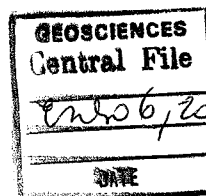


**PETRO-TECH
DRILLING**

FINAL INFORMATION

WELL No. : LO16 -25
AFE No. : 2212001
RIG No. : P # 48
CONTRAT. : PEPESA



WELL DATA

TYPE OF WELL :	DEVELOPMENT
WATER DEPTH	309'
SPUD IN DATE :	SEPT. 03 -2002
DATE T.D. REACH.:	OCT. 18 -2002
DATE ABANDON	OCT. 20 -2002
DRLG. DAYS :	45.25
T.D. (MD) :	6894'
T.D. (TVD) :	4224'
MAX. ANGLE :	66.34°
FINAL ANGLE :	46°
DIRECTION :	N 58.2° W
OBJECTIVE FORM.:	RIO BRAVO
TOTAL COST (\$) :	1'580,700*
FT. COST (\$) :	132.74

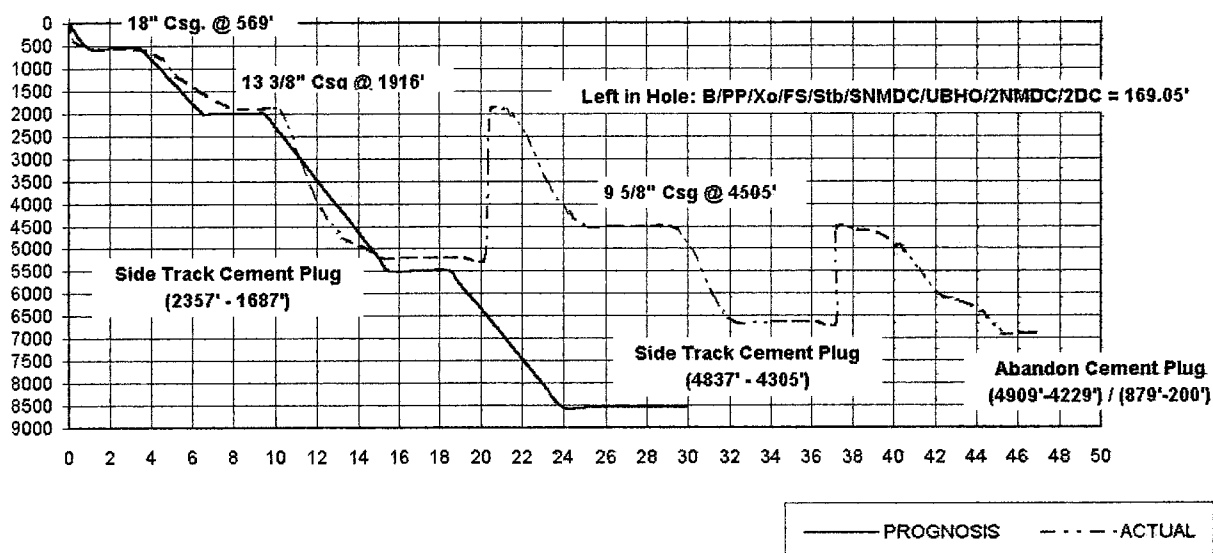
PETRO-TECH

DRILLING

DRILLING TIME PROGNOSIS

WELL: LO16-25	RIG: P-48	CONTRACTOR: PEPESA	LOCATION: LOBITOS
OBJECTIVE: RIO BRAVO	ESTIMATE DEPTH: 8,550'	DAYS ESTIM: 24	REAL: 45 API: 2212001
SPUD DATE: SEPT. 03-2002	DATE TD. REACH: OCT.18-2002	FINAL DEP.: 6894'	RELEASED: OCT.20-2002

DEVELOPMENT WELL



Relocate components; Skidded Rig over slot # 25. Ran 18" conductor tag at 385 penetrated (5'). RIH w/Slick Assy. Gyro Data took multishot survey from: 365 to surface (365 -1.181°-S76.19°E) POOH .W.O. Divers to orient and relocate conductor. Lifted and pulled sling to pass horizontal member of jacket; ran conductor to 392 (7' toward west from first conductor point) RIH w/slick Assy. tag at 370' took multishot Gyro (365°-2.25°-N55.32°W) 3 Sept. Start-Drilled to 411 and penetrated conductor to 405 Drilled to 570' without return POOH. M/U underreamer RIH to 410 enlarge hole. POOH. Ran 18" Cond. to 569 welded its base & flange and N/U 21 1/4" Annular Bop's. RIH w/opened end Dp's to 570. Circ. Cemented. RIH w/Slick Assy tag at 495 drilled out cement displaced water by mud. Drilled high torq to 586' took multishot gyro from 550 to 50 (550 -1.62°- N51.28°W) POOH made 14 trips w/magnet-mill (recovered 35 kgs of junk) M/U Mud Motor-(GTX-CS1) bit. Drilled sliding from 586 to 786. Circ took gyro multishot and install MWD; tested -Ok. Drilled to 1087' (33.2° -N30.7°W) made short trip to 18" Cond. Drilled to 1150' (37.27°-N29.32°W) repaired # 2 mud pump (5.5hrs). POOH to shoe; changed liner packing of cylinder head (9.5hrs) RIH to bottom drilled (sliding & rotating) to 1464 (54.15°-N33.11°W) made short trip 5 stands tag at 1430 washed out to bottom. Drilled to 1526' repaired # 1 mud pump (changed pony road of piston -1.5hrs) POOH changed Mud Motor: 5/6 stand by 4/5 XP. RIH tag at 1481 washed to bottom. Drilled to 1718' (66.15°-N50.81°W) repaired # 2 mud pump (0.5hrs) Drilled to 1855' (65.79°-N53.29°W) changed liner and piston of # 2 mud pump (1hr) Drilled to 1916'. POOH. L/D Mud Motor and R/U Near Bit. RIH tag at 1666; washed out to bottom. POOH. Ran - Cemented 13 3/8" Csg. WOC. Cut off Csg. N/D Bop's welded Csg. Head; N/U raiser and Bop's. welded flowline; tested blind rams & kill lines w/1200 psi-Ok. RIH w/Slick Assy. Tag at 1855 tested Pipe Ram's w/1200 and Annular w/800psi-Ok. Drilled out cement and 9' formation. POOH. RIH w/(S987BHP) PDC-bit & Mud Motor at 1863 cut 70' drilling line. Drilled (sliding & rotating) to 2498' (58.6°-N61.1°W) made short trip to 13 3/8" shoe. Drilled to 3093' (63.1°-N64°W) short trip 6 stand-Ok. Drilled to 3628 (63.3°-N64.3°W) short trip 6 stands-Ok. Drilled to 4132 (62.7°-N62°W) short trip to 13 3/8 shoe. Repaired fawick air line of # 1 engine of drawwork (0.5hr) Drilled to 4383' (62.7°-N62.3°W) welded nipple of # 2 mud pump (1.5hrs) Drilled to 4612' ; welded nipple of # 2 mud pump (1hr); short trip 6 stands-Ok. Drilled to 4728 (63.3°-N63.3°W) changed piston on # 2 mud pump (0.5hr). Drilled to 4828' (62.5°-N64.3°W) POOH changed Mud Motor. RIH washed out from 4780 to bottom. Drilled to 4947'; changed piston on # 1 mud pump (0.5hr) Drilled to 5014' (63.1°-N64°W) repaired line of diesel of # 1 drawworks eng. (1hr) Drilling at 5202(63.6°-N62.69°W) Circ made short trip to 13 3/8" shoe POOH - RIH 9 5/8" Cgs at 2912; repaired bell nipple cont. RIH w/difficulty tag at 3289 attempted circulating negative POOH 1 joint to 3242 and stablished circulation attempted RIH csg negative tag at 3289 worked and POOH to 2864 circ. & increased mud WT. to 10.8ppg; secured bell nipple POOH Csg. RIH w/Near bit Assy

tag at 2794 reamed w/difficulty to 3086; raised mud WT to 11ppg, continue reaming to 3117 worked string to free and POOH to 3054 RIH to 3117; reamed w/difficulty to 3182 pumped low viscosity pill and heavy sweep to clean out well; raised mud WT to 11.2ppg continue reaming to 3260; worked string to free; increased pump pressure and POOH to 2952; jarring and pulling joint by joint to 2295; then in stands to surface. Cleaned balled up 12 1/4" bit RIH w/same Assy tag at 2350; N/U kelly reamed w/difficulty and worked string to 2867; made connecyion, D/P hold, didn't run; POOH joint. Circ & POOH string. RIH w/diverter tool at 2357 and set **side track cement plug**. WOC (28hrs)

M/U 12 1/4" bit tag at 1662'; drilled out soft cement to 1794'. WOC (4.5hrs) Drilled out cement to 1920 - hard POOH M/U (**S987BHP**) bit -Mud Motor. Drilled (sliding & rotating) to 2464 (62.8°-N62.4°W) short trip to 13 3/8" shoe. Drilled to 2841' (63°-N66.8°W) changed piston on # 2 mud pump (0.5hr) Drilled to 3030' (64°-N66.8°W) short trip 6 stands. Drilled to 3070 changed pony rod piston on #2 mud pump (1hrs) Drilled to 3218 (64.5°-N63.8°W) changed piston on #2 mud pump (0.5hrs) Drilled to 3533 (63°-N62.1°W) made short trip to 13 3/8 shoe. (last 3 stands POOH w/drag) RIH without problems. Drilled to 3548' repaired leak on nipple of dumper of #2 mud pump (2hrs) Drilled to 4036' (62.9°-N62.6°W) short trip 6 stands. Drilled to 4287 (62.2°-N62.6°W) changed piston on #1 mud pump (0.5hrs) Drilled to 4505 (62.5°-N64°W) short trip 6 stands. Circ & raised mud WT. to 11.8ppg. POOH w/difficulty from 2306 to shoe L/D Slim-1 and Mud Motor. P/U near bit Assy and RIH set at 2174 reamed to 2499 Circ. RIH w/elevator to 2655 put kelly and RIH w/circ. joint by joint to 3252. POOH L/D 11joints to 2866; reamed w/difficulty to 3977. Circ. and pumping heavy sweep; reaming to 4505. Circ. displaced 120 bls pill w/lubra-glide (6lbs/bl) short trip 20 stands. RIH tag at 4376; reamed to bottom. Cir & pumped 120 bls pill w/lubra-glide POOH to surf. (worked string to pass trough 13 3/8" shoe) Run & Cemented 9 5/8" Csg; set slips; N/D Bop's; cut csg. N/U Csg Spool N/U Bop's; welded flowline; Tested blind rams, lines and kill manifold w/1500psi-Ok. RIH 8 1/2" bit w/Slick Assy tag at 4410 tested pipe rams w/1500psi and annular w/1000psi-Ok. Drilled out cement to 4505 and formation 10'. POOH. M/U Mud Motor. RIH w/(**MA88PX**) bit. Drilled to 4858(60.8°-N61.9°W) raised Mw to 10.7ppg by gas; made short trip to change MWD. Drilled to 5265 (61.5°-N59.8°W) short trip 6 stands Drilled to 5673' (61.1°-N60.5°W) made short trip 6 stands Drilled to 6080' (61.7°-N59°W) short trip 5 stands Drilled to 6647' (60.6°-N59.1°W) Circ. short trip to 6325 (MOP 220M#) worked in tight hole 6325 to 6294 to free (245M#) reamed w/difficulty from 6294 to 6334 (partial circulation) high torque-loss circ; left kelly (bit at 6294') attempted pull w/jar-negative worked stuck pipe HLS RIH w/MWD fishing tool no pass to 4818 POOH M/U injection head in 5"Dp. RIH fishing tool w/pump pressure at 6214 and recovered MWD-GR. RIH w/free point detector-no pass to 5050. POOH gauge sensor ran w/pump pressure to 6194 no pass (at 6160 free 30% 6130 100% free) Ran string shot w/pump pressure at 6130 worked string to apply torque made mechanic back off. Ran CCL detected unscrew at 5724 attempted recover CCL-negative. POOH string cutting wire line cable in each stand recovered CCL. RIH w/opened end heavy weight to shoe. Circ gas cut mud, raised Mw from 10.7 to 11.2ppg continue RIH to 5724 worked and caught fish. HLS M/U and RIH severing tool w/pump pressure to 6126 fire and cut between 2nd and 3rd Dc's worked string to free. POOH w/difficulty joint by joint to shoe then in stands to surf. **Recovered:** 11Hw's, 1Dc and drill collar parted - **Left in hole:** B/PP/Xo/F.S/ Stb/ SNMDC/UHBO 2NMDC/2Dc's = 169.05' RIH w/diverter tool to 5000; Circ & set heavy sweep POOH to 4837 and **set side track cement plug**. WOC (23.5hr) M/U 8 1/2" bit tag at 4234 drilled out cement to 4379 WOC (2.5hr) drilled cement to 4535 Circ. displace contaminated mud POOH M/U (**M88PX**) bit w/Motor (rotating & sliding) to 4651' (61.7°-N61.5°W) worked string and circulated POOH to 9 5/8" shoe. RIH joint by joint circulating to 4628 and displaced pill w/asphalt. POOH L/D motor. RIH w/Slick Assy (**GTM-1**) bit to 4464 repaired Sweco shale shaker. Drilled to 4661 Circ & pumped low viscosity pill; made short trip to shoe; displace high viscosity pill. POOH M/U (**M88PX**) bit w/Motor (rotating & sliding) to 4951' (56.6°-N60.5°W) made short trip to shoe. Drilled to 5358' (51.7°-N61.2°W) Circ and pumped low viscosity pill short trip 5 stands. Drilled to 5765 (48.4°-N59.9°W) Circ & pumped low viscosity pill short trip 5 stands Drilled to 6047' (49°-N60.5°W) Schlumberger changed Gamma Ray depth sensor (placed on drum) drilled to 6173' Circ & slug plug. POOH joint by joint circulating to 4511'; POOH in stands L/D Motor - Monels. RIH w/(0'-30')BHA -(**DS70FVAV**) bit tag at 4631 RIH w/Circ to 4718 then in stands to bottom. Drilled to 6221'. POOH Changed bit. RIH w/(**M88PX**) bit to 6171 and washed out to bottom. Drilled to 6579'. Circ. made short trip to 6100 (230M#); reamed from 6539 to 6579. Drilled to 6880' changed piston on # 1 mud pump. Drilled to 6894' (TD) Circ POOH joint by joint circulating to 6195 (230M#) Circ POOH in stands Circulated to clean hole continue POOH w/kelly and pump from 6008 to 5538 (220M#) tigh hole pumped pill finished POOH to surface. RIH w/diverter tool to 5100 Circ. pumped and displaced slug plug. Circulated. POOH to 4809. **Set 1st. Cement Abandon Plug**. POOH L.D.Dp's w/diverter tool to 1034 pumped high viscosity pill. POOH to 879. **Set 2nd. Cement Abandon Plug**. Finished L.D. Dp's. Rigging Down.

MOVING	ROTATE	TRIPS	REL. DRLG	M & R	COMPL.	STUCK PIPE	DOWNTIME
40	355.5	296.5	387.5	28		62.5	

BIT RECORD & FOOT COST (US\$)

WELL : LO16 - 25

SPUD IN DATE : SEPT. 03 - 2002

MUD TYPE : FLO-DRILL

RIG : PEPESA # 48

T. D. REACHED : OCT. 18 - 2002

MAX. ANGLE : 66.3°

BIT	SIZE	TYPE	MFG	SERIAL	JETS	DEPTH		FOOT.	HOURS		ROP	TRIP	BIT		WOB	RPM	PUMP		MUD WT.	DULL COND.	FORMATION
						IN	OUT		ROT.	CUM			COST	\$/Ft.			PRESS	GPM			
1RR	17	GTX-C1	HTC	S64DJ	3x16 - 14	360	570	210	3	3	70.0	0.9	0	7.3	15/20	120	550	500	8.3		TALARA
1RR	17	GTX-C1	HTC	S64DJ	3x16 - 14	570	586	16	1.5	4.5	10.7	0.9	0	59.3	10	70	980	595	8.5	4-3-1/16	
2	17	GTX-CS1	HTC	600092	3x20 - 16	586	1,526	940	32.5	37	28.9	2.3	15,500	31.1	35	MM/70	1,800	732	9.5		HELICO
2RR	17	GTX-CS1	HTC	600092	3x20 - 16	1,526	1,916	390	24	61	16.3	2.9	0	27.2	35	MM/50	2,100	703	9.4	3-4-3/16	LOBITOS
3RR	12 1/4	GTM-1	HTC	T04DA	3x16	1,916	1,925	9	0.5	61.5	18.0	2.9	0	149.2	15/5	100	1,800	645	8.7	4-4-1/8	LOBITOS
4RR	12 1/4	S987BHPX	STC	JS71794	7x13 - 2x14	1,925	4,828	2,903	63.5	125	45.7	7.2	0	9.6	10/20	MM/80	2,500	686	10.2		CHACRA
4RR	12 1/4	S987BHPX	STC	JS71794	8x14 - 15	4,828	5,202	374	14.5	139.5	25.8	7.8	0	23.6	8/18	MM/70	2,600	680	10.5	16%	CHACRA
SIDE TRACK																					
4RR	12 1/4	S987BHPX	STC	JS71794	8x14 - 15	1,940	4,505	2,565	66	205.5	38.9	6.8	0	11.2	15/30	MM/70	2,300	615	11.8		CHACRA
5RR	8 1/2	GTM-1	HTC	X65VD	3x8	4,505	4,515	10	0.5	206	20.0	6.8	0	288.4	15	60	1,400	489	10.3		CHACRA
6RR	8 1/2	MA89PX	STC	JS2239	3x15 - 3x16	4,515	4,858	343	9	215	38.1	7.3	0	18.8	12	MM/60	2,050	524	10.7		R. BRAVO
6RR	8 1/2	MA89PX	STC	JS2239	3x15 - 3x16	4,858	6,647	1,789	41.5	256.5	43.1	10	0	11.4	15	MM/60	2,150	476	11		R. BRAVO
SIDE TRACK																					
6RR	8 1/2	MA88PX®	STC	JR5253	6x16	4,535	4,651	116	10.5	267	11.0	7	0	59.6	10/20	MM/60	2,200	512	11.5	22%	CHACRA
7RR	8 1/2	GTM-1	HTC	X65YP	2x22 - 3x16	4,651	4,661	10	2	269	5.0	7	0	355.5	10/18	100	1,550	480	11.5	3-4-3/16	CHACRA
6RR	8 1/2	MA88PX®	STC	JR5253	6x16	4,661	6,173	1,512	58.5	327.5	25.8	9.3	0	17.7	15	MM/60	2,450	512	11.7		R. BRAVO
8RR	8 1/2	DS70FVAV	HYC	19694	3x18 - 3x16	6,173	6,221	48	5	332.5	9.6	9.3	0	117.7	18	110	1,800	512	11.7	25%	R. BRAVO
6RR	8 1/2	MA88PX®	STC	JR5253	6x16	6,221	6,894	673	23	355.5	29.3	10.3	0	19.5	20	110	2,000	512	11.7	25%	R. BRAVO
														16.37							

NOTE: PDC BIT PERFORMANCE

	FOOTAGE	HOURS
S987BHPX (JS71794)	9,347	209
MA89PX (JS2239)	4,604	192
MA88PX® (JR5253)	10,320	206
DS70FVAV (19694)	3,675	61

TFA: 1.208 = (7x13 - 2x14) = 7x15

TFA: 1.376 = (8x14 - 15) = 7x16

Drill String:	PIPE		TOOL JOINT		WEIGHT
	O.D	I.D	O.D	I.D	lbs/pie
Drill pipe "E"	5.00	4.3	6.25	3.25	19.5
Heavy weight	5.00	3	6.50	2.875	53.00
Drill collar (two size)	8.00	3	6.25	2.813	150 / 92

HYDRAULIC ANALYSIS

WELL : LO16 - 25

TYPE BIT	INTERVAL		BIT size	NOZZLES							FLOW gpm	PRESSURE (psi)		VELOCITY (ft/min)			HSI hp/plg2	JET VEL. ft/seg	IMPACT FORCE	ROP ft/hr	ECD lbs/gl	TYPE Motor	BHA
	FROM	TO		J-1	J-2	J-3	J-4	J-5	J-6	J-7		Bit	Systems	D.p	D.c	Critical							
GTX-1(rr)	360	570	17.00	16	16	16	14				500	315	699	46	44	289	0.4	217	443	70.0	8.3		1
GTX-1(rr)	570	586	17.00	16	16	16	14				595	458	1069	55	52	272	0.7	258	642	10.7	8.5		2
GTX-CS1(rr)	586	1526	17.00	20	20	20	16				732	339	2066	68	64	264	0.6	210	719	28.9	9.5	PP	3
GTX-CS1(rr)	1526	1916	17.00	20	20	20	16				703	310	2071	65	62	266	0.6	202	656	16.3	9.4	PP	4
GTM-1(rr)	1916	1925	12.25	16	16	16					645	867	1882	126	112	337	2.8	351	969	18.0	8.7		5
S987BHPX(rr)	1925	4828	12.25	15	15	15	15	15	15	15	686	273	2623	134	119	300	0.9	182	627	45.7	10.2	PP	6
S987BHPX(rr)	4828	5202	12.25	16	16	16	16	16	16	16	680	214	2670	133	118	304	0.7	159	557	25.8	10.5	PP	7
SIDE TRACK																							
S987BHPX(rr)	1940	4505	12.25	16	16	16	16	16	16	16	615	196	2463	120	107	286	0.6	144	512	38.9	11.8	PP	7
GTM-1(rr)	4505	4515	8.50	18	18	18					489	368	1417	254	186	377	1.9	210	521	20.0	10.6		8
MA89PX(rr)	4515	4858	8.50	16	16	15	15	15	15		524	208	2025	272	200	371	1.1	155	428	38.1	11.0	PP	9
MA89PX(rr)	4858	6647	8.50	24	16	15	15	15	15		476	117	1926	247	181	368	0.6	115	296	43.1	11.3	PP	9
SIDE TRACK																							
FISH : B / PP / Xo / F.S / SNMDC / UBHO / 2NMDC / 2DC's (169.05')																							
MA88PX(rr)	4535	4651	8.50	16	16	16	16	16	16		512	181	1932	265	195	351	1.0	139	404	11.0	11.8	PP	10
GTM-1(rr)	4651	4661	8.50	22	22	18					480	224	1363	249	183	351	1.1	155	422	5.0	11.8		11
MA88PX(rr)	4661	6173	8.50	16	16	16	16	16	16		512	184	2146	265	195	347	1.0	139	411	25.8	12.0	PP	10
DS70FVAV(rr)	6173	6221	8.50	18	18	18	16	16	16		512	143	1680	265	195	347	0.8	123	362	9.6	12.0		12
MA88PX(rr)	6221	6894	8.50	16	16	16	16	16	16		512	184	1806	265	195	347	1.0	139	411	29.3	12.0		12

BHA

- B / Bsub / 2Dc's1 / Xo / 4Dc's / Xo / 6Hw's (1)
- B / Xo / J.B / Xo / 2Dc1 / Xo / 6Dc's / Xo / 9Hw's (2)
- B / PP / F.Sub / SNMDC / UBHO / 2NMDC / 2Dc1 / Xo / 4Dc's / Xo / 6Hw / Jar / 14Hw's (3)
- B / PP / F.Sub / SNMDC / UBHO / 2NMDC / 2Dc1 / Xo / 4Dc's / Xo / 6Hw / Jar / 21Hw's (4)
- B / J.B / Xo / Dc1 / Xo / 7Dc's / Xo / 6Hw's / Jar / 17 Hw's (5)
- B / PP / F.Sub / Stb / SNMDC / UBHO / 2NMDC / 2Dc1 / Xo / 4Dc's / Xo / 6Hw / Jar / 21Hw's (6)
- B / PP / F.Sub / SNMDC / Stb / UBHO / 2NMDC / 2Dc1 / Xo / 4Dc's / Xo / 6Hw / Jar / 21Hw's (7)
- B / Xo / 7Dc's / Jar / 17Hw's (8)
- B / PP / Xo / F.Sub / Stb / SNMDC / UBHO / 2NMDC / 4Dc's / Xo / 12Hw / Jar / 14Hw's (9)
- B / PP / Xo / F.Sub / Stb / UBHO / SNMDC / 2NMDC / 4Dc's / Xo / 6Hw / Jar / 20Hw's (10)
- B / NBStb / F.Sub / 3Dc's / Xo / 6Hw's / Jar / 20Hw's (11)
- B / NBStb / F.S / Dc / Stb / 4Dc's / Xo / 6Hw's / Jar / 20Hw's (12)

CENTRAL FILE
GEOSCIENCES

DRILLING MUD RECAP

WELL: LO16-25

RIG: PEPESA # 48

	DEPTH	W. T	FUN. VISC	PLAST.	YIELD	GELS	FILTR.	CAKE	SOLIDS	SAND	MBT		ALKALINITY		CHLORIDE	CALCIUM	POTASIUUM	REMARKS
DATE	ft	lb/gl	Sec/gt API	VISC CPS	POINT lb/100ft2	10" / 10" lb/100ft2	API cc	1 / 32	% BY VOL	%by vol	lbs/bl	PH	Pm	Pf / Mf	mg/l	mg / lts	mg / lt	
05-Sep	570	8.5	45	11	13	3 / 4	12.0	1	2			10.5	1.10	5 / 1.2	15,000	60	13,500	Changed 60 mesh to 40 (Shale shaker) Brandt
06-Sep	692	8.5	42	9	13	3 / 4	10.0	1	2	0.10		10.5	1.00	.25 / .6	15,000	100	13,500	Changed (175-140) by 2(140) Sweco #2
07-Sep	1150	9.0	44	13	16	4 / 6	7.2	1	3	0.48	8	10.2	0.60	.15 / .3	17,000	200	12,000	
08-Sep	1646	9.2	44	14	16	4 / 10	7.4	1	4	0.40	15	9.9	0.60	.2 / .45	17,000	180	14,000	Changed 170 to 140 Sweco
09-Sep	1736	9.5	43	15	18	4 / 14	7.6	1	5	0.35	18	10.0	1.00	.28 / .6	17,000	80	15,000	60x40 Mesh new Brandt #1
10-Sep	1916	9.4	45	15	19	6 / 15	8.0	1	7	0.40	22	10.5	0.70	.2 / .5	16,000	100	15,000	
11-Sep	1916	8.5	42	8	11	2 / 3	10.0	1	1									Start Flo-Drill
12-Sep	1925	8.7	45	12	14	4 / 5		1	2		2.5	9.0	0.50	.18 / .26	24,000	160	20,000	Changed 6 mesh 140 Sweco # 1 & 2
13-Sep	3093	9.1	43	13	17	4 / 7	7.5	1	4	0.25	18	9.8	0.70	.2 / .4	19,000	300	13,500	
14-Sep	4123	9.8	48	16	19	4 / 12	6.5	1	8	0.20	25	9.1	0.45	.12 / .45	22,500	320	12,500	Changed 40 mesh to 60x40 Brandt #1
15-Sep	4765	10.0	46	18	20	6 / 16	6.8	1	10	0.40	27.5	9.5	0.40	.15 / .5	22,000	380	14,500	Changed Sweco 2(140 - 110)
16-Sep	4930	10.2	52	13	25	7 / 18	6.6	1	11	0.30	25	9.2	0.50	.12 / .45	20,000	380	13,500	Brandt #2 install 60x40 new
17-Sep	5202	10.4	55	19	22	5 / 18	7.0	2	12	0.50	30	9.8	0.40	.15 / .5	20,000	180	12,500	
18-Sep	5202	10.6	50	16	18	4 / 18	6.6	2	12	0.20	30		0.35	.1 / .5	20,000	280	12,000	Loss 100 bls of mud
19-Sep	5202	11.2	58	22	27	7 / 23	6.5	2	15	0.70	32.5	9.2	0.40	.1 / .4	20,000	260	11,500	
20-Sep	5202	11.2	54	22	24	7 / 24	6.5	2	15	0.50	35	9.3	0.50	.15 / .6	22,000	280	11,500	Changed Brandt #2 (60x40) 1/Sweco #2(140) 2rr
21-Sep	5202	11.2	55	20	28	10 / 32	6.5	2	15	0.25	33.5	9.0	0.50	.1 / .6	20,000	300	11,500	
22-Sep	1940	9.4	45	13	16	3 / 4	6.5	2	2	0.30	8	9.1	0.60	.15 / .5	17,000	280	16,000	
23-Sep	2357	9.6	45	13	16	3 / 4	6.5	1	2	0.30	8	9.0	0.50	.15 / .5	17,000	280	16,000	
24-Sep	2790	9.7	46	15	17	3 / 5	6.8	1	8	0.75	17.5	11.6	3.90	.4 / 1.2	25,000	380	18,000	Loss 60 bls of mud
25-Sep	3533	10.1	50	20	23	4 / 10	6.5	1	10	0.50	25	9.8	1.40	.15 / .6	24,000	450	13,500	
26-Sep	4191	10.8	52	23	33	8 / 25	5.8	1	11	0.70	35	9.7	1.10	.2 / .5	21,000	540	12,500	Increased concentr. Lube 100 - 1.5%
27-Sep	4505	11.8	61	27	30	8 / 30	5.6	2	16	0.80	37.5	9.8	0.85	.18 / .6	21,000	500	12,000	Changed 60x60 mesh Brandt #2
28-Sep	4505	12.5	65	28	26	7 / 28	5.8	2	17	0.80	40	9.8	0.80	.2 / .5	18,000	320	12,000	Resinex II (concentrar. 4.5 lb/gl)
29-Sep	4505	12.5	62	32	26	8 / 32	5.6	2	23	0.70	40	9.7	0.50	.15 / .6	18,000	360	12,000	Changed 110 mesh -Sweco #1
30-Sep	4505	12.7	65	30	25	6 / 30	5.6	2	24	0.80	38	9.8	0.60	.1 / .56	18,000	360	12,000	
01-Oct	4505	12.6	58	25	19													
02-Oct	4515	10.3	54	15	22	5 / 7	5.5	1	9	0.50	12.5	10.5	0.80	.4 / 1.2	17,000	100	14,000	Changed 2(180) Brandt #1 2(60x60) Brandt #2
03-Oct	5014	10.7	53	16	22	5 / 8	5.6	1	12	0.50	15	10.2	0.80	.3 / .7	18,000	120	17,000	Changed (60x60) Brandt #1
04-Oct	6049	10.8	56	17	26	6 / 17	5.6	1	13	0.60	22.5	10.0	0.90	.25 / .8	18,500	160	165,000	
05-Oct	6647	11.0	60	20	30	6 / 24	5.6	1	13	0.60	22.5	9.9	0.80	.2 / .6	18,000	200	16,000	
06-Oct	6647	11.0	58	18	29	6 / 20	5.6	1	14	0.60	22.5	9.5	0.80	.1 / 0.5	20,000	240		HLS fish MWD
07-Oct	6647	11.0	58	18	29	6 / 20	5.6	1	14	0.60	22.5	10.0	0.80	.2 / .6	20,000	240	16,000	
08-Oct	6647	11.0	60	21	29	7 / 25	5.6	1	11	0.50	22.5	10.0	0.80	.2 / .6	20,000	240	16,000	
09-Oct	6647	11.4	60	22	29	7 / 28	5.2	1	12	0.60	25	9.5	0.80	.15 / .9	20,000	200	16,000	Back off at 6126'
10-Oct	4300	11.3	60	22	29	7 / 28	5.4	1	12	0.50	25	9.5	0.80	.15 / .9	20,000	200	16,000	Set side track cement plug
11-Oct	4557	11.4	54	17	20	6 / 10	5.8	1	13.5	0.25	15	11.0	2.00	.6 / 1.6	22,000	480	18,000	Prepared 200 bls. Flo-Drill
12-Oct	4653	11.5	50	18	21	7 / 10	5.0	1	14	0.60	13	10.5	3.00	.8 / 1.2	24,000	440	17,000	
13-Oct	4951	11.5	51	20	23	7 / 12	5.2	1	14	0.60	13	10.2	2.60	.6 / 1.2	21,000	200	18,000	
14-Oct	5483	11.5	50	27	31	10 / 20	5.4	1	14	0.80	16	10.0	2.40	.35 / 1.1	27,000	160	18,500	Changed 2(1x60) Brandt #2

CE
TOTAL FILE
GEOSCIENCES

15-Oct	5992	11.7	60	20	32	10 / 32	5.6	1	15	0.60	20	10	1.60	.15 / .8	26,000	240	19,000	Sweco 2(180) 1(140) #2
16-Oct	6173	11.7	58	19	31	7 / 32	5.4	2	15	0.60	20	10	1.10	.2 / .9	26,000	320	18,000	
17-Oct	6397	11.7	58	21	27	9 / 30	5.1	1	15	0.50	17.5	10	1.40	.3 / .9	25,000	200	21,500	
18-Oct	6894	11.8	53	21	28	7 / 25	5.1	1	15.5	0.55	19	10	1.00	.15 / .9	25,000	320	20,400	
19-Oct	6894	11.8	54	22	29	6 / 16	5.4	2	16	0.50	20	10	0.60	.15 / .45	24,000	360	20,000	
20-Oct	6894	11.8	54	22	29	6 / 16	5.4	1	16	0.50	20	10	0.60	.15 / .45	24,000	360	20,000	Set abandon cement plug

10,900 Bbls. of mud build

PRODUCTS USED SUMMARY

	Unit cost	Quantity	COST
Baritine	6.40	6,121	39,174.40
Caustic Potash (KOH)	22.24	182	4,047.68
Caustic Soda	14.31	34	486.54
Drill - Kleen	109.25	9	983.25
Energizen HDE	56.17	12	674.04
Industrial Water (bbl)	1.05	9,020	9,471.00
Flovis	221.73	184	40,798.32
Flow Zan	183.00	60	10,980.00
Kla Gard	758.79	47	35,663.13
Lube 100	408.00	27	11,016.00
Lubra - Glide	130.00	50	6,500.00
Mi Gel	7.28	105	764.40
MSP- 4	4.27	12	51.24
OS-3020 (Bisulfito Aminio)	4.27	202	862.54
Pac Plus R	137.35	151	20,739.85
Pac Plus UL	127.35	183	23,305.05
Potassium Choride	20.64	1074	22,167.36
Resinex II	25.31	131	3,315.61
Shale Check	40.63	223	9,060.49
Sodium Bicarbonate	10.12	63	637.56
Soltex	67.80	181	12,271.80
X-Cide 207	69.74	33	2,301.42
Xp-20	35.60	40	1,424.00

Total Product Cost \$ 256,695.68

Cost per foot \$/f 21.56

Cost Per Bbl. \$/Bbl. 23.55

CENTRAL FILE
GEOSCIENCES

CASING AND CEMENTING POINTS

WELL : LO16 -25

CASING SIZE O.D	DESCRIPTION	POINT (ft)	CENTRA- LIZERS	SLURRY	DATE	RETURN (bls)
18"	Pipe steel weld: 70.59 #/ft (Thickness 0.3750)	569'		260 sx class "H" cmt + 1.5% Cl2Ca (16.4 ppg)	Sept. 04 -02	
13 3/8"	K55; 53.5 #/ft; STC	F.C: 1870' Shoe: 1916'	12	650 sx cmt (6% Gel) + 0.5gl/10bls FP-6L (13.5 ppg) 600 sx cmt+ 0.7% CaCL2 + 0.5gl/10bls FP-6L (15.6 ppg)	Sept. 11 -02	40
	SET SIDE TRACK CEMENT PLUG	2357' - 1687'		20 bls Mud Clean 503 sx cmt+ 0.4% CD-32 +0.7% FL-25 + 0.1% R-3 + 0.5gl/10bls FP-6L (15.6 ppg)	Sept. 21 -02	
9 5/8"	N-80; 43.5 #/ft; LTC	F.C: 4409' Shoe: 4505'	10	20 bls MCS Spacer (13.5 ppg) 10 bls Paravan -25 680 sx cmt (6% Gel) + 0.5gl/10bls FP-6L (13.5 ppg) 400 sx cmt+ 0.4% CD-32+ 0.7% FL-25 + 0.1% R-3 + 0.5gl/10bls FP-6L (15.6 ppg)	Oct. 01 -02	10
	SET SIDE TRACK CEMENT PLUG	4837' - 4305'		12 bls Paravan 200 sx cmt+ 0.4% CD-32+ 0.7% FL-25 + 0.1% R-3 + 0.5gl/10bls FP-6L (15.6 ppg)	Oct. 09 -02	
	SET ABANDON CEMENT PLUG	4905' - 4170'		260 sx cmt+ 0.8% CD-32+ 1.0% FL-25 + 0.2% R-3 + 0.5gl/10bls FP-6L (15.6 ppg)	Oct. 19 -02	
		856' - 200'		250 sx cmt+ 1% CaCL2 + 0.5gl/10bls FP-6L (15.6 ppg)		

DOWN HOLE MOTOR CONTROL

WELL : **LO16-25**
SPUD IN DATE : **SEPT. 03-02**
T.D. REACHED : **OCT. 18-02**

RIG # **P-48**
T.D. : **6894'**
SLIM -1 Hrs. **444.5**

WELL TYPE: **DEVELOPMENT**

RUN Nº	DOWN HOLE MOTOR TYPE	SIZE	DEPTH		FOOT.	CUM FOOT.	HRS	OTHER HRS.	CUM. HRS.	BITS		WOB MLB	RPM	PUMP PRESS.	GPM	FORMAT.	REMARKS
			IN	OUT						SIZE	TYPE						
1	A962M5630SP	9 3/8"	586	1526	940	940	32.5	23.0	55.5	17"	GTX-C1	35	MM/70	1800	735	Helico	Start kop at 586'
2	A800M4553XP	8"	1526	1916	390	1330	24.0	5.5		17"	GTX-C1	35	MM/50	2100	703	Lobitos	DLS of 5'/ 100'
3	A800M4553XP	8"	1925	4828	2903	4233	63.5	12.5	105.5	12 1/4"	S987BHPX	10/20	MM/80	2500	686	Chacra	Only 25% slidding correct well path
4	A800M7840XP	8"	4828	5202	374	4607	14.5	10.0		12 1/4"	S987BHPX	8/18	MM/70	2600	680	Chacra	Reached 9 5/8" Csg. (tigh hole)
5	A800M7840XP	8"	1940	4505	2565	7172	66.0	21.5	112.0	12 1/4"	S987BHPX	15/30	MM/70	2300	615	Chacra	Start side track w/BUR 0.8°/100'
6	A675S4550XP	6 3/4"	4515	6647	2132	9304	50.5	28.5	79.0	8 1/2"	MA89PX	15	MM/50	2150	475	Chacra	BUR & TR : 0.3°/100'
7	A6757850XP	6 5/8"	4535	4651	116	9420	10.5	4.0		8 1/2"	MA88PX	10/20	MM/60	2200	512	Chacra	Start side track #2 (hard)
8	A6757850XP	6 5/8"	4661	6173	1512	10932	58.5	19.5	92.5	8 1/2"	MA88PX	15	MM/60	2450	512	R. Bravo	BUR: 0.3°/100' & TR: 0.2°/100'

- 1.- 9 5/8" SPM Motor (16 3/4" Sleeve, 1.5° ABH)
- 2.- 8" XP Motor (16 13/16" Sleeve, 1.59° ABH)
- 3.- 8" XP Motor (12 1/16" Sleeve, 1.22° ABH)
- 4.- 8" XP Motor (12 1/16" Sleeve, 1.15° ABH)
- 5.- 8" XP Motor (12 1/16" Sleeve, 1.5° ABH)
- 6.- 6 5/8" XP Motor (8 3/8" Sleeve, 1.15° ABH)
- 7) y 8).- 6 5/8" XP Motor (8 3/4" Sleeve, 1.5° ABH)

LEFT IN HOLE

CENTRAL FILE
GEOSCIENCES

DRILLING RECORD
DRILLED WELL SUMMARY

WELL : LO16 - 26	CONTRACTOR: PEPESA	RIG #: P - 48	LOCATION: LOBITOS OFFSHORE	API # 2212001
WELL TYPE : DEVELOPMENT	TOTAL DEPTH: 8550'			
OBJECTIVE : RIO BRAVO	DATE TO REACH: OCT. 18-02	PENET. RATE (FT/HR) : 37	ABANDON DATE: OCT. 19 -02	ESTIM. COST : \$ 1'393,090
SPUD IN DATE: SEPT. 03 -02	DAYS : 45.25	FT/DAY : 221	RELEASED RIG: OCT. 20 -02	ACTUAL COST : \$ 1'580,700*

PHASE :	18" CONDUCT.	SURFACE (13 3/8")	INTERMED. (9 5/8")	PRODUCTION (5 1/2")	TOTALS
---------	--------------	-------------------	--------------------	---------------------	--------

WELL DATA		
DEPTH- ESTIM/REAL		
DAYS- ESTIM/REALS		
AVERAGE FT/DAY : EST/REALS		
COND.TOP - GUIDE SHOE		
BITS USED - 17" N/RR		
BITS USED - 12 1/4" N/RR		
BITS USED - 8 1/2" N/RR		
GPM - PRESSURE - HSI INITIAL		
GPM - PRESSURE - HSI FINAL		
FORMATIONS		
MUD TYPE		
MUD WT.- VISC - FILT (INIT./FINAL)		
P.V. - YP - PH (INIT./FINAL)		
PM - PF - SOLIDS (INIT./FINAL)		
TOTAL MUD COST		
MUD COST BY FT.		
ANGLE - DIRECT - DEPTH (INITIAL)		
ANGLE - DIRECT - DEPTH (FINAL)		
SIZE - TYPE & CSG. WT.		
CMT. SX- CENTRALIZ- RET. BBLs.		
TIME BREAKDOWN (HRS.)		
MOVING	RAN COND.	DRIV COND.
ROTATING	TRIPS	CIRC
REAMING	RUN CSG.	FISHING
CEMENT	NIPP BOPS	WOC
CUT CABLE	DIRECTION	LOGS
PLUGS	DRESS CMT	STUCK PIPE
MILL PLUGS	COMPLET	OTHERS
REPAIRS	MAINT	DOWNTIME
TOTAL HOURS :		
OTHERS		
WORKING W/ DOWN HOLE MOTOR (HRS)		
WORKING W/ SLIM 1 (HRS)		
MAX ANGLE		

550	570	
1	1.25	
190	192	
569		
1RR		
500	699	0.4
TALARA		
NATIVE (GEL)		
8.5	45	12
11	13	10.5
1.1	0.5	2
684		
2.85		
1.97	N51.3°W	550
18	Pipeline	70.59
40.0	14.5	12.0
3.0	11.0	3.0
6.0		
4.0	1.0	6.0
	19.5	
120.0		
1.62°		

2000	1916	
8.5	8	
483	340	
1916		
1RR / 1N		
595	1069	0.7
703	2071	0.6
LOBITOS		
FLO - DRILL		
8.5 - 9.2	45	7.8
14	16	10
1	0.28	5
27,294.33		
20.28		
2.84	N27.7°W	603
65.8	N53.3°W	1828
13 3/8	K-55	53.5
1250	12	40
58.0	46.0	8.0
2.0	4.5	
3.0	20.0	6.0
	5.0	
	0.5	
17.5	0.5	
171.0		
56.5		
85.0		
66.34°		

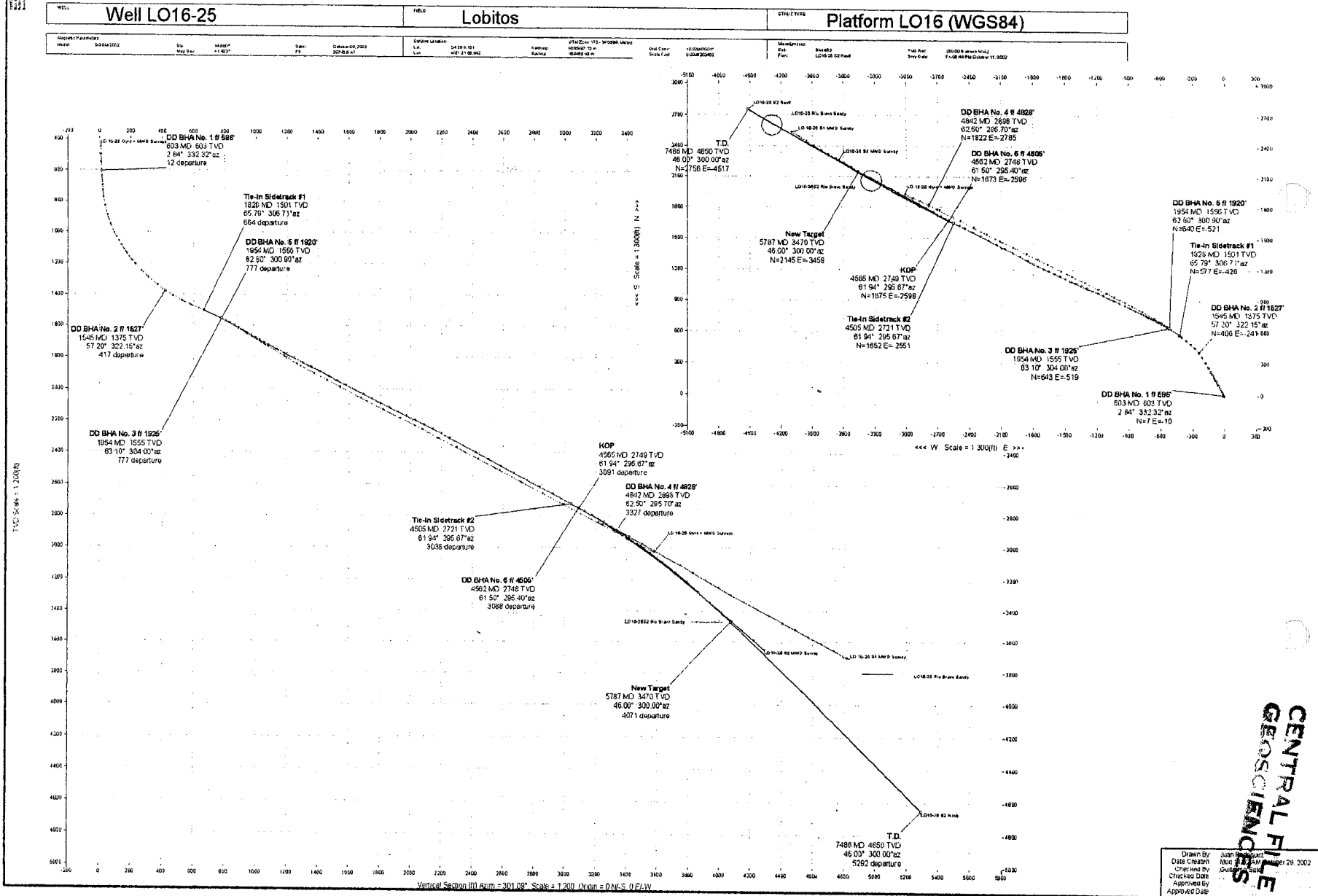
5500	4505	
9	20	
583	162	
4505		
2RR		
645	1682	2.8
615	2463	0.6
LOBITOS - CHACRA		
FLO - DRILL		
9.1 - 10.8	45	6.8
16 - 20	18 - 24	9.8
0.6	0.15	10
119,246.43		
20.41		
63.1	N56°W	1954
62.5	N64°W	4434
9 5/8	N-80	43.5
1080	10	10
144.5	106.0	37.0
73.5	20.5	
4.0	20.5	31.0
1.0	1.0	
3.0	1.5	3.5
		7.0
7.5		
461.5		
144.0		
188.0		
64.5°		

8550	6894	
5.5	16	
554	240	
4RR		
489	1417	1.9
512	1806	1
CHACRA		
FLO - DRILL		
10.3 - 11.6	58	5.4
22	29	10
1.1	0.8	15
109,470.92		
24.32		
61.7	N61.5°W	4658
48.1	N59.8°W	6069
SET ABANDON PLUG		
510		
150.0	133.5	27.5
5.0		23.5
	3.5	
	8.0	59.0
		5.0
2.5		
417.5		
119.5		
171.5		
61.7°		

8550	6894	
24	45.25	
512	221	
2RR / 1N		
2RR		
4RR		
256,695.68		
21.55		
40.0	14.5	12.0
355.5	296.5	75.5
81.5	25.0	
16.0	41.5	66.5
1.0	29.0	
3.0	10.0	62.5
		12.0
27.5	0.5	
	1,170.0	
320.0		
444.5		

CROSS-REFERENCES

Petro-Tech Peruana S.A.



LO 16-25 Gyro + MWD Survey Report

Report Date: October 21, 2002
Client: Petro-Tech Peruana S.A.
Field: Lobitos
Structure / Slot: Platform LO16 (WGS84) / Slot #25
Well: Well LO16-25
Borehole: Borehole LO16-25
UWI/API#:
Survey Name / Date: LO 16-25 Gyro + MWD Surveys / September 11, 2002
Tort / AHD / DDI / ERD ratio: 115.509" / 3651.39 ft / 5.854 / 1.206
Grid Coordinate System: UTM Zone 17S - WGS84, Meters
Location Lat/Long: S 4 28 9.181, W 81 21 55.642
Location Grid N/E Y/X: N 9505997.130 m, E 459456.430 m
Grid Convergence Angle: +0.02847801"
Grid Scale Factor: 0.99962035

Survey / DLS Computation Method: Minimum Curvature / Lubinski
Vertical Section Azimuth: 301.090"
Vertical Section Origin: N 0.000 ft, E 0.000 ft
TVD Reference Datum: KB
TVD Reference Elevation: 50.0 ft relative to MSL
Sea Bed / Ground Level Elevation: 0.000 ft relative to MSL
Magnetic Declination: 1.389"
Total Field Strength: 28763.698 nT
Magnetic Dip: 14.710"
Declination Date: September 05, 2002
Magnetic Declination Model: BGM 2001
North Reference: True North
Total Corr Mag North -> True North: +1.389"
Local Coordinates Referenced To: Well Head

Comments	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Vertical Section (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (deg)	DLS (deg/100 ft)	Build Rate (deg/100 ft)	Walk Rate (deg/100 ft)
Tie-In	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	50.00	0.66	152.14	50.00	-0.25	-0.25	0.13	0.29	152.14	1.32	1.32	0.00
	100.00	0.47	167.15	100.00	-0.64	-0.71	0.31	0.78	156.07	0.48	-0.38	30.02
	150.00	0.66	278.35	150.00	-0.51	-0.87	0.08	0.87	175.03	1.88	0.38	222.40
	200.00	1.21	295.02	199.99	0.28	-0.60	-0.69	0.91	228.80	1.22	1.10	33.34
	250.00	1.44	295.93	249.97	1.43	-0.10	-1.73	1.73	266.56	0.46	0.46	1.82
	300.00	0.90	302.92	299.96	2.45	0.38	-2.63	2.65	278.32	1.12	-1.08	13.98
	350.00	2.19	305.53	349.95	3.79	1.15	-3.73	3.91	287.16	2.58	2.58	5.22
	365.00	2.25	304.68	364.93	4.37	1.49	-4.21	4.46	289.46	0.46	0.40	-5.67
	400.00	1.93	297.97	399.91	5.65	2.15	-5.29	5.72	292.14	1.15	-0.91	-19.17
	450.00	1.91	301.86	449.88	7.32	2.99	-6.75	7.38	293.90	0.26	-0.04	7.78
	500.00	1.62	311.14	499.86	8.85	3.89	-7.99	8.88	295.99	0.81	-0.58	18.56
	550.00	1.97	308.72	549.83	10.40	4.90	-9.19	10.41	298.05	0.72	0.70	-4.84
DD BHA No. 1 f/ 586'	603.00	2.84	332.32	602.79	12.42	6.63	-10.51	12.42	302.24	2.45	1.64	44.53
	640.00	3.76	336.62	639.73	14.19	8.55	-11.42	14.27	306.84	2.57	2.49	11.62
	670.00	4.81	338.43	669.64	15.99	10.63	-12.27	16.23	310.90	3.53	3.50	6.03
	700.00	6.14	341.49	699.50	18.22	13.32	-13.24	18.78	315.17	4.54	4.43	10.20
	730.00	7.66	344.86	729.29	20.88	16.77	-14.27	22.02	319.60	5.24	5.07	11.23
	775.00	10.37	343.78	773.73	26.03	23.55	-16.19	28.58	325.50	6.03	6.02	-2.40
	834.00	14.18	339.44	831.37	35.60	35.42	-20.21	40.78	330.29	6.64	6.46	-7.36
	896.00	19.00	334.60	890.77	49.98	51.66	-27.21	58.39	332.22	8.08	7.77	-7.81
	958.00	24.20	329.60	948.40	69.58	71.76	-37.98	81.19	332.11	8.89	8.39	-8.06
	1022.00	28.90	328.20	1005.64	94.88	96.23	-52.77	109.75	331.26	7.41	7.34	-2.19
	1053.00	31.20	328.30	1032.47	108.69	109.43	-60.94	125.25	330.89	7.42	7.42	0.32
	1084.00	33.20	329.30	1058.70	123.32	123.56	-69.49	141.76	330.64	6.68	6.45	3.23
	1116.00	35.76	330.09	1085.08	139.22	139.20	-78.63	159.87	330.54	8.12	8.00	2.47
	1147.00	37.27	330.68	1109.99	155.30	155.23	-87.75	178.32	330.52	5.00	4.87	1.90
	1178.00	39.25	330.89	1134.33	171.98	171.99	-97.11	197.51	330.55	6.40	6.39	0.68
	1210.00	41.06	330.46	1158.79	189.92	189.98	-107.22	218.15	330.56	5.72	5.66	-1.34
	1241.00	43.06	330.09	1181.80	208.05	208.01	-117.52	238.91	330.54	6.50	6.45	-1.19
	1273.00	44.76	330.12	1204.86	227.46	227.25	-128.58	261.10	330.50	5.31	5.31	0.09
	1335.00	48.28	330.02	1247.51	266.81	266.23	-151.02	306.08	330.44	5.68	5.68	-0.16
	1399.00	51.39	328.12	1288.79	310.00	308.17	-176.17	354.97	330.24	5.36	4.86	-2.97
	1483.00	54.15	326.89	1339.61	369.90	364.56	-212.11	421.78	329.81	3.49	3.29	-1.46
DD BHA No. 2 f/ 1527'	1545.00	57.20	322.15	1374.58	416.86	406.21	-241.84	472.75	329.23	8.00	4.92	-7.65
	1609.00	60.14	316.74	1407.87	468.73	447.69	-277.39	526.66	328.22	8.56	4.59	-8.45
	1674.00	64.48	312.62	1438.08	524.65	488.11	-318.32	582.74	326.89	8.72	6.68	-6.34
	1734.00	66.15	309.19	1463.14	578.36	523.79	-359.53	635.31	325.53	5.89	2.78	-5.72
	1797.00	66.34	307.66	1488.52	635.55	559.63	-404.70	690.63	324.13	2.24	0.30	-2.43
	1828.00	65.79	306.71	1501.10	663.72	576.75	-427.27	717.78	323.47	3.32	-1.77	-3.06

LO 16-25 ST MWD Survey Report

Report Date: October 6, 2002
 Client: Petro-Tech Peruana S.A.
 Field: Lobitos
 Structure / Slot: Platform LO16 (WGS84) / Slot #25
 Well: Well LO16-25
 Borehole: Sidetrack #1
 UWI/API#:
 Survey Name / Date: LO 16-25 ST MWD SURVEYS / September 23, 2002
 Tort / AHD / DDI / ERD ratio: 134.937" / 4893.23 ft / 6.067 / 1.322
 Grid Coordinate System: UTM Zone 17S - WGS84, Meters
 Location Lat/Long: S 4 28 9.181, W 81 21 55.642
 Location Grid N/E Y/X: N 9505997, 130 m, E 459456.430 m
 Grid Convergence Angle: +0.02847801"
 Grid Scale Factor: 0.99962035

Survey / DLS Computation Method: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 301.090°
 Vertical Section Origin: N 0.000 ft, E 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 50.0 ft relative to MSL
 Sea Bed / Ground Level Elevation: 0.000 ft relative to MSL
 Magnetic Declination: 1.384°
 Total Field Strength: 28760.566 nT
 Magnetic Dip: 14.710°
 Declination Date: September 23, 2002
 Magnetic Declination Model: BGGM 2001
 North Reference: True North
 Total Corr Mag North -> True North: +1.384°
 Local Coordinates Referenced To: Well Head

Comments	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Vertical Section (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (deg)	DLS (deg/100 ft)
Tie-In	1828.00	65.79	306.71	1501.10	663.72	576.75	-427.27	717.78	323.47	0.00
DD BHA No. 5 ft 1920'	1954.00	62.80	300.90	1555.78	777.04	639.93	-521.50	825.52	320.82	4.78
	1985.00	62.40	299.50	1570.05	804.56	653.78	-545.29	851.33	320.17	4.21
	2016.00	61.80	299.30	1584.55	831.95	667.23	-569.15	877.00	319.54	2.02
	2048.00	61.30	298.80	1599.80	860.06	680.89	-593.75	903.41	318.91	2.08
	2079.00	61.40	298.00	1614.66	887.24	693.83	-617.68	928.94	318.32	2.29
	2109.00	61.20	296.70	1629.07	913.49	705.92	-641.05	953.56	317.76	3.86
	2140.00	61.10	296.00	1644.02	940.55	717.97	-665.38	978.88	317.18	2.00
	2172.00	60.70	296.00	1659.59	968.40	730.23	-690.51	1005.01	316.60	1.25
	2203.00	60.80	296.70	1674.73	995.36	742.23	-714.75	1030.43	316.08	2.00
	2235.00	61.20	297.40	1690.25	1023.28	754.96	-739.68	1056.92	315.59	2.29
	2267.00	62.23	298.10	1705.41	1051.41	768.08	-764.61	1083.78	315.13	3.75
	2298.00	63.00	297.40	1719.67	1078.89	780.90	-788.97	1110.08	314.71	3.19
	2359.00	63.00	296.70	1747.37	1133.10	805.61	-837.38	1161.99	313.89	1.02
	2423.00	62.80	297.30	1776.52	1189.93	831.48	-888.14	1216.62	313.11	0.89
	2486.00	63.50	296.00	1804.98	1245.97	856.69	-938.38	1270.62	312.39	2.15
	2549.00	63.40	295.20	1833.14	1302.06	881.04	-989.20	1324.67	311.69	1.15
	2612.00	63.50	295.60	1861.30	1358.14	905.21	-1040.11	1378.85	311.03	0.59
	2675.00	63.00	295.50	1889.65	1414.14	929.47	-1090.87	1433.15	310.43	0.81
	2738.00	62.10	295.30	1918.69	1469.77	953.46	-1141.37	1487.21	309.87	1.46
	2800.00	62.43	294.80	1947.55	1524.34	976.69	-1191.08	1540.33	309.35	0.89
	2864.00	63.00	293.20	1976.89	1580.78	999.82	-1243.04	1595.24	308.81	2.39
	2926.00	63.60	293.24	2004.74	1635.65	1021.66	-1293.95	1648.66	308.29	0.97
	2989.00	63.97	293.67	2032.57	1691.67	1044.16	-1345.80	1703.36	307.81	0.85
	3052.00	64.00	293.20	2060.21	1747.78	1066.67	-1397.74	1758.26	307.35	0.67
	3115.00	64.20	293.90	2087.72	1803.96	1089.32	-1449.69	1813.35	306.92	1.05
	3176.00	64.50	296.10	2114.13	1858.64	1112.56	-1499.53	1867.18	306.57	3.29
	3239.00	64.50	296.20	2141.25	1915.29	1137.62	-1550.57	1923.13	306.27	0.14
	3301.00	64.20	296.00	2168.09	1970.96	1162.20	-1600.76	1978.17	305.98	0.56
	3364.00	63.90	296.00	2195.66	2027.39	1187.04	-1651.67	2033.98	305.70	0.48
	3427.00	63.70	296.00	2223.48	2083.69	1211.82	-1702.48	2089.72	305.44	0.32
	3490.00	63.10	296.90	2251.68	2139.84	1236.91	-1752.91	2145.38	305.21	1.59
	3553.00	63.03	297.86	2280.22	2195.89	1262.74	-1802.79	2201.03	305.01	1.36
	3616.00	62.50	298.17	2309.05	2251.82	1289.05	-1852.24	2256.64	304.84	0.95
	3709.00	62.67	298.32	2351.87	2334.28	1328.12	-1924.97	2338.67	304.60	0.23
	3804.00	62.00	297.46	2395.98	2418.28	1367.47	-1999.33	2422.25	304.37	1.07
	3899.00	61.70	297.10	2440.80	2501.86	1405.87	-2073.78	2505.40	304.13	0.46
	3993.00	62.60	297.40	2484.72	2584.78	1443.92	-2147.66	2587.93	303.91	1.00
	4087.00	62.90	297.40	2527.76	2668.18	1482.38	-2221.86	2670.97	303.71	0.32
	4182.00	62.60	298.10	2571.25	2752.49	1521.70	-2296.60	2754.98	303.53	0.73

Comments	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Vertical Section (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (deg)	DLS (deg/100 ft)
DD BHA No. 6 f/ 4505'	4277.00	62.23	297.40	2615.25	2836.55	1560.91	-2371.11	2838.77	303.36	0.76
	4372.00	62.80	297.40	2659.09	2920.65	1599.69	-2445.94	2922.61	303.19	0.60
	4434.00	62.50	296.00	2687.57	2975.56	1624.44	-2495.13	2977.33	303.07	2.06
	4562.00	61.50	295.40	2747.67	3088.07	1673.45	-2596.97	3089.44	302.80	0.88
	4656.00	61.50	296.70	2792.52	3170.36	1709.73	-2671.18	3171.49	302.62	1.22
	4751.00	61.30	297.90	2838.00	3253.58	1747.98	-2745.30	3254.55	302.49	1.13
	4845.00	61.50	297.30	2883.00	3335.96	1786.21	-2818.43	3336.79	302.36	0.60
	4939.00	60.82	298.10	2928.34	3418.15	1824.49	-2891.34	3418.86	302.25	1.04
	5033.00	60.80	298.60	2974.18	3500.12	1863.46	-2963.56	3500.74	302.16	0.46
	5127.00	61.45	298.68	3019.58	3582.36	1902.91	-3035.80	3582.90	302.08	0.70
	5220.00	61.50	300.20	3063.99	3664.03	1943.07	-3106.96	3664.52	302.02	1.44
	5315.00	60.70	299.80	3109.90	3747.19	1984.65	-3178.98	3747.64	301.98	0.92
	5408.00	60.40	300.20	3155.62	3828.16	2025.15	-3249.12	3828.57	301.93	0.49
	5503.00	60.60	300.60	3202.41	3910.83	2066.99	-3320.43	3911.23	301.90	0.42
	5598.00	60.40	301.60	3249.19	3993.52	2109.69	-3391.23	3993.90	301.89	0.94
	5691.00	61.10	299.50	3294.63	4074.65	2150.93	-3461.10	4075.01	301.86	2.11
	5785.00	61.20	300.20	3339.99	4156.96	2191.91	-3532.51	4157.30	301.82	0.66
	5879.00	61.40	301.00	3385.13	4239.41	2233.88	-3603.48	4239.73	301.80	0.78
	5973.00	61.70	301.00	3429.91	4322.06	2276.45	-3674.32	4322.37	301.78	0.32
	6068.00	61.10	301.10	3475.39	4405.46	2319.47	-3745.78	4405.77	301.77	0.64
	6162.00	61.50	301.40	3520.53	4487.91	2362.24	-3816.27	4488.22	301.76	0.51
	6255.00	61.40	301.80	3564.97	4569.60	2405.05	-3885.85	4569.91	301.75	0.39
	6350.00	61.50	302.20	3610.38	4653.04	2449.27	-3956.62	4653.36	301.76	0.38
	6444.00	61.00	301.10	3655.59	4735.45	2492.51	-4026.77	4735.77	301.76	1.16
	6538.00	60.60	300.90	3701.45	4817.50	2534.77	-4097.10	4817.81	301.74	0.46

LO 16-25 ST MWD Survey Report

Report Date: October 6, 2002
 Client: Petro-Tech Peruana S.A.
 Field: Lobitos
 Structure / Slot: Platform LO16 (WGS84) / Slot #25
 Well: Well LO16-25
 Borehole: Sidetrack #1
 UWI/API#:

Survey Name / Date: LO 16-25 ST MWD SURVEYS / September 23, 2002
 Tort / AHD / DDI / ERD ratio: 134.937° / 4893.23 ft / 6.067 / 1.322
 Grid Coordinate System: UTM Zone 17S - WGS84, Meters
 Location Lat/Long: S 4 28 9.181, W 81 21 55.642
 Location Grid N/E Y/X: N 9505997.130 m, E 459456.430 m
 Grid Convergence Angle: +0.02847801°
 Grid Scale Factor: 0.99962035

Survey / DLS Computation Method: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 301.090°
 Vertical Section Origin: N 0.000 ft, E 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 50.0 ft relative to MSL
 Sea Bed / Ground Level Elevation: 0.000 ft relative to MSL
 Magnetic Declination: 1.384°
 Total Field Strength: 28760.566 nT
 Magnetic Dip: 14.710°
 Declination Date: September 23, 2002
 Magnetic Declination Model: BGGM 2001
 North Reference: True North
 Total Corr Mag North -> True North: +1.384°
 Local Coordinates Referenced To: Well Head

Comments	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Vertical Section (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (deg)	DLS (deg/100 ft)
Tie-In	1828.00	65.79	306.71	1501.10	663.72	576.75	-427.27	717.78	323.47	0.00
DD BHA No. 5 ft 1920'	1954.00	62.80	300.90	1555.78	777.04	639.93	-521.50	825.52	320.82	4.78
	1985.00	62.40	299.50	1570.05	804.56	653.78	-545.29	851.33	320.17	4.21
	2016.00	61.80	299.30	1584.55	831.95	667.23	-569.15	877.00	319.54	2.02
	2048.00	61.30	298.80	1599.80	860.06	680.89	-593.75	903.41	318.91	2.08
	2079.00	61.40	298.00	1614.66	887.24	693.83	-617.68	928.94	318.32	2.29
	2109.00	61.20	296.70	1629.07	913.49	705.92	-641.05	953.56	317.76	3.86
	2140.00	61.10	296.00	1644.02	940.55	717.97	-665.38	978.88	317.18	2.00
	2172.00	60.70	296.00	1659.59	968.40	730.23	-690.51	1005.01	316.60	1.25
	2203.00	60.80	296.70	1674.73	995.36	742.23	-714.75	1030.43	316.08	2.00
	2235.00	61.20	297.40	1690.25	1023.28	754.96	-739.68	1056.92	315.59	2.29
	2267.00	62.23	298.10	1705.41	1051.41	768.08	-764.61	1083.78	315.13	3.75
	2298.00	63.00	297.40	1719.67	1078.89	780.90	-788.97	1110.08	314.71	3.19
	2359.00	63.00	296.70	1747.37	1133.10	805.61	-837.38	1161.99	313.89	1.02
	2423.00	62.80	297.30	1776.52	1189.93	831.48	-888.14	1216.62	313.11	0.89
	2486.00	63.50	296.00	1804.98	1245.97	856.69	-938.38	1270.62	312.39	2.15
	2549.00	63.40	295.20	1833.14	1302.06	881.04	-989.20	1324.67	311.69	1.15
	2612.00	63.50	295.60	1861.30	1358.14	905.21	-1040.11	1378.85	311.03	0.59
	2675.00	63.00	295.50	1889.65	1414.14	929.47	-1090.87	1433.15	310.43	0.81
	2738.00	62.10	295.30	1918.69	1469.77	953.46	-1141.37	1487.21	309.87	1.46
	2800.00	62.43	294.80	1947.55	1524.34	976.69	-1191.08	1540.33	309.35	0.89
	2864.00	63.00	293.20	1976.89	1580.78	999.82	-1243.04	1595.24	308.81	2.39
	2926.00	63.60	293.24	2004.74	1635.65	1021.66	-1293.95	1648.66	308.29	0.97
	2989.00	63.97	293.67	2032.57	1691.67	1044.16	-1345.80	1703.36	307.81	0.85
	3052.00	64.00	293.20	2060.21	1747.78	1066.67	-1397.74	1758.26	307.35	0.67
	3115.00	64.20	293.90	2087.72	1803.96	1089.32	-1449.69	1813.35	306.92	1.05
	3176.00	64.50	296.10	2114.13	1858.64	1112.56	-1499.53	1867.18	306.57	3.29
	3239.00	64.50	296.20	2141.25	1915.29	1137.62	-1550.57	1923.13	306.27	0.14
	3301.00	64.20	296.00	2168.09	1970.96	1162.20	-1600.76	1978.17	305.98	0.56
	3364.00	63.90	296.00	2195.66	2027.39	1187.04	-1651.67	2033.98	305.70	0.48
	3427.00	63.70	296.00	2223.48	2083.69	1211.82	-1702.48	2089.72	305.44	0.32
	3490.00	63.10	296.90	2251.68	2139.84	1236.91	-1752.91	2145.38	305.21	1.59
	3553.00	63.03	297.86	2280.22	2195.89	1262.74	-1802.79	2201.03	305.01	1.36
	3616.00	62.50	298.17	2309.05	2251.82	1289.05	-1852.24	2256.64	304.84	0.95
	3709.00	62.67	298.32	2351.87	2334.28	1328.12	-1924.97	2338.67	304.60	0.23
	3804.00	62.00	297.46	2395.98	2418.28	1367.47	-1999.33	2422.25	304.37	1.07
	3899.00	61.70	297.10	2440.80	2501.86	1405.87	-2073.78	2505.40	304.13	0.46
	3993.00	62.60	297.40	2484.72	2584.78	1443.92	-2147.66	2587.93	303.91	1.00
	4087.00	62.90	297.40	2527.76	2668.18	1482.38	-2221.86	2670.97	303.71	0.32
	4182.00	62.60	298.10	2571.25	2752.49	1521.70	-2296.60	2754.98	303.53	0.73

Comments	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Vertical Section (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (deg)	DLS (deg/100 ft)
DD BHA No. 6 ft 4505'	4277.00	62.23	297.40	2615.25	2836.55	1560.91	-2371.11	2838.77	303.36	0.76
	4372.00	62.80	297.40	2659.09	2920.65	1599.69	-2445.94	2922.61	303.19	0.60
	4434.00	62.50	296.00	2687.57	2975.56	1624.44	-2495.13	2977.33	303.07	2.06
	4562.00	61.50	295.40	2747.67	3088.07	1673.45	-2596.97	3089.44	302.80	0.88
	4656.00	61.50	296.70	2792.52	3170.36	1709.73	-2671.18	3171.49	302.62	1.22
	4751.00	61.30	297.90	2838.00	3253.58	1747.98	-2745.30	3254.55	302.49	1.13
	4845.00	61.50	297.30	2883.00	3335.96	1786.21	-2818.43	3336.79	302.36	0.60
	4939.00	60.82	298.10	2928.34	3418.15	1824.49	-2891.34	3418.86	302.25	1.04
	5033.00	60.80	298.60	2974.18	3500.12	1863.46	-2963.56	3500.74	302.16	0.46
	5127.00	61.45	298.68	3019.58	3582.36	1902.91	-3035.80	3582.90	302.08	0.70
	5220.00	61.50	300.20	3063.99	3664.03	1943.07	-3106.96	3664.52	302.02	1.44
	5315.00	60.70	299.80	3109.90	3747.19	1984.65	-3178.98	3747.64	301.98	0.92
	5408.00	60.40	300.20	3155.62	3828.16	2025.15	-3249.12	3828.57	301.93	0.49
	5503.00	60.60	300.60	3202.41	3910.83	2066.99	-3320.43	3911.23	301.90	0.42
	5598.00	60.40	301.60	3249.19	3993.52	2109.69	-3391.23	3993.90	301.89	0.94
	5691.00	61.10	299.50	3294.63	4074.65	2150.93	-3461.10	4075.01	301.86	2.11
	5785.00	61.20	300.20	3339.99	4156.96	2191.91	-3532.51	4157.30	301.82	0.66
	5879.00	61.40	301.00	3385.13	4239.41	2233.88	-3603.48	4239.73	301.80	0.78
	5973.00	61.70	301.00	3429.91	4322.06	2276.45	-3674.32	4322.37	301.78	0.32
	6068.00	61.10	301.10	3475.39	4405.46	2319.47	-3745.78	4405.77	301.77	0.64
	6162.00	61.50	301.40	3520.53	4487.91	2362.24	-3816.27	4488.22	301.76	0.51
	6255.00	61.40	301.80	3564.97	4569.60	2405.05	-3885.85	4569.91	301.75	0.39
	6350.00	61.50	302.20	3610.38	4653.04	2449.27	-3956.62	4653.36	301.76	0.38
	6444.00	61.00	301.10	3655.59	4735.45	2492.51	-4026.77	4735.77	301.76	1.16
	6538.00	60.60	300.90	3701.45	4817.50	2534.77	-4097.10	4817.81	301.74	0.46

LO 16-25 S2 Survey Report

Report Date: October 21, 2002

Client: Petro-Tech Peruana S.A.

Field: Lobitos

Structure / Slot: Platform LO16 (WGS84) / Slot #25

Well: Well LO16-25

Borehole: Sideltrack #2

UWI/API#:

Survey Name / Date: LO 16-25 S2 SURVEYS / October 11, 2002

Tort / AHD / DDI / ERD ratio: 140.511" / 4364.99 ft / 6.009 / 1.196

Grid Coordinate System: UTM Zone 17S - WGS84, Meters

Location Lat/Long: S 4 28 9.181, W 81 21 55.642

Location Grid N/E Y/X: N 9505997.130 m, E 459456.430 m

Grid Convergence Angle: +0.02847801°

Grid Scale Factor: 0.99962035

Survey / DLS Computation Method: Minimum Curvature / Lubinski

Vertical Section Azimuth: 301.090°

Vertical Section Origin: N 0.000 ft, E 0.000 ft

TVD Reference Datum:

TVD Reference Elevation: 50.0 ft relative to MSL

Sea Bed / Ground Level Elevation: 0.000 ft relative to MSL

Magnetic Declination: 1.378°

Total Field Strength: 28757.435 nT

Magnetic Dip: 14.710°

Declination Date: October 11, 2002

Magnetic Declination Model: BGGM 2001

North Reference: True North

Total Corr Mag North -> True North: +1.378°

Local Coordinates Referenced To: Well Head

Comments	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Vertical Section (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (deg)	DLS (deg/100 ft)	Build Rate (deg/100 ft)	Walk Rate (deg/100 ft)
Tie-In	4505.00	61.94	295.67	2720.66	3038.11	1651.81	-2551.67	3039.66	302.92	0.00	0.00	0.00
DD BHA No. 7 f/ 4535'	4565.00	61.00	297.50	2749.32	3090.66	1675.40	-2598.81	3092.05	302.81	3.11	-1.57	3.05
	4658.00	61.70	298.50	2793.91	3172.15	1713.71	-2670.87	3173.38	302.69	1.21	0.75	1.08
DD BHA No. 8 f/ 4651'	4753.00	57.20	300.20	2842.19	3253.90	1753.78	-2742.17	3255.03	302.60	4.98	-4.74	1.79
	4847.00	57.00	299.50	2893.25	3332.81	1793.06	-2810.62	3333.87	302.54	0.66	-0.21	-0.74
	4941.00	56.60	299.50	2944.72	3411.43	1831.79	-2879.08	3412.41	302.47	0.43	-0.43	0.00
	5035.00	56.40	299.30	2996.60	3489.78	1870.27	-2947.37	3490.69	302.40	0.28	-0.21	-0.21
	5129.00	53.90	300.30	3050.31	3566.90	1908.60	-3014.31	3567.75	302.34	2.80	-2.66	1.06
	5223.00	53.30	298.80	3106.09	3642.52	1945.91	-3080.12	3643.31	302.28	1.43	-0.64	-1.60
	5317.00	51.70	298.80	3163.32	3717.04	1981.84	-3145.47	3717.75	302.21	1.70	-1.70	0.00
	5411.00	51.70	298.10	3221.58	3790.73	2016.98	-3210.33	3791.36	302.14	0.58	0.00	-0.74
	5507.00	49.90	298.90	3282.25	3865.04	2052.47	-3275.71	3865.61	302.07	1.98	-1.87	0.83
	5599.00	50.10	298.10	3341.38	3935.44	2086.10	-3337.65	3935.95	302.01	0.70	0.22	-0.87
	5694.00	49.50	298.80	3402.70	4007.93	2120.66	-3401.44	4008.37	301.94	0.85	-0.63	0.74
	5789.00	48.40	300.10	3465.09	4079.54	2155.88	-3463.83	4079.94	301.90	1.55	-1.16	1.37
	5881.00	48.70	299.50	3525.99	4148.48	2190.15	-3523.67	4148.85	301.86	0.59	0.33	-0.65
	5976.00	49.00	299.50	3588.51	4219.98	2225.37	-3585.93	4220.33	301.82	0.32	0.32	0.00
	6069.00	48.10	300.20	3650.07	4289.67	2260.06	-3646.39	4289.99	301.79	1.12	-0.97	0.75

Survey Type: Raw SurveySurvey Error Model: SLB ISCWSA 3-D 95.00% Confidence 2.7955 sigmaSurveying Prog:

MD From (ft)

4505.00

MD To (ft) EOU Freq Survey Tool Type
6069.00 Act-Stns SLB_MWD-STD