt. (4% Gel) + 0.5 gal/ 10 bbls FP-6L + 0.5% FL-52 + 0.7% CD-32.	14.1	1.53	7.6
2nd. Slurry			
400 Net sx+ 0.7% BA-56 + 0.5 gal/ 10 bbls. FP-6L + 0.35% CD-32	15.6	1.20	5.33

Release top plug (black) and displace with 200 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

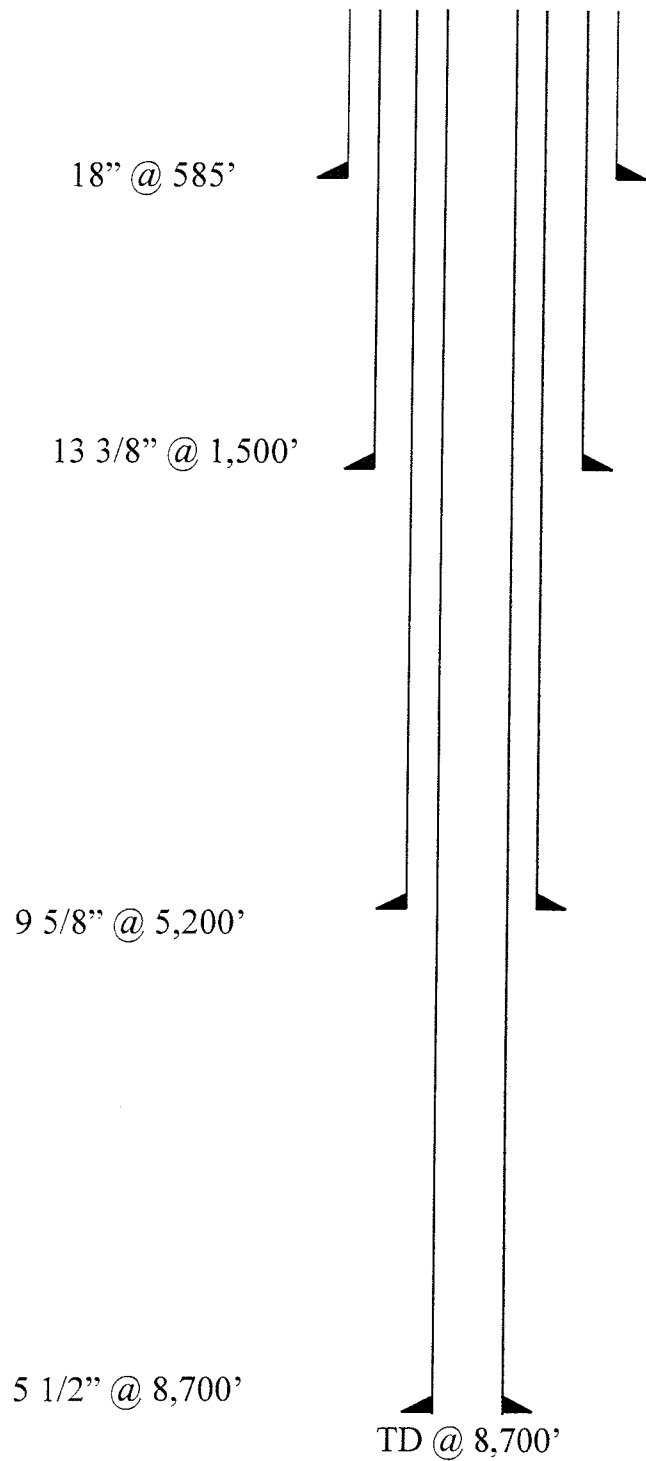
2) CASED HOLE LOGS:

- GR - CCL

Drilling Prognosis
LO6-23

LO6 - 23

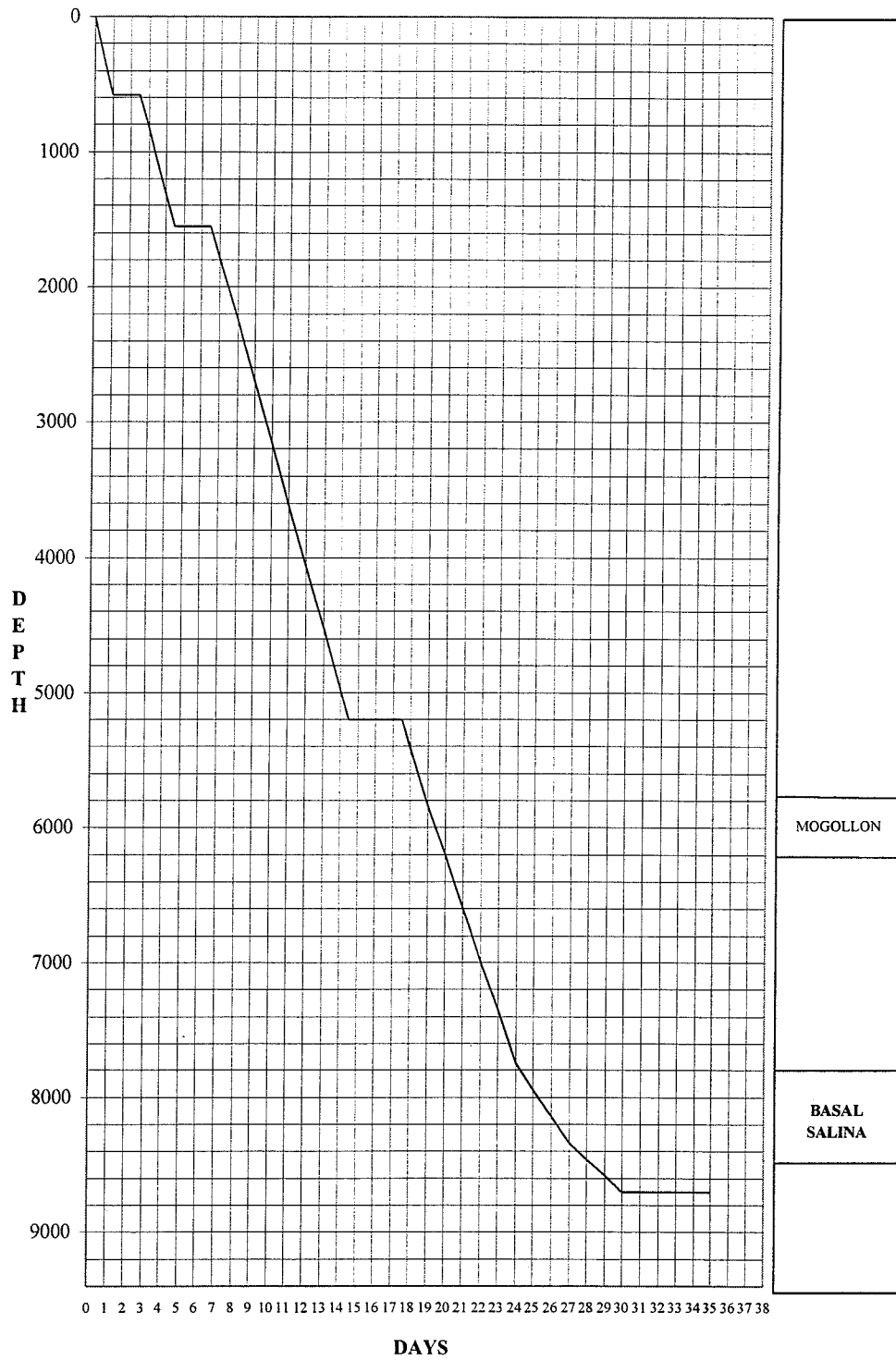
CASING DESIGN AND SETTING DEPTHS



Drilling Prognosis
LO6-23

LO6 - 23

Drilling Curve



Drilling Prognosis
LO6-23

PEIRO-TECH
PERUANA S.A.



PETRO-TECH PERUANA S.A.

CIA	ACD	BUDGET ITEM
06		

A.F.E. No.

FU	WELL DESCRIPTION	OFICIAL NUMBER	MM/DD/AA
18	LO6-23	Z-2B-24-081-D-LO6	4/26/01

FU	TYPE OF WELL	MOVEMENT	DRILLING	COMPLETION	EST FOOTAGE	A.R.E.A.
19	DEVELOPMENT	2	30	5	8700	LOBITOS

FU	GEN	CC	AREA
20		061	

WELL COST BREAKDOWN

SUB	DESCRIPTION	QUANTITY	UNIT COST	SUB-TOTAL	TOTAL US\$
OUTSIDE SERVICES:					
201	DRILLING RIG	7 / 30	8900 / 9.500		347,300
203	DIRECTIONAL DRLG.	27	8050		217,350
204	GEOLOGICAL	29	350		10,150
204	MUD LOGGING	29	400		11,600
205	MUD ENGINEERING	30	400		12,000
206	CEMENT. SURF. CSG.				5,800
206	CEMENT. INTERM. CSG.				7,900
206	CEMENT. PROD. CSG.				11,800
206	CEMENT. CONDUCT.				4,200
206	CEMENT. OTHERS				
207	ELECTRIC LOGGING				100,000
208	PERFORATING				23,500
209	FRAC SERVICES				21,000
211	TUBULAR INSPECTION				4,780
212	HYDRAULIC TONGS				20,570
219	WELL TESTING				4,000
221	TOOL SERVICES				3,450
228	MACHINE WORK				1,850
229	BARGE OPERATION (TRANSP)				
229	BARGE OPERATION (TENDER)	37	2080		76,960
237	MATER. & EQUIP. TRANSP.	32	100		3,200
240	INDUSTRIAL WATER				5,600
248	CATERING	37	120		4,440
	TOTAL OUTSIDE SERVICES:				897,450
MATERIALS & SUPPLIES:					
326	BITS				62,000
327	WELLHEAD				23,500
328	FLOATING EQUIPMENT - CENT.				7,800
336	3/4" STEEL PLATE				180
340	WELDING MATERIAL				140
341	MAT. CMT. SURF. CSG.				3,800
341	MAT. CMT. INTERM. CSG.				6,800
341	MAT. CMT. PROD. CSG.				12,100
341	MAT. CMT. CONDUCT.				2,600
341	MAT. CMT. OTHERS				
342	FRAC MATERIALS				15,300
343	DRILLING FLUIDS				145,370
344	CONDUCTORS	585	21.89		12,810
344	SURFACE CSG.	1550	26.35		40,840
344	INTERMED. CSG.	5200	20.25		105,300
344	PRODCT. CSG.	8700	7.90		68,730
344	TUBING				
346	DIESEL- FUEL				46,800
347	H.P MOD. THR. COMP.				160
	TOTAL MATERIALS & SUPPLIES:				554,230
TOTAL PROJECT COST US \$					1,451,680

APPROVAL BY : _____ DATE : _____

DATA TABLES

GENERAL CASING DATA					
SIZE	WEIGHT LBS/FT	GRADE	CONNECTION	OPTIMUM MAKE UP TORQUE (FT/LBS)	MAXIMUM OVERPULL (TENSION) LBS
18	70.59	ASTM A53B	WELD CONN	N/A	N/A
13 3/8"	54.5	K-55	STC	5470	547,000
9 5/8"	43.5	N-80	LTC	8130	813,000
5 1/2"	17.0	K-55	LTC	2720	272,000
5 1/2"	17.0	N-80	LTC	3410	338,000
5 1/2"	20.0	N-80	LTC	4200	416,000
3 1/2"	9.3	J-55	Atlas Bradford FL4S	1400	78,000

SIZE	GRADE	WT	ID	DRIFT DIA	Burst psi	Collapse psi	BBL/FT	FT/BBL
13 3/8"	K-55	54.5	12.615	12.459	2730	1130	.1545	6.47
9 5/8"	N-80	43.5	8.755	8.599	6330	3810	.0744	13.43
5 1/2"	K-55	17.0	4.892	4.767	5320	4910	.0232	43.01
5 1/2"	N-80	17.0	4.892	4.767	7740	6280	.0232	43.01
5 1/2"	N-80	20.0	4.778	4.653	9190	8830	.0221	45.09
3 1/2"	K-55	9.3	2.992	2.867	6980	7400	.0087	114.99

BUOYANCY FACTORS FOR STEEL PIPE IN VARIOUS WEIGHT FLUIDS									
LBS/GAL	FACTOR	LBS/GAL	FACTOR	LBS/GAL	FACTOR	LBS/GAL	FACTOR	LBS/GAL	FACTOR
9.1	.8609	9.6	.8533	10.1	.8457	10.6	.8380	11.1	.8304
9.2	.8594	9.7	.8518	10.2	.8441	10.7	.8365	11.2	.8289
9.3	.8579	9.8	.8502	10.3	.8426	10.8	.8350	11.3	.8273
9.4	.8564	9.9	.8487	10.4	.8411	10.9	.8334	11.4	.8258
9.5	.8548	10.0	.8472	10.5	.8395	11.0	.8319	11.5	.8243

CONVERSION FACTORS		
Centigrade Degree	$(C^{\circ} \times 1.8) + 32$	= Degrees Fahrenheit
Centimeter (cm)	$\times .393700$	= Inch
Circle Diameter	$\times 3.1416$	= Circumference
Cubic Foot	$\times .1781$	= Barrel (42)
Diameter x Circumference	$\times .25$	= Area
Fahrenheit Degree	$(F^{\circ} - 32) \times .555$	= Degrees Centigrade
Foot-Pound	$\times .138255$	= Kilogram-Meter
Gallon Liquid U.S.	$\times .133680555$	= Cubic Feet
Knot US	$\times 1.15155$	= Mile/Hour
Liter	$\times .035316$	= Cubic Feet
Liter	$\times .264178$	= Gallon US
Pound	$\times .4536$	= Kilograms
Steel (cubic foot)	$\times 489.569$	= Pounds (pipe or tubing)
Cost of any item	-\$1.00	= Amount in your pocket