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INTEROFFICE MEMORANDUM
DEVN- 003- 13

To: Pedro Alarcon / Jin Seok Yi

From: H. Janampa, M. Chávez, H. Cornejo, J.C. Muñoz, E. Borda

Date: January 15th. 2013

Subject: **Proposal to Drill Development Well LO6-27D**

In order to continue developing the Lower Basal Salina reservoir in the Lobitos field, it is recommended to drill the well **LO6-27D**, which will be located in an isolated block reservoir. The secondary objective is the Upper Basal Salina. Well control data and 3D seismic were used to locate the propose **LO6- 27D** well (Figures 1, 3, 4 & 7)

Due to Rig capacity, the drilling design for **LO6-27D** is proposed as deviated well; with a maximum vertical angle of 47° towards S 15.72° W. Estimated final total depth is 11084 feet MD (-8080 feet VSS) (Figures 1, 2 & 4). The chance of success (COS) is 60%

At the top of Lower Basal Salina, the proposed **LO6-27D** well will be located at 900 meters SE from LO6-25ST and 750 meters SE from LO6-22R (Figure 1)

From sedimentary point of view, it is necessary to indicate that the Basal Salina formation consist of several turbidite channels which act as independent reservoirs (Figures 5, 6, 8 & 9)

The well LO6-25ST had an IPR of 864 BOPD and cumulated 873 MBO. Currently is producing 24 BOPD from Lower Basal Salina. The well LO6-22R had an IPR of 509 BOPD and cumulated 331 MBO. Currently is producing 21 BOPD from Upper Basal Salina (Figures 1, 4, 7, 10 & 11)

Due to future development of the block, it is important to keep the vertical angle and direction as close as possible to propose **LO6-27D** well (Figures 1, 2 & 4)

The propose well **LO6-27D** is located in a non-developed block reservoir, where it is expected to find the top of Lower Basal Salina at 10345 feet MD (-7576 feet VSS), with 100 feet of net sand thickness (Figures 1, 2 & 5)

Lithologically, the Lower Basal Salina formation is composed of medium to coarse grained sandstones and conglomerate, interbedded with thin shale breaks, and according to sedimentary deposition trend, it is expected to find the same trend of well LO6-25ST (Figures 5, 6 & 9)

For a complete evaluation, better understanding and modeling of Basal Salina reservoirs, it is recommended a full logging set of gamma ray, resistivity, neutron-density, Images log and Pressure test points in Basal Salina sands (Figure 2)

Based on production of neighboring wells for a Base Case, it is expected to produce with initial rate of 600 BOPD and reserves of 235 MBO for Basal Salina (Figures 10, 11 & Table A)

The main risks associated with this well location are:

- Structural risk due to the existence of possible minor faults that could reduce the size of the block.

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- Sedimentary changes that could reduce the net sand thickness and petrophysics properties.
- Finally, presence of high gas content in upper or lower sands in both objectives respectively, could affect the reserves.

ECONOMIC SUMMARY

CASE	IP (BOPD)	EUR (MBO)	CAPEX (MUS\$)	NPV 10.5% (M\$)	PAY OUT (YRS)	AT PIR	ROR (%)
LOW	335	131	5,300	1,694	2.50	0.32	46
BASE	600	235	5,300	6,251	0.58	1.18	>100
HIGH	800	314	5,300	9,669	0.33	1.82	>100

Base case reserves and IPR for this well are estimated 235 MBO & 600 BOPD respectively. The drilling cost estimated 5,300 MUS\$. NPV is 6,251 MUS\$ using portfolio parameters with discount rate of 10.5% (Figure 12 & Table B)

Cc: J. Duarte, C. Hwang; C. Valdizan, K. Valencia
C. Kim, R. Gilaver, O. Nieto, V. Delgado
J. Garzón, J. Chuyes, V. Peralta, E. Gonzales
C. Hamann, A. Agurto, Central File

Attached Documents:

- Fig 1: Structural Map of Lower Basal Salina Showing the Proposal Well **LO6- 27D**
 Fig 2: Geologic Prognosis
 Fig 3: SW - NE Arbitrary Seismic line for proposal well **LO6- 27D**
 Fig 4: SW - NE Structural Cross Section for Proposal Well **LO6- 27D**
 Fig 5: Lower Basal Salina Net Sand Thickness Map for Proposal Well **LO6- 27D**
 Fig 6: W- E Stratigraphic Correlation of Basal Salina around LO6 & LO7 platforms
 Fig 7: Structural Map of Upper Basal Salina Showing the Proposal Well **LO6- 27D**
 Fig 8: Upper Basal Salina Net Sand Thickness Map for Proposal Well **LO6- 27D**
 Fig 9: NW- SE Stratigraphic Correlation of Basal Salina around LO6, LO16 & LO13 platforms
 Fig 10: Estimated Oil Production and Reserves of Lower Basal Salina formation
 Fig 11: Estimated Oil Production and Reserves of Upper Basal Salina formation
 Fig 12: Drilling and Cost Time- Depth Chart of Well **LO6- 27D**
 Table A: Economic summary and Oil rate forecast for well **LO6- 27D**
 Table B: AFE for Proposal Well **LO6- 27D**



Fig. 1; Structural Map of Lower Basal Salina, Showing the Proposal Well LO6- 27D

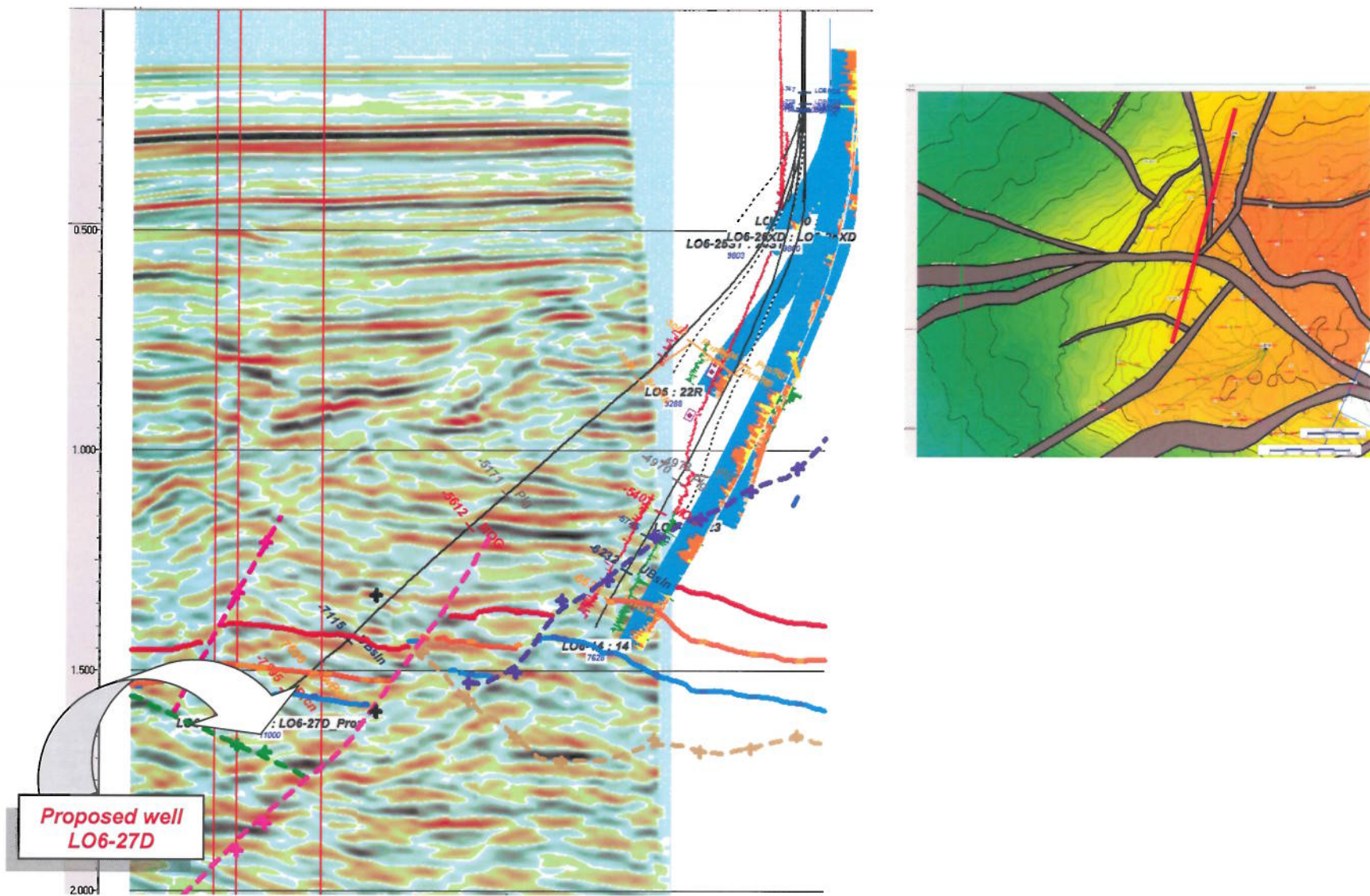


Fig. 3; SW- NE Arbitrary Seismic line for Proposal Well LO6-27D

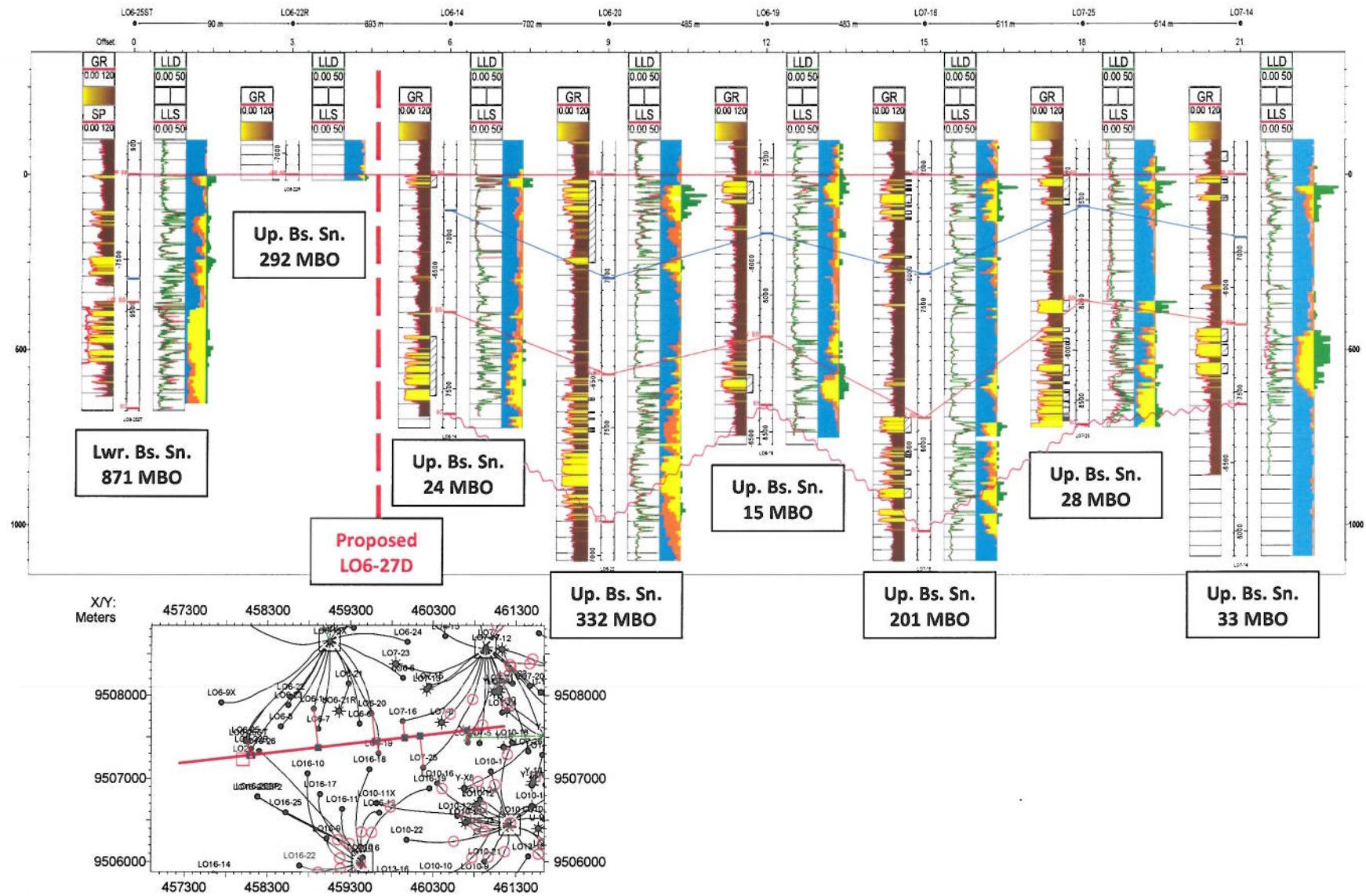


Fig. 6; W- E Stratigraphic Correlation of Basal Salina Formation around LO6 & LO7 platforms, with proposal well LO6- 27D

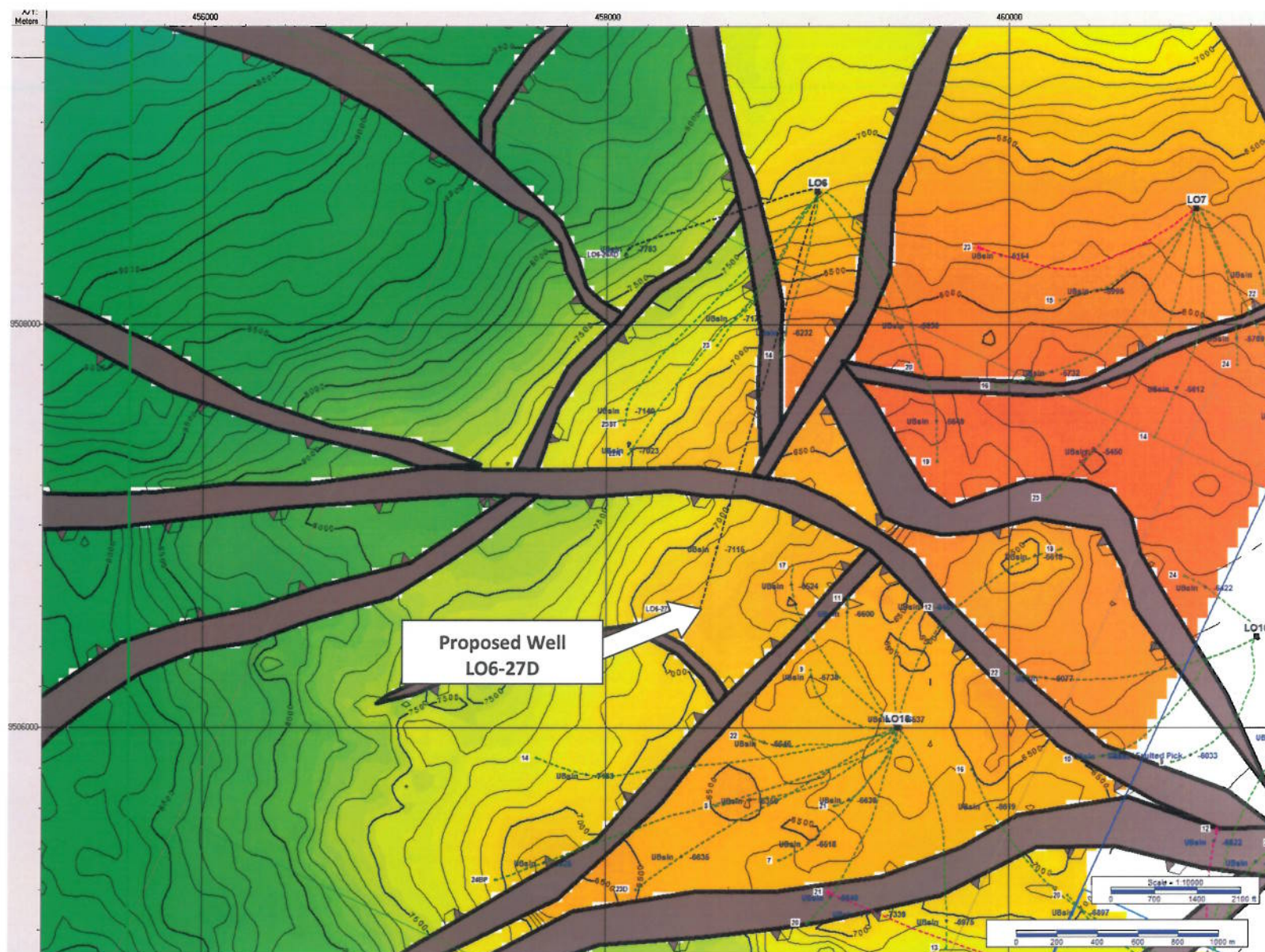


Fig. 7; Structural Map of Upper Basal Salina, Showing the Proposal Well LO6- 27D

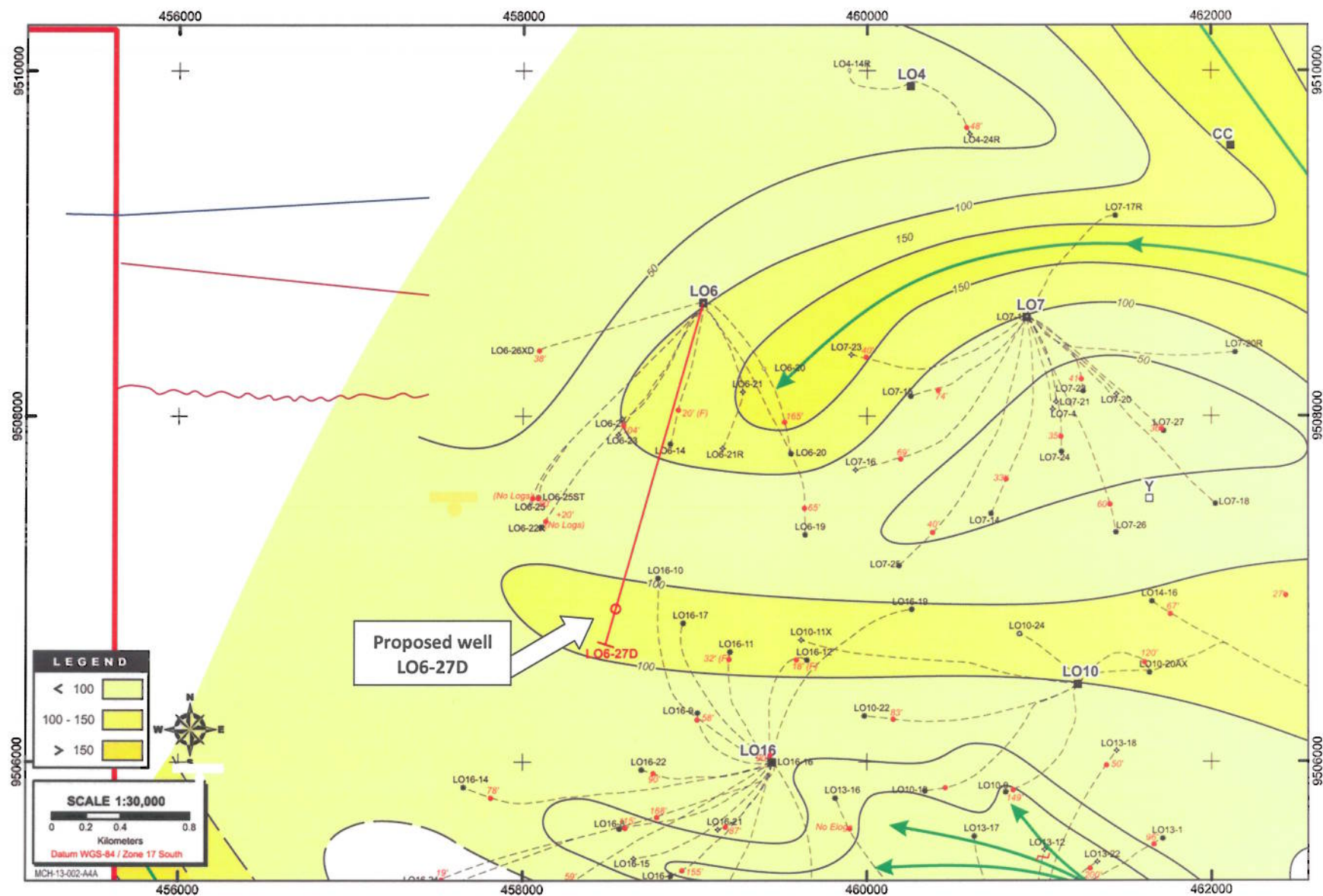


Fig. 8; Upper Basal Salina Net Sand Thickness Map for Proposal Well LO6- 27D

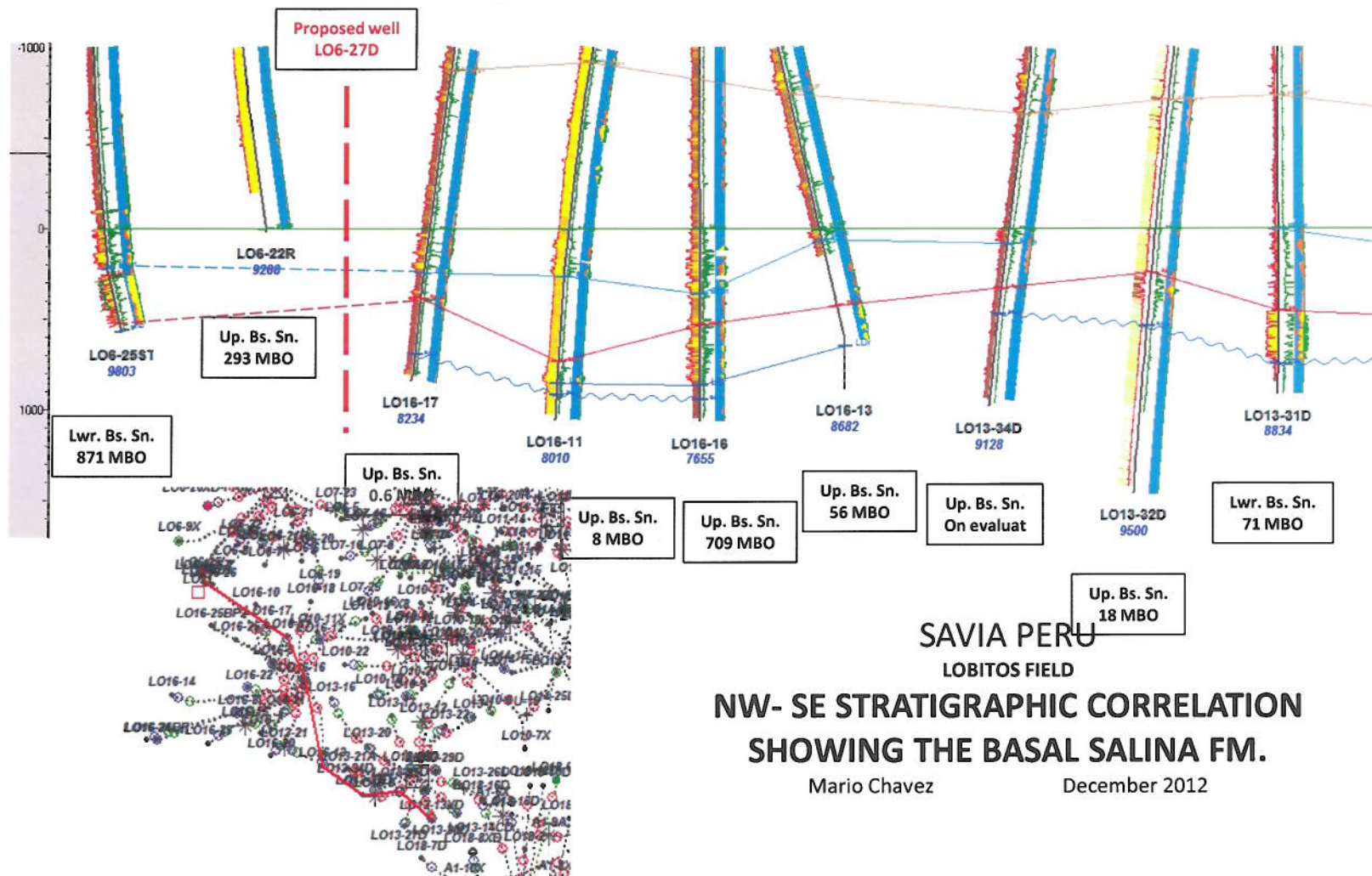
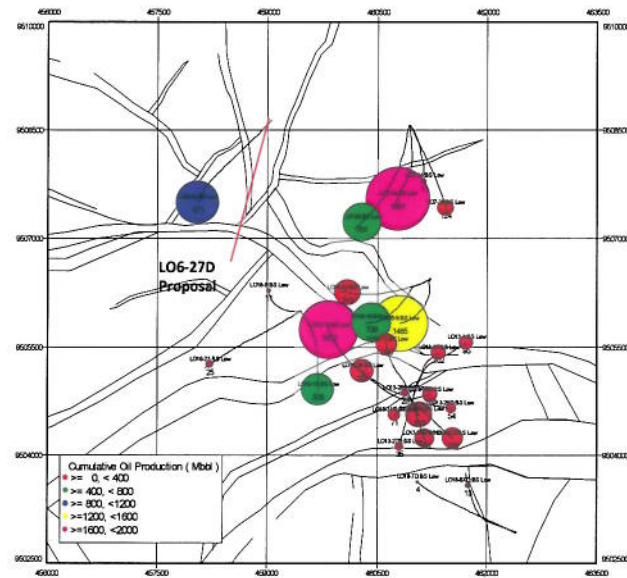
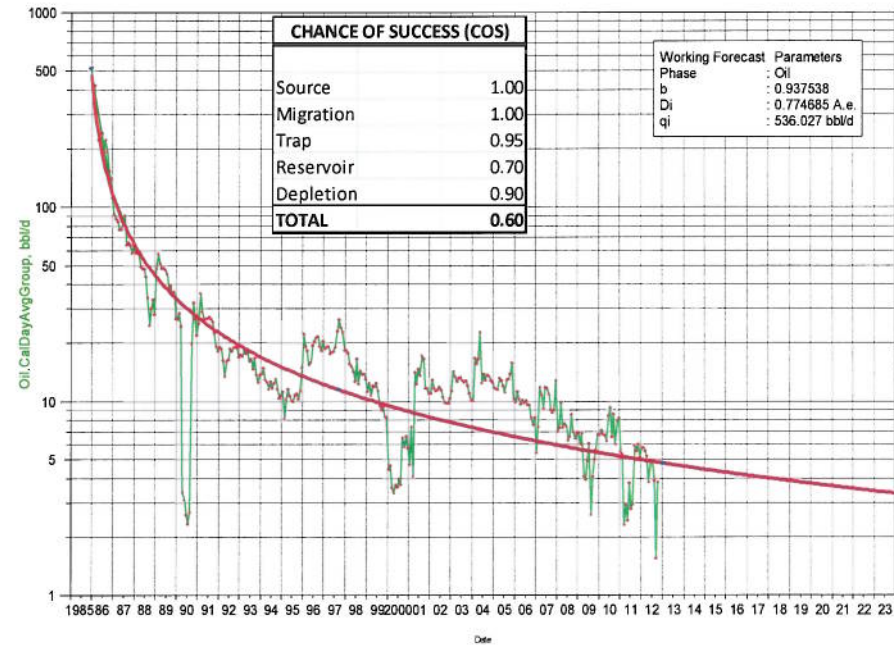


Fig. 9; NW- SE Stratigraphic Correlation of BASAL SALINA Formation around of LO6, LO16 & LO13 platforms

Cumulative Oil Production



Curve Type – Average LO16 Block



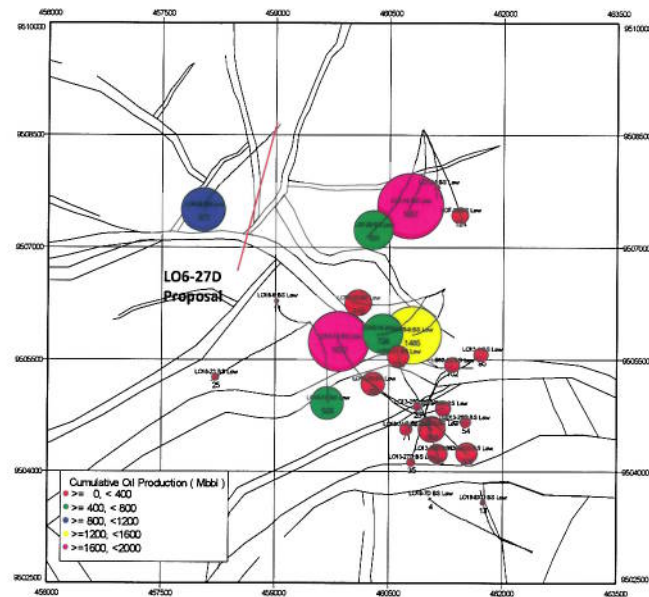
Flow Equation

Case	Fm.	Mbro.	Pr (Psi)	H (Feet)	Φ	k'	Sw	Bo	Uo	Ct	API ^o	Qi (BOPD)	Reserves MBO
LOW	BASAL SALINA	Lower	4057	25.0	9%	10	41.0%	1.321	0.629	1.505E-05	37	335	131
BASE	BASAL SALINA	Lower	4057	45.0	9%	10	41.0%	1.321	0.629	1.505E-05	37	600	235
HIGH	BASAL SALINA	Lower	4057	60.0	9%	10	41.0%	1.321	0.629	1.505E-05	37	800	314

Pi (Initial reservoir pressure estimated)= 4057 psi

Fig. 10; Estimated Oil Production and Reserves of Lower Basal Salina Formation

Cumulative Oil Production



Curve Type – Average LO16 Block



Flow Equation

Case	Fm.	Mbro.	Pr (Psi)	H (Feet)	Φ	k'	S_w	B_o	U_o	C_t	API ^o	Qi (BOPD)	Reserves MBO
LOW	BASAL SALINA	Lower	4057	25.0	9%	10	41.0%	1.321	0.629	1.505E-05	37	335	131
BASE	BASAL SALINA	Lower	4057	45.0	9%	10	41.0%	1.321	0.629	1.505E-05	37	600	235
HIGH	BASAL SALINA	Lower	4057	60.0	9%	10	41.0%	1.321	0.629	1.505E-05	37	800	314

Pi (Initial reservoir pressure estimated)= 4057 psi

Fig 11 Estimated Oil Production and Reserves of Upper Basal Salina Formation

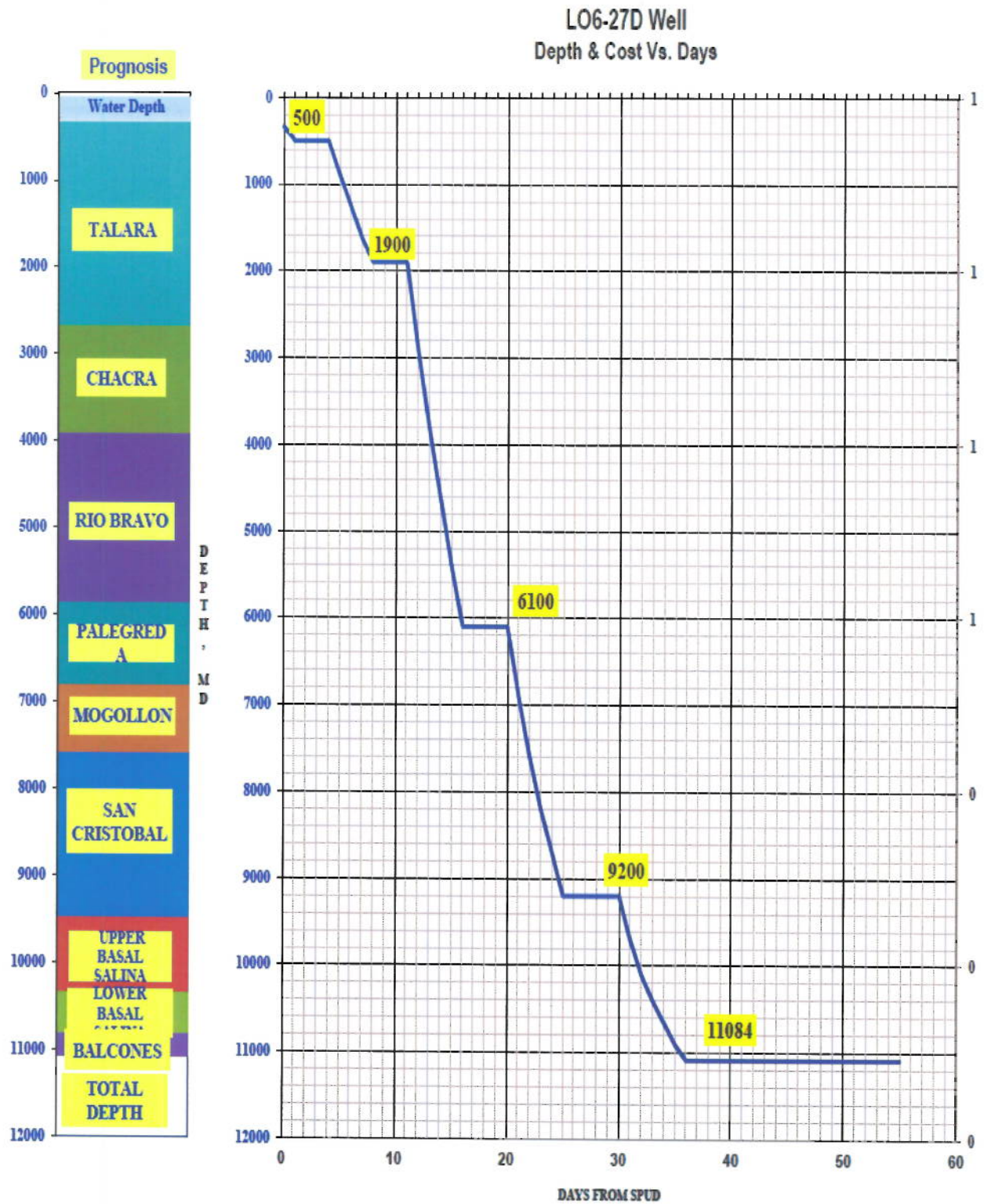


Fig. 12; Drilling and Cost Time-Depth of Well LO6-27D

Economic Summary (Savia)

LO6_27D_BASE

(Nominal values)

Interests & Settings

Net Revenue	84.00	Net Expl	100.00	Net Dev	100.00	Net Opex	100.00
Company (% of Total)	100.00	0.00	100.00	100.00	100.00	100.00	100.00
Partner (% of Contr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Contr	84.00	0.00	100.00	100.00	100.00	100.00	100.00
NOC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Model	Peru License R Fact (2003)						
Global Params	Savia Peru						
Escalation Date	2013/01						
Discount Date	2013/01						
Economic Limit	2023/12						

Economic Indicators

Disc. Rate	(%)	BT NPV	(M\$)	AT NPV	(M\$)	BT PIR	(fraction)	AT PIR	(fraction)	DPI	(fraction)	AT IE	(M\$)	AT IE	(fraction)
10.00		12,851.00		8,546.00		2.42		1.61		2.61		-5,300.00		1.61	
10.50		9,952.00		6,332.00		1.88		1.19		2.19		0.00		0	
10.50		9,847.00		6,251.00		1.88		1.18		2.18		-5,300.00		1.18	
12		9,547.00		6,022.00		1.8		1.14		2.14		0		0	
AT ROR (%)															
AT Payout (yrs)															
F&D (\$/BOE)															
Lifting Costs (\$/BOE)															

Cash Flow Breakdown

	(M\$)	(\$/BOE)	(M\$) [10.5 %]	(\$/BOE) [10.5 %]	(%)
Net Revenue	18,814.00	95.15	15,716.00	79.48	100.00
Less:					
Bonuses & Fees	0.00	0.00	0.00	0.00	0.00
Operating Costs	663.00	3.36	464.00	2.34	3.53
Tariffs	0.00	0.00	0.00	0.00	0.00
Prod & Asset Taxes	0.00	0.00	0.00	0.00	0.00
Capital Costs	5,300.00	26.80	5,300.00	26.80	28.17
Plus: Other Income/Expense	0.00	0.00	0.00	0.00	0.00
Before Tax Cash Flow	12,851.00	64.99	9,952.00	50.33	68.30
Less Income Tax	4,305.00	21.77	3,621.00	18.31	22.88
After Tax Cash Flow	8,546.00	43.22	6,332.00	32.02	45.42

Reserves and Investments

	(MSTB)	Project	Contr	Comp Wl	Company
Oil	(MSTB)	235.00	198.00	235.00	198.00
Gas	(MMSCF)	0.00	0.00	0.00	0.00
NGL	(MSTB)	0.00	0.00	0.00	0.00
Water	(MSTB)	0.00	0.00	0.00	0.00
Total	(MBOE)	235.00	198.00	235.00	198.00
Acquisition	(M\$)	0.00	0.00	0.00	0.00
Exploration	(M\$)	0.00	0.00	0.00	0.00
Development	(M\$)	5,300.00	5,300.00	0.00	5,300.00
Abandonment	(M\$)	0.00	0.00	0.00	0.00
Total	(M\$)	5,300.00	5,300.00	0.00	5,300.00

All values are Company (Comp) Share unless specified otherwise.

Date	Sales Volume Oil	Price Oil	Net Revenue Oil	Sales Volume Total	Net Price [BOE]	Net Revenue [BOE]	(-) Operating Costs	(-) Capital Costs	Amortization	Taxable Income	(-) Before Tax Cash Flow	(-) Income Taxes	(=) After Tax Cash Flow [10.5 %]
	MSTB	\$/Bbl	M\$	Total	\$/BOE	M\$	M\$	M\$	M\$	M\$	M\$	M\$	M\$
2013(12)	95.00	95.00	7,600.00	95.00	79.17	7600	117.00	5,300.00	2144	5339	2183	1768	395
2014(12)	41.00	95.00	3,297.00	41	95.00	3297	76.00	—	930	2291	3221	768	2454
2015(12)	24.00	90.20	1,827.00	24	90.2	1827	61	—	543	1223	1766	410	1357
2016(12)	17.00	92.01	1,313.00	17	92.01	1313	55	—	382	875	1258	293	964
2017(12)	13.00	93.85	1,025.00	13	93.85	1025	52	—	293	660	972	228	745
2018(12)	11.00	95.72	846.00	11	95.72	846	51	—	237	558	795	187	608
2019(12)	9.00	97.64	723.00	9	97.64	723	50	—	198	474	672	159	514
2020(12)	8.00	98.59	635.00	8	98.59	635	50	—	171	414	585	139	447
2021(12)	7.00	101.58	566.00	7	101.58	566	50	—	149	367	516	123	393
2022(12)	6.00	103.61	513.00	6	103.61	513	50	—	133	330	463	111	352
2023(12)	5.00	105.69	470.00	5	105.69	470	50	—	119	300	420	101	319
Total	235.00	97.30	18,814.00	235.00	—	18,814.00	663.00	5,300.00	5300	12851	12851	4305	8546

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 MUSD\$	5,300
Oil Price according Portfolio MTP 2012: 95 US\$/BL for 2013 & 2014	
phased 2% yearly from 2015 to 2023.	

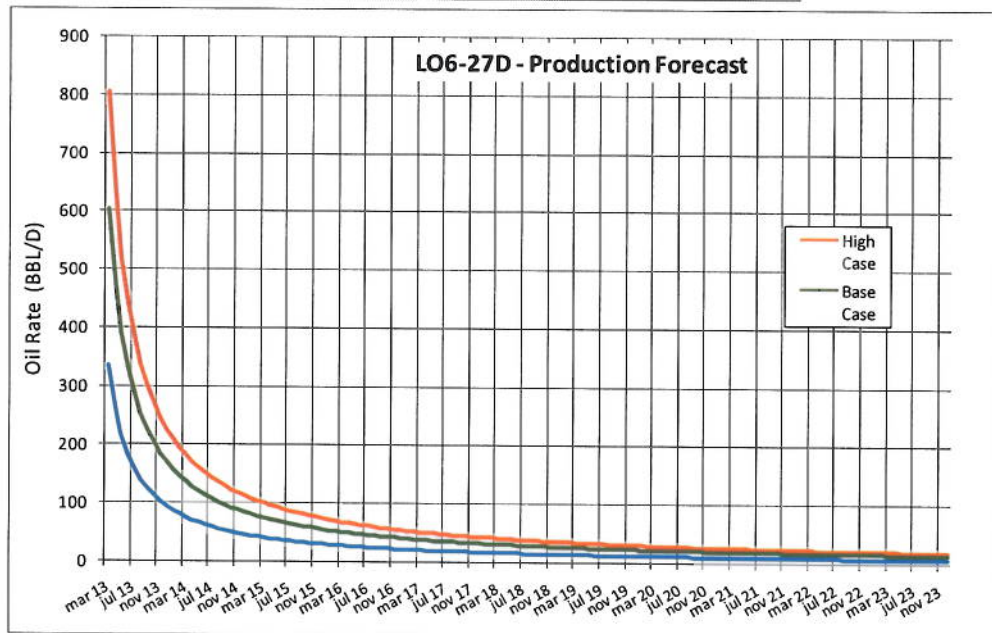


Table A; Economic Summary and Oil rate forecast for Well LO6-27D.



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CIA	ACD	BUDGET ITEM
06		

A F E No.

FU	WELL DESCRIPTION	OFICIAL NUMBER				MM / DD / AA
18	LOG-27D					
TOTAL ESTIMATED DAYS						
FU	TYPE OF WELL	MOV / COND	DRILLING	COMPLETION	EST. FOOTAGE	A R E A
19	DEVELOPMENT	5	36	19	11084	LOBITOS

FU	GEN	CC	AREA
20		061	

WELL COST BREAKDOWN

SUB	DESCRIPTION	QUANTITY	UNIT COST	SUB-TOTAL	TOTAL US\$
OUTSIDE SERVICES:					
201	DRILLING RIG	24	36		1 280 000
203	DIRECTIONAL DRILLING				350 000
204	MUD LOGGING	39		2300	89 700
205	MUD ENGINEERING	41	14	1100 600	53 500
206	CEMENT CONDUCTOR				0
206	CEMENT. SURF. CSG.				24 440
206	CEMENT. INTERM. CSG.				23 150
206	CEMENT. OTHERS				18 730
206	CEMENT 7" CSG.				25 360
206	CEMENT. 5" LINER				19 500
207	ELECTRIC LOGGING				400 000
208	PERFORATING				54 000
209	STIMULATION				35 000
211	TUBULAR INSPECTION				13 250
212	HYDRAULIC TONGS				104 630
213	DIVING				18 690
219	WELL TESTING				8 000
221	TOOL SERVICES				25 000
224	METALIC STRUCTURES CUT & WELD				12 000
228	MACHINE WORK				7 500
229	BARGE OPERATIONS				354 000
231	BOAT OPERATIONS				330 000
237	MATER. & EQUIP. TRANSP.				21 000
240	WATER SUPPLY				14 400
243	CHARTER				0
244	TOOLS RENTAL				228 400
248	CATERING				54 000
249	CONSULTING				75 000
252	ENVIRONMENTAL PROTECTION				15 000
TOTAL OUTSIDE SERVICES:					3 652 250
MATERIALS & SUPPLIES:					
301	FITTING SCREWED				200
303	VALVES AND PARTS				800
304	API FLANGES & RING GASKET				800
306	HARDWARE				900
325	BITS				76 000
326	TOOLS FOR DRILLING				63 770
327	COMPLETIONS				98 000
328	FLOATING EQUIPMENT - CMT.				28 340
329	PRODUCTION FACILITIES EQUIP.				1 520
335	OTHERS TUBULAR CONNECTIONS				7 500
336	STRUCTURAL CONST. MAT.				2 200
340	WELDING MATERIAL				400
341	MAT. CMT. CONDUCT.				0
341	MAT. CMT. SURF. CSG.				11 000
341	MAT. CMT. INTERM. CSG.				27 300
341	MAT. CMT. 7" CSG.				27 600
341	MAT. CMT. 5" LINER				34 050
341	MAT. CMT. OTHERS				7 050
342	STIMULATION MATERIAL				90 000
343	DRILLING / COMPLETION FLUIDS				204 580
344	CONDUCTORS	450	45.50		20 480
344	SURFACE CSG.	1000	40.00		40 000
344	INTERMED. CSG. (9 5/8")	3900	34.00		132 600
344	7" CSG.	8000	20.00		160 000
344	5.5" CSG.	0	19.00		0
344	5" LINER	3584	28.00		100 350
344	2 7/8" TUBING	11084	5.50		60 960
346	DIESEL-FUEL				450 680
347	OIL & GRASES				1 600
TOTAL MATERIALS & SUPPLIES:					1 648 680
TOTAL PROJECT COST US \$					5 300 930

Table B; AFE for proposal Well LO13-27D