

PEIRO-TECH PERLANA S.A



PTP-DRLG-178-01

June 18, 2001

TO : Operations Manager

FROM : Drilling Manager

CC : Geosciences Manager, Engineering Manager, Drilling Foreman, PEPESA, M-I Overseas.

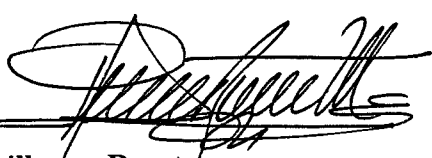
SUBJECT : WELL LO6-25 RE-ENTRY PROGRAM

Attached is the Re-entry Program to return with P-48 Rig to the LO6-25 well, which is open hole flowing through the kill line from BOP's stack left on the wellhead.

The purpose of this job is to control and conditioning well in order to put it on production after perform a conventional completion through 5 ½" casing

Suitable procedures will be applied to control well and Mud logging unit 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 if it's necessary.

The estimated time to control and conditioning this well is 10 days plus 5 days for completion. The expenditure estimated to develop this job will be U. S \$ 493,120.00 and charged to the same AFE N° 2210306, which was used to drill the well.


Guillermo Ruesta
Drilling Manager

GEOSCIENCES
Central File
<i>21-A60-06</i>
DATE

Drilling Prognosis
LO6-25

GENERAL INFORMATION

AREA : LOBITOS

OFFICIAL NUMBER : Z-2B-24-079-D-LO6

WELL : LO6 - 25

WELL TYPE : DEVELOPMENT

AFE : 2210306

GEOLOGIC PROGNOSIS

<u>FORMATION (LITHO)</u>	<u>MEASURED DEPTH</u>	<u>VERTICAL DEPTH</u>	<u>OBSERVATIONS</u>
RIO BRAVO	4550	3300	SECONDARY OBJECTIVE
PALEGREDA	6230	4615	
MOGOLLON	7010	5310	SECONDARY OBJECTIVE
SAN CRISTOBAL	7900	6135	
BASAL SALINA	9210	7365	MAIN OBJECTIVE
BALCONES			
TOTAL DEPTH	9790	7946	

COORDINATES

SURFACE (WGS-84) N: 9°508,648.86 mts E: 459,050.20 mts.

OBJECTIVE (WGS-84) N: 9°507,590.00 mts. E: 458,100.00 mts.

DIRECTIONAL

Current Status

9 5/8" Casing Shoe MD	5,980 ft.
9 5/8" Casing Shoe TVD	4,450 ft.
Casing Shoe Angle	27.90°
Current Drilled Depth	9,790 ft.
Vertical Depth	7,946 ft.
Horizontal Distance	4,990 ft.
Angle to Drilled Depth	12°
Direction to Drilled Depth	S 41.6° W
Drilled Depth Programmed	10,090 ft.
Estimated Control Well & Drilling Days	11
Completion Days	5

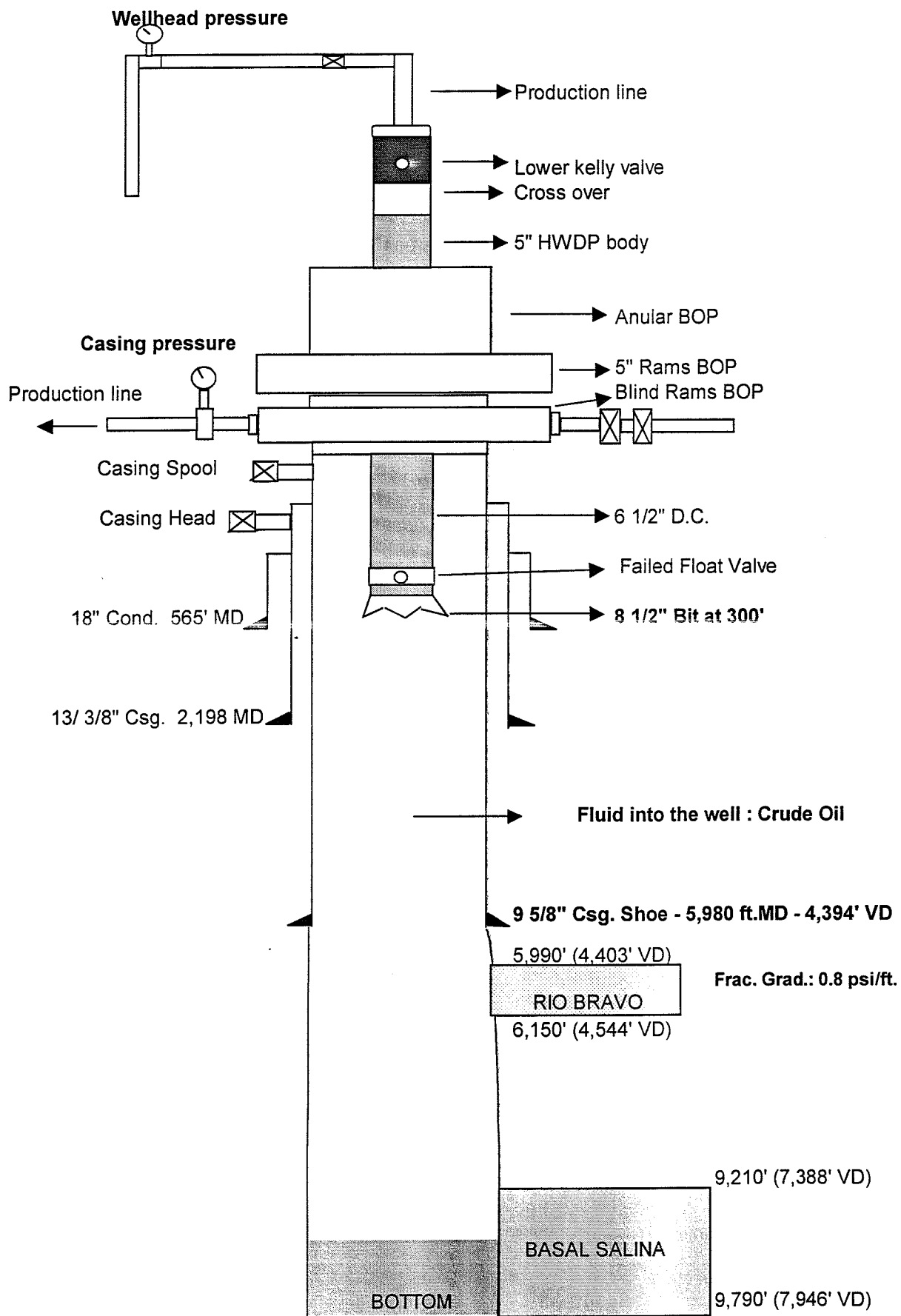
DRILLING RIG

Contractor / Rig	: PEPESA # 48
Draw works Type	: IDECO - 750
Traveling Blocks Type	: IDECO UTB- 265 Tns
Pump N° 1	: IDECO T - 1000 (10" x 6 1/2")
Pump N° 2	: IDECO T - 1000 (10" x 6 1/2")

ELEVATIONS

KB	: 50 ft.
Water Depth	: 335 ft.

Status of LO6-25 Well



LO6-25 RE-ENTRY PROGRAM

PREVIOUS STAGE

1. Bleed off well opening choke valve from 3/8" until having wide open by 1/16" every time at intervals of 48 hours.
2. If **wellhead pressure drop to zero**, continue with PROCEDURE N° 1.
3. If the well continues flowing with certain pressure after 24 hours go to PROCEDURE N° 2.
4. Move rig 48 to well LO6-25.
5. Conditioning mud used in well LO6-23 raising mud weight from 12.3 ppg to 12.5 ppg then pumping mud (+/- 400 bbls.) to HIPPO VESSEL tanks.
6. Prepare new mud (+/- 500 bbls.) with 13.5 ppg on PEPESA's mud pits to be installed on BB-1.
7. Continue preparing mud on rig mud pits to complete 600 bbls with 13.0 ppg.

PROCEDURE N° 1

1. Move rig 48 to well LO6-25.
2. Make up drill pipe by stands on stack board (+/- 6,000 feet).
3. Disconnect production lines and make up kill line to stand pipe and choke line to "choke manifold" then from here to trip tank in order to measure fluid volume discharged, pump this fluid to BB-1 barge.
4. Pick up Kelly on Lower Kelly valve in Heavy Weight Drill Pipe body. Open HCR valve and slug pipe with 13.5 ppg. Mud to displace crude oil. Observe the well. Open a little the Annular BOP.
5. Pull out slowly and replace quickly HWDP. RIH with new HWDP with float valve at top. Close in BOP's. Leave HCR valve in open position. Lift Annular BOP to check leakage by ring. (If it's necessary change BOP).
6. Install "bell nipple" and flow line. (Readjust bolts of BOP Annular flange).
7. Stripping drill pipe either until where are be possible or 9 5/8" casing shoe. Take care to measure the fluid volume discharged by enough drill pipe stripped. Circulate to displace crude oil with 13.5 ppg. mud. Observe well. If it no flows, continue stripping drill pipe to tag obstruction. Otherwise circulate raising mud weight to control well before continue stripping.
8. Clean up well monitoring mud density at 13.0 ppg. Make wiper trip after to reach the last TD at 9,790 feet. Circulate and homogenize mud weight.
9. Make short trip to check gas trip and observe well. Evaluate if it's possible continue drilling, otherwise condition hole to run 5 1/2" casing.

EQUIPMENT REQUIRED

1. BB-1 Barge.
2. Production's tanks to receive fluids from the well (1000 & 500 bbls.).
3. PEPESA's mud pit on Barge to store mud.
4. BJ Cementing pump.
5. Float valve.
6. Tank for receiving detritus of formation.

PROCEDURE N° 2

1. Move rig 48 to well LO6-25.
2. Make up drill pipe by stands on stack board (+/- 6,000 feet).
3. Close in the well, disconnect production lines and make up kill line to stand pipe and choke line to "choke manifold" then from here to trip tank in order to measure fluid volume discharged, pump this fluid to BB-1 barge.
4. Pick up Kelly on Lower Kelly valve in Heavy Weight Drill Pipe body. Connect Stand Pipe line to BJ cementing pump on BB-1 Barge.
5. Proceed to control well by Volume Method of Gas Lubrication. The principle is replace the influx with mud to reduce surface pressure to a safe level in order to be able stripping Drill Pipe into the well as follow:
6. Select a Working Pressure Range to increase the casing pressure each cycle.
7. Calculate the hydrostatic pressure per bbl of mud in the upper annulus:

$$\text{Hy. Per Bbl. (psi/bbl)} = \text{Mud gradient (psi/ft)} / \text{Upper annular capacity (bbl/ft)}.$$

8. Record the shut-in casing pressure before pumping mud into the well for this cycle as **P1**.
9. Pump lube mud into the well through the Stand Pipe to increase pressure by the **working pressure range**. Stop pumping and when the casing pressure has stabilized, record this pressure as **P2**.
10. To measure **the volume** of mud lubricated for this cycle and calculate the hydrostatic pressure increase.

$$\text{Hy. Increase (psi)} = \text{Hy. Per bbl. (psi/bbl)} \times \text{Volume lubricate for cycle (bbls.)}.$$

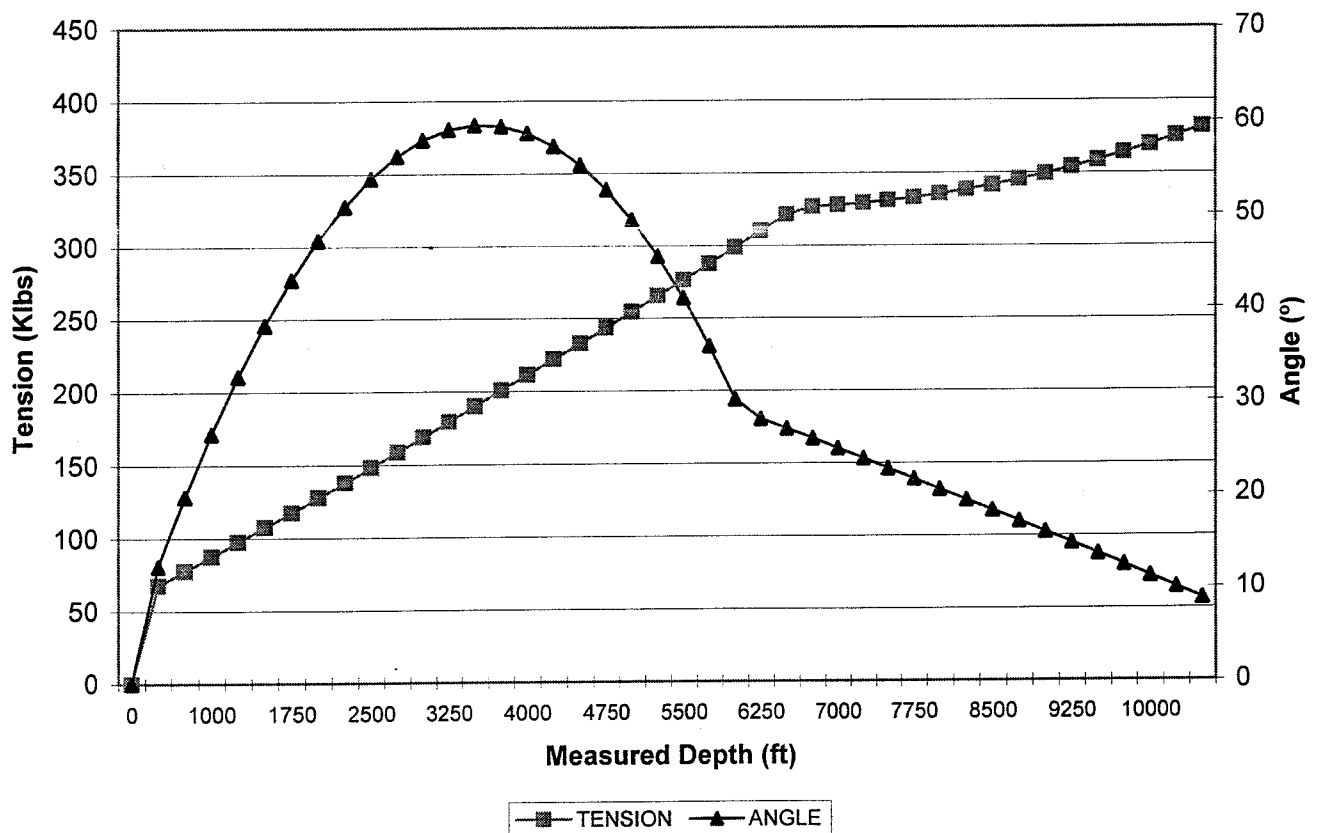
11. Allow 30 – 45 minutes (it could take longer) for the mud to lubricate (slip through) the influx.
 - First bleed crude oil and gas from the choke manifold to reduce the casing pressure from **P2** to **P1**.
 - Then bleed crude oil and gas from the choke to reduce the casing pressure from **P1** by hydrostatic increase.
 - Do not bleed mud from the choke, to allow additional time for the mud lubricated.
12. Continue steps 8 – 11 until the process is completed either to get pressure zero in casing or a safe level to stripping Drill Pipe.
13. Pull out and replace quickly HWDP. RIH with new 5" HWDP with float valve at top. Close in BOP's.
14. To install "bell nipple" and flow line. Lift Annular BOP to check leakage by ring. (If it's necessary change BOP).
15. Stripping drill pipe either until where are be possible or 9 5/8" casing shoe. Take care to measure the fluid volume discharged by enough drill pipe stripped. Circulate with 13.5 ppg mud. Observe well. If it no flows continue stripping drill pipe to tag obstruction. Otherwise circulate and rise mud weight before stripping.
16. Clean up well monitoring mud density at 13.0 ppg. Make wiper trips after to reach last TD at 9,790 feet. Circulate and homogenize mud weight.
17. Make short trip to check gas trip and observe well. Evaluate if it's possible continue drilling otherwise condition hole to run 5 1/2" casing.
18. Make short trip in order to condition hole. POOH laying down drill pipe.
19. Run 5 1/2," N-80, 17#/ft casing, cement and set casing hanger according to program.

20. Install 11" x 7 1/16" - 3000 x 5000 psi tubing head.

Notes: Considerations for stripping operations:

1. Take care about well bore pressures in relations to the maximum allowable for the formation below the casing shoe.
2. Make permanent monitoring of pressure and fluid volumes.
3. Controlling increase in well bore pressure due to surge pressure.
4. The rubbers must be removed from the Drill Pipe and the pipe surface smooth of burrs.
5. While stripping the information regarding minimum closing pressure for annular BOP should be on hand.
6. Maintain minimum annular closing pressure with no leakage.
7. Clear communication between driller and choke operator.
8. Floor hand should remove burrs from tool joint and past with lubricant.

LOAD & ANGLE PREDICTING



MUD PROGRAM

TO CONDITION HOLE (Prior Ream Hole)

INTERVAL

SURF. – 5,900' (Csg. Shoe)

MUD TYPE

BENTONITE – POLYMER

Prior stripping drill pipe prepare 1,200 bbls of mud and condition it with density according to program. The recommend rheological properties adequate to get proper cleanness and. well bore stability.

Weight (lbs/gl)	Visc.(Sec/qt)	VP (cps)	Yp (lb/100ft ²)	Filt.(cc/30')
13.5	55	14	22	8

TO CONDITION HOLE

INTERVAL

5,900 – 9,790

MUD TYPE

FLO-DRILL

Maintain rheological mud properties according recommendation. YP and PV will kept at levels that help to hold well bore stability and assure good bottom hole cleanness. 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'
5,900 – 9,790	12.5-13.0	55	16 - 20	22 – 28	10	8-6

PH	PM Cc	PF Cc	CALCIUM PPM	POTASIUM PPM
10	1 – 1.2	0.2 - 0.35	180 - 200	12,000

CEMENT PROGRAM

5 1/2" O.D. CASING AT +/- 9,790 feet (Hole Average: 16")

Note: Before POOH for running casing a hole average diameter calculation by circulating it should be done.

1. POOH. laying down string. Fill the hole with mud to keep hydrostatic pressure.
2. Maximum speed for running casing in hole: 40 sec/ft.
3. Install floating equipment. Apply thread lock compound.
4. Place centralizers (total: 25), the first 20 in each tube starting from the first couple and the remaining between: 5700'- 6100' (5).
5. Condition mud rheology - $Y_p \pm 15 \text{ Lbs/ } 100 \text{ ft}^2$.
6. 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)	Yield (ft ³ / sx)	Water (gls/ sx)
Mud Flush (40 bbls)	8.5	---	---
Mud Sweep (60 bbls)	14.0		
1 st Slurry			
2200 sx cmt. (4% Gel) + 0.5 gal/ 10bbls FP-6L + 1% FL-62 + 0.35% R-3	14.1	1.58	8.07
2 nd Slurry			
1050 sx cmt. + 0.5gal/10bbls FP-6L+0.75% BA-56 + 0.15% R-3 + 0.40% CD-32	15.6	1.20	5.40

Release top plug (black) and displace with 233 bbls diesel. Pump plug with 2250 psi. Hold for 5 minutes and then bleed pressure off to see if floats hold.

LO6-25

Drilling Curve

