

Oficina principal
Av. Rivera
Navarrete 501,
Piso 11, San Isidro
Lima-Perú
T (511) 513 7500
F (511) 441 4217

Oficina Talara
Av. Jorge Chávez s/n
La Brea-Negritos,
Talara-Perú
Apartado 5-C Talara
T (51) (073) 284 000
F (51) (073) 393 137

SAVIA Perú S.A.
www.saviaperu.com



EMPRESA
SOCIALMENTE
RESPONSABLE



SAVIA
PERÚ

INTEROFFICE MEMORANDUM
DEVM-040-13

To:  Pedro Alarcon /  Jae Hwii Gwag /  Jin Seok Y
From:  H. Janampa,  H. Cornejo, J.C.Muñoz, E. Borda

Date: June 25th, 2013

Subject: **Proposal to Drill Development Well LO6-33D**

It is recommended to drill the proposed well **LO6-33D to development 186 MBO** of reserves in the Rio Bravo Formation southwest of Lobitos Field. Programmed TD is 8200' MD (-4856' VSS) and well cost estimated is 4,235 MU\$ (Figures 1, 2, 3, 4 & 7)

LO6-33D is proposed as a vertical well; with a maximum vertical angle of 63.5° towards S 48.9° W (Figures 1, 2, 3, 4)

The chance of success (COS) is 90% (Fig. 8)

At middle point of Rio Bravo, the proposed well LO6-33D is located at 450 meters south of LO6-31D and 400 meters of well LO6-28D. (Fig.1)

The vertical sequence of Rio Bravo suggest that this formation was deposited as Deep sea Fan complex in the lower section, grading to Shallow marine sands in the upper section, restricted to coastal facies with presence of shell fragments, with beach sand bars cut by channels. This sequence constitute the main reservoir sands based on production, lithology and electrical characteristics, likewise according to last 3D reprocessed seismic, several cross lines have confirmed the time line during the sedimentation of Rio Bravo showing several sequences of sands, which act as independent reservoirs, therefore is important to find the zones where these sands were deposited (Figure 3)

Although several wells were completed in Rio Bravo formation in the south west area of LO6 platform as the following wells: LO6-22 with 624 BOPD of IPR and 352 MBO of accumulated, likewise the wells LO6-7, LO6-8 and LO6-9X with 155 BOPD, 634 BOPD and 103 BOPD of IPR's and accumulates of 305 MBO, 249 MBO and 87 MBO respectively. Two wells were drilled in this year, the first LO6-28D penetrated Rio Bravo sands with original pressure and an initial rate of 686 BOPD. The second well is now in test (Fig. 6)

For a complete evaluation, better understanding and modeling of Rio Bravo reservoir, it is recommended a full logging set of gamma ray, resistivity, and neutron-density (Fig.2)

The main risks associated with this well location are:

- Sedimentary changes that could reduce the net sand thickness and petrophysics properties.

Oficina principal
Av. Rivera
Navarrete 501,
Piso 11, San Isidro
Lima-Perú
T (511) 513 7500
F (511) 441 4217

Oficina Talara
Av. Jorge Chávez s/n
La Brea-Negritos,
Talara-Perú
Apartado 5-C Talara
T (51) (073) 284 000
F (51) (073) 393 137

SAVIA Perú S.A.
www.saviaperu.com



EMPRESA
SOCIALMENTE
RESPONSABLE



SAVIA
PERÚ

ECONOMIC SUMMARY

CASE	IP (BOPD)	EUR (MBO)	CAPEX (MUS\$)	NPV 10.5% (M\$)	PAY OUT (YRS)	AT PIR	ROR (%)
LOW	135	87	4,235	100	9.17	0.02	12
BASE	290	186	4,235	4,041	1.67	0.95	73
HIGH	540	347	4,235	10,398	0.83	2.46	>100

CONSIDERATIONS

Net Revenue Interest %	84%
Discount Rate %	10.5%
Tax	30%
Variable Cost, US\$/BL	0.91
Fixed MUS\$/Year	36.6
Cost MUS\$	4,235
Oil Price according Portfolio MTP 2012: 95 US\$/BL for 2013 & 2014 phased 2% yearly from 2015 to 2023.	

Base case reserves and IPR for this well are estimated 186 MBO & 290 BOPD respectively, the drilling cost estimated is US\$ 4,235 M, NPV is US\$ 4,041 M using portfolio parameters with discount rate of 10.5%
(Figures 7,8 & Tables A & B)

Cc: J. Duarte, C. Hwang; O. Nieto E. Borda
J. Garzon R. Gilabert V. Peralta V. Delgado
B. Kim J. Chuyes A. Agurto Central File
C. Valdizan C. Montes R. Corman E. Gonzales
C. Ramírez K. Valencia J. Gwag L. Torres

Attached Documents

Oficina principal
Av. Rivera
Navarrete 501,
Piso 11, San Isidro
Lima-Perú
T (511) 513 7500
F (511) 441 4217

Oficina Talara
Av. Jorge Chávez s/n
La Brea-Negritos,
Talara-Perú
Apartado 5-C Talara
T (51) (073) 284 000
F (51) (073) 393 137

SAVIA Perú S.A.
www.saviaperu.com



- Fig.1: Top Rio Bravo Fm., showing the proposed well LO6-33D
- Fig.2: Geological Prognosis
- Fig.3: Seismic Line showing the proposed well LO6-33D
- Fig 4: SW-NE Structural Cross Section for proposed well LO6-33D
- Fig.5: Rio Bravo Fm. Net Sand Map for proposed well LO6-33D
- Fig.6: SE-NW Stratigraphic correlation of Rio Bravo Fm. for proposed well LO6-33D
- Fig 7: Estimated Oil production of Rio Bravo and closest producers wells
- Fig 8: Drilling and Cost Time-Depth Chart of well LO6-33D
- Table A: Economic Summary and Oil rate forecast for well LO6-33D
- Table B: AFE for Proposed well LO6-33D



Z-2B - LOBITOS AREA
TOP RIO BRAVO FM. - DEPTH STRUCTURE MAP
C.I. 100 ft

E. Borda May 2013

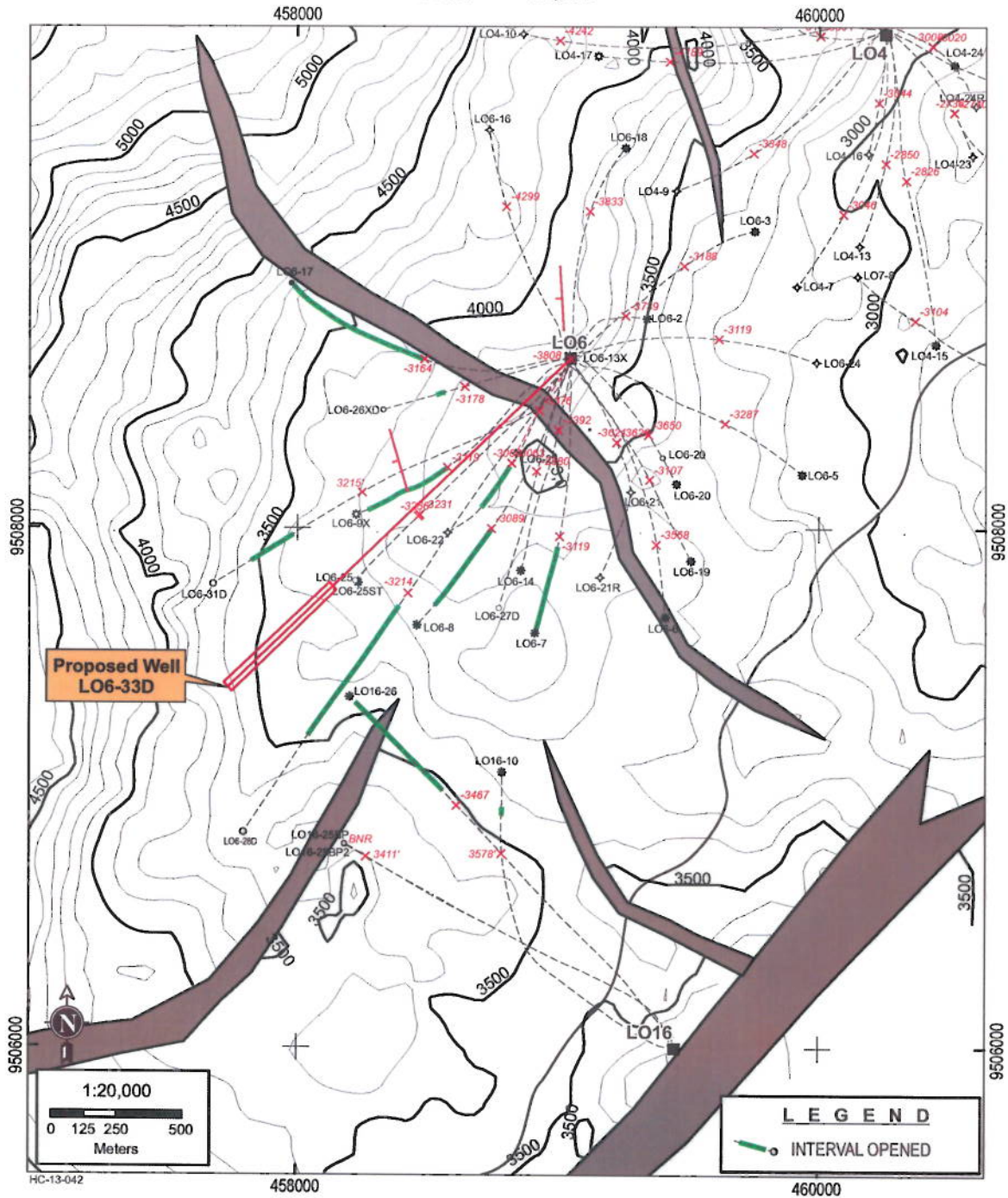
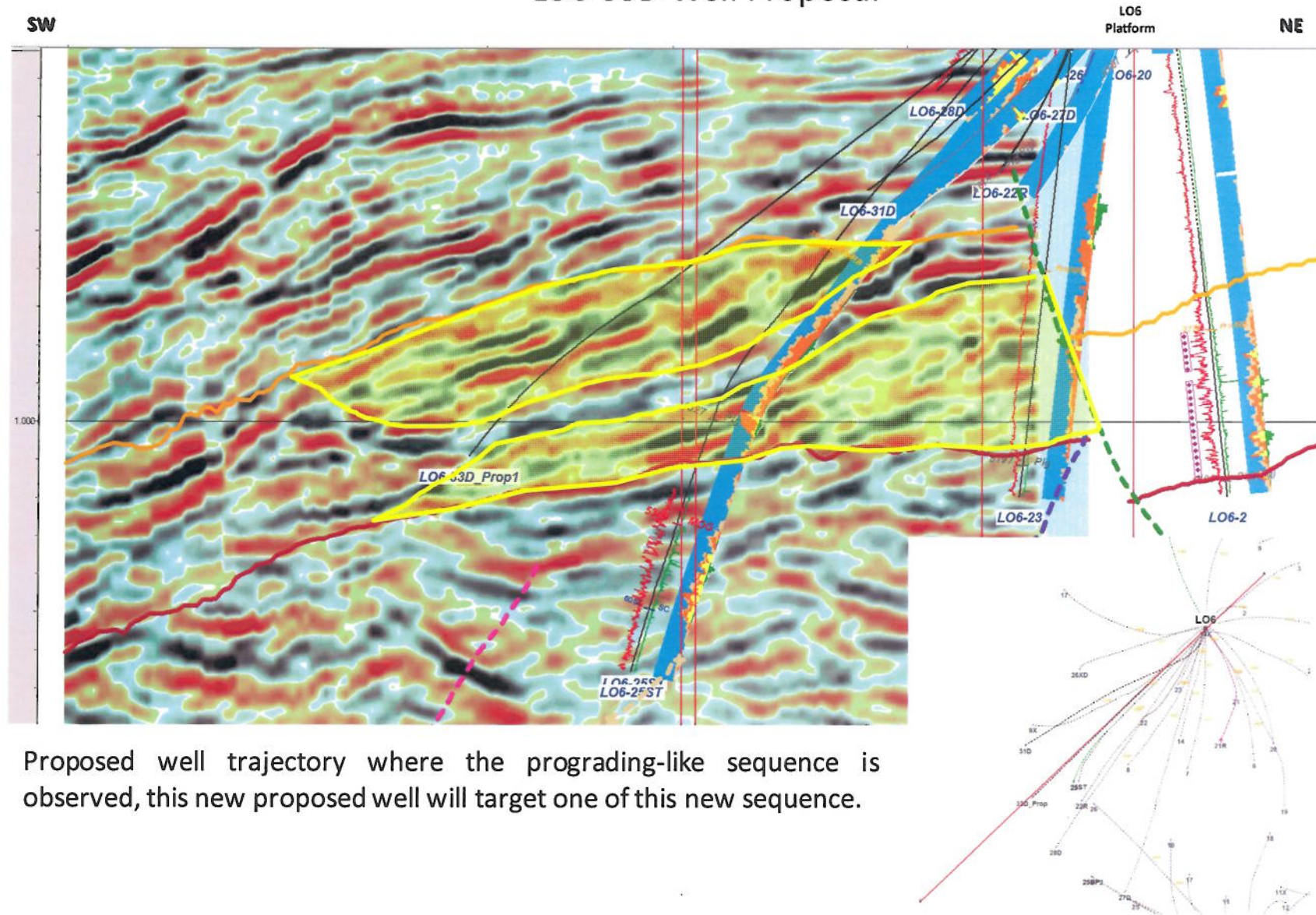


Fig 1: Structural Map showing the Proposal Well LO6-33D

GEOLOGIC LOGGING						
AREA		OFFICIAL WELL NUMBER		SAVIA PERU SA.		RIG N°
LOBITOS OFFSHORE				LO6-33D		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
E	KB:	DIRECTION OF	T	DRILLED DEPTH	T	ESTIMATED FINAL
L	50 FT	DEVIATE WELL S 48.95° W	A	5840 FT	O	8,200 FT
E	WATER DEPTH	ANGLE CONDUCTOR	R	VERTICAL DEPTH	T	HORIZONTAL DRIFT
V	335 FT	FROM VERTICAL VERT.	G	3430 FT	D	5,962 FT
A	GROUND LEVEL	RECOMENDED DEPTH	E	HORIZONTAL DRIFT	E	MAX. ANGLE
T	FT	OF K.O.P. 480 FT	T	4150 FT	P.	63.59°
			LIMITS (DIAMETER) TO MAIN OBJECTIVE. (LOW. BS)			
			TOP: 100 ft. BASE: 100ft.			
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	
C	BIT SAMPLES	EVERY 30 FT.FROM SURFACE TO 5500'				REMARKS At 6000' drop vert. Angle 1.3°/100 ft. to reach 41° to TD.
N	TO BE TAKEN	EVERY 10 FT. FROM 5500' TO TOTAL DEPTH				
O	RECOMMENDED	PALEONTOLOGY EVERY 150' FROM SURFACE TO 5500'				
T	FOR	PALEONTOLOGY EVERY 90' FROM 5500' TO TOTAL DEPTH				
R.	PALEO-PALYNOLOGY	PALYNOLOGY AT REQUESTED BY LIMA OFFICE				
L	RECOMMENDED	DLL-MSFL-GR; FDC-CNL-GR.				
O	OPEN HOLE					
G	RECOMMENDED					
G	AFTER CASING	GR-CCL				
I	NEARBY WELLS					
N	FOR					
G	CORRELATION	LO6-9X, LO6-22, LO16-26XD,LO6-28D,LO6-31D				
E	SIDEWALL	SWC * HRCT				
V	CORES	NOT CONSIDERED				
A	CONVENTIONAL					
L	CORES	NOT CONSIDERED				
U	GAS					
A	LOGGER	MUD LOGGING UNIT.				
T.	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

Fig 2: Geologic Prognosis

LO6-33D Well Proposal



Proposed well trajectory where the prograding-like sequence is observed, this new proposed well will target one of this new sequence.

Fig. 3: SW-NE 3D seismic Line for proposal well LO6-33D

Z-2B BLOCK / LOBITOS FIELD
SW-NE STRUCTURAL SECTION A-A' FOR
PROPOSED WELL LO6-33D

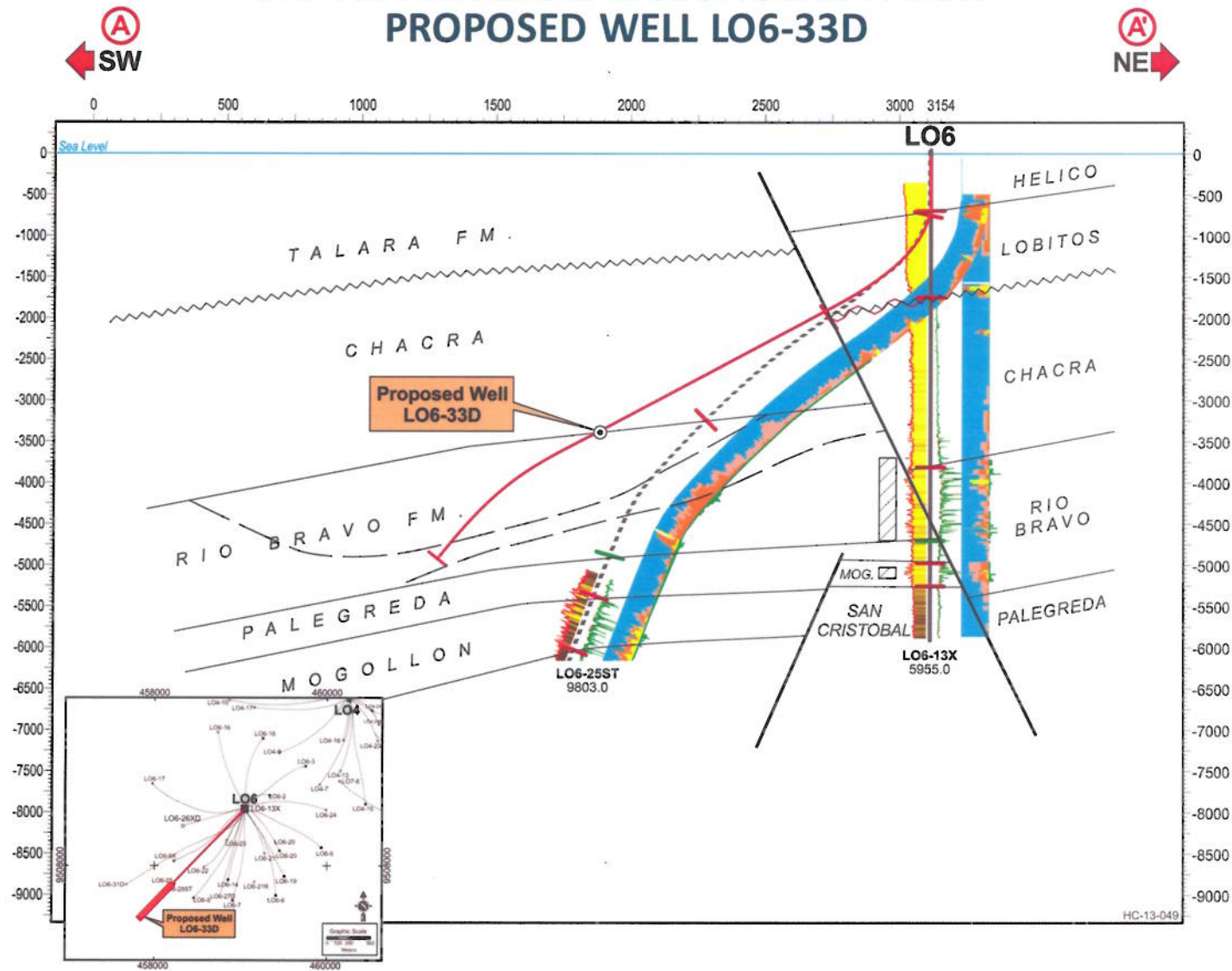


Fig. 4: SW-NE Structural Cross Section for proposal well LO6-33D

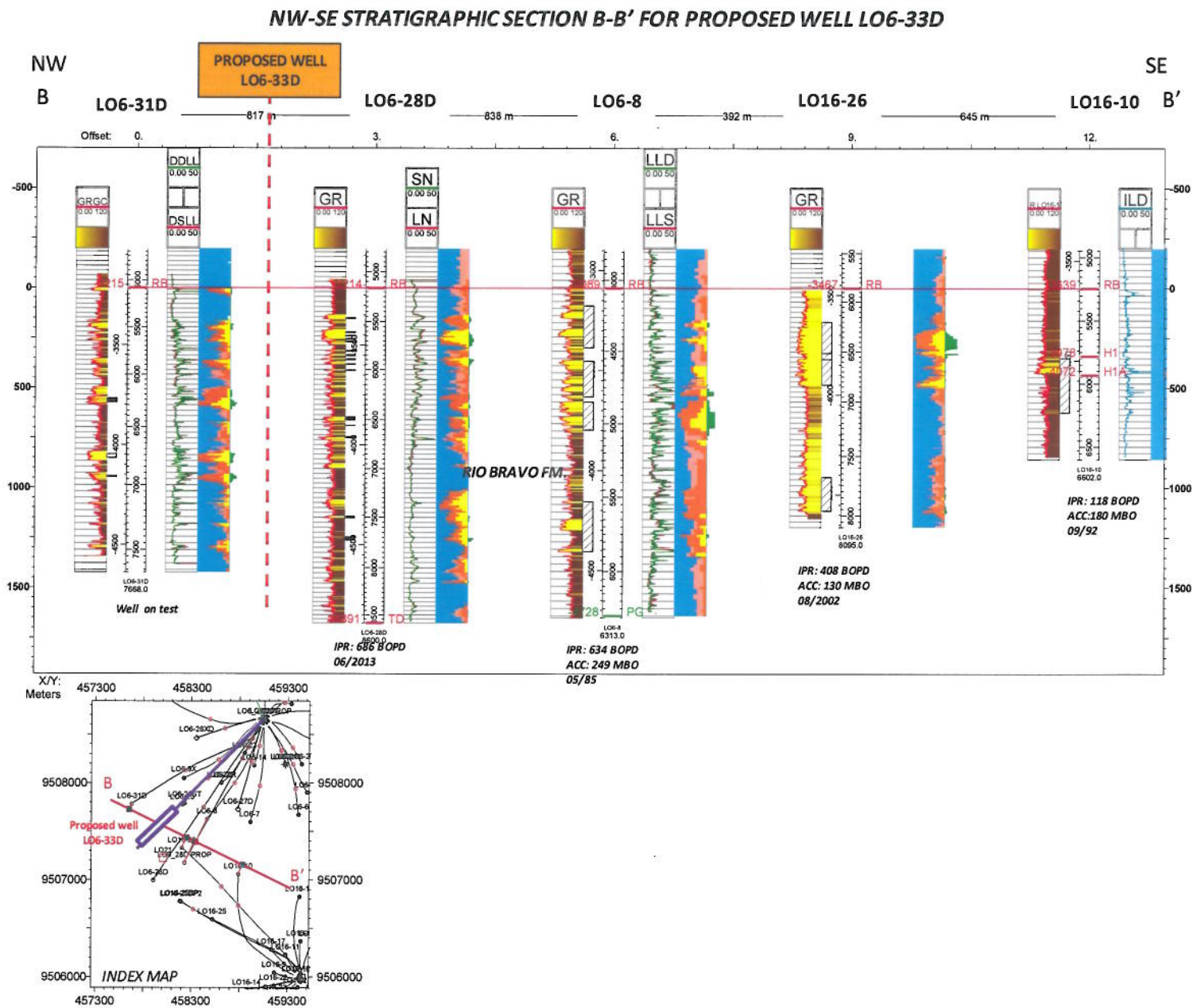
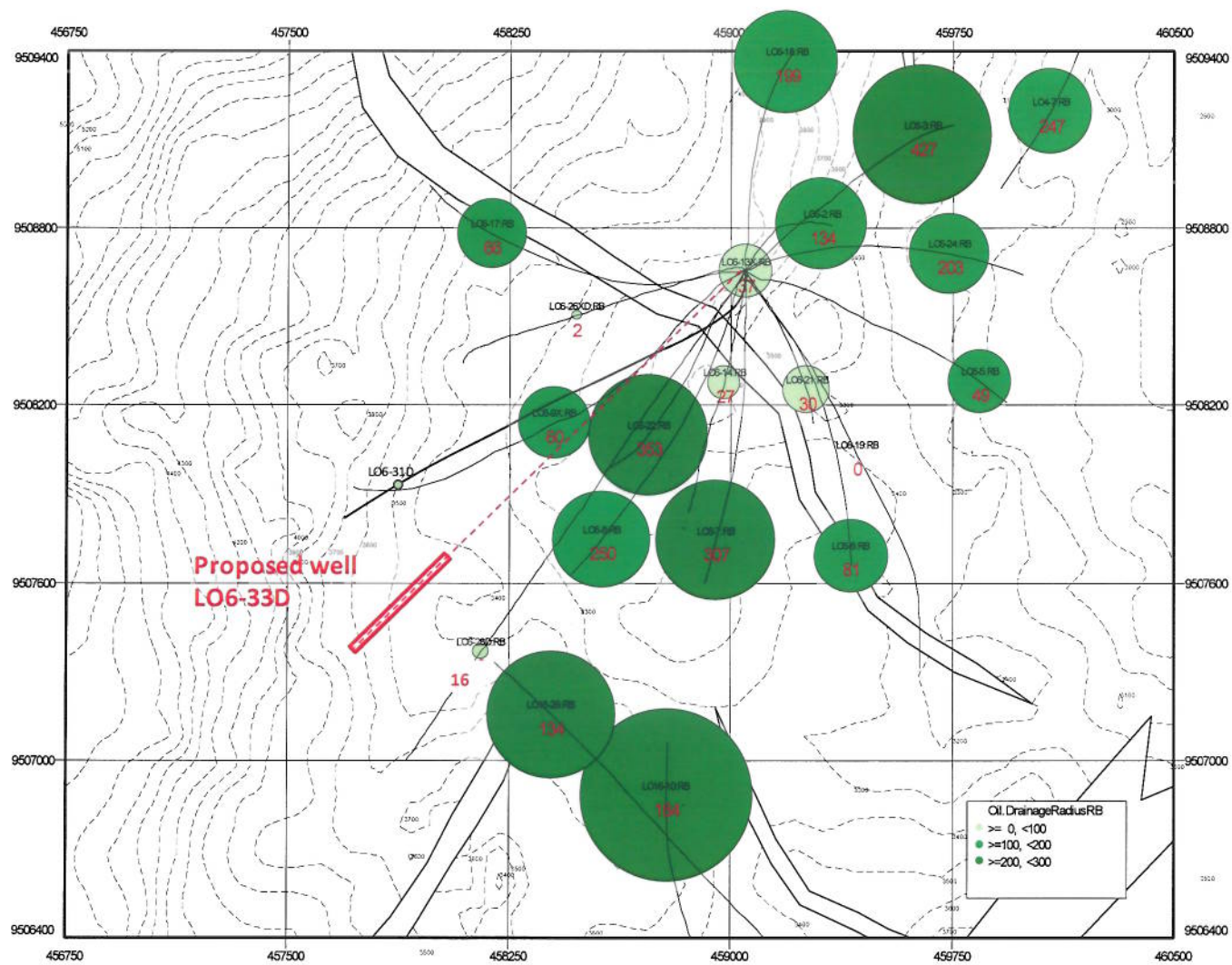


Fig. 6: NW-SE Stratigraphic Correlation of Rio Bravo, south of LO6 Platform, including LO6-31D, LO6-28D, LO6-8, LO16-26 and LO16-10



CASO	BASE ft	TOPE ft	Fm.	Pr inic. psi	Pr act. psi	Depl. %	EUR Mbls	Qo bopd
LOW	4850	3460	RIO BRAVO	2327	2098	10%	90	135
BASE	4850	3460	RIO BRAVO	2327	2098	10%	190	290
HIGH	4850	3460	RIO BRAVO	2327	2098	10%	350	540

Fig. 7: Estimated Oil Production and Reserves of Rio Bravo formation and closest producing wells

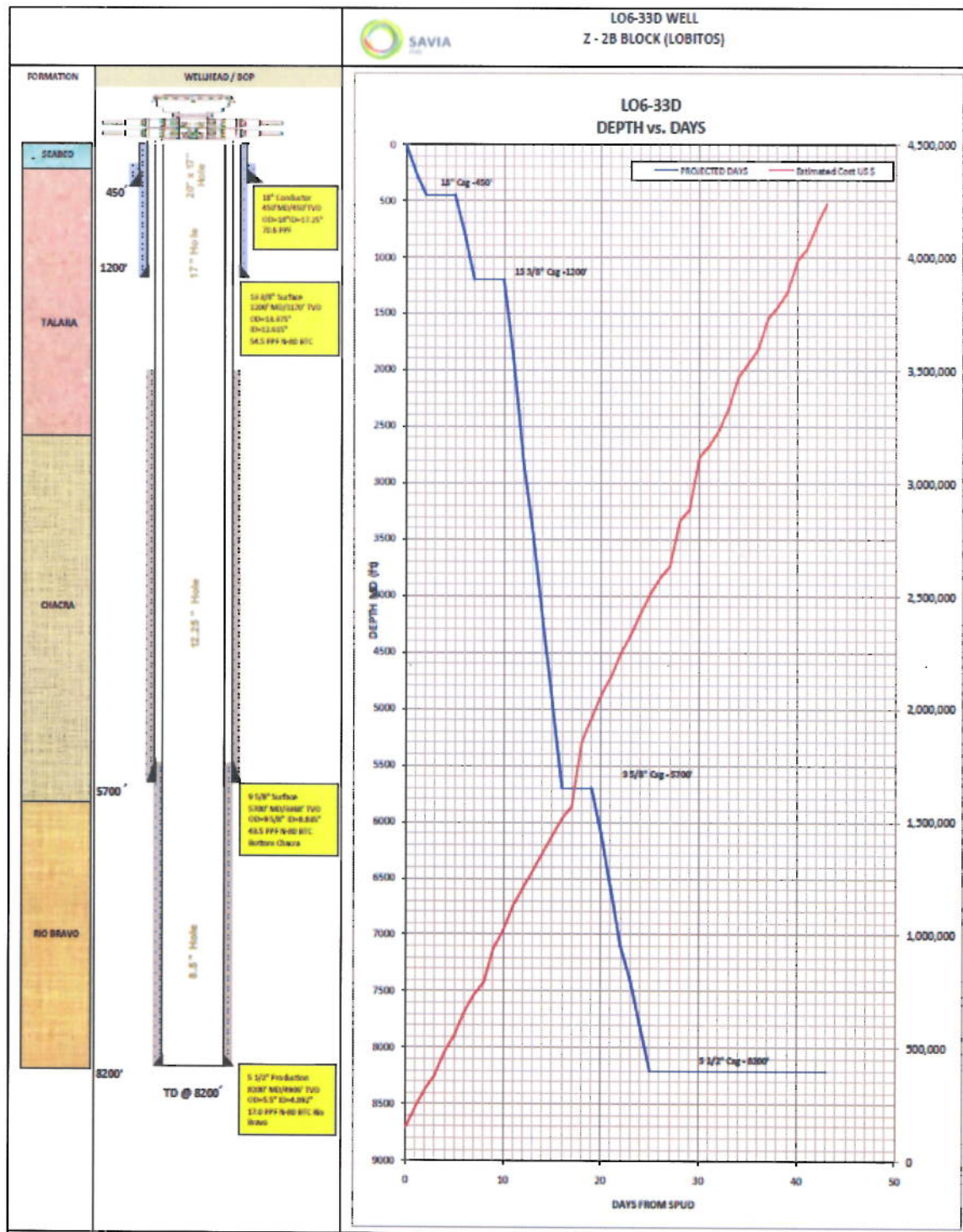


Fig. 8: Drilling Cost Time-Depth Chart of well LO6-33D

Economic Summary (Savia)														
LO6_33D_BASE														
(Nominal values)														
Interests & Settings					Economic Indicators									
Net Revenue	Net Expl	Net Dev	Net Oper	Net Opr	Disc. Rate	ST NPV	AT NPV	ST PIR	AT PIR	DPI	AT ME	AT IE		
84.00	0.00	100.00	100.00	100.00	(%)	(M\$)	(M\$)	(fraction)	(fraction)	(fraction)	(M\$)	(fraction)		
Company (% of Total)	100.00	0.00	100.00	100.00	0.00	10,073.00	6,698.00	2.38	1.58	2.58	-4,235.00	1.58		
Partner (% of Conts)	0.00	0.00	0.00	0.00	0.00	10.00	6,715.00	4,133.00	1.59	0.98	1.98	0.00		
Contr	84.00	0.00	100.00	100.00	0.00	10.50	6,594.00	4,041.00	1.56	0.95	1.95	-4,235.00	0.95	
WOC	0.00	0.00	0.00	0.00	0.00	12	6,252.00	3,780.00	1.48	0.89	1.89	0		
Model	Peru License R Fact (2003)													
Global Params	Savia Peru													
Escalation Date	2013/01													
Discount Date	2013/01													
Economic Limit	2023/12													

Peep Version 2009.1

CONSIDERATIONS

Net Revenue Interest %	84%
Discount Rate %	10.5%
Tax	30%
Variable Cost, US\$/BL	0.91
Fixed MUS\$/Year	36.6
Cost MUS\$	4,235
Oil Price according Portfolio MTP 2012: 95 US\$/Bbl for 2013 & 2014	
phased 2% yearly from 2015 to 2023.	

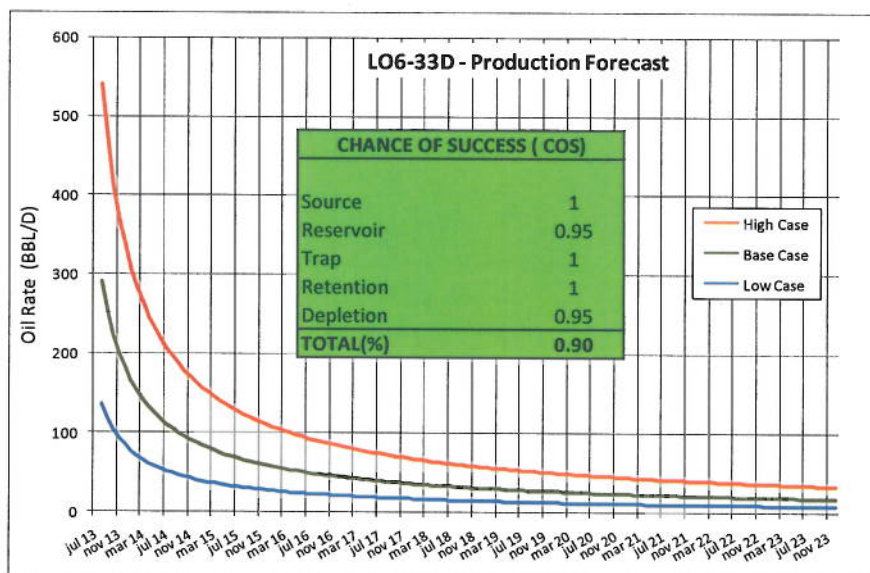


Table A: Economic summary and Oil rate forecast for well LO6-33D



SAVIA PERU S.A.

CIA	ACD	BUDGET ITEM	A F E 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	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

Table B: AFE for proposal well LO6-33D