SAVIA-Z2B-24-LO6-33D

LOBITOS

DRILLING PROGRAM

PREPARED BY:

Ericson Gaspar.
Drilling Engineer

REWIED BY:

Carlos Ramirez.
Drilling Engineering Head (e)

Ricardo Gilabert.
Drilling Operations Head (e)

José Chuyes.
Drilling Technical Leader

APPROVED BY:

Chuluk Hwang.
Operations Manager

TABLE OF CONTENTS

I. INTRODUCTION

A. SUMMARY

The SAVIA-Z2B-24-LO6-33D development well is designed as "S modified" type. The proposed well will evaluate Rio Bravo formation as main objective. The offset wells drilled from this platform are, LO6-9X, LO6-22, LO6-26XD, LO6-28D, LO16-26 and LO6-31D.

The Rig "PEPESA-40" will be used to drill this well. The Casing design will have 18" x 70.59 lbs/ft ASTM A53B as conductor Pipe at 450 ft MD - TVD, 13 3/8" 54.5 lbs/ft K-55 BTC Surface Casing set at 1,200 ft MD; 1,170.3 ft TVD; 9 5/8"- 43.50 lbs/ft N-80 BTC Intermediate Casing set at 5,700 ft MD, 3,368 TVD and 5 ½"-17 lbs/ft, N-80, BTC as Production Casing set at 8,200 ft MD; 4,906 ft TVD.
The 17" hole will be drilled with Aquagel/ water based mud system with viscous sweeps. After setting surface casing, the 12 ¼" intermediate hole will be drilled using EZ Mud/Clayseal water base mud system and 8 ½" Production hole will be drilled using Baradril –N water mud system.
Note: All depths indicated in this drilling program are referred at RT (Rotary Table).

GEOLOGICAL EVALUATION

The Mud Logging services will be run by service company Lab. Mud logging will be recorded from 450 ft MD, TVD to total depth. Samples are required every 30 ft from surface to 5,500 ft MD and every 10 ft from 5,500 ft MD to total depth. Paleontology samples will be taken every 150 ft from surface to 5,500 ft MD and every 90 ft from 5,500 ft to total depth. Palynology at requested by Lima office.

The recommended open hole logs are **DLL-MSFL-GR; FDC-CNL-GR**. Condition trip have to be made prior Pressure points logs. For cement evaluation the recommended logs will be, CBL-VDL-CCL-GR as required.

INCLINATION AND DIRECTIONAL SURVEYS

In order to ensure conductor direction Gyro survey will be taken at seabed depth and at conductor shoe depth 450 ft MD. At 480 ft Directional Drilling Service will start. The 17" hole section will be drilled using a Mud Motor and Gyro until risk of collision and magnetic interference disappear +/- 1,000 ft. Next hole sections will be drilled taking surveys with MWD system to total depth.

The slot selected is the slot D ("Slot D"). The directional drilling plan will be as follow: Drill vertical section to 480 ft MD (KOP), at these depth start the buildup section to reach 63.59° as maximum inclination angle at 2,012.9 ft MD; 1,727.7 ft TVD in S 48.95º W direction, in order to reach main target Rio Bravo formation, continue the tangent section and hold 63.59° to 6,000 ft MD; 3,501.2 ft TVD, then drill the drop section to reach 41.0° at 7,737.5 ft MD, finally continue the tangent section and hold 41° to total depth of 8,200.0 ft MD; 4,906 ft TVD in S 48.95º W direction.

Recommendations:

Company man must check that the directional drilling engineer has present all items indicate below before commencement of the directional drilling operation.

- Gyro survey must be used all 17" hole section because of the magnetic interference until 1,000 ft MD from nearby wells.
- Scribe line must be used as a back up to confirm the Gyro orientation.
- During the KOP the azimuth and the inclination need to be monitored to assure the trajectory of the well will be far away from the offset wells.
- ROP, vibrations, Torque and motor stalling must be monitored because this could indicate about a collision.

DRILLING HAZARDS

Problems may include lost circulation in Rio Bravo formation and wellbore instability; last one could be present in **Talara and Chacra formations.** Wellbore instability will be controlled with appropriate mud weight and properly mud properties for shale inhibition.

To prevent problems related to loss circulation in Rio Bravo formation, hole cleaning is very important (Tangent section with high inclination angle). There are three main factors that affect the hole cleaning capability and they are all interdependent on each other. They are: (a) Pipe Rotation, (b) Flow rate and (c) Low-end mud rheology. To achieve good hole cleaning the correct RPM's, flow rates & mud parameters must be chosen for the given hole size.

- **If the inclination is more than 40 deg, below practice should followed.**
- **Circulate 30 minutes after long slide interval.**
- **If there is abundant caving, stop drilling and circulate out of the well. If the caving continues, short trip to shoe to check hole condition.**
- **If you encounter tight spots while POOH, run back in the hole 3~5 stands (or until the BHA is free from the obstruction) and circulate at least 30 minutes to remove cutting.**
- **Never back reaming without permission of Drilling operations Head (Ricardo Gilabert).**
- **Patience is the real key to effective hole cleaning. If cuttings are still coming out of the hole, then the hole isn't clean yet.**

(**) The primary rules for back reaming in high angle wells are:

- Always perform a cleanup cycle prior to starting back reaming, and after back reaming prior to POOH. Also, consider intermediate clean up sessions while back reaming out of the hole.
- Back reaming should always be performed at maximum possible flow rate and RPM (within other system limitations).
- Take special care when back reaming into a casing shoe as the larger diameter rat hole below the shoe (or when drilling oversize hole) may be an area where cuttings will accumulate. Consider extra circulation with rotation before back reaming into the shoe.
- Sweeps should be avoided while back reaming as they increase the risk of packing off (i.e. can pickup cutting dunes).

Differential sticking is a problem mainly when sand formation will be drilled in **Rio Bravo.** Treatment drilling fluid with bridged material and all the time is necessary hold the BHA moving. **Special caution will be taken because stuck pipe & lost circulation events happened in previous wells LO6-27D and LO6-28D, this formation could have layers with low pore pressure.**
Mud weight will be increased as dictated by wellbore stability conditions and Mud logging unit information. Also special cautions will be taken when Rio Bravo will be drilled due to gas presence possibility. Enough material must be stocked at the rig site to raise the mud weight by two pounds if it's necessary equivalent at 1,200 Sx of barite.

Maximum mud weight required to reach total depth should be 11.5 ppg.

GEOLOGICAL PROGNOSIS

GEOLOGIC PROGNOSIS

AREA	OFFICIAL WELL NUMBER	SAVIA PERU SA.	TYPE OF WELL	RIG N°
LOBITOS OFFSHORE		LO6-33D	DEVELOPMENT	PEPESA-40

PRIMARY OBJECTIVE	SECONDARY OBJECTIVE
RIO BRAVO	

SURFACE COORDINATES (UTM) (WGS-84)		TARGET COORDINATES (UTM) (WGS-84)	
9'508,652.99 MN	459,049.25 ME	9'507,790.31 MN	458,124.14 ME

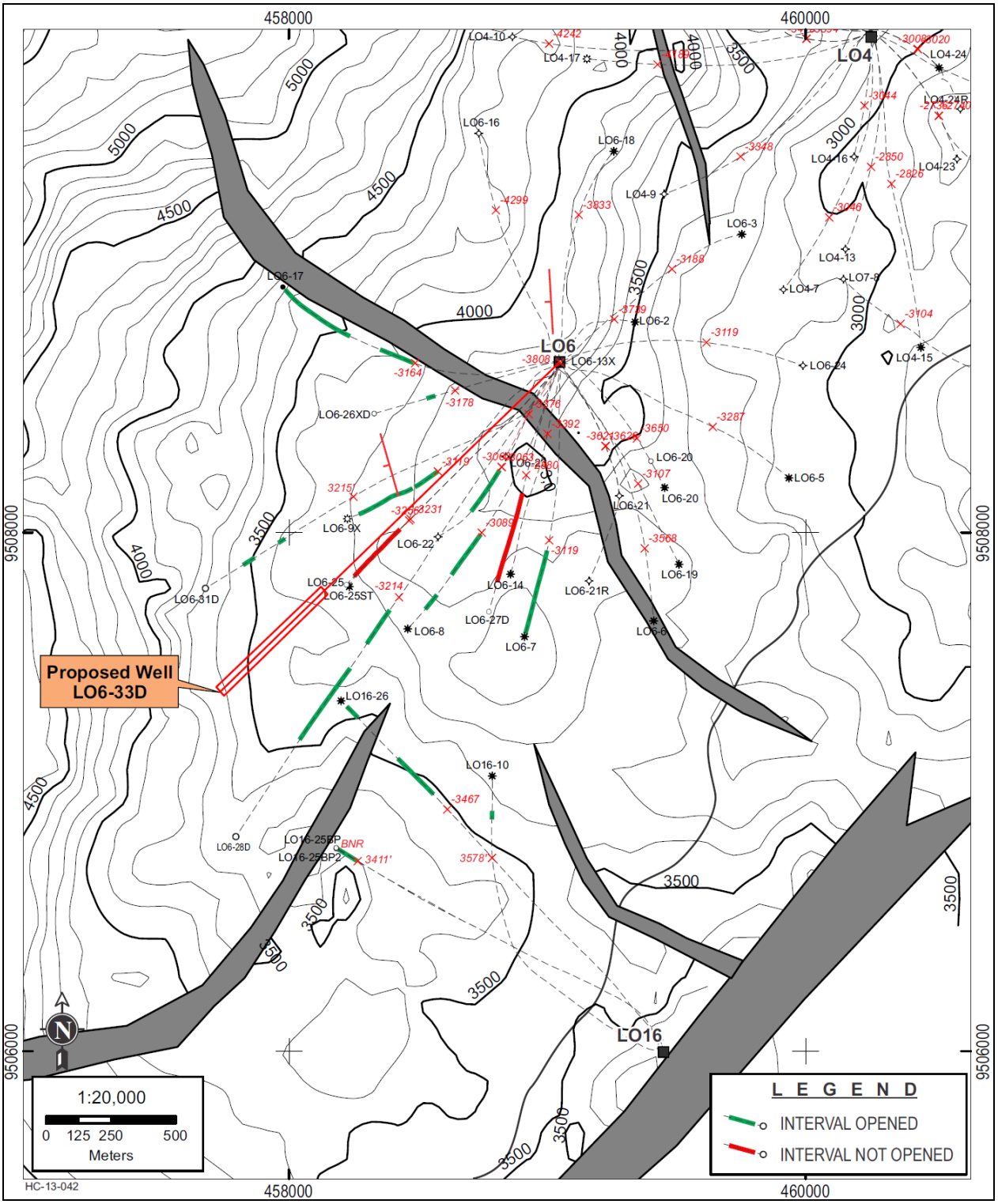
ELEVAT.		WELL		TARGET		
KB:	50 FT	DIRECTION OF DEVIATE WELL	S 48.95° W	DRILLED DEPTH	5840 FT	ESTIMATED FINAL TO. 8,200 FT
WATER DEPTH	335 FT	ANGLE CONDUCTOR FROM VERTICAL	VERT.	VERTICAL DEPTH	3430 FT	HORIZONTAL DRIFT TD. 5,962 FT
GROUND LEVEL	FT	RECOMENDED DEPTH OF K.O.P.	480 FT	HORIZONTAL DRIFT	4150 FT	MAX. ANGLE P. 63.59°
		BUILD UP ANGLE AT	Drop vert. Angle 4.5°/100 FT.	LIMITS (DIAMETER) TO MAIN OBJECTIVE. (LOW. BS)	TOP: 100 ft.	BASE: 100ft.

STRATIGRAPHIC SEQUENCE	FORMATION / MEMBER	DRILLED TOP (MD/FT)	VERT. TOP (VD/FT)	SUBSEA TOP (SS/FT)	OBSERVATIONS
	TALARA	AT SEA BOTTOM			
	CHACRA	2600	1,989	1,939	
	RIO BRAVO	5840	3,430	3,380	MAIN OBJECTIVE
	TD.	8,200	4,906	4,856	

COMTR.	BIT SAMPLES TO BE TAKEN	EVERY 30 FT.FROM SURFACE TO 5500' EVERY 10 FT. FROM 5500' TO TOTAL DEPTH	**REMARKS** **At 6000' drop vert. Angle 1.3°/100 ft. to reach 41° toTD.**
	RECOMMENDED FOR PALEO-PALYNOLOGY	PALEONTOLOGY EVERY 150' FROM SURFACE TO 5500' PALEONTOLOGY EVERY 90' FROM 5500' TO TOTAL DEPTH PALYNOLOGY AT REQUESTED BY LIMA OFFICE	
LOGGING	RECOMMENDED OPEN HOLE	DLL-MSFL-GR; FDC-CNL-GR.	
	RECOMMENDED AFTER CASING	GR-CCL	
	NEARBY WELLS FOR CORRELATION	LO6-9X, LO6-22, LO16-26XD,LO6-28D,LO6-31D	
EVALUAT.	SIDEWALL CORES	SWC * HRCT NOT CONSIDERED	
	CONVENTIONAL CORES	NOT CONSIDERED	
	GAS LOGGER	MUD LOGGING UNIT.	
	FORMATION TESTING	NOT CONSIDERED	

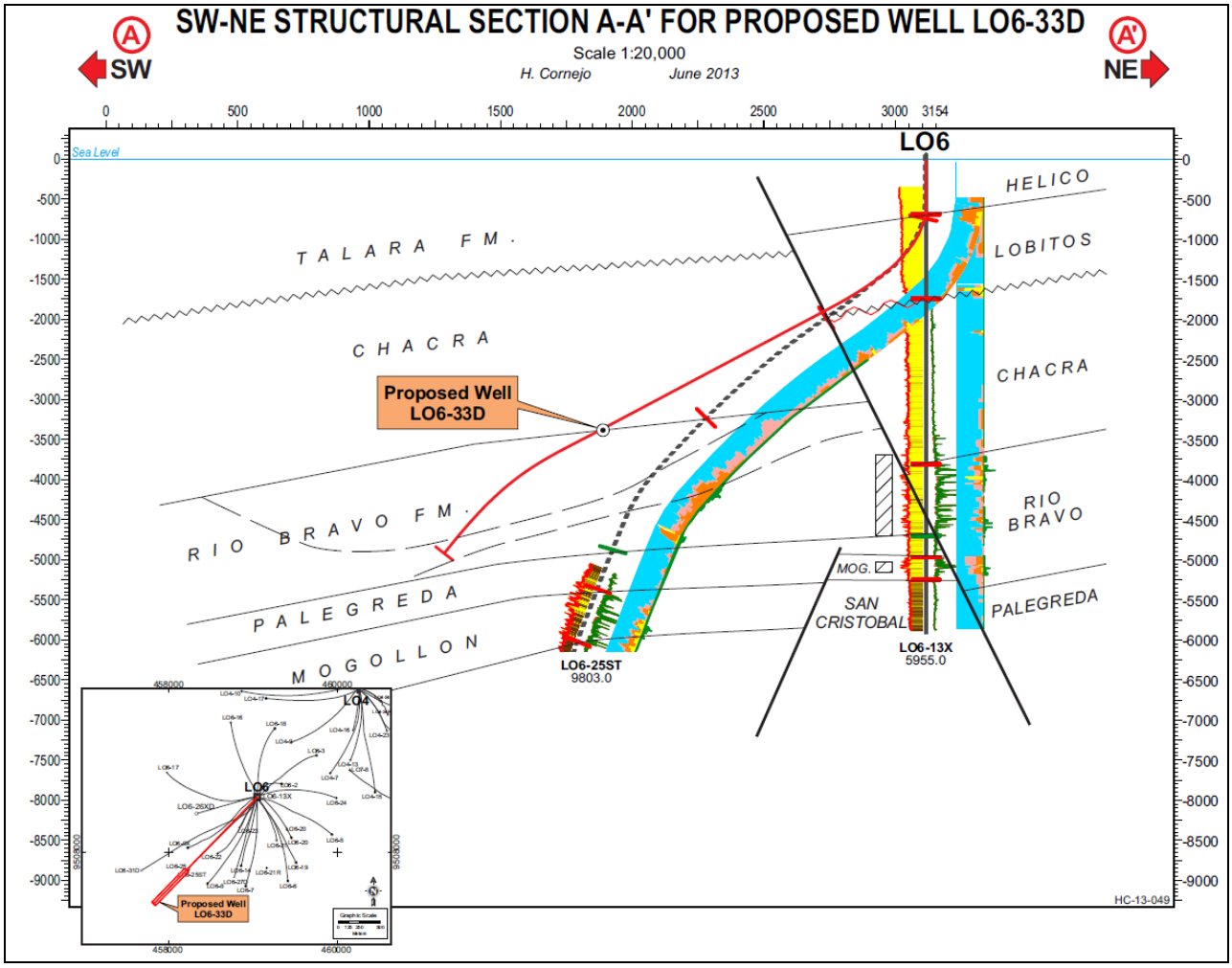
RECOMMENDED BY	DATE:	REVISED BY	DATE:	APPROVED BY	DATE:
H.Cornejo / J.C. Muñoz/E. Borda	June. 2013	H. Janampa	June. 2013	P. Alarcon	June. 2013

RIO BRAVO TOP – STURCTURAL MAP

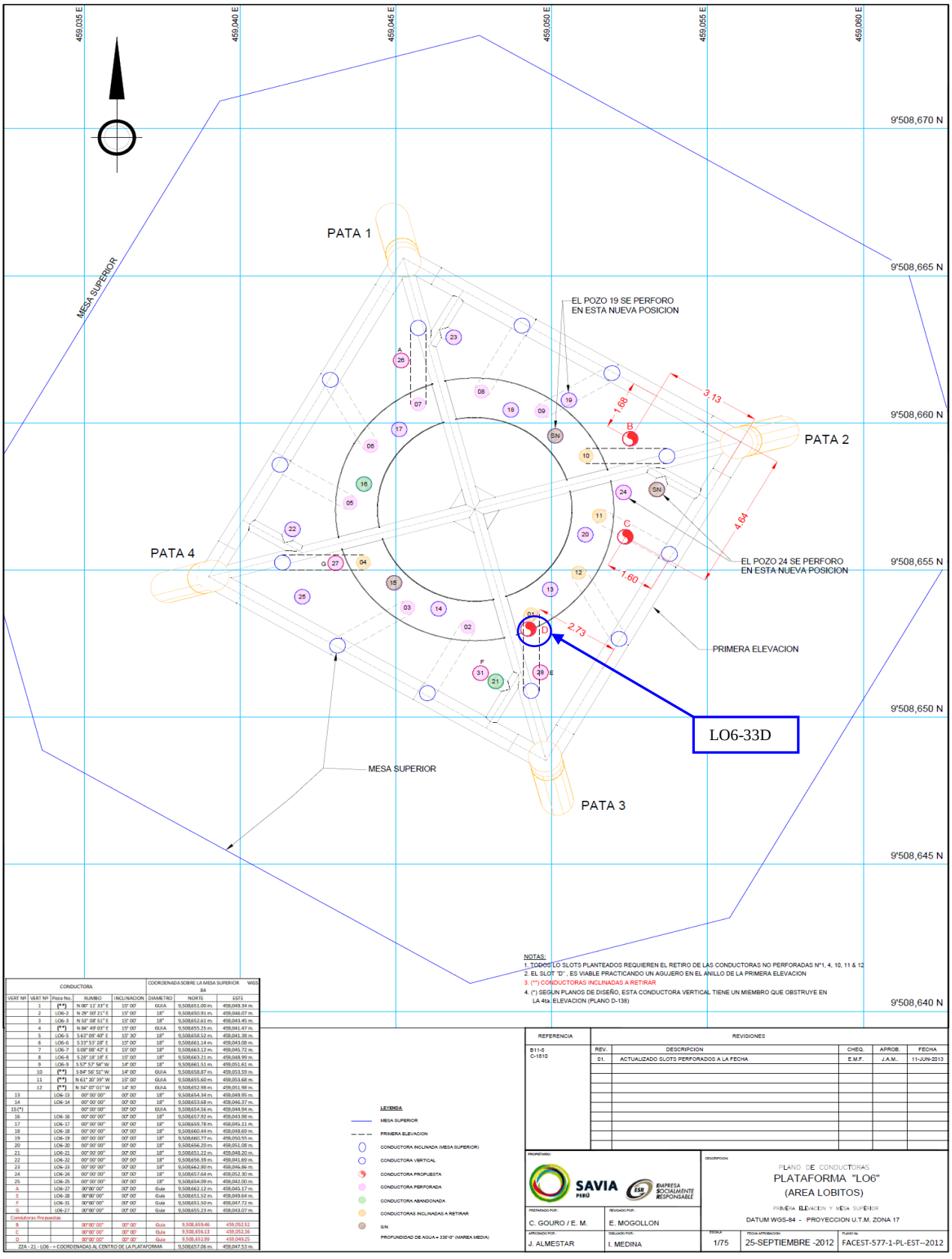


Prepared by:	Reviewed by:	Approved by:
E. Gaspar: Drilling Engineer.	C. Ramirez: Drilling Engineering Head. R. Gilabert: Drilling Operations Head J. Chuyes: Drilling Technical Leader	C. Hwang: Operations Manager.

STRUCTURAL SECTION



PLATFORM MAP



NOTAS:
1. TODOS LO SLOTS PLANTEADOS REQUIEREN EL RETIRO DE LAS CONDUCTORAS NO PERFORADAS N°1, 4, 10, 11 & 12
2. EL SLOT "D" , ES VIABLE PRACTICANDO UN AGUJERO EN EL ANILLO DE LA PRIMERA ELEVACION
3. (**) CONDUCTORAS INCLINADAS A RETIRAR
4. (*) SEGUN PLANOS DE DISEÑO, ESTA CONDUCTORA VERTICAL TIENE UN MIEMBRO QUE OBSTRUYE EN LA 4ta ELEVACION (PLANO D-138)

CONDUCTORA					COORDENADAS SOBRE LA MESA SUPERIOR WGS 84		
VERT Nº	VERT Nº	Pozo No.	RUMBO	INCLINACION	DIAMETRO	NORTE	ESTE
	1	(**)	N 00° 11' 15" E	15° 00'	GUIA	9,508,651.00 m.	459,049.34 m.
	2	LO6-2	N 29° 00' 21" E	15° 00'	18"	9,508,650.91 m.	459,046.07 m.
	3	LO6-3	N 53° 08' 51" E	15° 00'	18"	9,508,652.61 m.	459,043.45 m.
	4	(*)	N 84° 49' 03" E	15° 00'	GUIA	9,508,655.25 m.	459,041.47 m.
	5	LO6-5	S 63° 09' 48" E	15° 00'	18"	9,508,658.52 m.	459,041.38 m.
	6	LO6-6	S 33° 53' 28" E	15° 00'	18"	9,508,661.14 m.	459,043.08 m.
	7	LO6-7	S 08° 08' 42" E	15° 00'	18"	9,508,663.12 m.	459,045.72 m.
	8	LO6-8	S 28° 18' 18" E	15° 00'	18"	9,508,663.21 m.	459,048.99 m.
	9	LO6-9	S 57° 57' 56" W	14° 00'	18"	9,508,661.51 m.	459,051.61 m.
	10	(**)	S 84° 56' 51" W	14° 00'	GUIA	9,508,658.87 m.	459,053.59 m.
	11	(**)	N 61° 30' 16" W	15° 00'	GUIA	9,508,655.60 m.	459,053.68 m.
	12	(**)	N 34° 07' 01" W	14° 30'	GUIA	9,508,652.98 m.	459,051.98 m.
13		LO6-13	00° 00' 00"	00° 00'	18"	9,508,654.34 m.	459,049.95 m.
14		LO6-14	00° 00' 00"	00° 00'	18"	9,508,653.68 m.	459,046.37 m.
15(*)			00° 00' 00"	00° 00'	GUIA	9,508,654.56 m.	459,044.94 m.
16		LO6-16	00° 00' 00"	00° 00'	18"	9,508,657.92 m.	459,043.98 m.
17		LO6-17	00° 00' 00"	00° 00'	18"	9,508,659.78 m.	459,045.11 m.
18		LO6-18	00° 00' 00"	00° 00'	18"	9,508,660.44 m.	459,048.69 m.
19		LO6-19	00° 00' 00"	00° 00'	18"	9,508,660.77 m.	459,050.55 m.
20		LO6-20	00° 00' 00"	00° 00'	18"	9,508,656.20 m.	459,051.08 m.
21		LO6-21	00° 00' 00"	00° 00'	18"	9,508,651.22 m.	459,048.20 m.
22		LO6-22	00° 00' 00"	00° 00'	18"	9,508,656.39 m.	459,041.69 m.
23		LO6-23	00° 00' 00"	00° 00'	18"	9,508,662.90 m.	459,046.86 m.
24		LO6-24	00° 00' 00"	00° 00'	18"	9,508,657.64 m.	459,052.30 m.
25		LO6-25	00° 00' 00"	00° 00'	18"	9,508,654.09 m.	459,042.00 m.
A		LO6-27	00°00' 00"	00° 00'	Guia	9,508,662.12 m.	459,045.17 m.
E		LO6-28	00°00' 00"	00° 00'	Guia	9,508,651.52 m.	459,049.64 m.
F		LO6-31	00°00' 00"	00° 00'	Guia	9,508,651.50 m.	459,047.72 m.
G		LO6-27	00°00' 00"	00° 00'	Guia	9,508,655.23 m.	459,043.07 m.
Conductoras Propuestas							
B			00°00' 00"	00° 00'	Guia	9,508,659.46	459,052.52
C			00°00' 00"	00° 00'	Guia	9,508,656.13	459,052.36
D			00°00' 00"	00° 00'	Guia	9,508,652.99	459,049.25
ZZA - 21 - LO6 - = COORDENADAS AL CENTRO DE LA PLATAFORMA						9,508,657.06 m.	459,047.53 m.

LEYENDA
- MESA SUPERIOR
- PRIMERA ELEVACION
- CONDUCTORA INCLINADA (MESA SUPERIOR)
- CONDUCTORA VERTICAL
- CONDUCTORA PROPUESTA
- CONDUCTORA PERFORADA
- CONDUCTORA ABANDONADA
- CONDUCTORAS INCLINADAS A RETIRAR
- S/N
- PROFUNDIDAD DE AGUA = 335'-0" (MAREA MEDIA)

REFERENCIA	REVISIONES				
B11-5 C-1610	REV.	DESCRIPCION	CHEQ.	APROB.	FECHA
	01.	ACTUALIZADO SLOTS PERFORADOS A LA FECHA	E.M.F.	J.A.M.	11-JUN-2013

PROPIETARIO: SAVIA PERÚ — EMPRESA SOCIALMENTE RESPONSABLE

DESCRIPCION: PLANO DE CONDUCTORAS
PLATAFORMA "LO6"
(AREA LOBITOS)
PRIMERA ELEVACION Y MESA SUPERIOR
DATUM WGS-84 - PROYECCION U.T.M. ZONA 17

PREPARADO POR:	REVISADO POR:	ESCALA	FECHA APROBACION:	PLANO No.
C. GOURO / E. M.	E. MOGOLLON	1/75	25-SEPTIEMBRE -2012	FACEST-577-1-PL-EST--2012
APROBADO POR: J. ALMESTAR	DIBUJADO POR: I. MEDINA			

B. GENERAL

Type of well	: DEVELOPMENT	
Contract area	: Z2B – Offshore Perú	
Surface location (WGS-84)	: 9, 508,652.99 m N	459,049.25 m E
Target Location (WGS-84)	: 9,507,790.31 m N	458,124.14 m E
Top Depth (Rio Bravo)	: 5,839.9 ft MD	3,430 ft TVD
Water Depth	: 335ft	
RKB-MSL	: 50 ft	

WELL INFORMATION

Well Name	: LO6-33D
Well Official Number	: SAVIA-Z2B-24-LO6-33D
Well Type	: Modified S.

GEOLOGICAL RECOMMENDATION

FORMATION	MEASURE DEPTH (ft)	VERTICAL DEPTH (SS) (ft)	REMARKS
TALARA		From Seabed to bottom	
CHACRA	2,600	1,939	
RIO BRAVO	5,840	3,380	MAIN OBJECTIVE
TOTAL DEPTH	8,200	4,906	

DIRECCIONAL PLAN

Kick off point	: 480 ft
Rate of build	: Maximum 4.5º/100 ft
Maximum Angle	: 63.59º
Direction (Vertical section)	: S 48.95º W
Drilled Depth to Target	: 5,839.9 ft
Vertical Depth to Target	: 3,430 ft
Vertical Section to Target	: 4,149.8 ft
Drilled Depth Programmed	: 8,200 ft
Estimated Drilling Days	: 22 days
Total Operation Days	: 43 days

DIRECTIONAL WELL PLANNIG

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well LO6-33D Slot D - Slot Slot D
Company:	SAVIA	**TVD Reference:**	KB Above MSL @ 50.0ft (Original Well Elev)
Project:	Lobitos	**MD Reference:**	KB Above MSL @ 50.0ft (Original Well Elev)
Site:	LO6	**North Reference:**	True
Well:	LO6-33D Slot D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	LO6-33D		
Design:	LO6-33D Rev#01 21Jun13		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
450.0	0.00	0.00	450.0	0.0	0.0	0.0	0.00	0.00	0.00
18" Conductor									
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP @ 4.0/100ft									
555.0	3.00	170.00	555.0	-1.9	0.3	1.1	4.00	4.00	0.00
Build and Turn @ 4.5/100ft									
600.0	4.99	175.21	599.9	-5.0	0.7	2.9	4.50	4.43	11.57
778.5	13.00	180.00	776.0	-32.9	1.4	21.2	4.50	4.48	2.68
Build and Turn @ 4.5/100ft									
800.0	13.58	183.37	796.9	-37.8	1.2	24.6	4.50	2.69	15.71
1,000.0	20.39	204.01	988.3	-93.2	-14.4	73.5	4.50	3.41	10.32
1,200.0	28.41	214.02	1,170.3	-164.6	-55.3	151.8	4.50	4.01	5.01
13 3/8" Csg.									
1,400.0	36.86	219.82	1,338.6	-250.3	-120.4	257.7	4.50	4.22	2.90
1,600.0	45.50	223.68	1,489.1	-348.2	-208.3	388.6	4.50	4.32	1.93
1,800.0	54.23	226.54	1,617.9	-455.8	-316.7	541.2	4.50	4.37	1.43
2,000.0	63.02	228.82	1,721.9	-570.5	-442.9	711.7	4.50	4.39	1.14
2,012.9	63.59	228.95	1,727.7	-578.1	-451.6	723.3	4.50	4.40	1.04
Hold 63.59deg Inc.									
2,200.0	63.59	228.95	1,810.9	-688.1	-577.9	890.8	0.00	0.00	0.00
2,400.0	63.59	228.95	1,899.9	-805.8	-713.0	1,069.9	0.00	0.00	0.00
2,599.9	63.59	228.95	1,988.8	-923.3	-848.1	1,248.8	0.00	0.00	0.00
Chacra									
2,600.0	63.59	228.95	1,988.8	-923.4	-848.1	1,248.9	0.00	0.00	0.00
2,800.0	63.59	228.95	2,077.8	-1,041.0	-983.2	1,428.0	0.00	0.00	0.00
3,000.0	63.59	228.95	2,166.8	-1,158.6	-1,118.3	1,607.1	0.00	0.00	0.00
3,200.0	63.59	228.95	2,255.7	-1,276.3	-1,253.4	1,786.2	0.00	0.00	0.00
3,400.0	63.59	228.95	2,344.7	-1,393.9	-1,388.5	1,965.2	0.00	0.00	0.00
3,600.0	63.59	228.95	2,433.7	-1,511.5	-1,523.6	2,144.3	0.00	0.00	0.00
3,800.0	63.59	228.95	2,522.6	-1,629.1	-1,658.7	2,323.4	0.00	0.00	0.00
4,000.0	63.59	228.95	2,611.6	-1,746.8	-1,793.8	2,502.5	0.00	0.00	0.00
4,200.0	63.59	228.95	2,700.6	-1,864.4	-1,928.9	2,681.5	0.00	0.00	0.00
4,400.0	63.59	228.95	2,789.5	-1,982.0	-2,064.0	2,860.6	0.00	0.00	0.00
4,600.0	63.59	228.95	2,878.5	-2,099.6	-2,199.1	3,039.7	0.00	0.00	0.00
4,800.0	63.59	228.95	2,967.5	-2,217.2	-2,334.2	3,218.8	0.00	0.00	0.00
5,000.0	63.59	228.95	3,056.4	-2,334.9	-2,469.3	3,397.8	0.00	0.00	0.00
5,200.0	63.59	228.95	3,145.4	-2,452.5	-2,604.3	3,576.9	0.00	0.00	0.00
5,400.0	63.59	228.95	3,234.3	-2,570.1	-2,739.4	3,756.0	0.00	0.00	0.00
5,600.0	63.59	228.95	3,323.3	-2,687.7	-2,874.5	3,935.1	0.00	0.00	0.00
5,700.0	63.59	228.95	3,367.8	-2,746.5	-2,942.1	4,024.6	0.00	0.00	0.00
9 5/8" Csg.									
5,800.0	63.59	228.95	3,412.3	-2,805.4	-3,009.6	4,114.1	0.00	0.00	0.00
5,839.9	63.59	228.95	3,430.0	-2,828.8	-3,036.5	4,149.8	0.00	0.00	0.00
Rio Bravo - Rio Bravo - LO6-33D									
6,000.0	63.59	228.95	3,501.2	-2,923.0	-3,144.7	4,293.2	0.00	0.00	0.00
Drop @ 1.3/100ft									
6,200.0	60.99	228.95	3,594.2	-3,039.2	-3,278.2	4,470.2	1.30	-1.30	0.00
6,400.0	58.39	228.95	3,695.2	-3,152.6	-3,408.5	4,642.8	1.30	-1.30	0.00
6,600.0	55.79	228.95	3,803.8	-3,262.9	-3,535.1	4,810.6	1.30	-1.30	0.00
6,800.0	53.19	228.95	3,920.0	-3,369.8	-3,657.8	4,973.4	1.30	-1.30	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well LO6-33D Slot D - Slot Slot D
Company:	SAVIA	**TVD Reference:**	KB Above MSL @ 50.0ft (Original Well Elev)
Project:	Lobitos	**MD Reference:**	KB Above MSL @ 50.0ft (Original Well Elev)
Site:	LO6	**North Reference:**	True
Well:	LO6-33D Slot D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	LO6-33D		
Design:	LO6-33D Rev#01 21Jun13		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,000.0	50.59	228.95	4,043.4	-3,473.1	-3,776.5	5,130.7	1.30	-1.30	0.00
7,200.0	47.99	228.95	4,173.9	-3,572.6	-3,890.8	5,282.2	1.30	-1.30	0.00
7,400.0	45.39	228.95	4,311.0	-3,668.2	-4,000.6	5,427.7	1.30	-1.30	0.00
7,600.0	42.79	228.95	4,454.7	-3,759.6	-4,105.5	5,566.8	1.30	-1.30	0.00
7,737.5	41.00	228.95	4,557.0	-3,819.9	-4,174.7	5,658.6	1.30	-1.30	0.00
Hold 41.0deg Inc.									
7,800.0	41.00	228.95	4,604.2	-3,846.8	-4,205.7	5,699.6	0.00	0.00	0.00
8,000.0	41.00	228.95	4,755.1	-3,933.0	-4,304.6	5,830.8	0.00	0.00	0.00
8,200.0	41.00	228.95	4,906.1	-4,019.1	-4,403.6	5,961.9	0.00	0.00	0.00
TD at 8200.0 - 5 1/2" Csg.									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (m)	Easting (m)	Latitude	Longitude
Rio Bravo - LO6-33D - plan hits target center - Circle (radius 50.0)	0.00	0.00	3,430.0	-2,828.8	-3,036.5	9,507,790.31	458,124.14	4° 27' 10.759 S	81° 22' 38.845 W

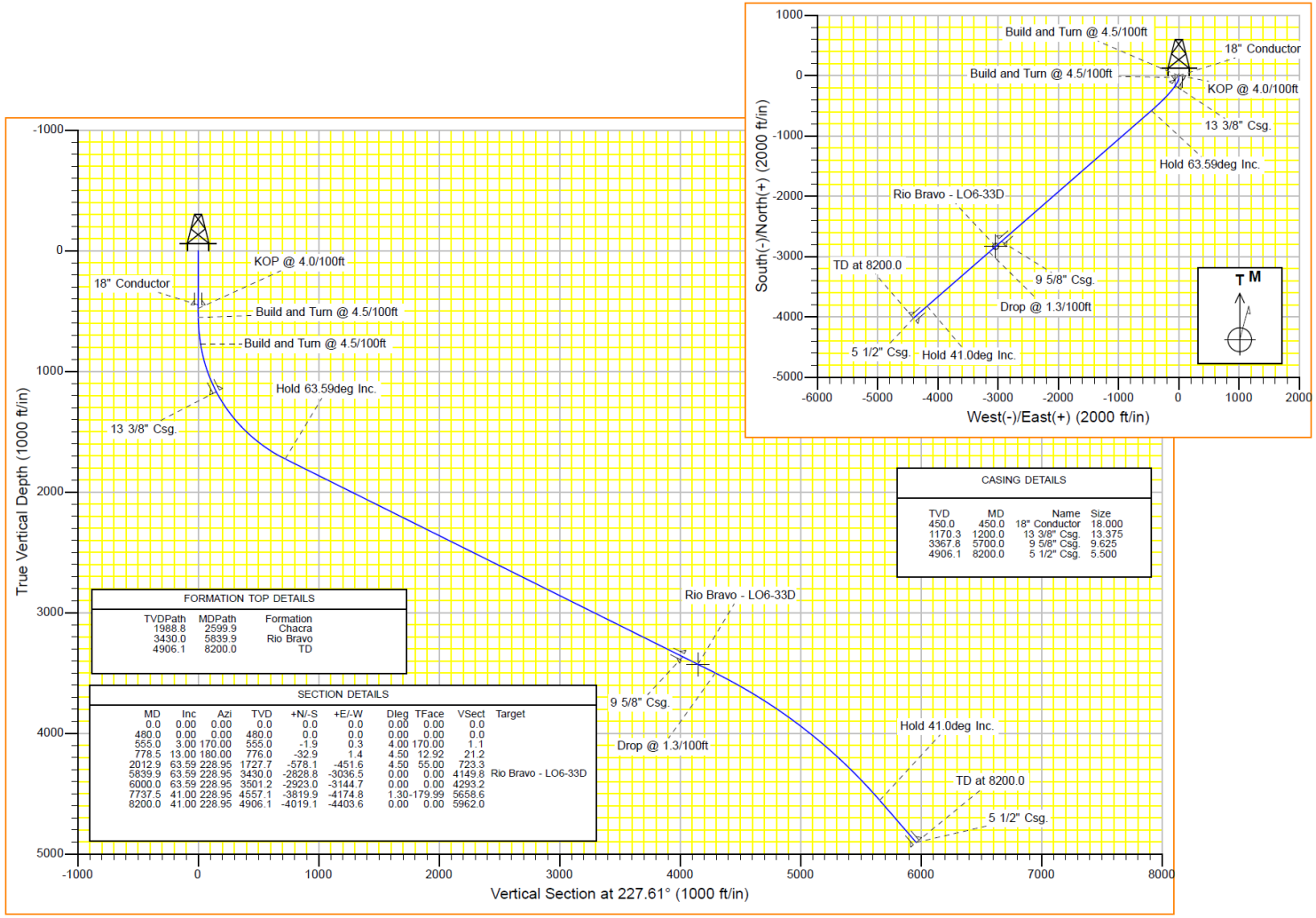
Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
450.0	450.0	18" Conductor	18.000	20.000
1,200.0	1,170.3	13 3/8" Csg.	13.375	17.000
5,700.0	3,367.8	9 5/8" Csg.	9.625	12.250
8,200.0	4,906.1	5 1/2" Csg.	5.500	8.500

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,599.9	1,988.8	Chacra		0.00	
5,839.9	3,430.0	Rio Bravo		0.00	
8,200.0	4,906.1	TD		0.00	

DIAGRAM OF DIRECTIONAL WELL PLAN



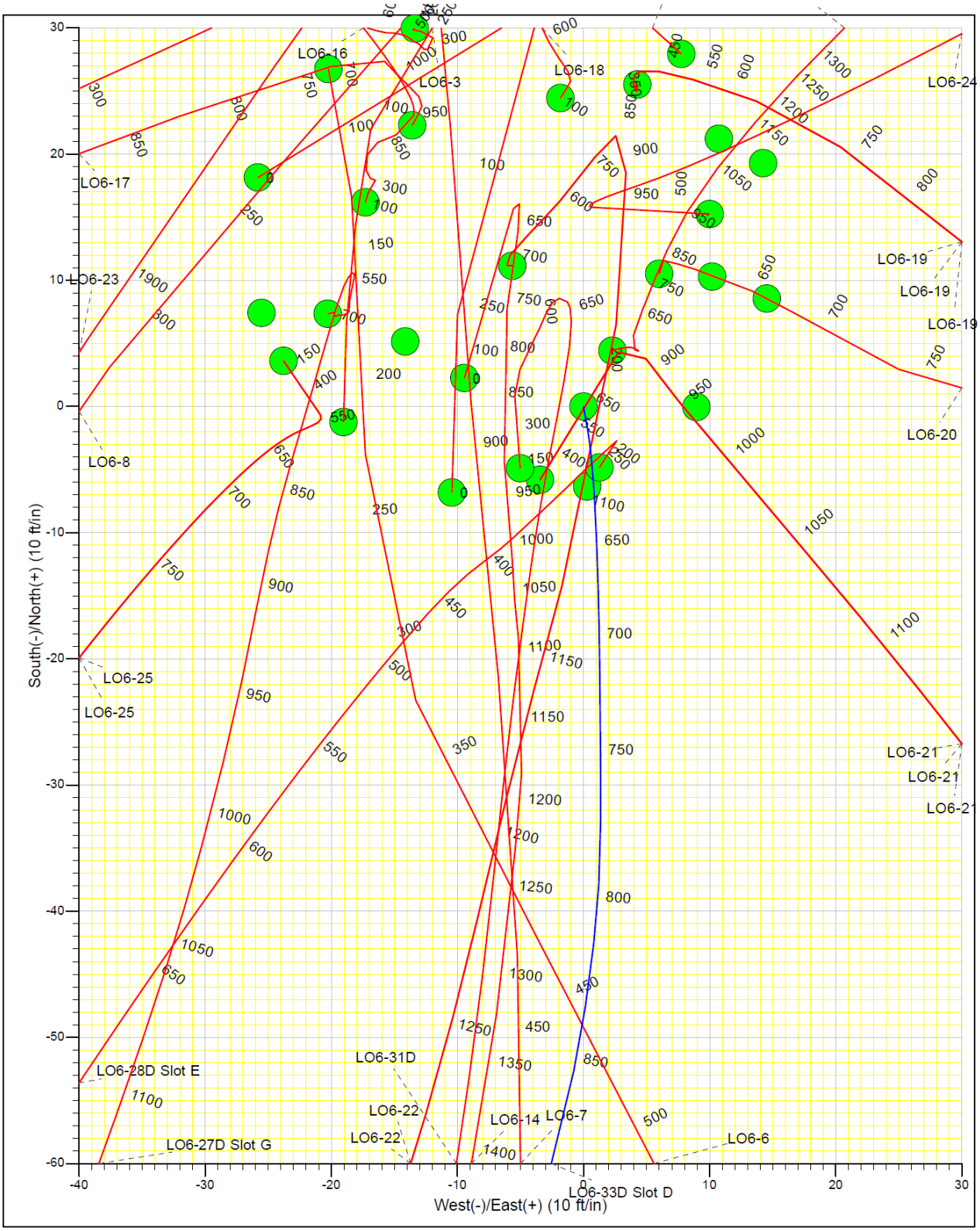
Prepared by:	Reviewed by:	Approved by:
E. Gaspar: Drilling Engineer.	C. Ramirez: Drilling Engineering Head. R. Gilabert: Drilling Operations Head J. Chuyes: Drilling Technical Leader	C. Hwang: Operations Manager.

ANTICOLLISION SUMMARY REPORT

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
LO6						
LO6-13 - LO6-13 - LO6-13	0.0	0.0	5.0			
LO6-13 - LO6-13 - LO6-13	500.0	499.9	6.4	5.9	11.966 SF	
LO6-14 - LO6-14 - LO6-14	0.0	0.0	9.7			
LO6-14 - LO6-14 - LO6-14	700.0	701.1	30.7	29.4	23.938 SF	
LO6-16 - LO6-16 - LO6-16	100.0	62.9	23.8			
LO6-16 - LO6-16 - LO6-16	700.0	661.9	42.3	40.7	27.541 SF	
LO6-17 - LO6-17 - LO6-17	100.0	66.9	26.3			
LO6-17 - LO6-17 - LO6-17	700.0	665.5	48.9	47.3	30.452 SF	
LO6-18 - LO6-18 - LO6-18	0.0	0.0	24.5			
LO6-18 - LO6-18 - LO6-18	700.0	698.2	49.2	47.8	34.097 SF	
LO6-19 - LO6-19 - LO6-19	168.3	168.3	25.2			
LO6-19 - LO6-19 - LO6-19	800.0	799.6	59.7	57.7	29.109 SF	
LO6-19 - LO6-19 ST1 - LO6-19 ST1	168.3	168.3	25.2			
LO6-19 - LO6-19 ST1 - LO6-19 ST1	800.0	799.6	59.7	57.7	29.109 SF	
LO6-19 - LO6-19 ST3 - LO6-19 ST3	168.3	168.3	25.2			
LO6-19 - LO6-19 ST3 - LO6-19 ST3	800.0	799.6	59.7	57.7	29.109 SF	
LO6-2 - LO6-2 - LO6-2	0.0	1.8	12.3			
LO6-2 - LO6-2 - LO6-2	700.0	664.1	192.4	190.3	91.857 SF	
LO6-20 - LO6-20 - LO6-20	0.0	0.0	12.1			
LO6-20 - LO6-20 - LO6-20	700.0	699.1	29.6	28.2	21.140 SF	
LO6-21 - LO6-21 - LO6-21	529.2	529.3	0.7	0.1	1.151 Level 2 , CC, ES, SF	
LO6-21 - LO6-21R - LO6-21R	529.2	529.3	0.7	0.1	1.151 Level 2 , CC, ES, SF	
LO6-21 - LO6-21R ST1 - LO6-21R ST1	529.2	529.3	0.7	0.1	1.151 Level 2 , CC, ES, SF	
LO6-22 - LO6-22 - LO6-22	0.0	0.0	12.5			
LO6-22 - LO6-22 - LO6-22	600.0	599.6	22.3	21.4	23.884 SF	
LO6-22 - LO6-22R - LO6-22R	0.0	0.0	12.5			
LO6-22 - LO6-22R - LO6-22R	600.0	599.6	22.3	21.4	23.884 SF	
LO6-23 - LO6-23 - LO6-23	241.6	211.6	33.1			
LO6-23 - LO6-23 - LO6-23	700.0	668.1	55.7	54.1	34.256 SF	
LO6-24 - LO6-24 - LO6-24	500.0	500.1	17.0	16.4	28.440 CC, ES	
LO6-24 - LO6-24 - LO6-24	600.0	599.9	21.1	20.2	24.958 SF	
LO6-25 - LO6-25 - LO6-25	539.9	540.0	21.0	20.5	40.242 CC	
LO6-25 - LO6-25 - LO6-25	2,422.4	2,364.8	40.4	10.2	1.337 Level 3 , ES, SF	
LO6-25 - LO6-25 ST1 - LO6-25 ST1	539.9	540.0	21.0	20.5	40.242 CC	
LO6-25 - LO6-25 ST1 - LO6-25 ST1	2,422.4	2,364.8	40.4	10.2	1.337 Level 3 , ES, SF	
LO6-26XD Slot A - LO6-26XD Slot A - LO6-26XD	388.4	388.5	30.8	30.8	846.508 CC, ES	
LO6-26XD Slot A - LO6-26XD Slot A - LO6-26XD	700.0	694.9	55.8	54.1	33.189 SF	
LO6-27D Slot G - LO6-27D - LO6-27D	424.8	424.8	20.0	19.9	114.852 CC, ES	
LO6-27D Slot G - LO6-27D - LO6-27D	1,200.0	1,205.5	88.8	86.4	37.672 SF	
LO6-28D Slot E - LO6-28D - LO6-28D	212.2	212.2	3.8			
LO6-28D Slot E - LO6-28D - LO6-28D	2,200.0	2,102.1	111.2	94.8	6.772 SF	
LO6-3 - LO6-3 - LO6-3	0.0	0.3	19.1			
LO6-3 - LO6-3 - LO6-3	800.0	751.2	223.4	220.8	85.416 SF	
LO6-31D Slot F - LO6-31D - LO6-31D Survey	328.8	328.8	5.4			
LO6-31D Slot F - LO6-31D - LO6-31D Survey	500.0	500.0	7.0	6.4	12.336 SF	
LO6-5 - LO6-5 - LO6-5	0.0	0.0	31.6			
LO6-5 - LO6-5 - LO6-5	800.0	795.9	114.3	111.7	43.636 SF	
LO6-6 - LO6-6 - LO6-6	210.1	179.7	17.1			
LO6-6 - LO6-6 - LO6-6	1,000.0	927.6	145.8	142.0	39.171 SF	
LO6-7 - LO6-7 - LO6-7	233.8	203.9	8.9			
LO6-7 - LO6-7 - LO6-7	1,200.0	1,141.5	82.7	77.6	16.350 SF	
LO6-8 - LO6-8 - LO6-8	0.0	0.0	30.3			
LO6-8 - LO6-8 - LO6-8	1,900.0	1,800.3	206.7	190.8	13.017 SF	
LO6-9 - LO6-9 - LO6-9	0.0	0.0	29.0			
LO6-9 - LO6-9 - LO6-9	2,228.0	2,141.1	179.9	155.9	7.516 SF	

SPIDER PLOT - LO6 PLATFORM



II. DRILLING PROGRAM

PRIOR TO SETTING THE CONDUCTOR

- Skidding and Rig up over slot "D".
- Held a comprehensive safety meeting with rig crew and service personnel.
- Install **6"** pump liners in mud pumps for drilling 17" and 12 ¼" sections of well.
- Inspect equipment as required, include Zero discharge system, Inspect drilling rig and correct deficiencies founded

A. DRILL-RUN 18" CONDUCTOR PIPE

FROM SURFACE TO 412 ft MD, TVD

1. RIH 18" conductor pipe to sea bottom. RIH slick BHA with 17" (RR) tri-cone bit **T11** (IADC = 115, Nozzles = 4x15, TFA = 0.69 in^2), bit sub with lateral jets, 01- 8" DC's, XO, 02-6 ¾" DC, 5" DP's. Run gyro survey and confirm the conductor orientation at sea bed. Drill while hang up and slide down the conductor pipe as much as possible, use 5/10k WOB, 50 rpm, 400 GPM +/- and sea water trying to washing out conductor hole and minimize the amount of junk that falls into the hole. Deepening 18" conductor while drilling 17" hole and weld stops to 450 ft with seawater (± 65 feet of formation). Sweep hole with viscosity pill and POOH.

Conductor Pipe Running Checklist

- Drift and measure the conductor pipe on the rack.
- Paint length and joint number on each joint with white paint.
- In order to ensure appropriate size, check conductor pipe tools (including backup tools).

SIZE (IN)	DEPTH FT	WT PPF	GRADE	CONN	COLL PRES (Psi)	BURST PRESS (Psi)	TENSILE KLbs	TEST PRESS (Psi)
18" OD 17.25 ID	0 - 412	70.5	ASTM A53B	WELD	--------	--------		350 PSI

2. Weld supports in 18" conductor, make fine cut and prepare to install 21 ¼" Diverter.
3. Install adapter spool and 21 ¼" Diverter and lines. Perform function test (Pressure test 300 psi).
4. RIH with open end drill pipe (cementing string), clean out the bottom, circulate with sea water until obtain lost circulation. If lost circulation is not achieved, close Diverter and increase pressure, max. Pressure 200 psi.
5. Using drill pipe verify and ensure cleanliness to the bottom before to continue with the next step.
6. The 18" conductor pipe will be cemented using single slurry. With Diverter closed, pump 20 bbl of sea water in order to test admission (max. pressure 350 psi). Cement as per Cementing Program, last 14 bbl of cement with lateral valve of Diverter opened to ensure cement height inside 18" conductor.

7. POOH 5" DP slowly into 18" shoe and quickly to 100 ft; install circulation head and circulate to clean pipe and casing.
8. Close Diverter and Displace with 5.0 bbl of seawater @ 2-3 BPM. Close circulation head.
9. WOC 5 hours with the well closed. Open well and POOH 5" drill pipe.

B. DRILL 17" SURFACE HOLE

From Conductor shoe to 1,200 ft MD, 1,170.3 TVD

Recommendations:

- R/U mud loggers and gas detector before drill out cement; test all the equipment to ensure they are in operative condition.
- Ensure inside BOP (safety valve), tools and all necessary crossovers to be used are on the rig floor ready for immediate installation.
- Hold evacuation drill and safety meeting before drill out cement of conductor casing.
- Hold Diverter drill meeting with each crew. Each crew member should know his responsibility and a pre-plan must be in place before any incident occurrence.
- Keep regular discussion with the rig crew regarding plans of action in the event of a well control situation.
- Function test Diverter periodically.
- Two mud pumps have to be used in order to achieve drilling hydraulics pump rate to ± 850 gpm.
- Directional BHA is planned for this section **(see BHA Program)**.
- **RIH Slick BHA with 17" used Tooth bit, tag cement (recorded depth) & drill out cement to conductor shoe and Drill 10 fts of new formation in order to assure cleaning of junk debris. If torque is observed stop rotation. POOH and Run with magnet to recover metal debris until assure hole is clean.**

1. M/U Directional BHA with 17" Tooth bit MSDSH (Nozzles = 3x18+1x16) and RIH with Mud Motor. Recommended Directional BHA (**Phoenix**): 17" Tooth Bit, 9 5/8" Mud Motor (16 ¾" STB, B.H.=1.5°), 01- UBHO w/Gyro , 04 – 7 ¾" DC, 8" Drilling Jar, 01- 7 ¾" DC, XO, 01-6 ¼" DC, 15- 5" HWDP, 5" DP String. See BHA Program (Section V. BITS, BHA AND HYDRAULICS).

   - If excessive torque is observed, stop rotation. POOH and trip in hole with magnet tool to recover metal debris until ensure bottom hole cleanliness. Then M/U 17" tooth bit again. RIH and drill new formation with normal drilling conditions.

   - The use of Tricone bit is considering the risk of collision with LO6-21D, this bit is recommended for this purpose.

2. At 480 ft MD start directional work while take gyro surveys each stand, drilling as per directional plan (build up section) to casing point depth at 1,200 ft MD, Aquagel mud system will be used in this section. Circulate to clean hole and pump sweep pill.

   Note. - If lost circulation is observed after conductor shoe depth, drill 17" hole with sea water and pump sweep pill each stand to casing point. Additionally at casing point depth displace sea water by Aquagel mud 9.6 ppg in order to keep hole stability prior run 13 3/8" casing.

- All 17" section take survey only with gyro system (every stand or as per directional driller recommendations).
- Monitor the cuttings loading at surface and adjust shaker screens and solids equipment accordingly.
- Use slow RPM and light WOB until Mud Motor and stabilizer is below 18" conductor shoe.
- Talara group formation is mostly claystone with inter-bedded Siltstone and sandstone.
- Drill with Aquagel treated with fresh water mud and high viscosity sweeps as needed to clean hole.
- Maximum MW out should not exceed 9.6 ppg. Pump viscous sweeps to clean hole.
- High viscosity sweeps are needed to be pumped every 3 - 4 stands to prevent pack offs and control gumbo if it is observed.
- **In case of lost circulation, reduce rate to the minimum, the hole will be filled with sea water.**
- Take Flow checks as required.
- **No wiper trip will be needed for this section, but if the hole condition shows high torque and drag perform short trips to evaluate the hole condition.**

3. At section TD, circulate 3 times bottoms up or until shaker is clean while maintaining rotation. Pump high viscosity sweep and follow with 40 bbl of weighted pill. Verify hole cleaning by visual inspection of the shaker loading and mud conditions. Flow check prior to tripping out of the hole. Pooh to surface taking flow checks as required. L/D directional BHA and bit.

4. **If it is necessary**, M/U 17" Tooth bit, bit sub, w/float valve and near bit STB under gauge. RIH and wash the last 5 stands to bottom, reaming and circulating as necessary. Circulate bottoms up until shakers are free of cuttings. Pump and spot high-viscosity pill in bottom hole. Condition mud in preparation for running and cementing casing. POOH to surface for run 13 3/8" casing. Keep hole properly filled during trip out of the hole. Strap out, use a trip sheet. L/D condition BHA, retrieve and inspect wear bushing.

5. Rig up **conventional casing running tools** and run 13 3/8" casing to 1,200 ft. MD; 1,170.3 ft TVD. Cement casing to surface as per program.

C. RUN 13 3/8" SURFACE CASING

From Surface to 1,200 ft MD; 1,170.3 ft TVD

1. Hold pre job safety and procedural meeting.

2. Rig up casing handling equipment.

3. Make up 13 3/8" threadlocked shoetrack consisting of the following:

   - 13 3/8" 54.5 ppf K-55 BTC PDC drillable Guide Shoe.
   - 1 joints 13 3/8" 54.5 ppf K-55 BTC casing. Install 02 bow-spring centralizers on shoe track at 5 ft and 20 ft above guide shoe with stop collar.
   - 13 3/8" 54.5 ppf K-55 BTC drillable float collar (no- rotating type).

4. Set shoe track in slips. Ensure shoetrack circulates and is clear of debris.

5. RIH with 13 3/8" 54.5 ppf K-55 BTC casing from surface to 1,200 ft MD 1,170.3 ft TVD as follows:

   - ± 30 joints 13 3/8" 54.5 K-55 BTC casing. R-3.
   - Install centralizer as per cementing program recommend.

   Pick up the casing according to normal rig operations, no special handlings tubular is required.
   (See Step XII: Casing Running Checklist)

6. M/U swedge on last joint. Continue RIH to get casing shoe 1 ft above the bottom. Ensure pipe measurements are accurate. Break circulation slowly to break gels.

   - If restriction is observed at last joint to reach on bottom, then start circulation very slowly and perform washing down to bottom. Circulate. Change the swedge by cementing head.

7. Ensure the pipe measurements are accurate. Circulate and condition mud as long as necessary to get good rheology properties. While circulating, monitor returns for losses and reduce rate as required. Run ECD calculations to ensure not breaking down the formation.

8. Stop circulation. M/U cementing head and circulate with 10 BPM maximum, meanwhile performed safety and operation meeting. Discuss the cement job procedure with the cementing supervisor. Pressure Test cementing lines to 2,500 psi. Verify that the cementing head is loaded with the correct plugs. Release bottom plug **(red)**. Mix, pump and displace the pre-flush and cement as per the CEMENTING PROGRAM (Calculations will be based on 70% over gauge).

9. Release top plug **(black)** and displace with drilling mud using Halliburton pumps to float collar at 7 -10 bpm as high rate as possible without breaking down formation. As plug achieve the float collar, reduce the pump rate to 1-2 bpm. Bump the plug with 500 psi over the final circulating pressure. If plug does not bump with calculated displacement, pump maximum ½ volume of the one joint between the float collar and shoe over the calculated displacement.

   Note: If lost circulation or no cement return to surface is observed during the cement operations. Top job cement must be performed.

10. Bleed off the pressure and check to ensure the float equipment is holding. (Record back flow volume, if float valves don't hold, record the back-pressure and close the cement head valve).

11. WOC 5 hours meanwhile Rig down 13 3/8" cementing head. Cut and bevel 18" conductor and weld steel ring plate between 18" conductor and 13 3/8" landing joint. Continue make cut on 13 3/8" casing and L/D 13 3/8" landing joint. N/D the Diverter and remove 21 ¼" flange. Install 13 5/8" 3M Casing Head. The top flange must be near the level of the floor. Measure distance from rotary table to wellhead and recorded it on Daily Drilling report.

    - **Note. - Speed Grip wellhead is recommended for this well (13 5/8" 3M x 11" 3M, 11" 3M x 7 1/16" 5M).**

    - **FEPCO's operator will be on location for casing head installation.**

12. N/U 13 5/8"x 5M psi BOP stack, riser and bell nipple. Hook up control lines and kill lines.

13. Inspect Accumulator bottles. Ensure adequate volume and precharge pressure for correct BOP operation.

14. Function Test all BOP components from remote panel prior to pressure test.

D. DRILL 12 ¼" INTERMEDIATE HOLE

From 1,200 ft MD; 1,170.3 TVD to 5,700 ft MD 3,367.8 TVD

Recommendations:

- Pressure test BOP system as per/ attached procedure (BOP Procedure Testing). Install wear bushing and verify gas detector is working.
- Hold BOP drill, evacuation drill and safety meeting.
- Check surface samples to ensure cement hardness before drilling out.
- At all times, while conducting drilling and testing operations, ensure that a TIW valve in the open position. Inside BOP and necessary crossovers for the string being used are on the rig floor ready for immediate installation.
- Install 6" liners in the three pumps prior to begin drilling 12 ¼" hole.
- Pump rate at end of 12 ¼" hole section should be as high as possible within the interval of 750 to ± 850 gpm.
- Two mud pumps have to be used for good drilling hydraulics circulating at ± 850 gpm to ensure good cleaning in the hole.
- **Ensure pump replacement parts are readily available on the rig for immediate replacement and have pop-offs set at ±3,700 psi.**
- Directional BHA is programmed in this section **(See Directional program).**
- Condition and make consistent EZ MUD/CLAYSEAL mud system with density from 9.6 to 10.9 ppg.

1. M/U Directional BHA with 12 ¼" PDC bit **SDi419MHABPX** (Nozzles= 6x14) and RIH with mud motor. Recommended Directional BHA (**Phoenix**): 12 ¼" PDC Bit, 7 ¾" Mud Motor (12 1/8" Sleeve STB and B.H. = 1.5º), 01- 8" Short DC; 01- 12 1/8"Stabilizer, UBHO, 01- 8" Spiral Monel w/MWD, 01-8" Spiral Monel, XO, 01-6 ¼" DC, 12-5" HWDP, 01-6 ¾" Drilling Jar, 12-5" HWDP, 5" DP String. (Check with Phoenix DD the minimum ID in the Drill String for fishing tools to release MWD tool, it is necessary has in location the screen filter for 4 ½" IF connection). See BHA Program (Section V. BITS, BHA AND HYDRAULICS).
2. RIH to TOC (top of cement). Tag TOC and recorded depth. Drill out cement, float equipment and perform CIT with 1,000 psi 10 ft above shoe, continue drilling casing shoe and 10 ft. of new formation. Circulate hole clean and perform Formation Integrity Test (FIT) with EMW of 13.5 ppg as per attached procedure in the FORMATION INTEGRITY of the program ensure positive displacement pump can hand small volumes as needed for this job.

    - Before drill out cement, **Perform casing pressure Test with 1000 psi** (3,500 psi is the 70% of the BOP WP & 1,911 psi is the 70% of the 13 3/8" burst rating). The pressure have to remain stabilize for at least 5 minutes.

3. Drill 12 ¼" build up section in S 48.95º W direction with max BUR of 4.5°/100 ft to reach 63.59° as maximum inclination angle at 2,012.9 ft MD; 1,727.7 ft TVD, continue drilling the tangent section holding 63.59° and 228.95° azimuth to 9 5/8" casing point depth at 5,700 ft MD, 3,367.8 ft TVD.

   - **Perform short trips to evaluate the hole condition each 1,500 ft of the section (Aprox at 2,700 ft and 4,200 ft).**
   - Drill 12 ¼" hole using low RPM and light WOB until the string stabilizer is below 13 3/8" casing shoe.
   - The remaining section of Talara formation is mostly claystone with interbedded shale and interbedded fine sandstone, so that is recommended to drill with steel body PDC bit (IADC: S123) with 4 blades and 19 mm cutters. As contingency must have a PDC steel body (IADC S223) with 5 blades and 19 mm cutters.
   - Maximum mud weight of 10.9 ppg will be use until 9 5/8" casing is set up.
   - The 9 5/8" Intermediate casing point should cover the remaining section of Talara, and Chacra formations (Set casing prior Rio Bravo formation). Take deviation and azimuth surveys in continues mode with MWD every stand of progress.
   - EZ MUD/CLAYSEAL mud system will be used for this section and high viscosity sweeps need to pumped in order to ensure hole cleaning. Increase or cut down mud weight according hole condition dictate and trying to keep wellbore stability.
   - Wiper trips based on hole conditions only, wiper trips should be performed to the casing shoe depth based on 24 hr continuous information gathered at the Wellsite and involving Talara operation team.

4. At section TD, circulate minimum 3 times bottoms up until shaker are free of cuttings. Ensure drilling string keep reciprocating. Sweep hole with a hi-vis sweep, follow it with 40 bbl of high weighted pill to float any cutting that may accumulate in enlarged washed out sections. Note take great care when pumping high weight pills – if hole cleaning has been poor they can bring large volumes to surface with the resultant risk of packing off the wellbore. Before POOH drill string, perform flow check and monitor gas units.
5. POOH drill string to previous casing shoe. (If the hole condition during the trip out to casing present excessive torque and drag; **Perform back-reaming just if it is needed**, POOH to surface, L/D Directional BHA and bit.
6. M/U slick BHA with 12 ¼" Tricone bit, bit sub, w/float valve and RIH to bottom. Circulate bottoms up while reciprocating pipe and rotating at 100 rpm, monitoring shakers for cuttings volume trend and condition mud for running logging. Pump and spot high-viscosity pill in bottom hole. POOH to surface.
7. L/D BHA. Retrieve and inspect 13 3/8" wear bushing. **Change 5" rams for 9 5/8".**
8. Rig up casing fill up and circulating tool and run 9 5/8" casing to 5,700 ft MD; 3,367.8 ft TVD. Cement casing as per program.

   Note.- Take care while drilling Chacra fm due to reactive shale and claystone layers. Apply good drilling practices & assure appropriate shale inhibition concentration.

E. RUN 9 5/8" INTERMEDIATE CASING

From Surface to 5,700 ft MD; 3,367.8 ft TVD

The running Intermediate casing operation will be performed with Fill up tool. Ensure all the equipment is in Rig Site before the casing string being in open hole.

1. Hold pre job safety and procedural meeting.

2. Rig up casing handling equipment.

3. Make up 9 5/8" threadlocked shoetrack consisting of the following:

   - 9 5/8" 43.5 ppf N-80 BTC PDC drillable Guide Shoe.
   - 2 joints 9 5/8" 43.5 ppf N-80 BTC casing. Install 2 bow-spring centralizers in each joint with stop collar.
   - 9 5/8" 43.5 ppf N-80 BTC drillable float collar (no- rotating type).

4. Set shoe track in slips. Ensure shoetrack circulates and is clear of debris.

5. Centralize casing string as per recommendations on cementing program. Dope all threads with API thread compound prior to M/U.

6. Pick up casings out of V door using single joint elevators. Clamp on protectors must be used on the pin end of each joint. Limit the speed to 2.5 min per casing to avoid surge on the open hole formations. Check with Halliburton and running casing company services calculates (Swab and surge simulation should be done for running casing thru Pariñas).

7. Continue RIH with 9 5/8" 43.5 ppf N-80 BTC casing from surface to 5,700 ft MD, 3,367.8 ft TVD as follows:

   - ± 142 joints 9 5/8" 43.5 N-80 BTC casing. R-3.
   - Install centralizer as per Cementing Program.
   - Break circulation every 1500 ft or as hole dictates. Circulate and work casing if hit bridge.

(See Step XII: Casing Running Checklist)

8. Break circulation at low rates and wash down last joints to setting depth. Pick up off bottom to last casing connection, record pick up and slack off hookload and drag.

9. At TD circulate hole and condition mud. Ensure pipe measurements are accurate. Circulate and condition mud as lowest possible PV and YP (reduce rheology parameters and verify YP enough for barite suspension). Slowly increase of the circulation rate to 10 BPM maximum. While circulating, monitor returns for losses and reduce rate as required. Run ECD calculations to ensure not breaking down the formation. If hole are in good conditions, reciprocate casing 10 ft. If at any time during running operation there are indications of casing sticking, run casing to bottom.

10. Stop circulation and L/D fill up tool. M/U cementing head and circulate with 10 BPM, meanwhile performed safety and operation meeting. Discuss the cement job procedure with the cementing supervisor. Pressure Test cementing lines to 3,000 psi. Verify that the cementing head is loaded with the correct plugs. With the rig pumps start pumping 40 bbl of low rheology mud. Release bottom plug **(red)**. Mix, pump and displace the pre-flush and cement as per the CEMENTING PROGRAM with Halliburton pumps (Calculations are based on 55% over gauge).

Release top plug **(black)** and displace with drilling mud using Halliburton pumps to float collar at 7 -10 bpm as high rate as possible without breaking down formation. As plug achieve the float collar, reduce the pump rate to 1-2 bpm. Bump the plug with 500 psi over the final circulating pressure. If plug does not bump with calculated displacement, pump maximum ½ volumes of the two joints between the float collar and shoe over the calculated displacement. Bleed off the pressure and check to ensure the float equipment is holding. (Record the volume of back flow, if float valves don't hold, record the back-pressure and close the cement head valve). **Note. - Perform CIT with 1000 psi.**

11. WOC 6 hours meanwhile Rig down 9 5/8" cementing head. P/U BOP (Review this part of procedure because is necessary slip 9 5/8 Casing into 13 5/8" wellhead). Cut and bevel 9 5/8" casing and lay down landing joint. Make final cut on 9 5/8" casing.

12. N/D BOP and install casing spool 13 5/8" x 3M – 11" x 3M and set on well head housing with enough tension in casing. Test ring gasket and Pack off on spool 50% of the casing collapse rating 1900 psi.

13. N/U 13 5/8"x 5M psi BOP stack, riser and bell nipple. Hook up control lines and kill lines.

14. Inspect Accumulator bottles. Ensure adequate volume and precharge pressure for correct BOP operation.

15. Function Test all BOP components from remote panel prior to pressure test.

F. DRILL 8 ½" PRODUCTION HOLE

From 5,700 ft MD; 3,367.8 TVD to 8,200 ft MD; 4,906.1 TVD

- Pressure test BOP system as per attached procedure (BOP Procedure Testing). Install wear bushing and verify gas detector is working.
- Change rams from 9 5/8" to 5".
- Drill 8 ½" hole using low RPM and light WOB until the stabilizer is below 9 5/8" casing shoe.
- Hold BOP drill, evacuation drill and safety meeting.
- Check surface samples to ensure cement hardness before drilling out.
- At all times, while conducting drilling and testing operations, ensure that a TIW valve in the open position. Inside BOP and necessary crossovers for the string being used are on the rig floor ready for immediate installation.
- **Install 5 ½" liners in the three pumps prior to begin drilling 8 ½" hole.**
- Pump rate during the 8 ½" hole section should be as high as possible within the interval of 450 to ± 550 gpm.
- Directional BHA is programmed in this section **(See Directional program).**
- Prepare and Condition BARADRIL N mud system with density from 10.9 to 11.5 ppg.

1. M/U BHA with 8 ½" PDC bit R**SH519M-A10** (Nozzles= 5x13+ 3x10) and RIH with mud motor. Recommended Directional BHA: 8 ½" PDC Bit, 6 ¾"motor (8 3/8" Sleeve STB, BH=1.5), 01 –6 ¾" Short DC, 01 – 8 3/8" STB, UBHO, 01- 6 ¾" NMDC w/MWD, 01- 6 ¾" Monel, 01 – 6 ¼" DC, 18 – 5" HWDP, 01-6 ¾" Drilling Jar, 12 – 5" HWDP, 5" DP String. (Check with **Phoenix** DD the minimum ID in the Drill String for fishing tools to release MWD tool, it is necessary has in location the screen filter for 4 ½" IF connection). See BHA Program (Section V. BITS, BHA AND HYDRAULICS).

2. RIH to TOC (top of cement). Tag TOC and recorded depth. (*) Drill out cement, float equipment, casing shoe and 10 ft of new formation. Circulate hole clean and perform Formation Integrity Test (FIT) with EMW of 13.5 ppg as per attached procedure in the FORMATION INTEGRITY of the program. Ensure positive displacement pump can handle small volumes as needed for this job.

   - (*) Before drill out cement, **Perform casing pressure Test with 1000 psi** (2,667 psi is the 70% of the collapse rating & 4,431 psi is the 70% of the 9 5/8" burst rating). The pressure have to remain stabilize for at least 5 minutes.

3. Continue drilling 8 ½" Tangent section holding 63.59° inclination angle and 228.95° azimuth to 6,000 ft MD; 3501.2 ft TVD, then drill the drop section with DOR of 1.3°/100 ft to reach 41.0° at 7,737.5 ft MD, finally continue drilling the tangent section and hold 41° to total depth of 8,200.0 ft MD; 4,906 ft TVD in S 48.95º W direction **(Continuous review of directional plan with Phoenix's DD).**

   - **Special caution will be taken when Rio Bravo formation will be drilled, because there were events of <u>stuck pipe and Lost circulation</u> in offset wells (Review LO6-27D, 28D and 31D wells), Pipe must be keep in reciprocating up and down all time.**
   - Use maximum flow rate of ±550 gpm
   - **Wiper trips based on hole conditions only, wiper trips can be performed to previous casing shoe depth and it will be based on 24 hr continuous information gathered at the Wellsite and involving Talara operation team.**
   - Maximum mud weight of 11.5 ppg will be use until 5 ½" casing will be set up.
   - In accordance with the well profile, Torque and drag analysis will be run in order to install torque reducers in the string.
   - It's recommended add enough lubricant in drilling fluid to help to reduce the friction coefficient if the hole condition require.
   - To install protecting rubbers on the drill pipe to avoid the casing's wear, verify the rubber will be installed every stand on critical points. It's recommended add enough lubricant in drilling fluid to help to reduce the friction coefficient.
   - The Rio Bravo formation is composed of sand with medium to coarse grained sandstone. It is recommended to drill with PDC bit (IADC M322) with 5 blades and 19 mm cutters.
   - The Total Depth must be stop considering the needed to take ± 100 feet as rat hole.

4. At section TD, circulate minimum 03 times bottoms up or until shaker are free of cuttings. Ensure drilling string keep reciprocating. Sweep hole with a hi vis sweep, follow it with 30 bbl of high weighted pill to float any cutting that may accumulate in enlarged washed out sections. Note take great care when pumping high weight pills – if hole cleaning has been poor they can bring large volumes to surface with the resultant risk of packing off the wellbore. Before POOH drill string, perform flow check and monitor gas units.

5. POOH drill string to previous casing shoe (If the hole condition during the trip out to casing present excessive torque and drag; **Perform back-reaming just if it is needed).** POOH to surface, L/D Directional BHA and bit.

6. M/U slick BHA with 8 ½" Tricone bit, bit sub, w/float valve and RIH to bottom. Circulate until shaker is clean while reciprocating pipe and rotating, monitoring shakers for cuttings volume and condition mud for running logging. Pump and spot high-viscosity pill in bottom hole. POOH to surface.

7. R/U and run logs as per Wireline logging/evaluation section of the program (Consider use Weatherford Compact well shuttle if condition of the well requires).

(See Step XII: Log Running Checklist)

8. After run wireline logs, evaluate if it is needed to make condition trip. In case of condition trip run with used 8 1/2" tri-cone bit, bit sub with float valve and near bit STB under gauge. RIH to bottom and circulate minimum 2 bottoms up or until shaker are free of cuttings condition mud in preparation for running and cementing 5 ½" Production casing. Perform flow check prior to pulling off bottom. POOH 5" DP in Stands and rack back in the derrick, Keep hole properly filled during trip out; Strap out. Use a trip sheet.

9. L/D BHA. Retrieve and inspect 9 5/8" wear bushing. **Change 5" rams for 5 ½".**

10. Rig up casing fill up and circulating tool and run 5 ½" casing to 8,200 ft MD; 4,906.1 ft TVD. Cement casing as per program.

G. RUN 5 ½" PRODUCTION CASING.

From Surface to 8,200 ft MD; 4,906.1 TVD

The Production casing running operation will be performed with fill up tool. Ensure all the equipment is in Rig Site before the casing string being in open hole.

1. Hold pre job safety and procedural meeting.

2. Rig up casing handling equipment.

3. Make up 5 ½" threadlocked shoetrack consisting of the following:

   - 5 ½" 17.0 ppf N-80 BTC Guide Shoe (With float valve).
   - 2 joints 5 ½" 17.0 ppf N-80 BTC casing. Install 2 bow-spring centralizers in each joint with stop collar.
   - 5 ½" 17.0 ppf N-80 BTC float collar (Conventional type).

4. Set shoe track in slips. Ensure shoetrack circulates and is clear of debris.

5. Centralize casing string as per recommendations on cementing program. Dope all threads with API thread compound prior to M/U.

6. Pick up casings out of V door using single joint elevators. Clamp on protectors must be used on the pin end of each joint. Limit the speed to 2.5 min per casing to avoid surge on the open hole formations. Check with Halliburton calcs.

7. Continue RIH with 5 ½" 17.0 ppf N-80 BTC casing from surface to 8,200 ft MD; 4,906.1ft TVD as follows:

   - ± 205 joints 5 ½" 17.0 N-80 BTC casing. R-3
   - Install centralizer as per Cementing Program recommendation.
   - Break circulation every 1500 ft or as hole dictates. Circulate and work casing if hit bridge.

Note.- In case of non stock of casing 5 ½" 17.0 ppf, N-80 BTC. WEDGE 513™ 5 ½" 17.0 ppf, L-80 will be used (Ensure floating equipment available).

(See Step XII: Casing Running Checklist)

8. Break circulation at low rates and wash down last joints to setting depth. Pick up off bottom to last casing connection, record pick up and slack off hookload and drag.

9. At TD circulate hole and condition mud. Ensure pipe measurements are accurate. Circulate and condition mud as lowest possible PV and YP (reduce rheology parameters and verify YP enough for barite suspension). Slowly increase of the circulation rate to 5-7 BPM maximum. While circulating, monitor returns for losses and reduce rate as required. Run ECD calculations to ensure not breaking down the formation. If hole are in good conditions, reciprocate casing 10 ft.

10. Stop circulation and L/D Casing running tool. M/U cementing head and circulate with 5 -7 BPM maximum, meanwhile performed safety and operation meeting. Discuss the cement job procedure with the cementing supervisor. Pressure Test cementing lines to 5,000 psi. Verify the cementing head is loaded with the correct plugs. With the rig pumps stat pumping 40 bbl of low rheology mud. Release bottom plug **(red)**. Mix, pump and displace the pre-flush and two cement slurry as per the CEMENTING PROGRAM with Halliburton pumps (Calculations are based on 50% over gauge and caliper log data).

11. Release top plug **(black)** and displace with drilling mud using Halliburton pumps to float collar at 7-10 bpm as high rate as possible without breaking down formation. As plug achieve the float collar, reduce the pump rate to 2 bpm. Bump the plug with 500 psi over the final circulating pressure. If plug does not bump with calculated displacement, pump maximum ½ volumes of the two joints between the float collar and shoe over the calculated displacement. Bleed off the pressure and check to ensure the float equipment is holding. (Record the volume of back flow, if float valves don't hold, record the back-pressure and close the cement head valve). Perform CIT with 1500 psi.

12. WOC 8 hours meanwhile Rig down 5 ½" cementing head. Pull BOP, Cut and bevel 5 ½" casing and lay down landing joint. Make final cut on 5 ½" casing.

13. N/D BOP Stack and install Tubing spool 7 1/16" x 5M – 11" x 3M and set on well head housing with enough tension in casing. Test ring gasket and Pack off on spool 50% of the casing collapse rating 1000 psi.

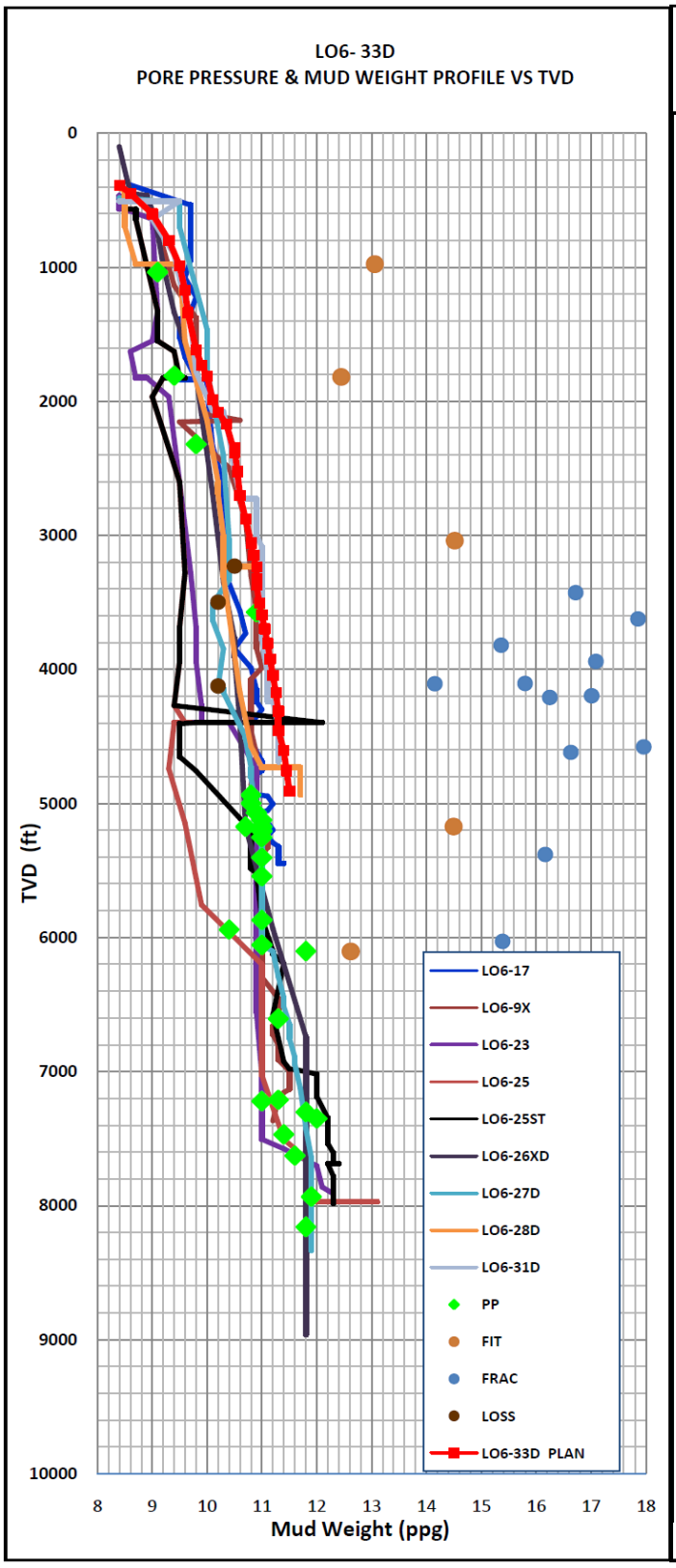
14. N/U 7 1/16"x 5M psi BOP stack, riser and bell nipple. Hook up control lines and kill lines.

15. Inspect Accumulator bottles. Ensure adequate volume and precharge pressure for correct BOP operation.
16. Function Test all BOP components from remote panel prior to pressure test.

The Final Program to cement 5 ½" Production Casing with its respective detail will be prepared according to the well conditions. This program must be approved by the Drilling Engineering Head.

Completion Program will be submitted after finish the logging program.

III. PORE PRESSURE / MUD WEIGHT PROFILES



CSG	LO6-33D PLAN			Water Depth - 335 ft GL-RKB: 50 ft
	MD	TVD	(ppg)	FORMATION TOP
	385.0	385.0	8.4	TALARA - Sea Floor
	450.0	450.0	8.6	18", ASTM-A53B, 70.6 ppf at 450 ft MD.
	600.0	599.8	9.0	
	800.0	796.9	9.3	17" (8.6 - 9.6 ppg)
	1000.0	988.3	9.5	
	1200.0	1170.3	9.6	13 3/8", N-80, 54.5 ppf, BTC at 1,200 ft MD, 1170.3 TVD.
	1400.0	1338.6	9.7	
	1800.0	1617.9	9.8	12 1/4" (9.6 - 10.9 ppg)
	2012.9	1727.7	9.9	
	2200.0	1810.9	10.0	
	2600.0	1988.9	10.1	CHACRA - 1,989 ft TVD
	2800.0	2077.8	10.2	
	3000.0	2166.8	10.4	
	3200.0	2379.2	10.5	
	3400.0	2344.7	10.5	
	3800.0	2522.6	10.6	
	4200.0	2700.6	10.6	
	4600.0	2878.5	10.7	
	5000.0	3056.4	10.8	
	5200.0	3145.4	10.9	
	5400.0	3234.3	10.9	9 5/8", N-80, 43.5 ppf, BTC at 5700 ft MD, 3367.8 ft TVD
	5600.0	3323.3	10.9	
	5700.0	3367.8	10.9	8 1/2" (10.9 - 11.5 ppg)
	6000.0	3501.2	11.0	RIO BRAVO - 3430 ft TVD
	6200.0	3594.2	11.0	
	6400.0	3695.2	11.1	
	6600.0	3803.8	11.1	
	6800.0	3920.0	11.2	
	7000.0	4043.4	11.2	
	7200.0	4173.9	11.3	
	7400.0	4311.0	11.3	
	7600.0	4454.7	11.3	
	7800.0	4604.2	11.4	
	8000.0	4755.1	11.5	5 1/2", N-80, 17 ppf, BTC at 8200 ft MD, 4906 ft TVD
	8200.0	4906.1	11.5	
				TD 8200 ft MD, 4906 ft TVD

IV. MUD PROGRAM

A. 18" CONDUCTOR HOLE

INTERVAL (MD)	MUD TYPE
0-450'	Aquagel

Use sea water to drill and high viscosity pills for cleaning large diameter to bottom and support unconsolidated formations and maximize solids removal.

B. 17" SURFACE HOLE

INTERVAL (MD)	MUD TYPE
450'-1,200'	Aquagel

- The mud weight has to keep within 8.6 to 9.6 ppg.
- The goal of this interval is to drill a hole of 17" with Aquagel fluid to run 13 3/8" casing, this disperse system will be premixed in the tanks of the drilling rig by using water with 15 ppb of AQUAGEL, 0.03 ppb of X-TEND II.
- Add 0.5 ppb of sodium bicarbonate to fresh water to reduce the hardness before adding AQUAGEL (Bentonite).
- In order to minimize possible bit balling during the connections AKTAFLO's could be used.
- Monitor hole conditions by observing cuttings size, shape and quantity and tight spots on connections. Increase the mud weight as necessary to improve hole conditions.
- AKTAFLOS is a non-ionic surfactant that reduces surface tension among water, solids and clay.
- Control the ROP based on flow rate, viscosity and solids loading. If high ROP is observed, add disperse pill with 10 ppb with walnut and 1% AKTAFLOS as per hole dictate.
- Maintain adequate dilution rates to prevent solids and mud weight build up in the fluid otherwise use centrifuge to optimize if is required. If there is evidence of bit balling, it must treated through the circulation of a dispersed pill, 50% water and 50% mud, approximately 30 bbl with 10 ppb of WALLNUT and 1% of AKTAFLO S. (it should be aware that these pills are incorporated into the system, resulting in a reduction in the rheological properties, therefore these properties must be adjusted).
- Is necessary to work with high pumping rates to help the hole cleaning, due to low annular velocity and high ROP associated.
- Circulate the hole clean prior to running the 13 3/8" casing. At TD, pump a viscous pill and circulate until clean returns. Prior to pulling out of the hole to run casing; Leave in the open hole a high weighted pill (at least 1 ppb more tan final density of the mud in order to run 13-3/8" casing).

- Ensure all solids control equipment is running properly in order to control solids and keep appropriate mud weight. Ensure that shale shaker screen size is reduced to as fine mesh as flow will permit and the desander/desilter are functioning properly.

PROPERTIES:

Interval (feet)	Weight Lbs/gl	Viscosity Sec/qt	VP cps	YP Lb/100ft²	Solids %	Filtrate cc/30'	MBT ppb Eq	Ph
450'-1,200'	8.6 -9.6	38-55	5-12	18-30	< 10	< 6	<12.5	8.5 – 9.8

C. 12 ¼" INTERMEDIATE HOLE

INTERVAL (MD)	MUD TYPE
1,200'-5,700'	**EZ MUD / CLAYSEAL**

- **This section requires complete vigilance on mud properties and solids control (mainly shale & Claystone formations will be drilled .**
- The drill out of the 13 3/8" casing will be in short circuit with the fluid used in the previous section. This fluid will be displaced by Mud EZ MUD/CLAYSEAL PLUS in storage tanks.
- EZ MUD/CLAYSEAL PLUS system is a water-based non disperse fluid, low-solids content and high performance developed by Halliburton. CLAYSEAL PLUS system is shown as a great alternative when you need superior inhibition for hole stability and lubricity. **CLAYSEAL system used for drilling at this stage should be mixed with an initial concentration of polymer EZMUD 1.5 ppb and then add in system as dilution.**
- When Chacra formation has been drilling, continue the addition of EZMUD and CLAYSEAL to generate the stabilizing mechanism for the layers of shale present in such formation. EZ MUD is a primary polymer encapsulator for inhibition of Illite. CLAYSEAL is a secondary polymer inhibitor to inhibit the hydration of beds of shale.
- Careful monitoring and controlling of the MBT will be very important. We will again insure that the shaker screen mesh is as fine as the flow rate will permit and that all the solids control equipment are operating at top efficiency. Maintain the MBT < 17.5, otherwise execute dilution with new mud or use centrifuge if is required.
- The pH should be adjusted between 9.0 and 9.8 for an alkaline system in order to ensure an excellent performance of polymers.
- The CLAYSEAL system provides rheology required for proper hole cleaning even at low annular speeds. Sweep pills can be circulated mixed with base fluid and 0.5 - 1.0 ppb of BARAZAN D PLUS every 300 feet, also, may be combined pumping low

rheology pills p followed by high rheology when required, to provide extra hole cleaning.

- While drilling add EZ MUD as selective flocculants continuously without allowing a drop in concentration due to the submission of a rapid increase in the MBT and LGS. Similarly, the EZ MUD tends to be a total flocculants when soluble calcium is increased; therefore, calcium concentration must be maintained between 80 - 120 ppm.
- If it's necessary adding BAROLUBE G. S. lubricant 1.5% by volume to reduce the problems of hanging string and / or torque, this in accordance with the Company Man and Savia's drilling engineers.
- Monitor hole conditions observing cuttings size, shape and quantity and tight spots on connections. Increase the mud weight as necessary to improve hole conditions. A mud weight of 9.6 – 10.9 ppg may be required to reach the interval depth and run casing.
- Ensure all solids control equipment will be working properly in order to keep appropriate mud weight. Verify that shale shaker screen size is reduced to as fine a mesh as flow will permit and desander/desilter are functioning properly.
- Circulate to hole clean prior to running the 9 5/8" casing. Prior to pulling out of the hole to run casing; Leave in the open hole a high weighted pill (at least 1 ppb more than final density of the mud in order to run casing).

PROPERTIES:

Interval (feet)	Weight Lbs/gl	Viscosity Sec/qt	VP cps	YP Lb/100ft^2	Solids %	Filtrate cc/30'	MBT Ppb Eq	Ph
1,200'-5,700'	9.6-10.9	40-50	15 -20	18 -24	< 15	5-78	<17.5	9.0- 9.8

D. 8 ½" PRODUCTION HOLE

INTERVAL (MD)	MUD TYPE
5,700'-8,200´	**BARADRIL-N**

- To drill out floating equipment and cement of 9-5/8"casing, the mud to be used will be EZ MUD/CLAYSEAL used in the previous section, pre - treated with sodium bicarbonate in a short circuit, To reduce the possibility of contamination by cement.
- **The Rio Bravo formation will be drilled in this interval; it can be very permeable. There is a high probability of differential sticking with partial loss circulations, to avoid the former problems it's recommended pump pills of Calcium Carbonate 325/150 between 10-20 lpb as sealing agent.**

- The MBT value, will determine the dilution or use of the centrifuge if is required. The rheological properties, YP and PV, will be kept at levels that will prevent excessive shaker losses and assure good hole cleaning properties for that purpose BARAZAN D PLUS concentration should be adjusted. Maintain the MBT < 10; otherwise execute dilution with new mud.

- Ensure shaker screen mesh sizes are appropriate and all solids control equipment is operating at full efficiency. The pH should be adjusted between 9.0 and 9.8 for an alkaline system that ensures an excellent performance of polymers.

- **Sand and interbedded shale layers will be drilled in this interval. The shale often has pressure that requires mud weights ranging from 10.9 to11.5 ppg**.

- The sands of this 8 1/2" Intervals are very abrasive and develop excessive wear on the bottom hole assembly. It is helpful to increase the lubricants concentration to minimize the effects. If excessive torque and drag is experienced, and it is determined that a lubricant is required to reduce the friction coefficient.

- Monitor hole conditions by observing cuttings size, shape and quantity and tight spots on connections. Increase the mud weight as necessary to improve hole conditions. A mud weight from 10.9 to 11.5 ppg is required to reach the interval depth and run casing.

- **Gradual addition of a combination of sizing calcium carbonate will be performed in order to establish a particle size (D50) to fit the size of the pore throat established for the sand to be passed on intervals of 8-1/2 ". The bridging material performance will be evaluated by testing PPT using porous ceramic disks similar to the perforated zone.**

- Viscous pills can be pumped to clean every 300 ft and to ensure the hole cleaning at the final of the interval or before making wiper trip. Pumping heavy/viscous pill with BAROLIFT each 300 drilled feet or according to the software DFG and hole conditions.

- Ensure in platform LCM material (fine and medium) to possible lost circulation.

- If lost circulation occurs, "seepage loss", it will increase the calcium carbonate additions and include BAROFIBRE-Thin (2 ppb). If losses increase, LCM pill will be added to these same products varying in concentration as shown in the annex to decision tree.

- Circulate the hole clean prior to running the 5.5” casing. Spot a lubricant and stabilizing pill in the open hole prior to pulling out of the hole to run casing.

PROPERTIES:

Interval (feet)	Weight Lbs/gl	Viscosity Sec/qt	VP cps	YP Lb/100ft²	Solids %	Filtrate cc/30’	MBT ppb Eq	Ph
5,700- 8,200	10.9-11.5	48 – 60	25-30	20-26	< 16	4-5	< 10	9.0- 9.8

GENERAL RECOMMENDATIONS

Apply best hole cleaning practices through the well in special to 12 ¼" & 8 ½" hole section; initial practices to consider:

- A volume of kill mud 13.5 ppg will be ready to use in this section, it volume will treated periodically.
- For bottoms up cleaning cycles: 2.0 factors for total circulation time in 12 ¼" section and 1.5 for the other section. By default evaluate clean returns on shakers before pulling out.
- **To drill section with high angle, schedule weighted sweeps at regular interval 200-300 ft of equivalent open hole volume, 1.5-2 YP and MW + 2 to 3 ppg. Monitor and report return characteristics**.
- Maintain pipe rotation over 80 rpm; minimum acceptable: 60 rpm
- Monitor connections in terms of drag, filling, break circulation, torque as main parameters.
- Monitor returns on shakers in terms of amount and type of material and correlate it with ROP and flow rate in case of observing any abnormal behavior report it and act accordingly.
- Avoid back reaming as much as possible.
- Treat any tight hole as cutting bed as first approach.
- Optimize rheological properties of the mud.
- Run in regular basis hydraulics software to verify field observations against simulated outcomes.

V. BITS, BHA AND HYDRAULICS

A. BIT PROGRAM

HOLE SECTION	FORMATION	SECTION INTERVAL	PROPOSED BIT TYPE	SUPPLIER	IADC CODE	WOB Klbs	RPM	Remarks
17" x 20"	**Talara**	385' – 450'	T11	NOV	115	5-20	ROT.	Rotary Drilling BHA.
17"	**Talara**	450'-1200'	MSDSH	Smith	115	10-20	PDM	Milled Tooth bit.
12 ¼"	**Talara Chacra**	1200'-5700'	SDi419MHABPX	Smith	S123	10-25	PDM	Steel PDC Bit, **4 Blades 19 mm**, and ONYX cutters. **JSA=31.93 in2**.
			SDi519BPX (BACK UP)	Smith	S123	10-25	PDM	**(Back Up)** Steel PDC Bit, 5 blades 19&13 mm ONYX cutters.
8 ½"	**Rio Bravo**	5700'- 8200'	RSH519M-A10	NOV	M322	10-25	PDM	Matrix PDC Bit, 5 Blades, 19 mm HELIOS cutters. JSA=18.20 in2. Gauge pad = 3.0 in.
			RSH519M-A6 (BACK UP)	NOV	M322	10-25	PDM	Matrix PDC Bit, 5 Blades 19 mm Helios cutters.

B. BHA PROGRAM

17" PILOT HOLE (ROTARY BHA)	17" HOLE (MOTOR W/O MWD)	12 1/4" HOLE (MOTOR BHA)	8 1/2" HOLE (MOTOR BHA)
385 - 450 (ft)	450 - 1200 (ft)	1200 - 5700 (ft)	5700 - 8200 (ft)
5"DP	5" DP	5" DP	5" DP
2 x 7 3/4" DC	15 x 5" HWDP	12 x 5" HWDP	12 x 5" HWDP
STB	1 x 6 1/4" DC	1 x 6 3/4" Drlg Jar	1 x 6 ¾" Drlg Jar
XO	XO	12 x 5" HWDP	18 x 5" HWDP
1 x 7 ¾" DC	1 x 8" DC	1x 6 ¼" DC	1 x 6 ¼" DC
1 x Bit Sub w/lateral jets	1 x 8" Drlg Jar	XO	1 x 6 ¾" Monel
17" Tooth Bit	4 x 8" DC	1 x 8" Spiral Monel	1 x 6 ¾" Monel w/MWD
	1 x UBHO	1 x 8" Spiral Monel w/MWD	UBHO
	1 x 9 5/8" PDM (16 3/4" STB, BH=1.5)	UBHO	1 x 8 3/8" STB
	17" Tooth Bit	1 x 12 1/8" STB	1 x 6 ¾" Short DC
		1 x 8" Short DC	1 x 6-3/4" PDM (Sleeve 8 3/4", BH=1.5)
		1 x 7-3/4" PDM (Sleeve 12 1/8", BH=1.5)	**8 ½" PDC Bit**
		12 1/4" PDC Bit	
Total BHA = 232 ft	**Total BHA = 732 ft**	**Total BHA = 893 ft**	**Total BHA = 1068 ft**
	Weight below Jar = 25997 Lb	**Weight below Jar = 37942 Lb**	**Weight below Jar = 40595 Lb**
	Weight available = 22186 Lb	**Weight available = 31628 Lb**	**Weight available = 33467 Lb**

Prepared by:	Reviewed by:	Approved by:
E. Gaspar: Drilling Engineer.	C. Ramirez: Drilling Engineering Head. R. Gilabert: Drilling Operations Head J. Chuyes: Drilling Technical Leader	C. Hwang: Operations Manager.

HYDRAULIC PROGRAM

DRILLING TUBULARS	PIPE O.D.		PIPE I.D.		TOOL JOINT O.D.	TOOL JOINT I.D.	WEIGHT lbs/ft
Drill Pipe "G-105"	5.0"		4.276		6 5/8	3.5	19. 5
Heavy Weight Drill Pipe	5.0"		3.0		6 5/8	3.125	50.38
Drill Pipe " S-135"	3 ½"		2.125"		5.0	2.414	15.5
Drill Collar	7 ¾"		3"		8.0	2.81	150.0
Drill Collar	6 ¼"		2 13/16"		6.75	2.25	92.8

Prediction of Critical Pipe Running Speed During Tripping in Drilling

Critical running-in speed:	$V_p = a_0 + a_1\rho_m + a_2\mu_p + a_3Y_p + a_4R + a_5d_h + a_6P_f$ $P_f = G_f * h$
Critical running-out speed:	$V_p = b_0 + b_1\rho_m + b_2\mu_p + b_3Y_p + b_4R + b_5d_h + b_6P_p$ $P_p = G_p * h$

Table 3. Correlation coefficients and accuracy constants

Critical running-in speed correlation constants Eq. 12.	a_0 = -90.650644 a_1 = -2.03 a_2 = 0.00654655 a_3 = 0.040705 a_4 = 42.302 a_5 = 11.9403 a_6 = 4.663E-03	Coefficient of linear correlation r^2 = 0.875 Standard error of estimate SEE = 0.8172
Critical running-out speed correlation constants Eq. (13).	b_0 = -48.293 b_1 = -1.1625 b_2 = 3.749E-03 b_3 = 2.231E-02 b_4 = 24.225 b_5 = 6.9378 b_6 = 2.6703E-03	Coefficient of linear correlation r^2 = 0.955 Standard error of estimate SEE = 0.39

R = Drillcollars-to-drillpipe length ratio

INTERVAL		NOZZLES								ΔPRESSURE (psi)		VELOCITY (ft/min)			HSI	JET VELOC.	IMPACT	ECD	
From	To	J-1	J-2	J-3	J-4	J-5	J-6	J-7	GPM	Bit	System	DP	DC	Crit		Ft/seg	Lbs	ppg	BHA
450	1,200	4x16, TFA=0.785 in^2							750-850	698	835	74	87	773	1.29	294	1053	9.89	Motor
1,200	5,700	6x14, TFA= 0.902 in^2							750-850	838	3179	149	737	710	3.39	302	1451	10.9	Motor
5,700	8,200	5x13 + 3x10; TFA= 0.878 in^2							450-550	391	2319	269	492	535	2.21	201	658	12.5	Motor

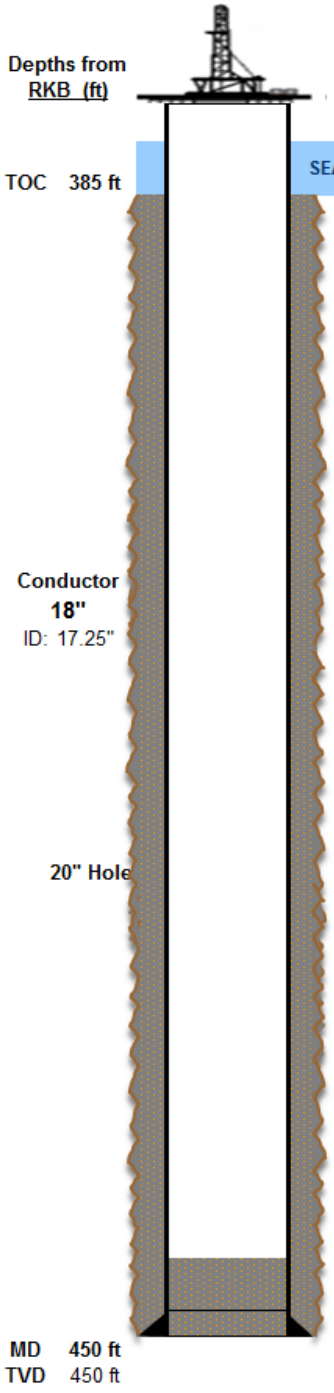
Prepared by:	Reviewed by:	Approved by:
E. Gaspar: Drilling Engineer.	C. Ramirez: Drilling Engineering Head. R. Gilabert: Drilling Operations Head J. Chuyes: Drilling Technical Leader	C. Hwang: Operations Manager.

VI. CEMENT PROGRAM

A. 18" CONDUCTOR

LO6-33D

18" CONDUTOR CASING AND CEMENTING DIAGRAM



RKB Elev, AMSL: 50 ft
Water Depth: 335 ft
Well head: None

CONDUCTOR PIPE	
Size	18"
Weight	70.6 ppf
Grade	ASTM A53B
Connection	WELD CONN
Collapse	-
Burst	-
Tension	-
LOT	NA

HOLE	
Size	20"
Inclination	0°
MW	8.6 ppg
Type Mud	WBM
Pore Pressure	-
BHST	75
BHCT	65

Guide Shoe: Home made

LAB TEST CEMENT PRIOR TO PUMPING

UTILIZE HALLIBURTON SERVICES SIMULATION PROGRAM TO DETERMINE BHCT AS PER CEMENT LAB PROCEDURE INCLUDED IN PROGRAM

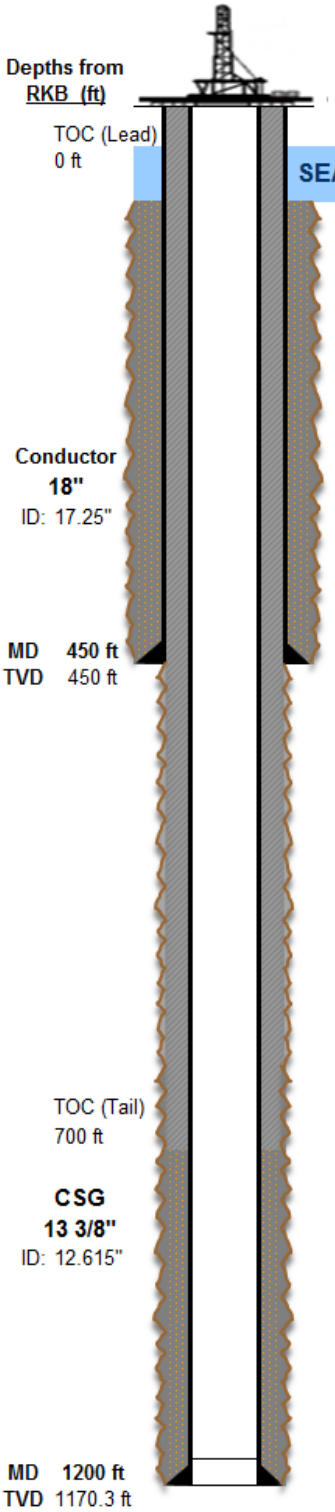
Centralizer:		None
Estimated Pumping Time:		17 min.
Maximun Estimated Pressure:		270 psi
Displacement:	9 bbls	8.6 ppg Sea water

MAIN SLURRY			
15.60	ppg		Density
1.21	cuft/sx		Yield
5.28	gps		Water Requirement
0.012	gps		Foam Preventer
03:28	hours	Thickening Time	
385.0	feet	Sea bottom	TOC
21.9	inch	100 % excess	Open Hole
242	sacks	Pacasmayo I	Cement
50.0	barrel		Volume Lead Slurry

B. 13 3/8" SURFACE CASING

LO6-33D

13-3/8" SURFACE CASING AND CEMENTING DIAGRAM



RKB Elev, AMSL: 50 ft
Water Depth: 335 ft

Well head: 13 3/8" X 13 5/8" 3M Casing Head

CONDUCTOR PIPE	
Size	18"
Weight	70.59 ppf
Grade	ASTM A53B
Connection	WELD CONN
Collapse	-
Burst	-
Tension	-
LOT	NA

HOLE	
Size	17"
Inclination	28.41°
MW	9.6 ppg
Type Mud	WBM
Pore Pressure	9.1 ppg
BHST	85 °F
BHCT	73°F

SURFACE CASING	
Size	13 3/8"
Weight	54.5 ppf
Grade	K-55
Connection	BTC
Collapse	1130 psi
Burst	2730 psi
Tension	853 klbs

Float Collar: Non Rotating Type, 54.50 ppf, K-55, BTC

Float Shoe: Conventional, 54.50 ppf, k-55, STC

LAB TEST CEMENT PRIOR TO PUMPING

Centralizers:		20
Estimated Pumping Time:		1 hour, 15 min.
Maximun Estimated Pressure:		400 psi
Displacement:	179 bbls	9.6 ppg WBM

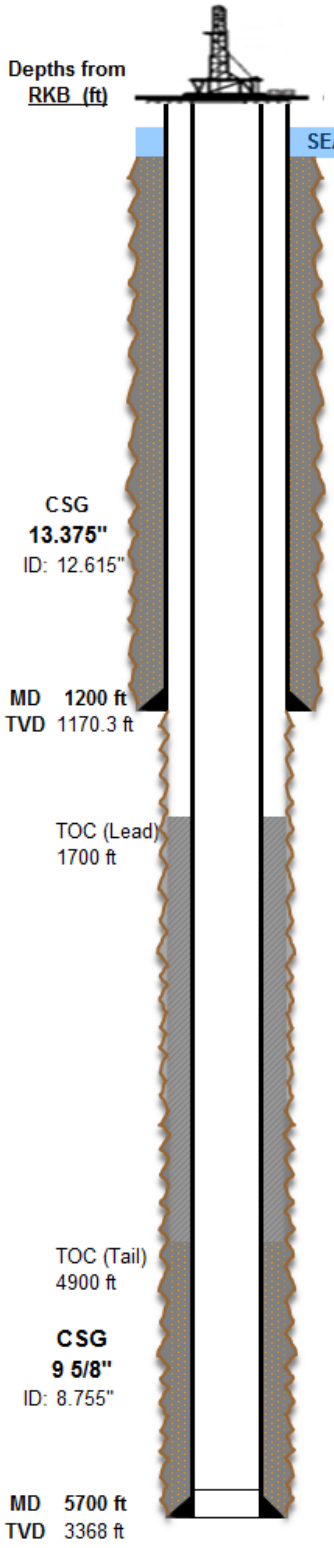
LEAD SLURRY			
12.5	ppg		Density
2.20	cuft/sx		Yield
12.33	gps		Sea Water Req.
0.012	gps	Dair 3000L	Defoamer
0.50	gps	Econolite L	Extender
0.25	%	Halad 344	Fluid Loss
04:17	hours	Thickening Time	
0.0	feet	Surface	**TOC**
17.0	inch	60 % excess	Open Hole
242	sacks	Pacasmayo I	Cement
95.0	barrel		Volume Lead Slurry

TAIL CEMENT			
15.2	ppg		Density
1.28	cuft/sx		Yield
5.91	gps		Sea Water Req.
0.012	gps	Dair 3000L	Defoamer
0.35	%	Halad 322	Fluid Loss
03:15	hours	Thickening Time	
700.0	feet		**TOC**
17.0	inch	60 % excess	Open Hole
404	sacks	Pacasmayo I	Cement
92.0	barrel		Volume Tail Slurry

C. 9 5/8" INTERMEDIATE CASING.

LO6-33D

9-5/8" INTERMEDIATE CASING AND CEMENTING DIAGRAM



RKB Elev, AMSL: 50 ft
Water Depth: 335 ft

Well head: 13 5/8" X 11" 3M Casing Spool

SURFACE CASING	
Size	13.375"
Weight	54.5 ppf
Grade	K-55
Connection	BTC
Collapse	1130 psi
Burst	2730 psi
Tension	853 klbs
FIT	13.5 ppg

HOLE	
Size	12.25"
Inclination	61.96°
MW	10.9 ppg
Type Mud	WBM
Pore Pressure	10.0 ppg
BHST	109 °F
BHCT	89 °F

INTERMEDIATE CASING	
Size	9 5/8"
Weight	43.5 ppf
Grade	N-80
Connection	BTC
Collapse	3810 psi
Burst	6330 psi
Tension	1005 klbs

Float Collar: Non Rotating Type, 43.50 ppf, N-80, BTC

Float Shoe: Conventional, 43.50 ppf, N-80, BTC

LAB TEST CEMENT PRIOR TO PUMPING

Centralizer:		40
Estimated Pumping Time:		2 hours, 44 min.
Maximun Estimated Pressure:		1000 psi
Displacement:	393 bbls	10.9 ppg WBM

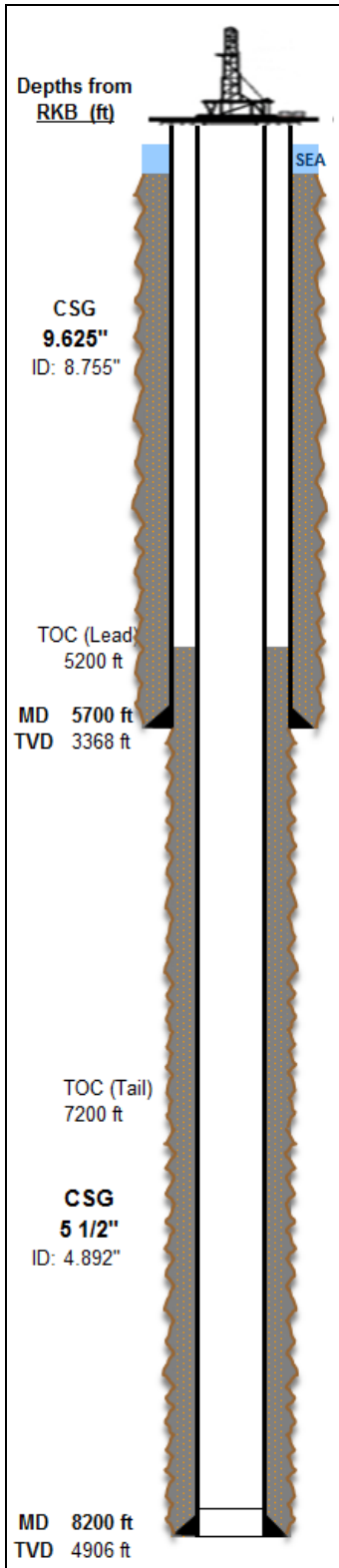
LEAD SLURRY			
13.5	ppg		Density
1.67	cuft/sx		Yield
8.73	gps		Water Requirement
0.012	gps	Dair 3000L	Defoamer
0.2	%	Silicalite	Suspend Additive
0.2	%	Halad 344	Fluid Loss
0.2	%	WG-17	
05:14	hours	Thickening Time	
1700.0	feet	Surface	TOC
12.25	inch	55 % excess	Open Hole
969	sacks	Pacasmayo V	Cement
177.0	barrel		Volume Lead Slurry

TAIL CEMENT			
15.2	ppg		Density
1.25	cuft/sx		Yield
5.68	gps		Water Requirement
0.012	gps	Dair 3000L	Defoamer
0.12	%	Halad 344 / 322	Fluid Loss
0.13	%	HR800	Retarder
04:12	hours	Thickening Time	
4900.0	feet		TOC
12.25	inch	55 % excess	Open Hole
350	sacks	Pacasmayo V	Cement
75.0	barrel		Volume Tail Slurry

D. 5.5" PRODUCTION CASING.

LO6-33D

5 1/2" PRODUCTION CASING AND CEMENTING DIAGRAM



RKB Elev, AMSL: 50 ft
Water Depth: 335 ft

Well head: 13 5/8" 3M x 11" 3M x 7 1/16" 5M Tubing Spool

INTERMEDIATE CASING	
Size	9.625"
Weight	43.5 ppf
Grade	N-80
Connection	BTC
Collapse	3810 psi
Burst	6330 psi
Tension	1005 klbs
FIT	13.5 ppg

HOLE	
Size	8.5"
Inclination	63.59°
MW	11.5 ppg
Type Mud	WBM
Pore Pressure	11.5 ppg
BHST	149 °F
BHCT	116 °F

PRODUCTION CASING	
Size	5.5"
Weight	17 ppf
Grade	N-80
Connection	BTC
Collapse	6290 psi
Burst	7740 psi
Tension	397 klbs

Float Collar: Non Rotating Type, 17.0 ppf, N-80, BTC

Float Shoe: Conventional, 17.0 ppf, N-80, BTC

LAB TEST CEMENT PRIOR TO PUMPING

Centralizer:		45
Estimated Pumping Time:		1 hours, 27 min.
Maximun Estimated Pressure:		800 psi
Displacement:	188 bbls	11.5 ppg WBM

LEAD SLURRY			
13.5	ppg		Density
1.66	cuft/sx		Yield
8.78	gps		Water Requirement
0.012	gps	Dair 3000L	Defoamer
0.20	%	Silicalite	Suspend Additive
0.3	%	Halad 344	Fluid Loss
0.2	%	WG-17	
0.10	gps	Econolite	
03:30	hours	Thickening Time	
5200.0	feet	Surface	**TOC**
12.25	inch	55 % excess	Open Hole
489	sacks	Pacasmayo V	Cement
139.0	barrel		Volume Lead Slurry

TAIL CEMENT			
15.2	ppg		Density
1.25	cuft/sx		Yield
5.68	gps		Water Requirement
0.012	gps	Dair 3000L	Defoamer
0.2	%	GasStop	Gas Control
0.2	%	Halad 344 / 322	Fluid Loss
0.017	gps	Super CBL	
0.017	gps	Super CBL	
02:55	hours	Thickening Time	
7200.0	feet		**TOC**
8.5	inch	55% excess	Open Hole
303	sacks	Pacasmayo V	Cement
65.0	barrel		Volume Tail Slurry

VII. BOP PRESSURE TESTING PROCEDURES

GENERAL STANDARS:

1. Make sure that proper size test plug is available on the rig for all sizes of casing to be run.
2. Prior to any pressure testing the area should be isolated and personnel notify and/or evacuated.
3. The well site Supervisor shall witness all BOP pressure tests. Each test should be recorder on the drilling recorder. Savia's BOP test form should be completed after pressure testing the BOP's.
4. All BOP pressure test shall be performed using water as the test fluid. Tests should include a low-pressure test (200 psi) for 10 minutes before proceeding to the full pressure test.
5. A satisfactory pressure test shall be achieved when the test pressure has been maintained for 10 minutes. A pressure drop of up to 2 % within the first 5 minutes is acceptable; provide the pressure the remains constant for the remaining 5 minutes.
6. Ensure the Poor boy is operative and suitable for this type of operations.
7. BOP's shall be function tested.

PRESSURE TESTING - WELL CONTROL EQUIPMENT

1. All well control equipment shall be pressure tested after installation of any wellhead body component or prior to be drilling out each casing string. the testing shall occur:
   - On the initial installation/running of the BOP
   - When there is any change in the application of the BOP.
   - Every 14 Days or to area specific regulatory requirements.
2. Testing shall be to the lowest of the following criteria:
   - Maximum anticipated wellhead pressure to be encountered in the hole section being drilled but no exceeding the working pressure of the BOP's.
   - 80% of casing burst pressure.
   - Wellhead rated pressure.
   - BOP rated pressure.
3. Annular BOP's shall be tested to a maximum of 35 % of rated working pressure if not otherwise specified (35 % of 5,000 psi = 1,750 psi).
4. The opening and closing volumes of all BOP functions shall be monitored and recorded.
5. The opening and closing times of all BOP functions shall be recorded.
6. Install HCR valve adjacent to the BOP inside the manual choke line valve.
7. Replace threaded companion flanges on 13 5/8" spacer spool with blank flanges.
8. Drain stack and flush with fresh water.

9. Make sure you have proper size cleaned and doped test plug on location for all casings to be run.

   - Pick up well head test plug to fit bowl of last casing head or spool.
   - Pull bore protector by using "j" studs on test plugs.
   - Remove bore protector from test plug.
   - Set test plug down into casing bowl and proceed with test.
   - When test are completed run cleaned and doped bore protector back into casing bowl and remove test plug.

   Alternative: If well head test plug cannot be used.

   - Pick up cup tester of proper size.
   - Make sure cups are cleaned and doped.
   - Space cup tester out so that it can be set in casing below casing bowl
   - Pick up slightly, fill with water, close well in and pressure up to set cups.
   - Proceed with test program.
   - Release cup tester by bleeding off test pressure and slacking off cup tester slightly then pick up and remove plug.
   - Circulate BOP, manifold and degasser with clean fresh water.
   - Tests well control equipment as follows.

Test	Low Test Psi	High Test Psi	Time Min	COMPONENTS
1	200	3,000	10	**Blind Rams**, Pack off bushing and seals.
2	200	3,000	10	**Pipe Rams**, Inside kill line valve (manual) HCR valve.
3	200	3,000	10	Annular Preventer
4	200	3,000	10	Bleed off valve and flare valve (to degasser).
5	200	3,000	10	Valves after chokes (left, right and two central)
6	200	3,000	10	Manual chokes, left and right
7	200	3,000	10	Two valves before chokes.
8	200	3,000	10	Master valve.
9	200	3,500	10	Mud pumps line, standpipe, rotary hose, IBOP of the top drive.

10. Remove test plug and lay down 5" drill pipe and test plug.
11. Install wear bushing and secure in casing hanger spool.

WELL CONTROL PROCEDURE

DIVERTER PROCEDURE

1. Prior to drilling below conductor pipe, the diverter system will be nipple up, operational and function tested to 200 psi.

2. Should a shallow gas kick be encountered while drilling, the following well control procedures will be implements.

   - Pick up Top Drive so that a tool joint of last DP is ± 4 feet above floor.
   - Open diverter valve on downwind side of rig. Diverter valve must be open before annular preventer is closed in order to prevent well bore fluids from fraccing around conductor pipe shoe.
   - Close annular preventer and start circulating through diverter system will kill mud. Be prepared to switch to seawater without shutting down if necessary due to lost returns or until the well is dead

BOP PROCEDURE

1. Prior to drilling out of surface casing, the BOP stack will be nipple up.

2. The rams, lines, valves and choke manifold will be tested to 200 psi low pressure and 3000 psi high pressure. The annular preventer will be tested to 1750 psi. This pressure will be more than the anticipated surface pressure.

3. All BOP testing will be done with clear water.

4. BOP tests will be made every 14 days or less following initial test after nipple up. Should hole conditions or other ongoing operations prevent the timely BOP test, the Talara Drilling Manager must be notified.

5. BOP tests will be performed from all control stations on a rotating basis.

6. BOPs are to be function tested as often as practical to insure adequate operation from all control stations. Blind and pipe rams are to be function tested each trip out of hole.

7. Pit drills and inside BOP drills are to be performed with each crew daily to ensure that each crew member understands his responsibility should a kick occur.

8. If it is necessary to use a tapered string of drill pipe, pipe rams will be changed to variable bore rams of the appropriate size range.

9. Should a kick occur while drilling, the following well control procedure will be initiated.

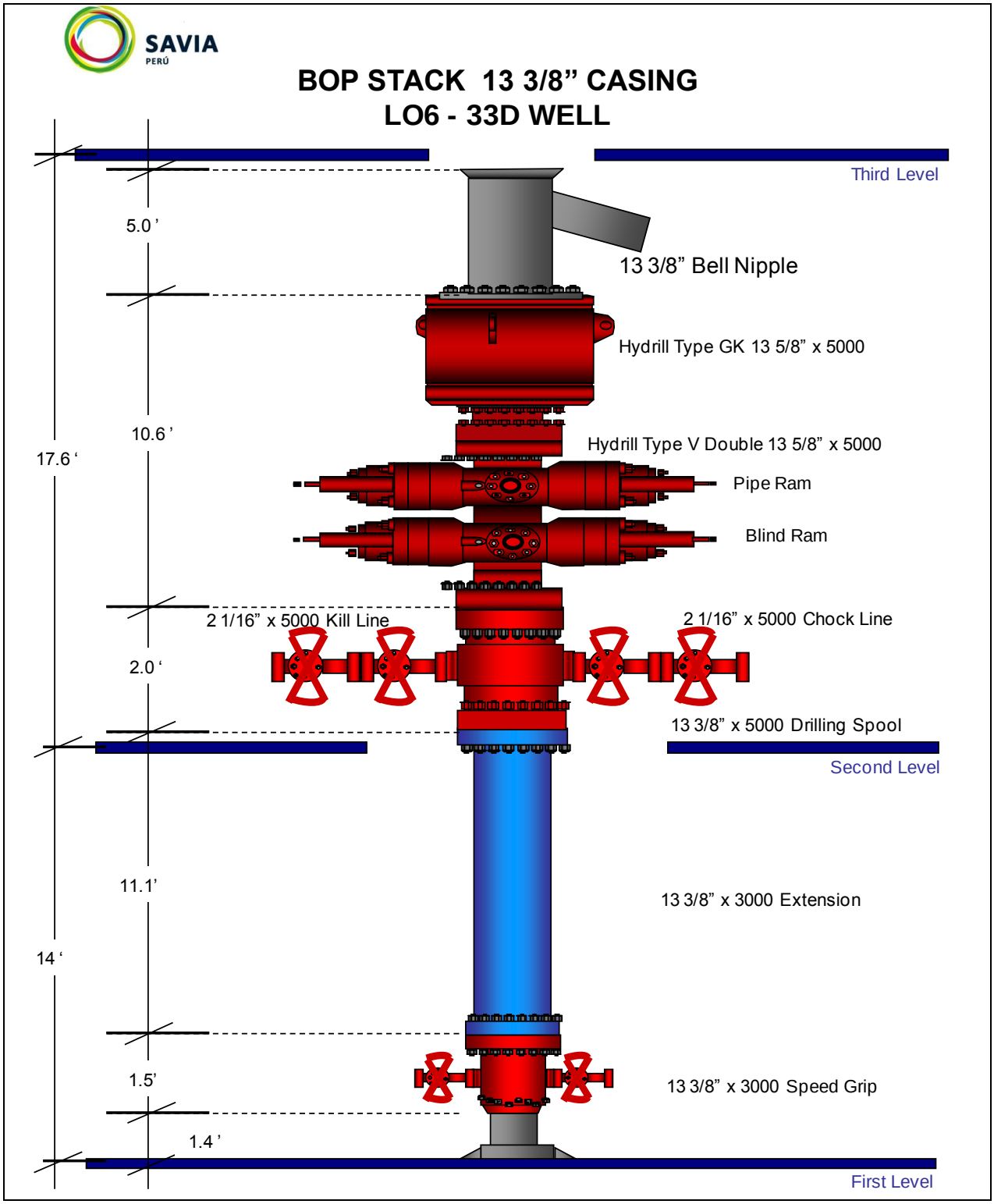
   - Stop the pumps.
   - Pick up drill string until tool joint is 4 ft above rig floor.

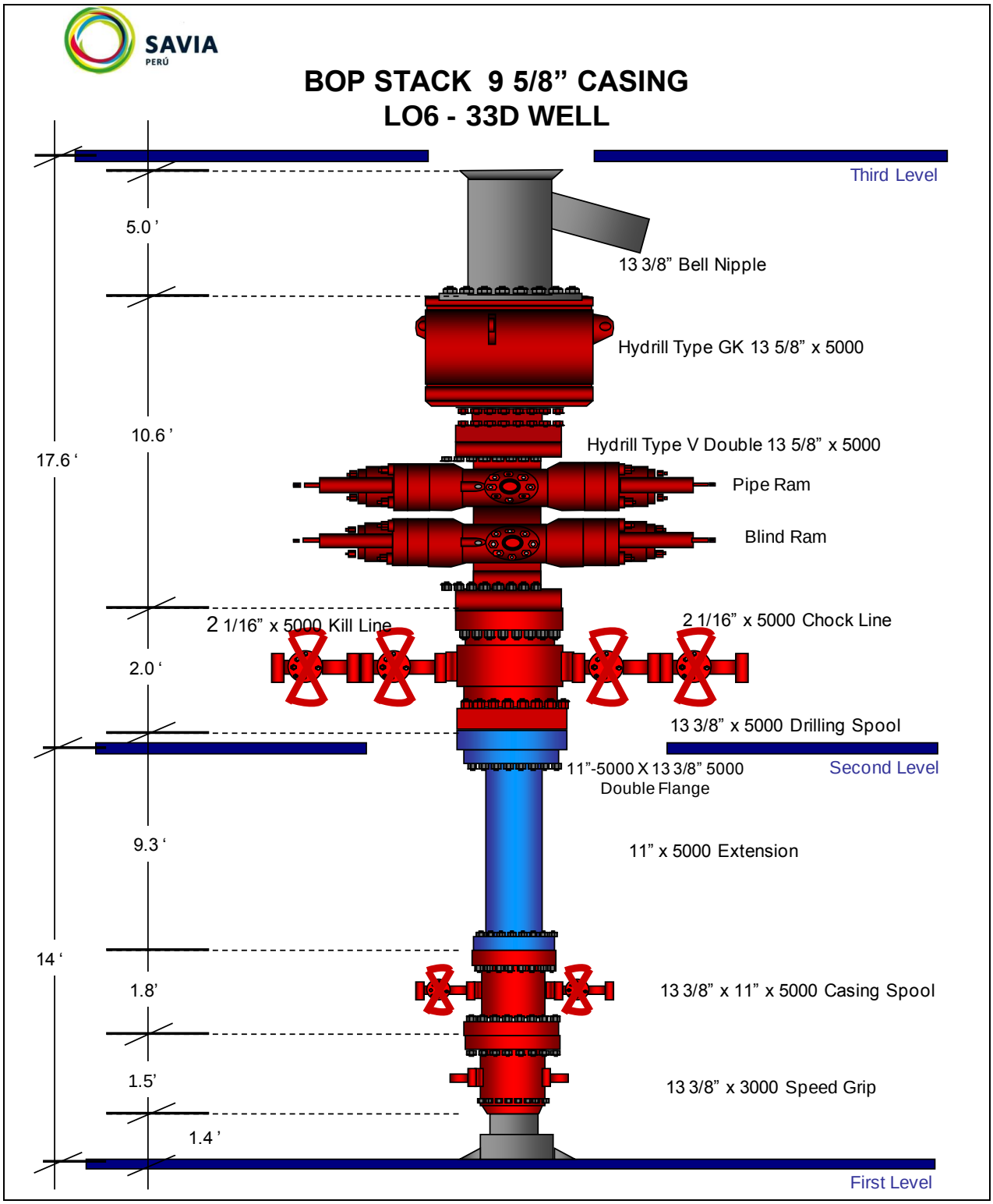
- Close annular BOP and check for drill pipe pressure and casing pressure (hard shut in).
- Initiate kill procedure.
- Monitor shut in casing pressure for not exceeding the MAASP.

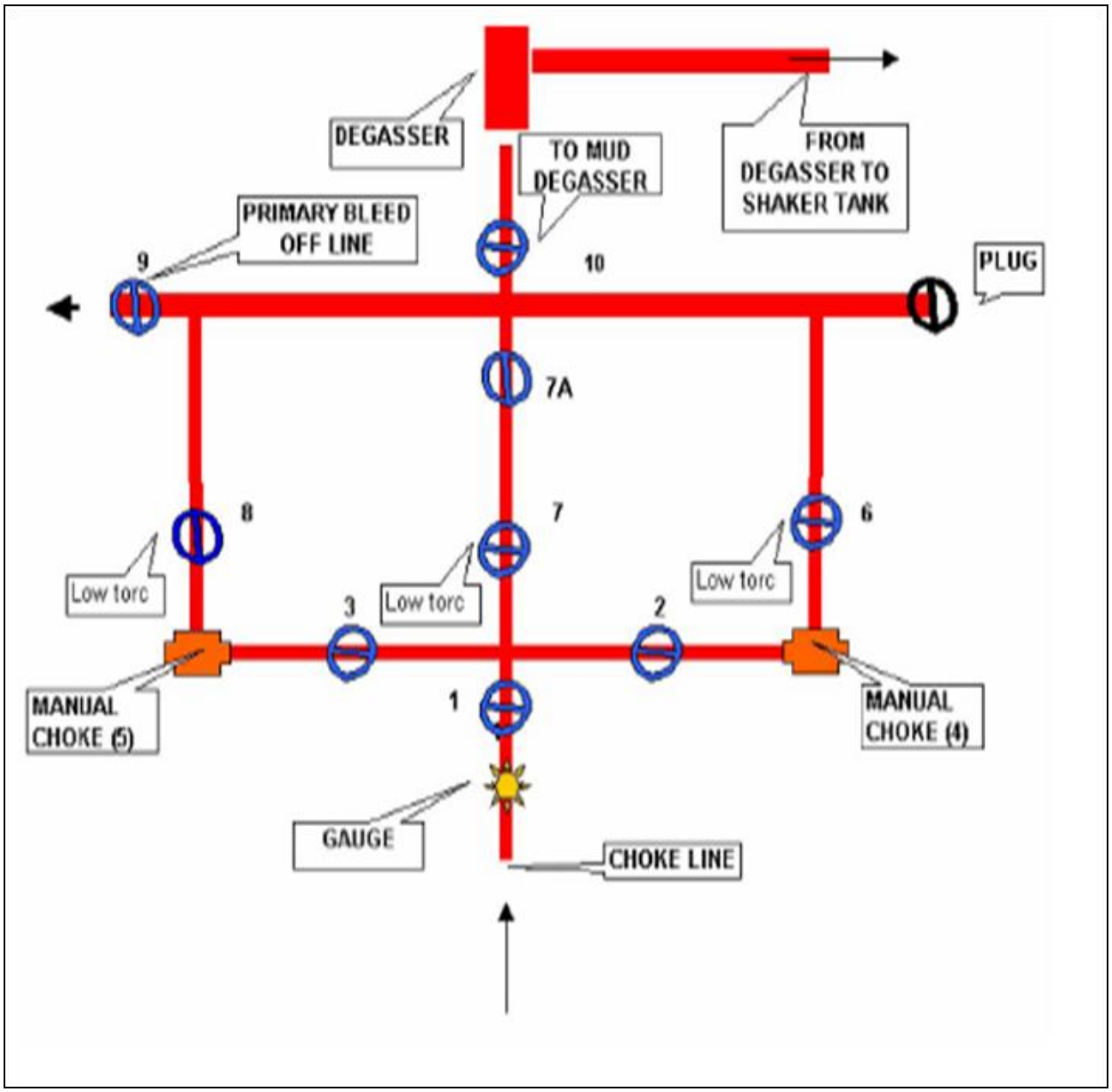
10. Should a kick occur while tripping pipe, the following well control procedure will be initiated.

- Set pipe on slips and install full opening safety valve and close same.
- Close annular preventer (hard shut in).
- Connect saver sub of the Top Drive to drill string.
- Opened safety valve and check drill pipe pressure and casing pressure.
- Close safety valve, disconnect saver sub of Top Drive and install inside BOP. Open safety valve.
- If conditions permit, strip in hole to total depth and initiate kill procedure.
- Monitor shut in casing pressure for not exceeding the MAASP.

VIII. BOP STACK & CHOKE MANIFOLD DIAGRAM




SAVIA PERÚ
BOP STACK 9 5/8" CASING
LO6 - 33D WELL
Third Level
5.0 '
13 3/8" Bell Nipple
Hydrill Type GK 13 5/8" x 5000
10.6 '
17.6 '
Hydrill Type V Double 13 5/8" x 5000
Pipe Ram
Blind Ram
2 1/16" x 5000 Kill Line
2 1/16" x 5000 Chock Line
2.0 '
13 3/8" x 5000 Drilling Spool
Second Level
11"-5000 X 13 3/8" 5000
Double Flange
9.3 '
11" x 5000 Extension
14 '
1.8'
13 3/8" x 11" x 5000 Casing Spool
1.5'
13 3/8" x 3000 Speed Grip
1.4 '
First Level


DEGASSER
TO MUD DEGASSER
FROM DEGASSER TO SHAKER TANK
PRIMARY BLEED OFF LINE
9
10
PLUG
7A
8
7
6
Low torc
Low torc
Low torc
3
2
1
MANUAL CHOKE (5)
MANUAL CHOKE (4)
GAUGE
CHOKE LINE

IX. COST – AFE.

SAVIA PERU S.A.

CIA	ACD	BUDGET ITEM	AFE No.
			2214268

FU	WELL DESCRIPTION	OFICIAL NUMBER	MM / DD / AA
	LO6-33D	SAV-Z2B-24-LO6-33D	

TOTAL ESTIMATED DAYS

FU	TYPE OF WELL	MOV / COND	DRILLING	COMPLETION	EST FOOTAGE	AREA
	DEVELOPMENT	3	25	18	8200	LOBITOS

FU	GEN	CC	AREA

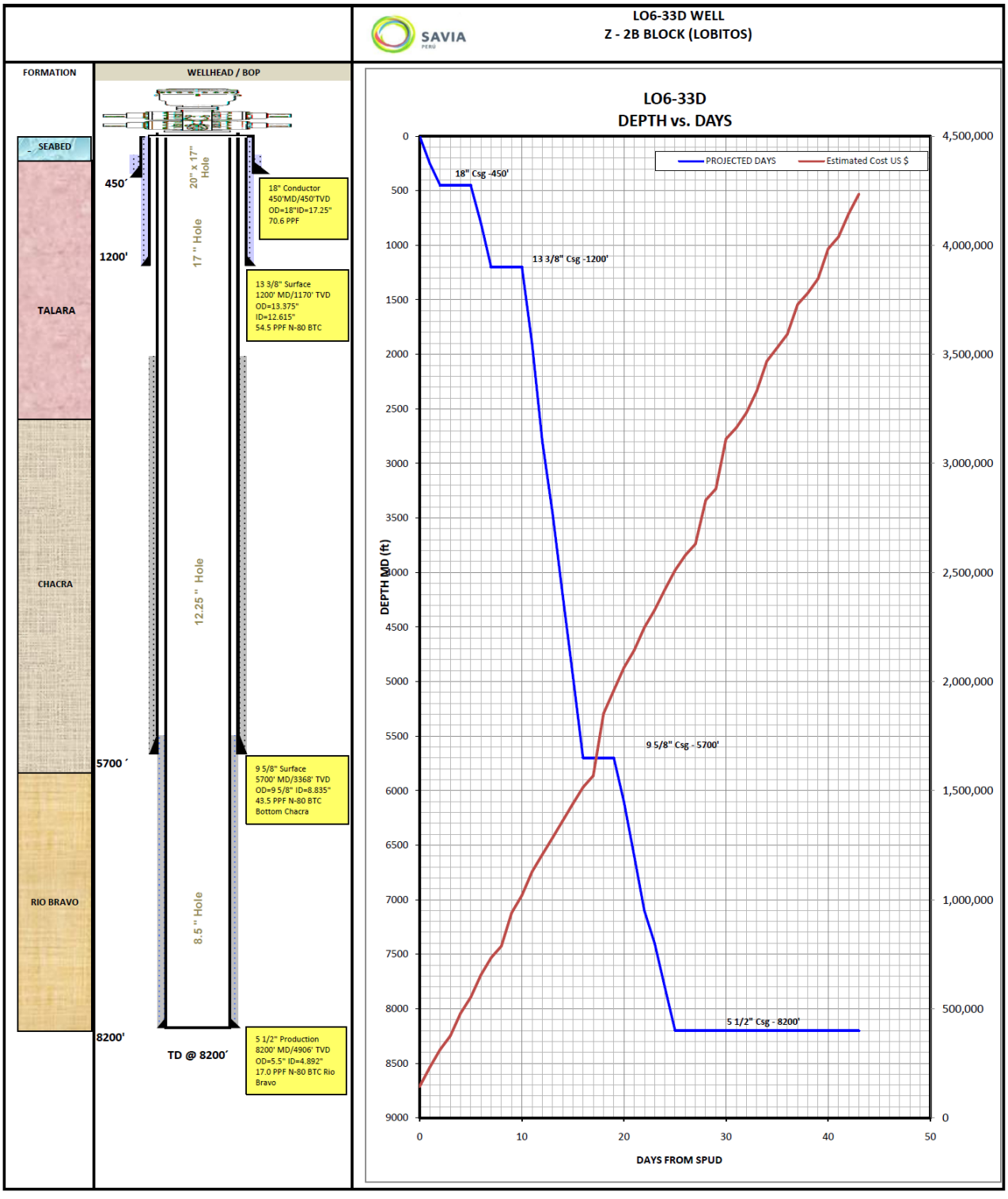
WELL COST BREAKDOWN

SUB	DESCRIPTION	QUANTITY	UNIT COST	SUB-TOTAL	TOTAL US$
	OUTSIDE SERVICES:				
201	DRILLING RIG	21 25			983,000
203	DIRECTIONAL DRILLING				218,200
204	MUD LOGGING	32	1500		48,000
205	MUD ENGINEERING	32 12	1200 900		49,200
206	CEMENT. CONDUCT.				15,780
206	CEMENT. SURF. CSG				21,930
206	CEMENT. INTERM. CSG.				31,530
206	CEMENT. OTHERS				26,930
206	CEMENT. CASING 7"				0
206	CEMENT. CASING 5 1/2"				32,940
207	ELECTRIC LOGGING				190,000
208	PERFORATING				60,000
209	STIMULATION				60,000
211	TUBULAR INSPECTION				7,950
213	DIVING				24,000
212	HYDRAULIC TONGS				54,540
219	WELL TESTING				16,000
221	TOOL SERVICES				60,000
224	METALIC STRUCTURES CUT & WELD				10,000
226	CRANE MAINTENANCE				15,000
228	MACHINE WORK				7,500
229	BARGE OPERATIONS				243,800
231	BOAT OPERATIONS				279,300
237	MATER. & EQUIP. TRANSP.				15,050
240	WATER FURNISHMENT				15,000
244	TOOL RENTAL				23,000
248	CATERING				55,200
249	CONSULTING				57,500
252	ENVIROMENTAL PROTECTION				8,750
	TOTAL OUTSIDE SERVICES:				**2,630,100**
	MATERIALS & SUPPLIES:				
301	FITTING SCREWED				200
303	VALVES AND PARTS				1,500
304	API FLANGES & RING GASKET				1,000
306	HARDWARE				2,000
325	BITS				127,700
326	TOOLS FOR DRILLING				44,660
327	COMPLETIONS				65,000
328	FLOATING EQUIPMENT - CMT.				21,040
329	PRODUCTION FACILITIES EQUIP.				2,000
335	OTHERS TUBULAR CONNECTIONS				7,500
336	STRUCTURAL CONST. MAT.				2,200
340	WELDING MATERIAL				500
341	MAT. CMT. CONDUCT.				18,000
341	MAT. CMT. SURF. CSG.				21,000
341	MAT. CMT. INTERM. CSG.				19,500
341	MAT. CMT. CASING 7"				0
341	MAT. CMT. CASING 5 1/2"				25,500
341	MAT. CMT. OTHERS				11,200
342	STIMULATION MATERIAL				90,000
343	DRILLING / COMPLETION FLUIDS				201,470
344	CONDUCTORS	450	37.52		16,880
344	SURFACE CSG.	1200	35.11		42,130
344	INTERMED. CSG. (9 5/8")	5700	28.42		161,990
344	7" CASING	0	18.33		0
344	5 1/2" CASING	8200	11.24		92,170
344	2 7/8" TUBING	7800	4.68		36,500
346	DIESEL-FUEL		4.60		591,330
347	OIL & GRASES				2,150
	TOTAL MATERIALS & SUPPLIES:				**1,605,120**
			TOTAL PROJECT COST US $		**4,235,220**

APPROVAL BY : _____ DATE : 1

Prepared by:	Reviewed by:	Approved by:
E. Gaspar: Drilling Engineer.	C. Ramirez: Drilling Engineering Head. R. Gilabert: Drilling Operations Head J. Chuyes: Drilling Technical Leader	C. Hwang: Operations Manager.

X. PROJECTED DAYS & COST Vs DEPTH



XI. FORMATION INTEGRITY TEST (F.I.T) PROCEDURE

1. Drill out the shoe track and 10 ft of new formation.

2. Circulate the hole clean and circulate until the mud in the annulus has homogenous density (in / out density is within 0.1 ppg).

3. Hoist the bit inside the casing shoe.

4. Close the annular BOP or the pipe rams, space out drill string and line up to perform leak off test to pump down the drill string.

5. Test lines to 2000 psi for 10 min (or max anticipated pressure), bleed off then commence pumping with the cement pump. Synchronize time between Mud logger and pumping unit.

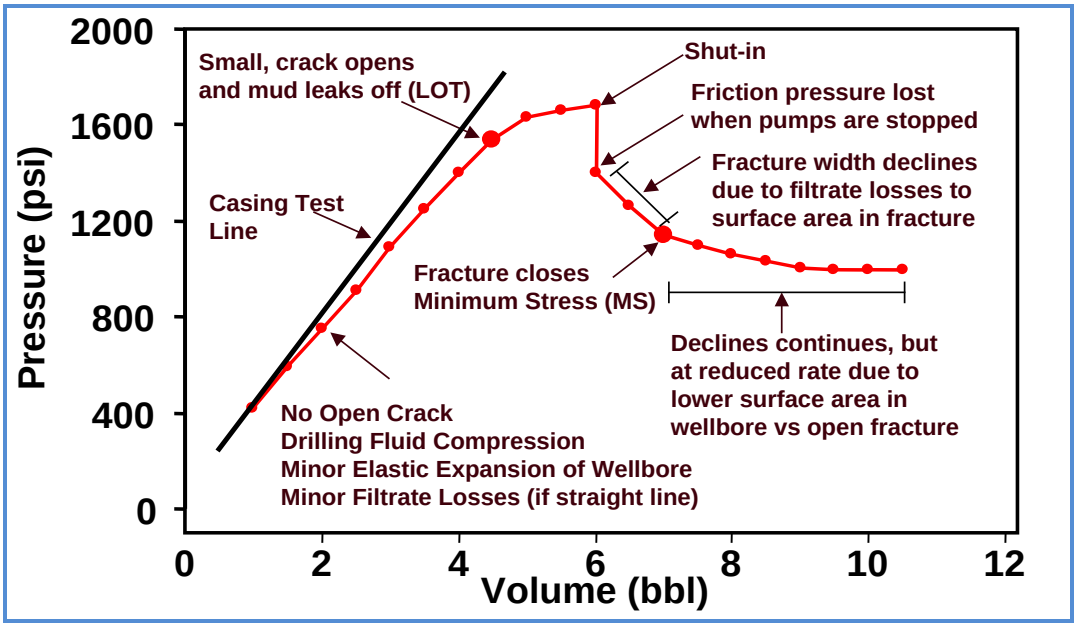
6. Pump at a constant pump rate (0.5 bbl/min), start logging time, pressure and volume data at frequent intervals on pumping unit, mud logging unit and pressure gauges on rig floor. Record the test manually on worksheet / plot provided at 1/ 2 bbl.

   a. Pump just to reach FIT equivalent mud weight recommended for each casing shoe. The pressure vs. volume plot clearly deviates from a straight line **(formation breakdown is not required)**.

7. Shut down pumps and close the pump isolation valve to monitor the pressure decline. Record ISIP 10 seconds after shutting in.

9. Report pressure, volumes pumped and returned and equivalent mud weight obtained from FIT as per the attached plot **(Pump just to Casing test Line).**

L.O.T PRESSURE PROFILE



APENDIX

Log Running Checklist

- Verify tools for log run on location.
- Verify fishing tool kit on location. Have over shots available to fish body of the logging tool. Consult with logging engineer and check out fishing tools to ensure correct tools had been checked in Talara.
- Talk with logging engineer and identify over pull limits for the logging tools prior to log.
- Down hole logs should be run as follow: RUN REPEATS AT THE BASE OF THE LAST CASING SHOE, NOT AT TOTAL DEPTH.
- Caliper information and log BHT data should be sent to the office.

Casing Running Checklist

- Remove thread-protectors, drift and measure the casing on the rack. Paint length and join number on each joint with white paint. Check the box connector for contamination or damage. It must verify that "steel tape measure" this in good conditions.
- Check casing tools (including backup tools) for proper size slips, elevator and tong jaws.
- Have the stabbing board in good working condition.
- Make sure the fill-up line works and is rigged up at the right height to fill the casing.
- Make sue casing is filled every joint.
- Have a casing swedge and lo-torque valve on the rig floor while running casing.
- Keep chicksan lines ready in case circulating is required prior to reaching bottom.
- Use API modified high pressure thread compound.
- Check the float equipment for operation and centralizers for proper size.
- Verify torque rating and torque the casing as per the Casing Program Table.
- Reduce accumulator annular pressure to required level to keep from collapsing the casing is being running if annular BOP has to be closed.
- Stab pin into the box carefully and fast slack off joint weight as the connection is being made up.
- Rotate the joint to the right with power tongs. Confirm make-up torque by verifying the optimum torque.
- After install joint # 3 fill casing and check float equipment operation.
- Fill Up casing on every joint while running.

CASING DETAILS

SIZE	DEPTH (ft)	WT (ppf)	GRADE	CONN	COLL (psi)	BURST (psi)	TENSILE (Lbs)	M/U TORQ (Ft-lb)	PRESSURE TEST (psi)
OD: 13 3/8" ID: 12.615" Drift: 12.495" Cplg OD: 14.375"	0 – 1,200	54.5	K-55	BTC	1,130	2,730	853, 000	Mainly use the triangle mark. **(Δ)/13,380**	1000 psi w/ 9.6 ppg MW
OD : 9 5/8" ID: 8.755" Drift: 8.599" Cplg OD: 10.625"	0 – 5,700	43.5	N-80	BTC	3,810	6,330	1'005,000	Mainly use the triangle mark. (Δ)/9,630	1,000 psi w/ 10.9 ppg MW
OD: 5.5" ID: 4.892" Drift: 4.767" Cplg OD: 6.05"	0 - 8,200	17.0	N-80	BTC	6,290	7,740	397,000	Mainly use the triangle mark. (Δ)/5,500	1,500 psi w/11.5 ppg MW

176 Article of DS Nº 032-2004-MEM

Minimum Security design factor

- Collapse = 1.125
- Tension (connection) = 2.00
- Tension (body) = 1.250
- Burst
- = 1.10