SAVIA-Z2B-24-LO6-31D

LOBITOS

DRILLING PROGRAM

PREPARED BY:

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I. INTRODUCTION

A. SUMMARY

The SAVIA-Z2B-24-LO6-31D development directional well, the main objective of this prospect is to evaluate Rio Bravo formation.

The well will be a modified "S" type and recommended drill vertically to 550 ft MD (KOP), at these depth start the buildup section to reach 59.21° as maximum inclination angle at 2,030.3 ft MD; 1,780.5 ft TVD in S 57.03º W direction, in order to reach main target Rio Bravo formation, continue the tangent section and hold 59.21° to 6,500 ft MD, then drill drop section with DOR of 1°/100ft to reach 48.0° at 7,621 ft MD. Continue tangent section and hold 48.0° to total depth of 8,544.0 ft MD; 5,350.0 ft TVD in S 57.03º W direction.

The drilling rig "PEPESA-40" will be used to drill this well. The Casing design recommended 18" x 70.59 lbs/ft ASTM A53B conductor Pipe at 500 ft MD - TVD, 9 5/8"- 43.50 lbs/ft N-80 BTC Surface Casing set at 2,500 ft MD; 2,020.9 ft TVD; and 5 ½"- 17 lbs/ft, N-80, BTC Production Casing set at 8,544 ft MD; 5,350 ft TVD.

The 17" x 22" hole will be drilled using sea water with viscous sweeps. After setting 18" Conductor, the 12 ¼" surface and 8 ½" production holes will be drilled using WBAC (Anionic & Cationic system) that is polymer 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 TGT Lab. Mud logging will be recorded from 500 ft MD TVD to total depth. Samples are required every 30 ft from surface to 5,000 ft and every 10 ft from 5,000 to total depth of 8,544 ft MD. Paleontology samples will be taken every 150 ft from surface to 5,000 ft MD and every 90 ft from 5,000 ft to total depth. Palynology at requested by Lima office.

The open hole logs will be evaluated according logging tools later. For cement evaluation the recommended logs will be, CBL-VDL-CCL-GR.

INCLINATION AND DIRECTIONAL SURVEYS

Gyro survey will be taken at seabed depth in order to ensure conductor direction. Then at conductor shoe depth 500 ft MD. At 550 ft Directional Drilling Service will start. The well will be drilled using a Mud Motor and Gyro due to magnetic interference to 800 ft. 8 ½" hole section will be drilled using Motary Steerable System (MSS) and taking surveys with MWD system to total depth.

The slot selected is the slot F ("Slot F"). The offset wells for correlation from this platform are, LO6-22, LO6-9X, LO16-26XD and LO6-28D.

The Slot "F" was selected because of the direction of this proposed well is S 57.03º W and the trend of the offset wells showed convenient space between centers, also considering risk of collision with nearby wells.

Recommendations:
Company man must check that the directional drilling engineer has present all items indicate below before commencement of the directional drilling operation.
- Confirm that all the offset well data are loaded in the computer.
- Check that the directional driller and MWD engineer know the directional drilling plan.
- Check that all the tool calibration has been done (Certificates).
- Check that tool face is correctly aligned with survey tool.
- Confirm that there is no magnetic interference.
- Check MWD data is matching with Gyro data.

- Gyro survey must be used during 12 ¼" hole section because of the magnetic interference until 800 ft MD from nearby wells.
- Control dog leg severity below 4.0 deg/100ft to minimize the torque at TD.
- 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; it could be present in **Talara, Chacra and Rio Bravo formations.** Wellbore instability will be controlled with appropriate mud weight and properties for shale inhibition, there are two inhibitors agents. In addition lost circulation in shallow hole could be present, tight spots and hole pack offs.

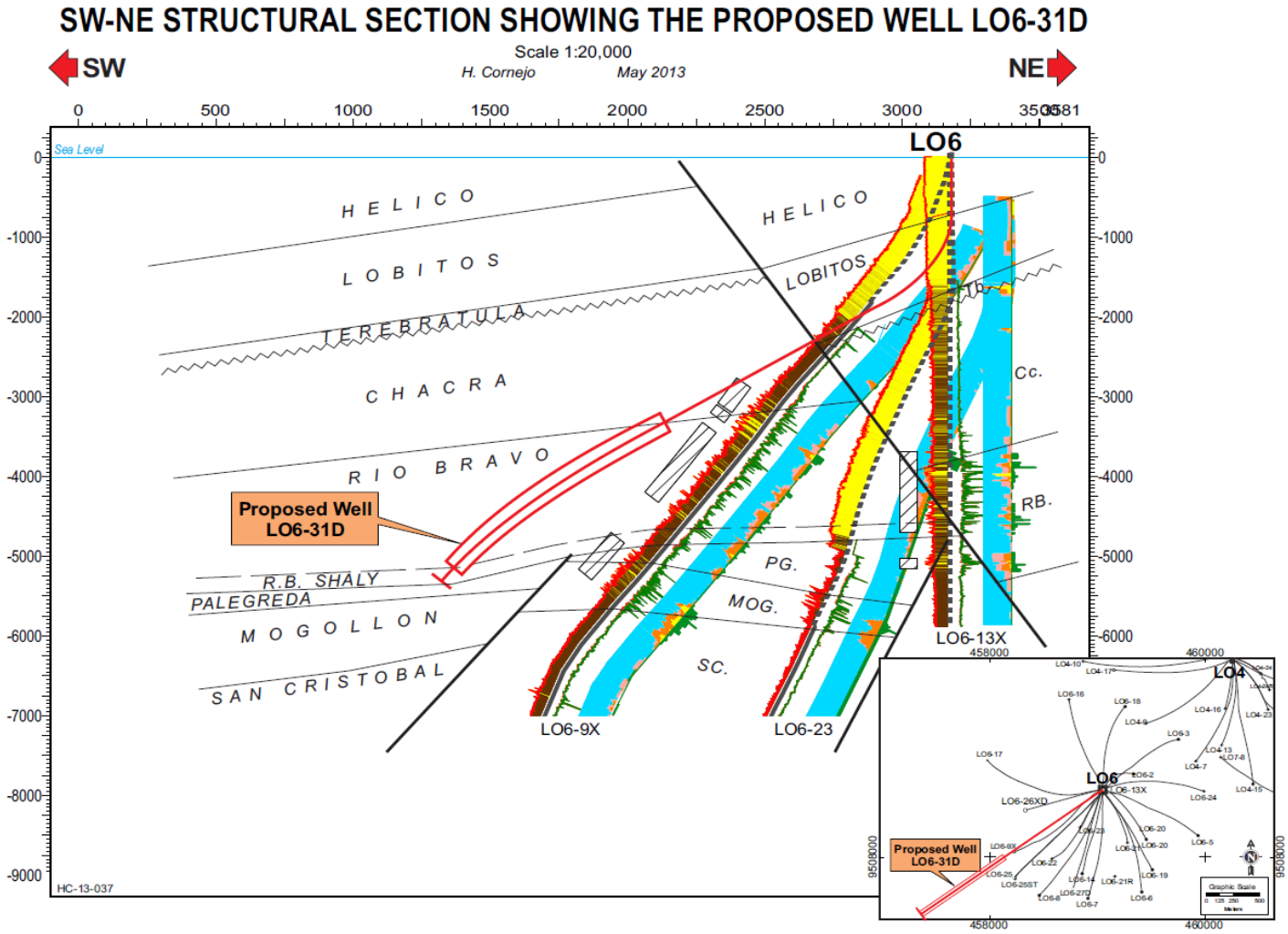
Differential sticking is a problem due to risk of stuck pipe that must be avoided; prevent this problem mainly when sand formation will be drilled in **Rio Bravo.** Treatment drilling fluid with bridged material and all the time is necessary hold the BHA moving. **Special caution will be taken because stuck pipe & lost circulation events happened in previous well LO6 – 27D.**

To prevent problems related loss circulation in Rio Bravo formation, hole cleaning is very important in 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.

The amount of clearance between the BHA and wellbore is extremely important because in most cases we leave cuttings beds in the hole. The trick is to have enough annular clearance around the BHA to allow the cuttings bed to pass by without increasing the height of the bed. However, if the bed height increases, cuttings build up around the BHA and the risk of pack-off increases and stuck pipe incidents will occur. In this scenario the BHA needs to be designed to maximum annular clearance. The Chacra shales have to be monitored in order to avoid inhibition problems.

Mud weight will be increased according the drilling fluid program or as dictated by wellbore stability conditions and Mud logging unit information. Special cautions will be taken when Rio Bravo formation will be drilled due to gas presence possibility.
Enough chemical material must be stocked at the rig site to raise the mud weight by two pounds if it's necessary equivalent at 800 Sx of barite. **Maximum mud weight required to reach total depth should be 11.6 ppg.**

STRUCTURAL SECTION



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.

GEOLOGICAL PROGNOSIS

GEOLOGIC PROGNOSIS

AREA	OFFICIAL WELL NUMBER	SAVIA PERU SA.	TYPE OF WELL	RIG N°
LOBITOS OFFSHORE		LO6-31D	DEVELOPMENT	PEPESA-40

PRIMARY OBJECTIVE	SECONDARY OBJECTIVE
RIO BRAVO	

SURFACE COORDINATES (UTM) (WGS-84)		TARGET COORDINATES (UTM) (WGS-84)	
9'508,651.50 MN	459,047.72 ME	9'508,087.08 MN	458,178.39 ME

ELEVATIONS		WELL TRAJECTORY		TARGETS		
KB:	50 FT	DIRECTION OF DEVIATE WELL	S 57.03° W	DRILLED DEPTH	5175 FT	ESTIMATED FINAL: 8,544 FT
WATER DEPTH	335 FT	ANGLE CONDUCTOR FROM VERTICAL	VERT.	VERTICAL DEPTH	3390 FT	HORIZONTAL DRIFT: 6,126 FT
GROUND LEVEL	FT	RECOMENDED DEPTH OF K.O.P.	600 FT	HORIZONTAL DRIFT	3400 FT	MAX. ANGLE: 59.21°
		BUILD UP ANGLE AT	Drop vert. Angle 4°/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	3045	2,300	2,250	
	RIO BRAVO	5175	3,390	3,340	MAIN OBJECTIVE
	RIO BRAVO Shaly	8,320	5,200	5,150	
	TD.	8,544	5,350	5,300	

CONTROL LOGGING		
BIT SAMPLES TO BE TAKEN	EVERY 30 FT.FROM SURFACE TO 5000'	
	EVERY 10 FT. FROM 5000' TO TOTAL DEPTH	
RECOMMENDED FOR PALEO-PALYNOLOGY	PALEONTOLOGY EVERY 150' FROM SURFACE TO 5000'	
	PALEONTOLOGY EVERY 90' FROM 5000' TO TOTAL DEPTH	
	PALYNOLOGY AT REQUESTED BY LIMA OFFICE	
RECOMMENDED OPEN HOLE	DLL-MSFL-GR; FDC-CNL-GR.	
	Pressure Test (10 Points in Rio Bravo)	
RECOMMENDED AFTER CASING	GR-CCL	
NEARBY WELLS FOR CORRELATION	LO6-9X, LO6-22, LO16-26XD,LO6-28D	

EVALUATION		
SIDEWALL CORES	SWC *	HRCT
	NOT CONSIDERED	
CONVENTIONAL CORES	NOT CONSIDERED	
GAS LOGGER	MUD LOGGING UNIT.	
FORMATION TESTING	NOT CONSIDERED	

REMARKS

At 6500 ft. MD. Drop vert. Angle 1°/100 ft. to reach 48 ° to TD.

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

RIO BRAVO – STURCTURAL MAP

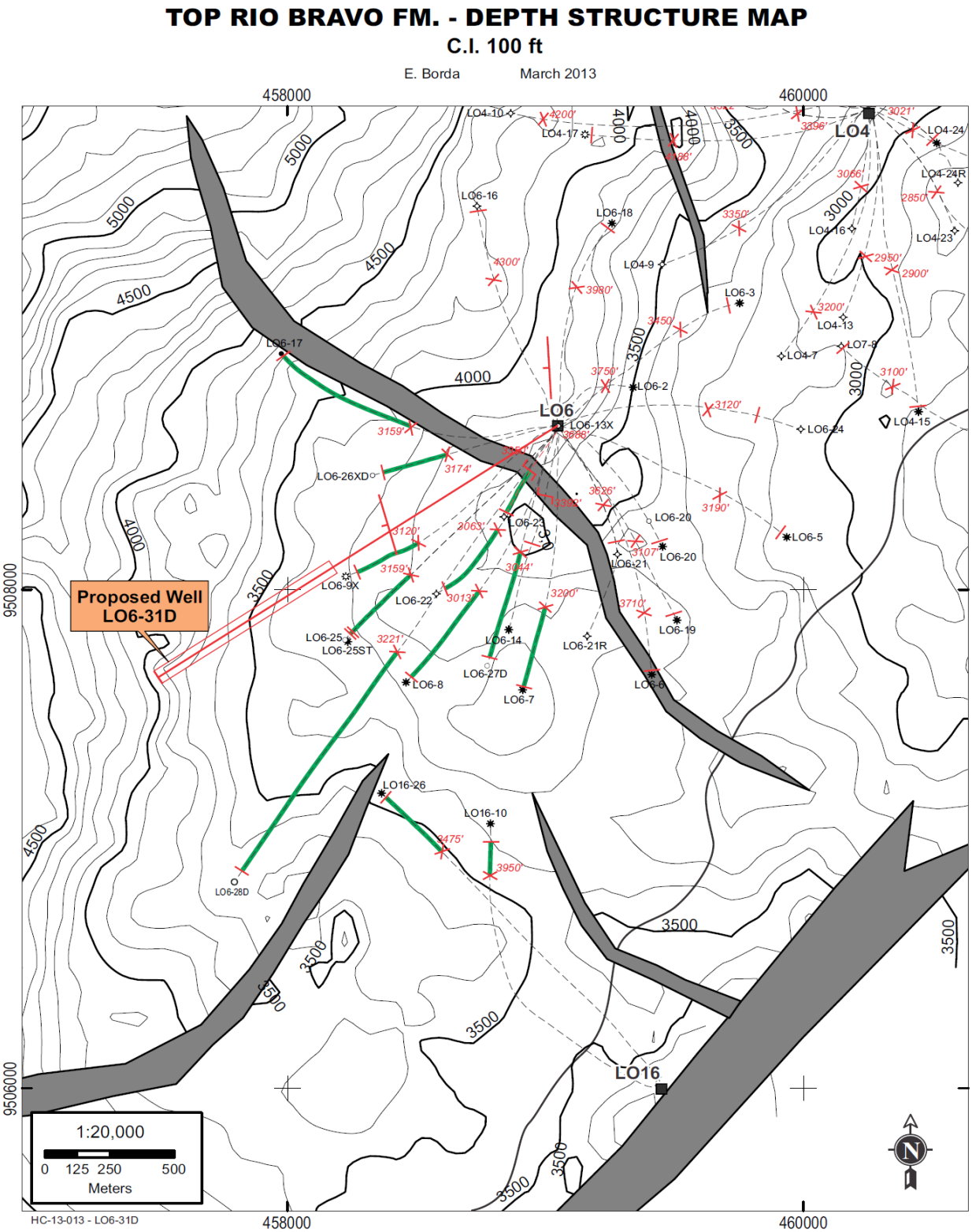
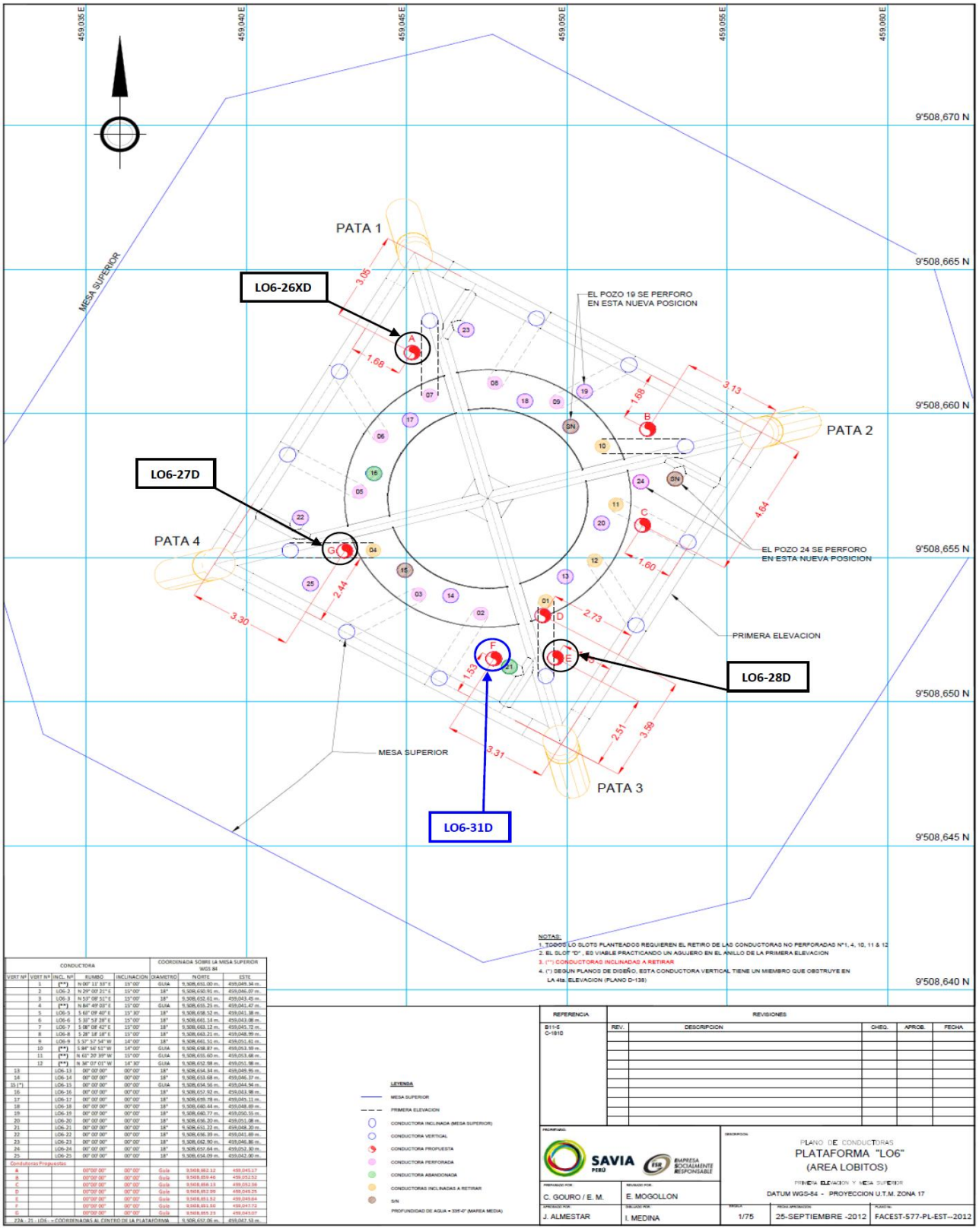


Fig. 1. Structural Map of Rio Bravo, showing the Proposed Well LO6-31D

PLATFORM MAP



CONDUCTORA					COORDENADA SOBRE LA MESA SUPERIOR WGS 84	
VERT Nº	VERT Nº	INCL. Nº	RUMBO	INCLINACION	DIAMETRO	N (mN)	E (mE)
	1	(**)	N 00° 11' 33" 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 66° 09' 40" E	15°/00°	18"	9,508,658.52 m.	459,041.38 m.
	6	LO6-6	S 35° 53' 28" E	15°/00°	18"	9,508,661.18 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 37° 37' 54" 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° 20' 39" W	15°/00°	GUIA	9,508,655.60 m.	459,053.68 m.
	12	(**)	N 36° 07' 01" W	18°/30°	GUIA	9,508,652.58 m.	459,051.98 m.
13		LO6-13	00° 00' 00"	00°/00°	18"	9,508,634.34 m.	459,049.95 m.
14		LO6-14	00° 00' 00"	00°/00°	18"	9,508,633.68 m.	459,046.37 m.
15 (*)		LO6-15	00° 00' 00"	00°/00°	GUIA	9,508,634.56 m.	459,044.56 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.	459,048.00 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"	9,508,657.54 m.	459,052.30 m.
25		LO6-25	00° 00' 00"	00°/00°	18"	9,508,654.09 m.	459,042.00 m.
Conductoras Propuestas							
A			00°/00' 00"	00°/00'	Guia	9,508,662.12	459,045.17
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	459,052.38
D			00°/00' 00"	00°/00'	Guia	9,508,653.99	459,049.25
E			00°/00' 00"	00°/00'	Guia	9,508,653.52	459,049.64
F			00°/00' 00"	00°/00'	Guia	9,508,653.50	459,047.72
G			00°/00' 00"	00°/00'	Guia	9,508,655.25	459,045.07

(*) A - 31 - LO6 - = COORDENADAS AL CENTRO DE LA PLATAFORMA 9,508,657.06 m. 459,047.53 m.

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.

B. GENERAL

Well Name	: LO6-31D	
Type of well	: DEVELOPMENT	
Contract area	: Z2B – Offshore Perú	
Surface location (WGS-84)	: 9,508,651.50 m N	459,047.72 m E
Target Location (WGS-84)	: 9,508,087.08 m N	458,178.39 m E
Target Depth (Rio Bravo)	: 5,174.8 ft MD	
Total Depth	: 8,544 ft MD	
Water Depth	: 335 ft	
RT-MSL	: 50 ft	

WELL INFORMATION

Well Name	: LO6-31D
Well Official Number	: SAVIA-Z2B-24-LO6-31D
Well Type	: Modified S.

GEOLOGICAL RECOMMENDATION

FORMATION	MEASURE DEPTH (ft)	VERTICAL DEPTH (SS) (ft)	REMARKS
TALARA		From Seabed to bottom	
CHACRA	3,045	2,250	
RIO BRAVO	5,175	3,340	**MAIN OBJECTIVE**
RIO BRAVO SHALY	8,320	5,150	
TOTAL DEPTH	8,544	5,300	

DIRECCIONAL PLAN

Kick off point	: 550 ft
Rate of build	: Maximum 4.0º/100 ft
Maximum Angle	: 59.21º
Direction (Vertical section)	: S 57.03º W
Drilled Depth to Target	: 5,174.8 ft
Vertical Depth to Target	: 3,390 ft
Vertical Section to Target	: 3,400.0 ft
Drilled Depth Programmed	: 8,544 ft
Estimated Drilling Days	: 23 days
Total Operation Days	: 43 days

DIRECTIONAL WELL PLANNIG

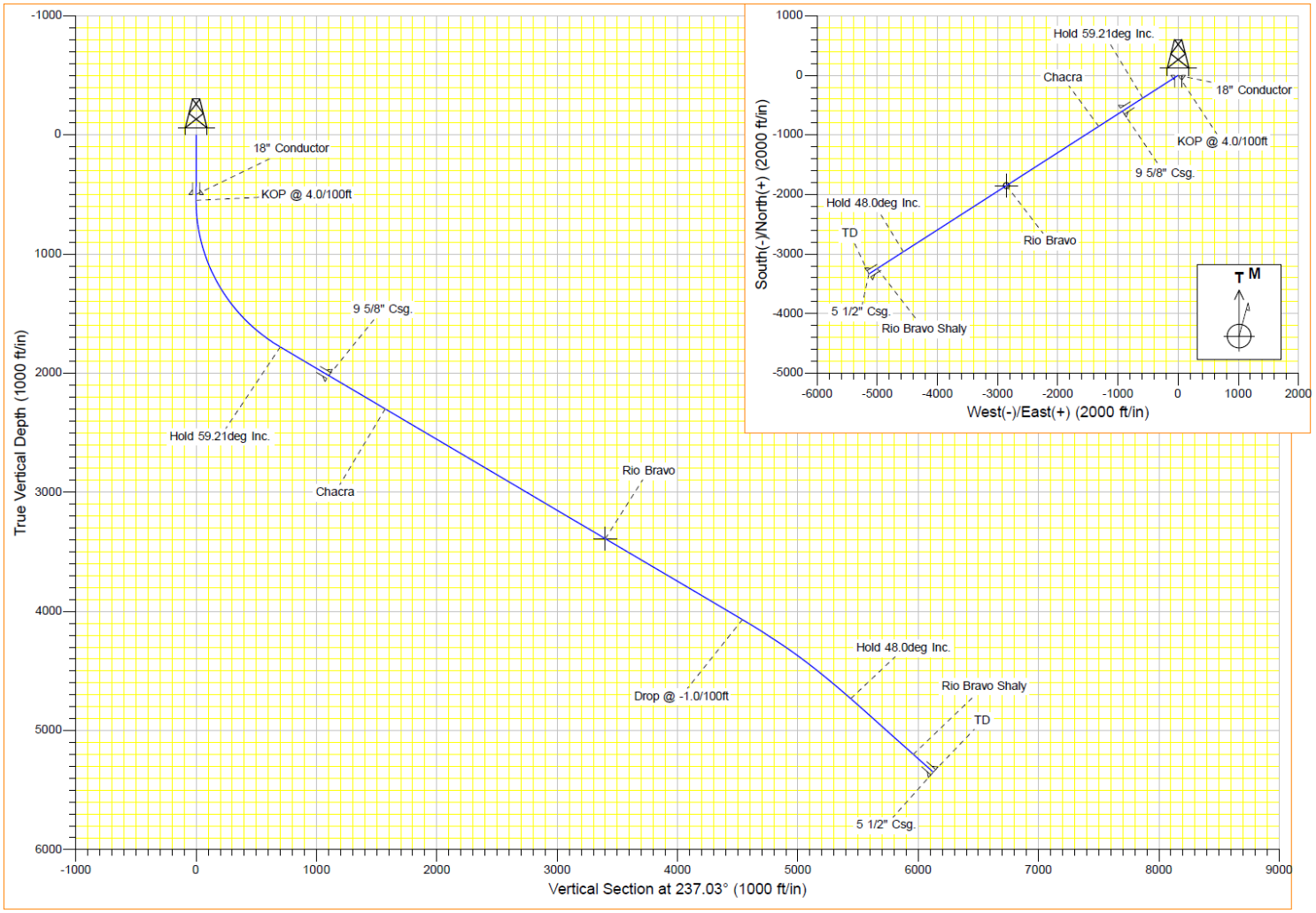
Project	Lobitos				
Map	Universal Transverse Mercator	**System Datum:**	Mean Sea Level		
Geo Datum:	WGS 1984				
Map Zone:	Zone 17S (84 W to 78 W)				
Site	LO6				
Site		**Northing:**	9,508,657.06 m	**Latitude:**	4° 26' 42.546 S
From:	Map	**Easting:**	459,047.53 m	**Longitude:**	81° 22' 8.868 W
Position	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.03 °
Well	LO6-31D Slot F				

Well	**+N/-S**	-18.2 ft	**Northing:**	9,508,651.50 m	**Latitude:**	4° 26' 42.727 S
	+E/-W	0.6 ft	**Easting:**	459,047.72 m	**Longitude:**	81° 22' 8.862 W
Position		0.0 ft	**Wellhead Elevation:**		**Water Depth:**	335.0 ft

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
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
18" Conductor									
550.0	0.00	0.00	550.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP @ 4.0/100ft									
600.0	2.00	237.03	600.0	-0.5	-0.7	0.9	4.00	4.00	0.00
800.0	10.00	237.03	798.7	-11.8	-18.3	21.8	4.00	4.00	0.00
1,000.0	18.00	237.03	992.6	-38.1	-58.8	70.1	4.00	4.00	0.00
1,200.0	26.00	237.03	1,177.9	-78.9	-121.6	145.0	4.00	4.00	0.00
1,400.0	34.00	237.03	1,351.0	-133.3	-205.5	244.9	4.00	4.00	0.00
1,600.0	42.00	237.03	1,508.5	-200.2	-308.7	367.9	4.00	4.00	0.00
1,800.0	50.00	237.03	1,647.3	-278.4	-429.3	511.7	4.00	4.00	0.00
2,000.0	58.00	237.03	1,764.7	-366.4	-564.9	673.3	4.00	4.00	0.00
2,030.3	59.21	237.03	1,780.5	-380.5	-586.6	699.2	4.00	4.00	0.00
Hold 59.21deg Inc.									
2,200.0	59.21	237.03	1,867.4	-459.8	-708.9	845.0	0.00	0.00	0.00
2,400.0	59.21	237.03	1,969.8	-553.3	-853.1	1,016.8	0.00	0.00	0.00
2,500.0	59.21	237.03	2,020.9	-600.0	-925.2	1,102.7	0.00	0.00	0.00
9 5/8" Csg.									
2,600.0	59.21	237.03	2,072.1	-646.8	-997.3	1,188.6	0.00	0.00	0.00
2,800.0	59.21	237.03	2,174.5	-740.3	-1,141.4	1,360.4	0.00	0.00	0.00
3,000.0	59.21	237.03	2,276.9	-833.7	-1,285.6	1,532.3	0.00	0.00	0.00
3,045.2	59.21	237.03	2,300.0	-854.9	-1,318.1	1,571.1	0.00	0.00	0.00
Chacra									
3,200.0	59.21	237.03	2,379.2	-927.2	-1,429.7	1,704.1	0.00	0.00	0.00
3,400.0	59.21	237.03	2,481.6	-1,020.7	-1,573.9	1,875.9	0.00	0.00	0.00
3,600.0	59.21	237.03	2,584.0	-1,114.2	-1,718.0	2,047.7	0.00	0.00	0.00
3,800.0	59.21	237.03	2,686.3	-1,207.7	-1,862.2	2,219.5	0.00	0.00	0.00
4,000.0	59.21	237.03	2,788.7	-1,301.2	-2,006.3	2,391.3	0.00	0.00	0.00
4,200.0	59.21	237.03	2,891.1	-1,394.7	-2,150.5	2,563.1	0.00	0.00	0.00
4,400.0	59.21	237.03	2,993.4	-1,488.2	-2,294.6	2,735.0	0.00	0.00	0.00
4,600.0	59.21	237.03	3,095.8	-1,581.7	-2,438.8	2,906.8	0.00	0.00	0.00
4,800.0	59.21	237.03	3,198.2	-1,675.2	-2,582.9	3,078.6	0.00	0.00	0.00
5,000.0	59.21	237.03	3,300.5	-1,768.7	-2,727.1	3,250.4	0.00	0.00	0.00
5,174.8	59.21	237.03	3,390.0	-1,850.3	-2,853.1	3,400.5	0.00	0.00	0.00
Rio Bravo - Rio Bravo 1 - LO6-31D									
5,200.0	59.21	237.03	3,402.9	-1,862.1	-2,871.2	3,422.2	0.00	0.00	0.00
5,400.0	59.21	237.03	3,505.3	-1,955.6	-3,015.4	3,594.0	0.00	0.00	0.00
5,511.8	59.21	237.03	3,562.5	-2,007.9	-3,096.0	3,690.1	0.00	0.00	0.00
5,600.0	59.21	237.03	3,607.7	-2,049.1	-3,159.6	3,765.9	0.00	0.00	0.00
5,800.0	59.21	237.03	3,710.0	-2,142.6	-3,303.7	3,937.7	0.00	0.00	0.00
6,000.0	59.21	237.03	3,812.4	-2,236.1	-3,447.9	4,109.5	0.00	0.00	0.00
6,200.0	59.21	237.03	3,914.8	-2,329.6	-3,592.0	4,281.3	0.00	0.00	0.00
6,400.0	59.21	237.03	4,017.1	-2,423.1	-3,736.2	4,453.1	0.00	0.00	0.00
6,500.0	59.21	237.03	4,068.3	-2,469.8	-3,808.2	4,539.0	0.00	0.00	0.00
Drop @ -1.0/100ft									
6,600.0	58.21	237.03	4,120.2	-2,516.3	-3,879.9	4,624.5	1.00	-1.00	0.00
6,800.0	56.21	237.03	4,228.5	-2,607.8	-4,021.0	4,792.6	1.00	-1.00	0.00
7,000.0	54.21	237.03	4,342.6	-2,697.2	-4,158.8	4,956.9	1.00	-1.00	0.00
7,200.0	52.21	237.03	4,462.4	-2,784.4	-4,293.2	5,117.0	1.00	-1.00	0.00
7,400.0	50.21	237.03	4,587.7	-2,869.2	-4,424.0	5,272.9	1.00	-1.00	0.00
7,600.0	48.21	237.03	4,718.3	-2,951.6	-4,551.0	5,424.3	1.00	-1.00	0.00
7,621.3	48.00	237.03	4,732.5	-2,960.2	-4,564.3	5,440.2	1.00	-1.00	0.00
Hold 48.0deg Inc.									
7,800.0	48.00	237.03	4,852.1	-3,032.5	-4,675.7	5,573.0	0.00	0.00	0.00
8,000.0	48.00	237.03	4,985.9	-3,113.4	-4,800.4	5,721.6	0.00	0.00	0.00
8,200.0	48.00	237.03	5,119.8	-3,194.3	-4,925.1	5,870.3	0.00	0.00	0.00
8,319.9	48.00	237.03	5,200.0	-3,242.7	-4,999.9	5,959.4	0.00	0.00	0.00
Rio Bravo Shaly									
8,400.0	48.00	237.03	5,253.6	-3,275.1	-5,049.8	6,018.9	0.00	0.00	0.00
8,544.1	48.00	237.03	5,350.0	-3,333.4	-5,139.6	6,125.9	0.00	0.00	0.00
TD - 5 1/2" Csg.									

WELL DIAGRAM



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.

II. DRILLING PROGRAM

Prior to set the conductor:

- Skidding and rig up over slot "F".
- Inspect equipment as required, include Zero discharge system, Inspect drilling rig and correct deficiencies founded.
- Held a comprehensive safety meeting with rig crew and service personnel.
- Install **6"** liners in mud pumps for drilling until surface section of the well.

A. DRILL-RUN & CEMENT 18" CONDUCTOR PIPE

FROM SURFACE TO 500 ft MD, TVD

1. RIH 18" Conductor pipe to sea bottom. RIH with 17" RR bit (3 jets 18/32", 1 center jet 16/32" TFA = 0.942 in^2, 01 – 8" jetting sub, 05- 8" DC's, XO, 02-6 ¾" DC, 08-5" DP's. Drill while hang up the conductor and slide down pipe as much as possible ±40 ft. Continue drilling 17" pilot hole to 500 ft with seawater (± 115 feet of formation). Sweep hole with viscosity pill and POOH.
2. If it is difficult to slide down the conductor, Under-reamer with 17" bit to enlarge hole to ± 22" can be considered. Spot in open hole 80 bbl of High viscosity Pill 9.4 ppg and POOH.
3. Run and weld 18" conductor to bottom.

Conductor Pipe Running Checklist

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

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 - 500	70.5	ASTM A53B	WELD	--------	--------		350 PSI

4. Weld 18" conductor to 1" base plate on first level (4 supports).
5. Weld 13 5/8" adapter flange with 18" conductor.
6. Install adapter spool and drilling spool.
7. N/U 13 5/8"x 5M psi BOP stack, riser and bell nipple. Hook up control lines and kill lines.
8. Inspect Accumulator bottles. Ensure adequate volume and precharge pressure for correct BOP operation.

9. Function Test all BOP components from remote panel prior to pressure test.
10. 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 BOP and increase pressure, max. Pressure 200 psi.
11. Using drill pipe verify and ensure cleanliness to the bottom before to continue with the next step.
12. The 18" conductor pipe will be cemented using single slurry. With annular preventer closed, pump 20 bbl of sea water in order to test admission (max. pressure 350 psi). Cement as per Cementing Program, last 30 bbl of cement with lateral valve of BOP opened to ensure cement height inside 18" conductor.
13. POOH 5" DP slowly into 18" shoe and quickly to 100 ft; install circulation head and circulate to clean pipe and casing.
14. Close BOP and Displace with 15.0 bbl of seawater @ 2-3 BPM. Close circulation head.
15. WOC 5 hours with the well closed. Open well and POOH 5" drill pipe.

B. DRILL 12 ¼" SURFACE HOLE

From Conductor shoe to 2,500 ft MD, 2,020 TVD

Recommendation:

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

- Check that the directional driller and MWD engineer know the directional drilling plan.
- Check that all the tool calibration has been done (Certificates).
- Check that tool face is correctly aligned with survey tool.
- 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 BOP 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.
- Two mud pumps have to be used in order to achieve drilling hydraulics pump rate to ± 850 gpm.
- The penetration rate should be 60-130 fph to ensure good hole cleaning.
- Directional BHA is planned for this section (see BHA Program).

1. RIH slick BHA with 12 ¼" used Tooth bit, tag cement (recorded depth) and drill out cement to conductor shoe. Drill 15 ft of new formation in order to ensure cleanliness of junk debris. Parameters: WOB 5/10k lb, 40-60 RPM, 550 GPM.

- If abnormal and excessive torque is observed when starting new formation, immediately stop rotation. POOH and trip in hole with magnet tool to recover metal debris until ensure bottom hole cleanliness. Then M/U 12 ¼" tooth bit again. RIH and drill new formation with normal drilling conditions.

2. RIH directional BHA with 12 ¼" PDC bit type: FS2563Z (Nozzles = 3x14 + 4x12, TFA = 0.893 in2). RIH Directional BHA **(Phoenix)**: 12 ¼"PDC bit, 7 3/4" Mud Motor (B.H. =1.5°), 01- UBHO w/Gyro, XO, 01-6 ¾" DC, 18 – 5" HWDP, 01-6 ¾" Drilling Jar, 06-5" 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 12 ¼" tooth bit again. RIH and drill new formation with normal drilling conditions.

3. At 500 ft MD start directional work while take gyro surveys each stand, drilling as per directional plan (build up section) until no magnetic interference depth approximately to ± 800 ft. POOH and install MWD (See BHA Program, Section V. BITS, BHA AND HYDRAULICS).

4. Drill 12 ¼" buildup section in S 57.03° W direction with maximum BUR of 4.0°/100 ft to reach 59.21° as maximum inclination angle at 2,030 ft MD, continue drilling the tangent section holding 59.21° and 237.03° azimuth to 9 5/8"casing point at 2,500 ft.

   - Monitor the cuttings loading at surface and adjust shaker screens and solids equipment accordingly.
   - Below the 18" conductor shoe, drill at reduced pump rate the first 150 ft to avoid erosion and wash out.
   - 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 WBAC treated with fresh water mud and high viscosity sweeps as needed to clean hole.
   - Maximum MW out should not exceed 10.1 ppg. Pump viscous sweeps to clean hole.
   - High viscosity sweeps are needed to be pumped every 3 or 4 stands to prevent pack offs.
   - In case of lost circulation, reduce rate to the minimum, the hole will be filled with sea water.
   - Take Flow checks as required.
   - **Minimize wiper trips, but if the hole condition shows high torque and drag perform short trips to evaluate the hole condition.**

5. At section TD, circulate 3 times bottoms up or until shaker is clean while maintaining rotation. Pump high viscosity sweep and follow with 30 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.

6. For condition trip, M/U rotary BHA with 12 ¼" Tooth bit, bit sub, w/float valve and near bit STB under gauge. RIH and wash the last 5 stands to bottom. 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

9 5/8" 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.

7. Rig up casing running tools and run 9 5/8" casing to 2,500 ft. MD; 2,020 ft TVD. Cement casing to surface as per program.

C. RUN 9 5/8" SURFACE CASING

From Surface to 2,500 ft MD; 2,020 ft TVD

The running 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 float Shoe.

   - 2 joints 9 5/8" 43.5 ppf N-80 BTC casing. Install 02 bow-spring centralizers on shoe track at 5 ft and 20 ft above guide shoe 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. RIH with 9 5/8" 43.5 ppf N-80 BTC casing from surface to 2,500 ft MD 2,020 ft TVD as follows:

   - ± 62 joints 9 5/8" 43.5 ppf N-80 BTC casing. R-3.
   - Install centralizer as per cementing program recommend.
   - Break circulation every 500 ft or as hole dictates. Circulate and work casing if hit bridge.

(See Step XII: Casing Running Checklist)

6. R/U Fill up tool and at circulating position 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.

7. 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.

8. **As a contingency, measure rig pumps efficiency. Record static hookload of 9 5/8" casing prior to cementing**.

9. Stop circulation, disconnect Fill up tool and M/U cementing head and circulate with 8-10 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.

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

10. Release top plug **(black)** and displace with drilling mud using Halliburton pumps to float collar at 5 -7 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 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 cannot hold, record the back-pressure and close the cement head valve). Perform CIT with 1000 psi.

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

11. WOC 6 hours meanwhile Rig down 9 5/8" cementing head. Cut and bevel 18" conductor, unscrew 13 5/8" BOP´s bolts, cut and retrieve 9 5/8" landing joint. Weld steel ring plate between 18" Conductor and 9 5/8" casing. Cut and bevel 9 5/8" Csg, install 11" x 11" 3M Casing Head (Speed grip) pressure test same. 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 (11" 3M x 7 1/16" 5M).

12. Install Spool adapter 11" 3M x 13 5/8" 5M. 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 8 ½" PRODUCTION HOLE

From 2,500 ft MD; 2,020 TVD to 8,544 ft MD; 5,350 TVD

- Pressure test BOP system as per attached procedure (BOP Procedure Testing). Install wear bushing and verify gas detector is working.
- Ensure 5" rams are installed into pipe rams.
- 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.
- Two mud pumps have to be used for good drilling hydraulics circulating at ± 450 - 550 gpm.
- Directional BHA is programmed in this section **(See Directional program).**
- Prepare and Condition WBAC mud system with density from 10.1 to 11.6 ppg.

1. M/U BHA with 8 ½" PDC bit **SKH519M-A3F** (Nozzles= 7x13) and RIH with Motary Steerable System. Recommended Directional BHA: 8 ½" PDC Bit, 6 ¾" Motary Steerable System, 01 –6 ¾" NMDC, 01- 6 ¾" HEL, 01- 6 ¾" NMDC, XO, 01- 6 ½" DC, XO, 01-6 ½" Drilling Jar, 01-6 ½" DC, XO, 30 – 5" HWDP, 5" DP String. (Check with **Weatherford** 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 float shoe, **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 59.21° inclination angle and 237.03° azimuth to 6,500 ft MD. Then drill drop section with DOR of 1.0°/100 ft to reach 48.0° at 7621.3 in S 57.03 ° W direction. Continue drilling the tangent section and hold 48.0° and 237.03° azimuth to 5 ½" casing seating depth at 8,544 ft MD, 5,350 TVD **(Continuous review of directional plan with Weatherford's DD).**
   - **Special caution will be taken when Rio Bravo formation will be drilled, because there were events of stuck pipe and Lost circulation in offset wells (Review LO6-27D and LO6-28D well), Pipe must be keep in reciprocating up and down all time.**
   - Use maximum flow rate of ±550 gpm

- **<u>Performed two (2) wiper trips in 8 ½" hole, each 2,000 ft drilled</u>. Wiper trips can be performed to the last wiper trip depth. Adjustments to wiper trips, working the pipe, circulating hole clean and sweeps will need to be made based on 24 hr continuous information gathered at the Wellsite and involving Talara operation team.**
- Mud weight of 11.6 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 redactors in the string.
- 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 rotary 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.

   Note. - If Pressure points will be taken, additional condition trip has to be made before it.

<u>(See Step XII: Log Running Checklist)</u>

8. After run logs, make conditioning trip 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 while reciprocate and rotate pipe, 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 running tools and run 5 ½" casing to 8,544 ft MD; 5,350 ft TVD. Cement casing as per program.

E. RUN 5 ½" PRODUCTION CASING.

From Surface to 8,544 ft MD; 5,350 TVD

The running Production 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 5 ½" threadlocked shoetrack consisting of the following:

   - 5 ½" 17.0 ppf N-80 BTC float 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 8,544 ft MD; 5,350 ft TVD as follows:

   NOTE: Before running casing is necessary to circulate for enough time, clean hole with low rates monitoring pressure at surface. After that continue running casing but always with circulating using fill up tool.

   - ± 214 joints 5 ½" 17.0 N-80 BTC casing. R-3
   - Install centralizer as per Cementing Program recommendation.
   - Break circulation every 1,500 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 casing 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 7-10 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.

10. **As a contingency, measure rig pumps efficiency. Record static hookload of 5 ½" casing prior to cementing**.

11. Stop circulation and L/D Fill up tool. M/U cementing head and circulate with 5 BPM maximum, meanwhile performed safety and operation meeting. Discuss the cement job procedure with the cementing supervisor. Pressure Test cementing lines to 3,000 psi. Verify 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 two cement slurry as per the CEMENTING PROGRAM with Halliburton pumps.

12. Release top plug **(black)** and displace with drilling mud using Halliburton pumps to float collar at 5 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 1,500 psi.

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

    - After to reach TD, we will evaluated the possibility to perform the displacement of cement with sea water.

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

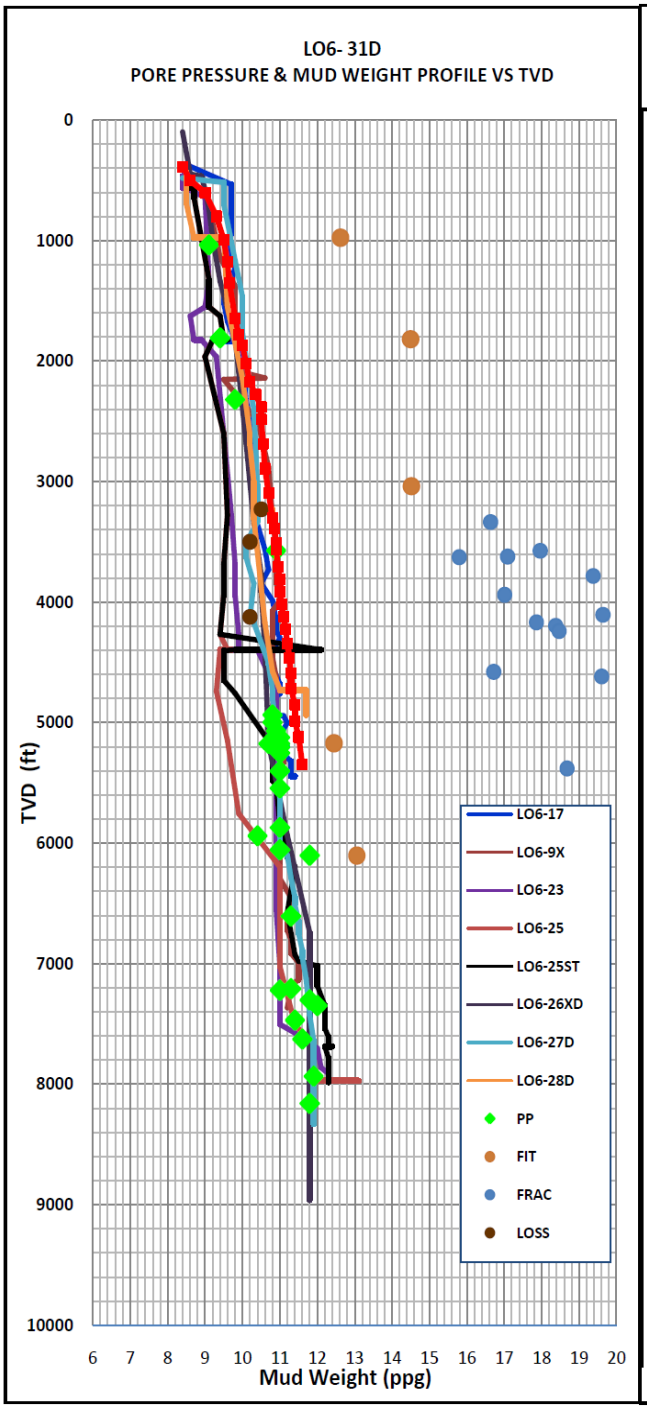
15. N/U 7 1/16"x 5M psi BOP stack, riser and bell nipple. Hook up control lines and kill lines.

16. Inspect Accumulator bottles. Ensure adequate volume and precharge pressure for correct BOP operation.
17. 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 Manager.

Completion Program will be submitted after finish the logging program.

III. PORE PRESSURE / MUD WEIGHT PROFILES



CSG	LO6-31D PLAN MD	TVD	(ppg)	Water Depth - 335 ft GL-RKB: 50 ft FORMATION TOP
	385.0	385.0	8.4	HELICO - Sea Floor
	500.0	500.0	8.6	18", ASTM-A53B, 70.6 ppf
	600.0	600.0	9.0	at 500 ft MD, TVD
	800.0	798.7	9.3	12 1/4" HOLE (8.6 - 10.0 ppg)
	1000.0	992.6	9.5	
	1200.0	1177.9	9.6	
	1400.0	1351.0	9.7	
	1800.0	1647.3	9.8	CHACRA - 2,300 ft TVD
	2030.3	1780.5	9.9	
	2200.0	1867.4	10.0	
	2500.0	2020.0	10.1	9 5/8", N-80, 43.5 ppf, BTC
	2800.0	2174.5	10.2	at 2,500 ft MD (2,021 ft TVD)
	3000.0	2276.9	10.4	8 1/2" HOLE (10.3 - 11.3 ppg)
	3200.0	2379.2	10.5	
	3400.0	2481.6	10.5	
	3800.0	2686.3	10.6	
	4200.0	2891.1	10.6	
	4600.0	3095.8	10.7	
	5000.0	3300.5	10.8	
	5174.8	3390.0	10.9	RIO BRAVO - 3,390 ft TVD
	5400.0	3505.0	10.9	
	5600.0	3562.5	10.9	
	5800.0	3710.0	11.0	
	6000.0	3812.4	11.0	
	6200.0	3914.8	11.0	
	6400.0	4017.1	11.1	
	6600.0	4120.2	11.1	
	6800.0	4228.5	11.2	
	7000.0	4342.6	11.2	
	7200.0	4462.4	11.3	
	7400.0	4587.7	11.3	
	7600.0	4718.3	11.3	
	7800.0	4852.1	11.4	RIO BRAVO SHALY - 5,200 ft TVD
	8000.0	4985.9	11.4	5 1/2", N-80, 17 ppf, BTC
	8200.0	5119.8	11.5	at 8,544 ft MD (5,350 ft TVD)
	8544.0	5350.0	11.6	TD at 8,544 ft MD (5,350 ft TVD)

IV. MUD PROGRAM

A. 18" CONDUCTOR HOLE

INTERVAL (MD)	MUD TYPE
0-500'	Bentonite Type

This interval will be drilled using sea water with Bentonite. At the end of the interval and before to run conductor high viscosity pills will be pumped for cleaning large diameter to bottom and support unconsolidated formations and maximize solids removal.

B. 12 ¼" SURFACE HOLE

INTERVAL (MD)	MUD TYPE
500'-2,500'	WBAC

WBAC system is a WBM drilling fluid prepared to minimize problems associated with shale inhibition, formulated by a primary inhibitor (WEL HIB A) as amine and potassium sulfate as a secondary inhibitor.

After to drill cement change the drilling fluid with new WBAC system of 8.6 ppg and displacing cement contaminated mud, depending on available space in pits. The displaced mud will be sent to centrifuges for dewatering unit, liquid has to be recovered to prepare new WBAC system.

- Start drilling the 12 ¼" surface section with a mud density of 8.6 ppg and increase as per program to 10.1 ppg.
- The goal of this interval is drill a hole of 12 ¼" with WBAC drilling fluid and run 9 5/8" casing within time estimated time and budget.
- Keep a MBT < 17.5Lbs/bbl to avoid increases in viscosity.
- Maintain a maximum pH = 9.5 to avoid degradation of the polymers.
- The Fluid loss control to maintain cake quality will be done with WEL PAC RLV, to reduce the API fluid loss in a range < 5.0 cc.
- **To improve the cleaning in the annular during drilling it is recommended to pump 30-Bbl high viscosity pill every 3 or 4 stands (as per hole condition dictate).**
- At the end of this interval, the mud density must be 10.1 ppg.
- Be careful with gas connection. Maintain density control input and output.
- In the shakers use high impact screens 100 mesh API to start drilling this phase and go up to 200 API closing mesh screens in high-impact.
- In Mud Cleaner (3 in 1) Solid Eliminator (mud cleaner) Use 230 mesh API.
- In centrifugal mud cleaners working in LGS to eliminate the unwanted solids that are not possible to remove with MUD CLEANER.

- Working in LGS to eliminate the unwanted solids that are not possible to remove MBT and % drilled solids, work in partial dewatering, doing test if the fluid of dewatering is compatible with the fluid WBAC.
- It is important to have good hole cleaning conditions for the run casing and adjust the properties of the fluid prior to cementation. And to make a contingency plan if present lost circulation or contaminated fluid.
- Maintain the K + concentration between 20,000 y 23,000 ppm because the presence of clay in Chacra formation.
- If lost circulation present, it will evaluate and determine the type and severity of lost before initiating corrective action.
- Maintain maximum flow rate that insures the clean hole
- If there are drags and torque, as first step is to circulate the well until to observe clean returns.
- 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.
- Ii it is necessary 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 9 5/8" 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 9 5/8" 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**
500'-2,500'	8.6 -10.1	50-60	10-12	15-25	6 - 12	6 - 8	5 -17.5	9.0 – 9.5

C. 8 ½" PRODUCTION HOLE

INTERVAL (MD)	MUD TYPE
2,500'- 8,544´	**WBAC**

- To drill out floating equipment and cement of 9-5/8"casing, the mud to be used will be of the previous phase and when to get to formation change the volume by new mud and start drilling.
- Homogenize the system with 10.1 ppg to perform FIT.
- **Sand and shale will be drilled in this interval. The sand often has pressure that requires mud weights ranging from 10.3 to11.3 ppg**.

- Maintain a MBT less 17.5 lb/Bbl to avoid increases in viscosity.
- Maintain a maximum pH: 9.2 to avoid degradation of the polymers and activated clays.
- Be use WEL PAC R / LV to reduce the API fluid loss in a range less to 5.0 cc. This will reduce the invasion of filtrate and we decrease the formation damage. Also improve the quality of the cake and the tendency of differential sticking.
- Maintain the pumping of calcium carbonate pill of different size to ensure an optimum seal.
- Maintain the density´s schedule according to the depth.
- In Shakers use high impact screens 120 – 140 mesh API to start drilling this phase and goes up to 200 API closing mesh screens in high-impact.
- In mud cleaner (3 in 1) Solid Eliminator will use 230 mesh API.
- In centrifugal mud cleaners working in LGS to eliminate the unwanted solids that are not possible to remove with MUD CLEANER. Until maximum weight of 11.6 ppg
- Maintain the Potassium ion concentration (K+) between 20,000 and 23,000 mg /lt by the presence of clay horizons in the Chacra formation.
- **To improve the cleaning in the annular during drilling it is recommended to pump 30-Bbl high viscosity pill every 3 or 4 stands (as per hole condition dictate).**
- 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 12-1/4 "and 8-1/2 ". The bridging material performance will be evaluated by testing PPT using porous ceramic disks similar to the perforated zone.
- To prevent any lost circulation by increase of density during drilling, it is recommended treatment of any bridging agent with a concentration of 10.0Lbs/Bbl.
- Before run 5 ½" casing circulate the well to maximum flow and pump high viscosity and heavy pill in open hole, this will help the stability of the hole before casing cement.
- Maintain density´s schedule according to the drilling fluids program.
- If present cuttings, to increase gradually density of the fluid equal to ECD until return clean.
- If there are drags and torque as a first step is to circulate the well until to observe returns clean, will be reviewed and only if absolutely necessary will increase the density.
- Control all times during the operation the tank volume, any volume change should verify which the cause is; it may be an indication of an outbreak or fluid loss.
- Perform calibration trip each 24 hours to ensure the well stability.
- At the total depth (8,544 ft), is recommending preparing a viscous pill of 30 Bbl to ensure the cleaning previous to calibration trip.
- For good hole cleaning use a flow rate of 450 to 550 GPM.
- It is important to have good hole cleaning conditions for the run casing and adjust the properties of the fluid prior to cementation. And to make a contingency plan if present lost circulation or contaminated fluid.
- Circulate the hole clean prior to running the 5 ½" casing. Spot a pill in the open hole prior to pulling out of the hole to run casing.
- The sands of this 8 1/2" Intervals are very abrasive and develop excessive wear on the bottom hole assembly. If excessive torque and drag is experienced, and it is determined that a lubricant is required to reduce the friction coefficient.

- 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. If losses increase, LCM pill will be added to these same products varying in concentration as shown in the annex to decision tree.

PROPERTIES:

Interval (feet)	**Weight** Lbs/gl	**Viscosity** Sec/qt	**VP** cps	**YP** Lb/100ft²	**Solids** %	**Filtrate** cc/30'	**MBT ppb Eq**	**Ph**
2,500-8,544	10.1-11.6	45 – 55	12-20	17-28	12 - 15	<5	< 12.5	9.0- 9.2

GENERAL RECOMMENDATIONS

Apply best hole cleaning practices through the well in all hole sections; initial practices to consider:

- A volume of kill mud 12.5 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.
- Schedule viscous sweeps at regular interval 270-460 ft (3-5 stands) of equivalent open hole volume, 1.5-2 YP and MW + 2 to 4 ppg. Monitor and report return characteristics.
- Maintain pipe rotation over 100 rpm; minimum acceptable: 80 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.
- 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	INTERVAL	PROPOSED BIT	SUPPLIER	IADC CODE	WOB Klbs	RPM	Remarks
17" x 20"	Talara	385' – 500'	XR+	Smith	115	5-20	ROT.	Rotary Drilling & Enlarge BHA.
12 ¼"	Talara	500'-2500'	FS2563Z	Halliburton	S123	8-25	PDM	Steel PDC Bit, 5 Blades 19 mm X 1 cutters. JSA=20.8 in2.
			FX56s (BACK UP)	Halliburton	S223	8-25	PDM	**(Back Up)** Steel PDC Bit, 5 blades 19 mm X1 cutters. JSA=39.75 in2.
8 ½"	Chacra Rio Bravo Rio Bravo Shaly	2500'- 8544'	SKHE519M-A3F	NOV	M322	10-25	MSS (Motary)	Matrix PDC Bit, 5 Blades, 19 mm HELIOS cutters. JSA=14.01 in2. Gauge pad = 6.0 in.
			SKHE519M-A3F (BACK UP)	NOV	M322	10-25	MSS (Motary)	Matrix PDC Bit, 5 Blades, 19 mm HELIOS cutters. JSA=14.01 in2. Gauge pad = 6.0 in.

BHA PROGRAM

17" PILOT HOLE (ROTARY BHA)	17" x 22" HOLE (ROTARY BHA)	12 1/4" HOLE (MOTOR BHA W/ Gyro)	12 1/4" HOLE (MOTOR BHA W/ MWD)	8 1/2" HOLE (MOTORY STEERABLE SYSTEM)
385 - ±500 (ft)	**385 - ±500 (ft)**	**500 - ±900 (ft)**	**±900 - 2500 (ft)**	**2500 - 8544 (ft)**
5"DP	5"DP	5" DP	5" DP	5" DP
2 x 6 3/4" DC	2 x 6 3/4" DC	6 x 5" HWDP	6 x 5" HWDP	30 x 5" HWDP
XO	XO	1 x 6 ¾" Drlg Jar	1 x 6 ¾" Drlg Jar	XO
5 x 8" DC	5 x 8" DC	18 x 5" HWDP	12 x 5" HWDP	1 x 6 1 /2" DC
1 x Bit Sub w/jets	1 x Bit Sub	1 x 6 ¾" DC	1 x 6 ½" DC	XO
17" Tooth Bit	1x Under-reamer	XO	XO	1 x 6 ½"" Drlg Jar
	17" Tooth Bit	1 x 8" UBHO	1 x 8" Spiral NMDC	1 x 6 1 /2" DC
		1 x 8" PDM (12 1/8" Sleeve STB; BH=1.5)	1 x 8" Spiral NMDC w/MWD (P-360)	XO
		12 1/4" PDC Bit	1 x 8" UBHO	1 x 6 ¾" NMDC
			1 x 12 1/8" STB	1 x 6 ¾" HEL
			1 x 8" PDM (12 1/8" Sleeve STB; BH=1.5)	1 x 6 ¾" Short NMDC
			12 1/4" PDC Bit	1 x 6 ¾" **Motary Steerable System**
				8 ½" PDC Bit
Total BHA = 222 ft	**Total BHA = 236 ft**	**Total BHA = 1000 ft**	**Total BHA = 723 ft**	**Total BHA = 1114 ft**
		Weight Below Jar = 33602 Lb	**Weight Below Jar = 38577 Lb**	**Weight Below Jar = 12038 Lb**
		Weight available = 28010 Lb	**Weight available = 32158 Lb**	**Weight available = 5081 Lb**

B. 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	49.3
Drill Pipe " G-105"	3 ½"		2.602		5.0	2.414	15.5
Drill Collar	7 ¾"		2.81		-	2.81	136.34
Drill Collar	6 ¼"		2.81		-	-	83.1

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
500	2,500	**3x14 + 4x12, TFA= 0.893 in^2**							750-850	843	2206	167	239	363	3.55	305	1345	9.8	Motor
2,500	8,544	**7x13; TFA= 0.907 in^2**							450-550	369	2116	261	449	374	2.09	195	643	12.41	Motor

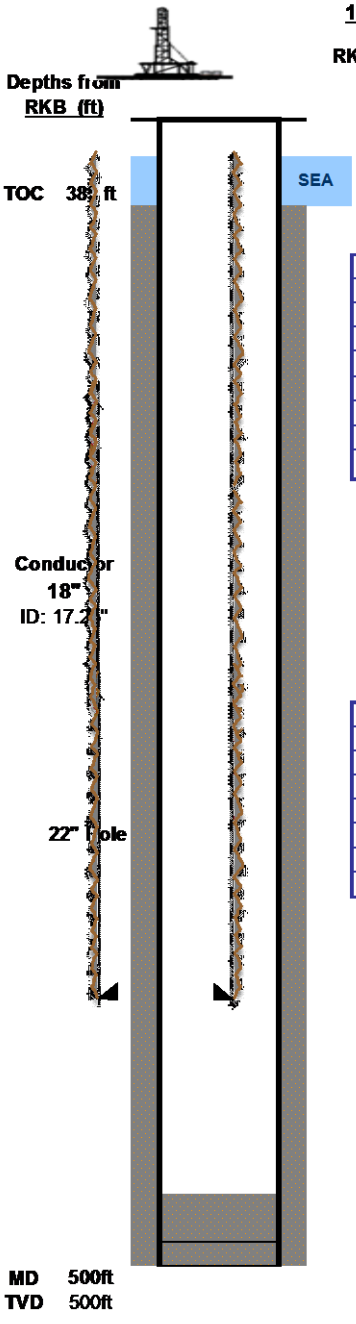
Prepared by:	Reviewed by:	Approved by:
E. Gaspar: Drilling Engineer.	C. Ramirez: Drilling Engineering Head. R. Gilabert: Drilling Operations Head. J. Chuyes: Drilling Technical Leader.	C. Hwang: Operations Manager.

VI. CEMENT PROGRAM

A. 18" CONDUCTOR PIPE

LO6-31D

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	22"
Inclination	0º
MW	8.6 ppg
Type Mud	WBM
Pore Pressure	-
BHST	75
BHCT	65

GuideShoe: Home made

LAB TEST CEMENT PRIOR TO PUMPING

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

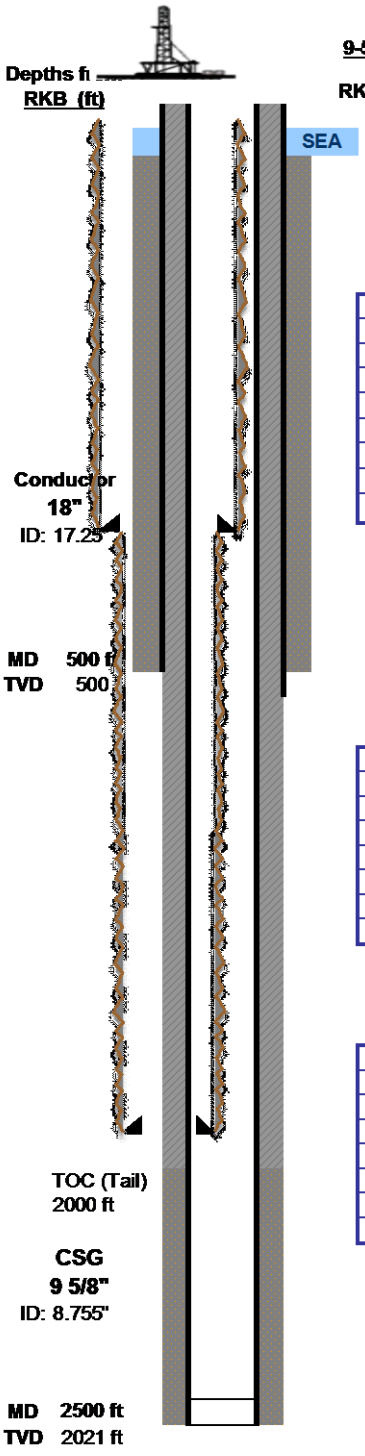
Centralizer:		None
Estimated Pumping Time:		38 min.
Maximun Estimated Pressure:		310 psi
Displacement:	43 bbls	8.6 ppg Sea water

MAIN SLURRY			
15.60	ppg		Density
1.23	cuft/sx		Yield
5.40	gps		Water Requirement
0.012	gps		Foam Preventer
01:51	hours	Thickening Time	
385.0	feet	Sea bottom	**TOC**
28.4	inch	100 % excess	Open Hole
571	sacks	Pacasmayo I	Cement
125.0	barrel		Volume Lead Slurry

B. 9 5/8" SURFACE CASING.

LO6-31D

9-5/8" INTERMEDIATE CASING AND CEMENTING DIAGRAM



RKB Elev, AMSL: 50 ft
Water Depth: 335 ft
Well head: 11" 3M Casing Spool

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

HOLE	
Size	12.25"
Inclination	59.21°
MW	10.1 ppg
Type Mud	WBM
Pore Pressure	9.6 ppg
BHST	114 °F
BHCT	92 °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:		31
Estimated Pumping Time:		1 hours, 38 min.
Maximun Estimated Pressure:		1000 psi
Displacement:	184 bbls	10.1 ppg WBM

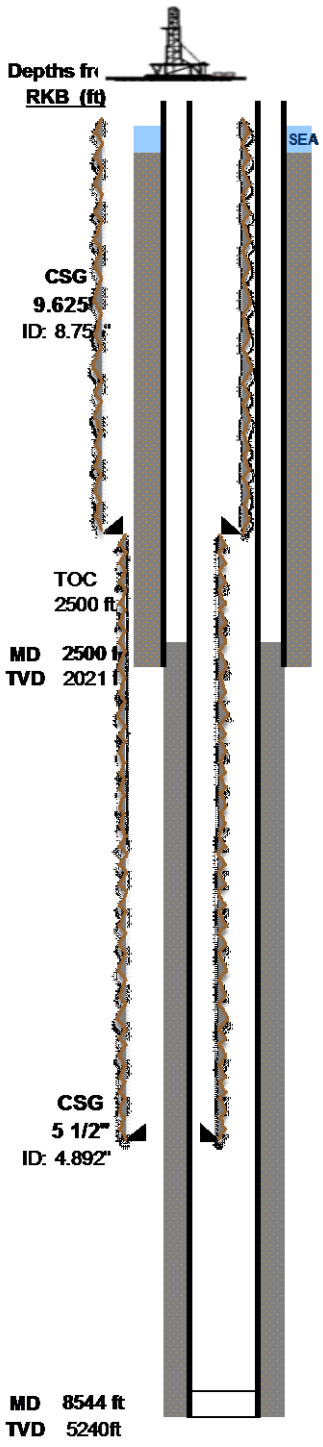
LEAD SLURRY			
12.5	ppg		Density
2.20	cuft/sx		Yield
12.33	gps		Water Requirement
0.012	gps	Dair 3000L	Defoamer
0.5	gps	Econolite	
0.2	%	Halad 344	Fluid Loss
04:40	hours	Thickening Time	
2000.0	feet	Surface	**TOC**
13.58	inch	60 % excess	Open Hole
595	sacks	Pacasmayo I	Cement
233.0	barrel		Volume Lead Slurry

TAIL CEMENT			
15.2	ppg		Density
1.27	cuft/sx		Yield
5.91	gps		Water Requirement
0.012	gps	Dair 3000L	Defoamer
0.1	%	Halad 344	Fluid Loss
0.2	%	Halad 322	Fluid Loss
03:14	hours	Thickening Time	
500.0	feet	2500 ft	**TOC**
13.58	inch	60 % excess	Open Hole
221	sacks	Pacasmayo I	Cement
50.0	barrel		Volume Tail Slurry

C. 5 ½" PRODUCTION CASING.

LO6-31D

5 1/2" PRODUCTION CASING AND CEMENTING DIAGRAM



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

Well head: 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	24°
MW	11.6 ppg
Type Mud	WBM
Pore Pressure	11.1 ppg
BHST	140 °F
BHCT	110 °F

INTERMEDIATE 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:		2 hours, 13 min.
Maximun Estimated Pressure:		1200 psi
Displacement:	197 bbls	11.6 ppg WBM

LEAD SLURRY			
13.5	ppg		Density
1.67	cuft/sx		Yield
8.79	gps		Water Requirement
0.012	gps	Dair 3000L	Defoamer
0.50	%	Silicalite	Suspend Additive
0.15	%	Halad 344	Fluid Loss
0.40	%	WG-17	
04:54	hours	Thickening Time	
2500.0	feet		**TOC**
9.76	inch	55 % excess	Open Hole
531	sacks	Pacasmayo V	Cement
158.0	barrel		Volume Lead Slurry

TAIL CEMENT			
15.2	ppg		Density
1.25	cuft/sx		Yield
5.69	gps		Water Requirement
0.012	gps	Dair 3000L	Defoamer
0.15	%	GasStop	Gas Control
0.15	%	Halad 344	Fluid Loss
0.20	%	WG-17	Retarder
0.011	gps	Super CBL	
03:35	hours	Thickening Time	
5000.0	feet		**TOC**
9.76	inch	55% excess	Open Hole
1015	sacks	Pacasmayo V	Cement
226.0	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.

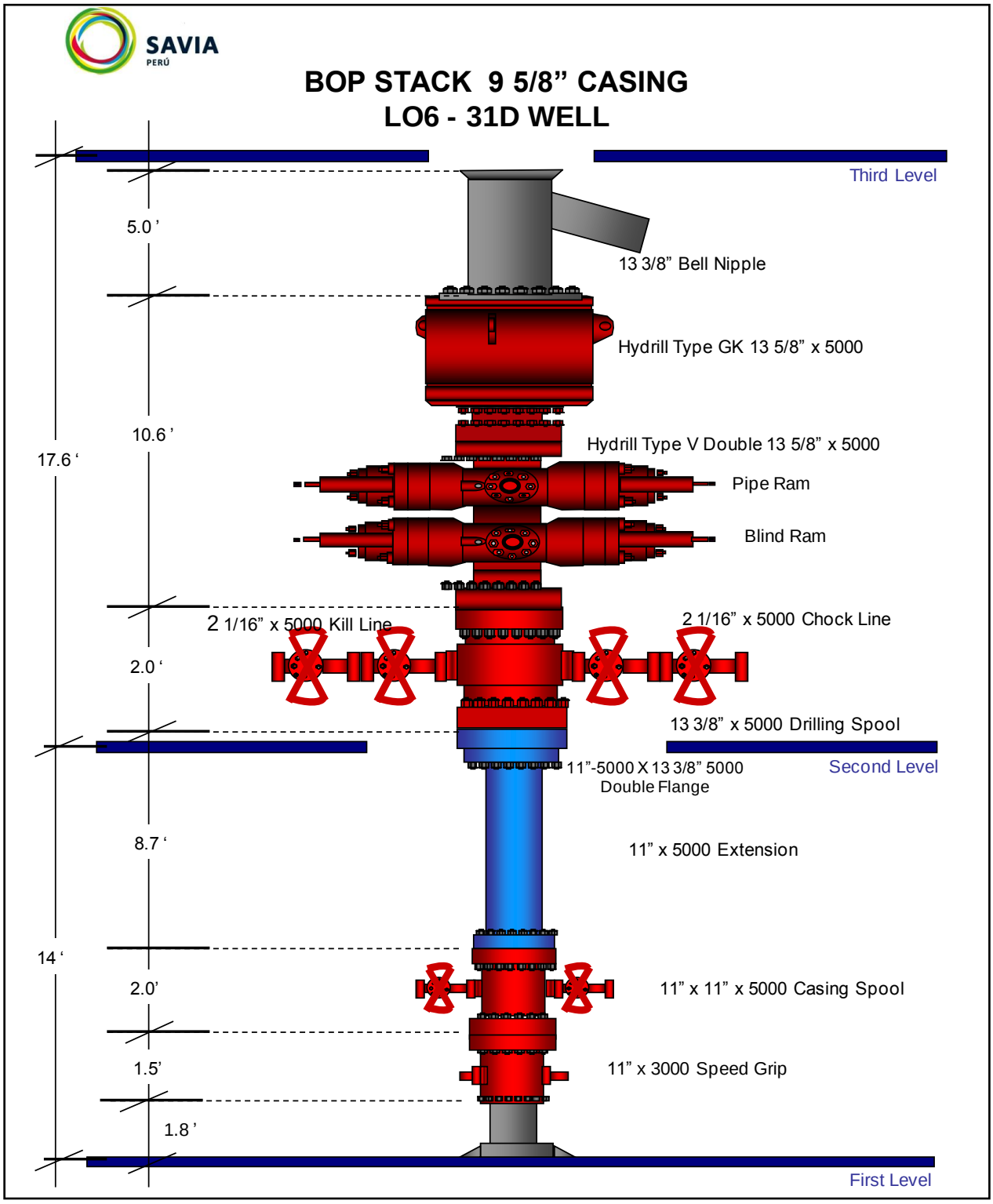
   - Stop the pumps.
   - Pick up drill string until tool joint is 4 ft above rig floor.

- 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.

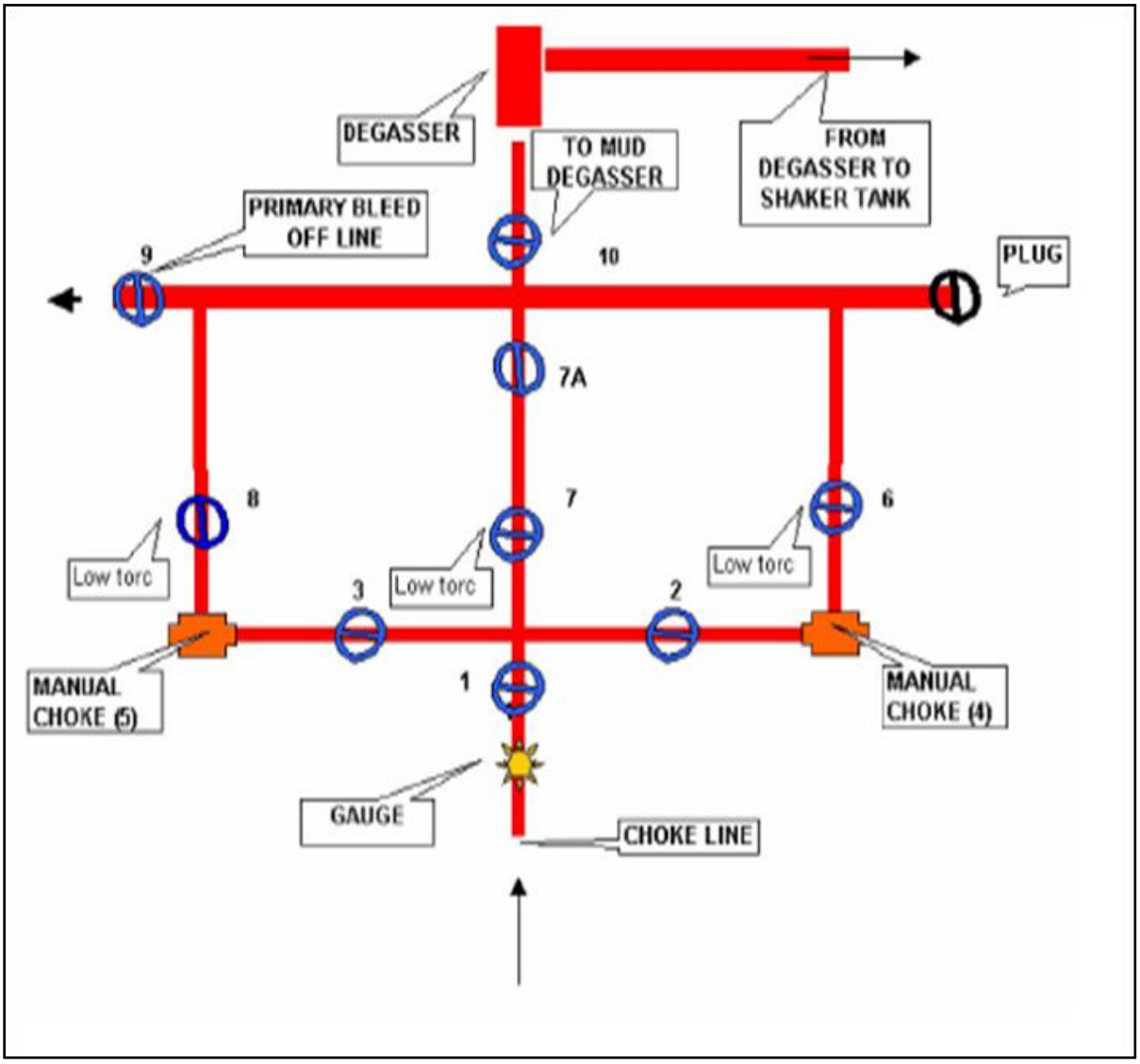
10. Should a kick occur while tripping pipe, the following well control procedure will be initiated.

- 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.

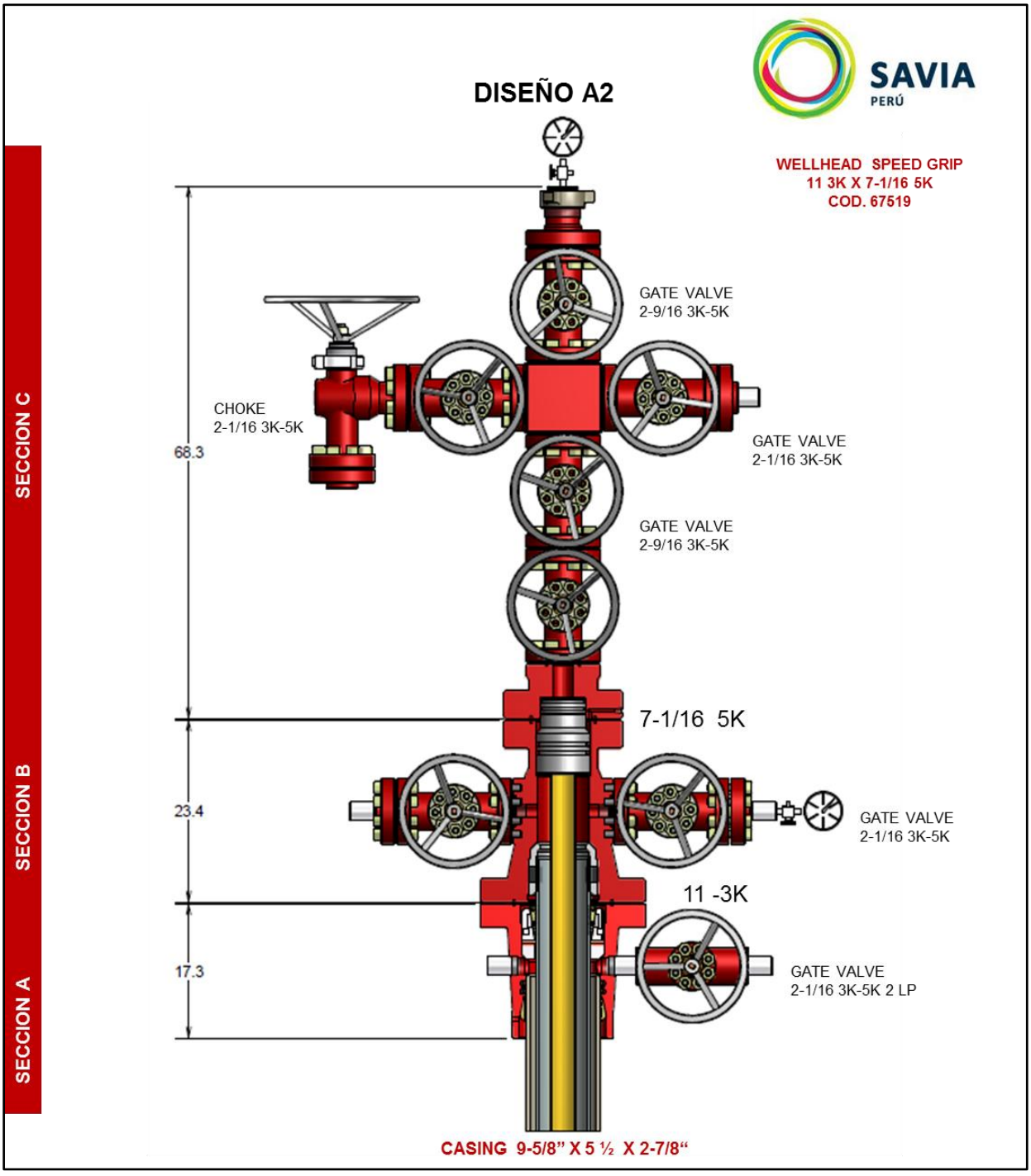
VIII. BOP STACK, CHOKE MANIFOLD DIAGRAM & WELLHEAD



CHOKE MANIFOLD



WELLHEAD – LO6-31D



IX. COST – AFE.

SAVIA PERU S.A.

CIA	ACD	BUDGET ITEM	AFE No.
			2214235

FU	WELL DESCRIPTION	OFICIAL NUMBER	MM / DD / AA
	LO6-31D	SAV-Z2B-24-LO6-31D	

TOTAL ESTIMATED DAYS

FU	TYPE OF WELL	MOV / COND	DRILLING	COMPLETION	EST FOOTAGE	AREA
	DEVELOPMENT	3	22	18	8544	LOBITOS

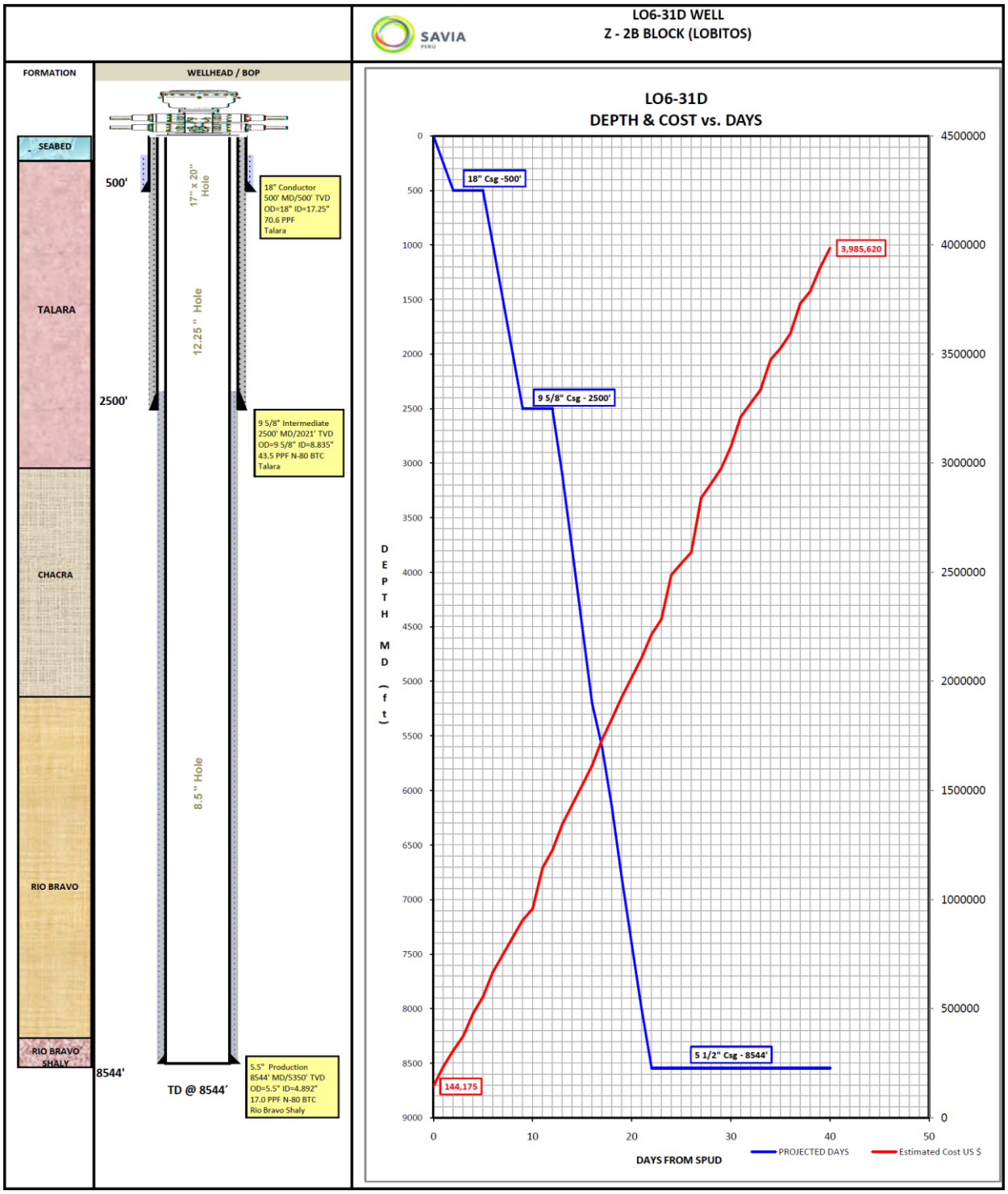
FU	GEN	CC	AREA

WELL COST BREAKDOWN

SUB	DESCRIPTION	QUANTITY	UNIT COST	SUB-TOTAL	TOTAL US$
	OUTSIDE SERVICES:				
201	DRILLING RIG	21 22			918,500
203	DIRECTIONAL DRILLING				302,700
204	MUD LOGGING	31	1500		46,500
205	MUD ENGINEERING	29 12	1200 900		45,600
206	CEMENT. CONDUCT.				16,880
206	CEMENT. SURF. CSG				0
206	CEMENT. INTERM. CSG.				24,630
206	CEMENT. OTHERS				26,930
206	CEMENT. CASING 7"				0
206	CEMENT. CASING 5 1/2"				34,080
207	ELECTRIC LOGGING				190,000
208	PERFORATING				60,000
209	STIMULATION				60,000
211	TUBULAR INSPECTION				7,950
213	DIVING				12,000
212	HYDRAULIC TONGS				50,720
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				227,900
231	BOAT OPERATIONS				290,900
237	MATER. & EQUIP. TRANSP.				14,000
240	WATER FURNISHMENT				15,000
244	TOOL RENTAL				54,200
248	CATERING				51,600
249	CONSULTING				53,750
252	ENVIROMENTAL PROTECTION				7,700
	TOTAL OUTSIDE SERVICES:				**2,620,040**
	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				104,700
326	TOOLS FOR DRILLING				44,660
327	COMPLETIONS				65,000
328	FLOATING EQUIPMENT - CMT.				13,840
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.				14,000
341	MAT. CMT. SURF. CSG.				0
341	MAT. CMT. INTERM. CSG.				19,500
341	MAT. CMT. CASING 7"				0
341	MAT. CMT. CASING 5 1/2"				33,000
341	MAT. CMT. OTHERS				16,920
342	STIMULATION MATERIAL				90,000
343	DRILLING / COMPLETION FLUIDS				171,000
344	CONDUCTORS	500	37.52		18,760
344	SURFACE CSG.	0	35.11		0
344	INTERMED. CSG. (9 5/8")	2500	28.42		71,050
344	7" CASING	0	18.33		0
344	5 1/2" CASING	8544	11.24		96,030
344	2 7/8" TUBING	8000	4.68		37,440
346	DIESEL-FUEL		4.60		550,630
347	OIL & GRASES				2,150
	TOTAL MATERIALS & SUPPLIES:				**1,365,580**
			TOTAL PROJECT COST US $		**3,985,620**

APPROVAL BY : _____ DATE : 1

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.

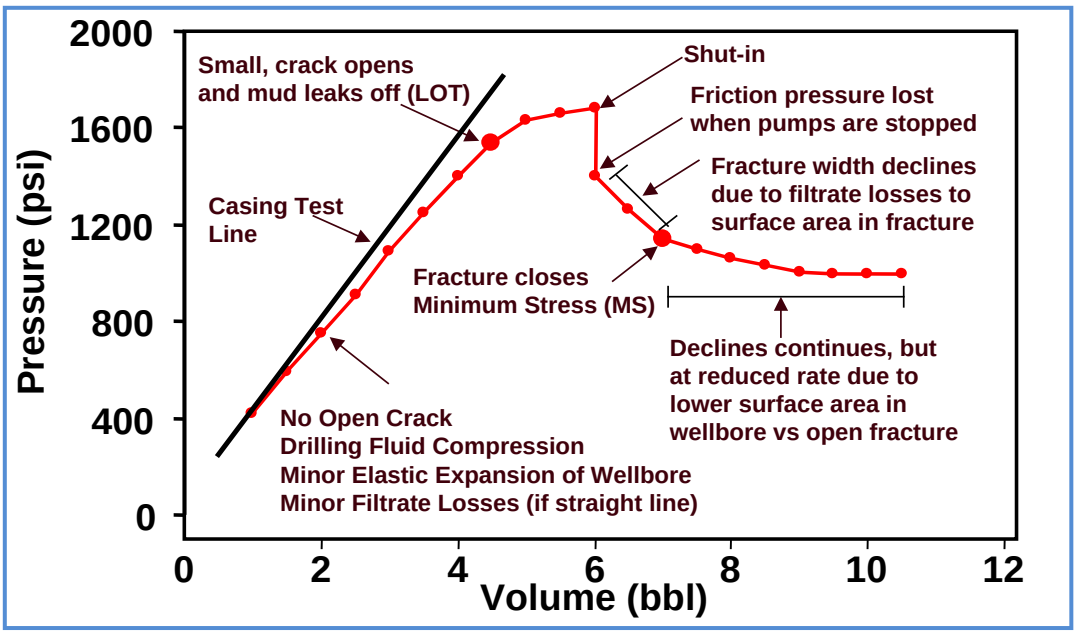
6. Pump at a constant pump rate (0.5 bbl/min), start logging time, pressure and volume data at frequent intervals on pumping unit, mud logging unit and pressure gauges on rig floor. Record the test manually on worksheet / plot provided at 1/ 2 bbl.

   - 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 sure 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 : 9 5/8" ID: 8.755" Drift: 8.599" Cplg OD: 10.625"	**0 – 2,500**	**43.5**	**N-80**	**BTC**	**3,810**	**6,330**	**1'005,000**	Mainly use the triangle mark. **(Δ)/9,630**	**1,500 psi w/ 10.1 ppg MW**
OD: 5.5" ID: 4.892" Drift: 4.767" Cplg OD: 6.05"	**0 - 8,544**	**17.0**	**N-80**	**BTC**	**6,290**	**7,100**	**397,000**	Mainly use the triangle mark. **(Δ)/5,500**	**1,5000 psi w/11.6 ppg MW**

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Minimum Security design factor

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