

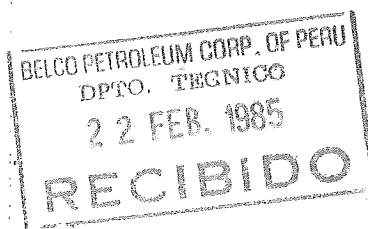
BELCO PETROLEUM

CORPORATION OF PERU
(SUCURSAL DEL PERU)

WELL FILE

TELEF. — NEGRITOS
883-864-885

APARTADO N° 1
TALARA-PERU



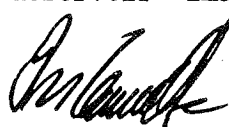
February 14, 1985.-
P.E.- 45, 1985.-

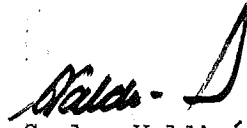
To : Drilling and Production Superintendents
From : Petroleum Engineering
Ref : Completion Program
Z2A-21-606-D-L06 (L06-5)
Lobitos - Offshore

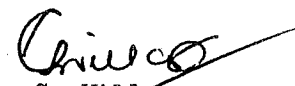
Attached you will find the Completion Program for well L06-5, which will be completed in the Rio Bravo Fm.

A treated sea water job is being recommended for this well.

As Reservoir Lima is expected 250 BOPD.


José Zamalloa V.
Pet. Engineering


V°B°: Carlos Valdizán M
Eng. Supt. (Act)


Approved : G. Villanueva
Drlg. Supt.

 WC/rzz

cc: O.M.

Lima Tech.

Drlg. Spt.

Prod. Spt.

Workover

Geology

Well file

WELL : Z2A-21-606-D-LO6 (LO6-5)
LOBITOS

- 1.- Run and cement the 5 1/2" production casing as per program in attachment 2.
- 2.- Install the 10"-3000# WP x 6"-5000# WP tbgs. head spool with 2"-5000# WP seal wing valves and 6" x 5000# WP ball valve on top as shooting valve.
- 3.- Run a temperature survey 6 to 12 hrs. after plug down to locate the top of cement.
- 4.- Run GR-CCL from 5600'-4000'.
- 5.- Test the shooting valve well head and casing with pressure up to 5000# 24 hrs. after plug down.
- 6.- Perforate the Rio Bravo formation in the 1st. stage according to the program in the attachment 3.
- 7.- Take SI-BHP to record the original pressure of the reservoir only if well head pressure is recorded after perforating.
- 8.- Frac the first stage according to the program in attachment 3.
- 9.- Shoot frac the rest of the stages according to the program in the attachment 4-5.
- 10.- Leave the well shut in for about 12 hrs. after displacement.
- 11.- Open the well and put it on production for clean out.
- 12.- Hook up the well into the production facilities.
- 13.- Put the well on production test, selecting the optimum choke size.
- 14.- Artificial gas lift installation program will be submitted posteriorly.

WC/rzz



CASING AND CEMENT PROGRAM

WELL	Z2A-21-D-606-L06 OFFICIAL NUMBER	L06-5 BELCO NUMBER	Lobitos Offshore AREA	AFE No.		
5689 ft. TOTAL DEPTH	4590 ft. TOTAL VERT. DEPTH	43 MAX ANGLE	41 AVERAGE ANGLE	9 5/8 in at 1805 ft. LAST CASING		
CASING PROGRAM						
CASING DESIGN SIZE 5 1/2" m	SECTION 1	5650-Surf. INTERVAL	5650 ft. LENGTH	J-55 GRADE	17 lb/ft WEIGHT	LT&C THREADS
	SECTION 2	INTERVAL	ft. LENGTH	GRADE	lb/ft WEIGHT	THREADS
	SECTION 3	INTERVAL	ft. LENGTH	GRADE	lb/ft WEIGHT	THREADS
	SECTION 4	INTERVAL	ft. LENGTH	GRADE	lb/ft WEIGHT	THREADS
FLOAT EQUIPMENT	SHOE	Guide shoe TYPE				5650 ft. DEPTH
	COLLAR	Diff. fill float collar TYPE				5610 ft. DEPTH
	OTHER	TYPE				ft. DEPTH
CENTRALIZERS 33 ea.;	5610-5000 INTERVAL	EVERY One joint	15 TOTAL	INTERVAL	EVERY	TOTAL
	4700-4000 INTERVAL	EVERY One joint	18 TOTAL	INTERVAL	EVERY	TOTAL
	INTERVAL	EVERY	TOTAL	INTERVAL	EVERY	TOTAL
CEMENTING PROGRAM						
WASHER	- TYPE	20 bbl VOLUME	Flo-check 21 COMPOSITION			
SLURRY 1	800 SXS CEMENT	4 o/o GEL	1.2% CFR-2 + 0.5% Halad-9 + 0.5 gls/1000 gls ADDITIVE	ADDITIVE		
	14.1 lb/gl DENSITY	1.55 ft ³ /sx YIELD	7.8 gl/sx WATER REQ.	2:30 Hr. Min T.T.	3000 ft EST. TOP	
SLURRY 2	SXS CEMENT	o/o GEL	ADDITIVE	ADDITIVE	ADDITIVE	
	lb/gl DENSITY	ft ³ /sx YIELD	gl/sx WATER REQ.	Hr. Min T.T.	ft EST. TOP	
SLURRY 3	SXS CEMENT	o/o GEL	ADDITIVE	ADDITIVE	ADDITIVE	
	lb/gl DENSITY	ft ³ /sx YIELD	gl/sx WATER REQ.	Hr. Min T.T.	ft EST. TOP	
DISPLACEMENT	130 bbl VOLUME	sea water FLUID	7-8 BPM RATE	± 1300-1500 psi PRESS AT PLUG BUMPING		
WELLHEAD	SIZE 13 3/8" x 5 1/2" x 9 5/8" x 2 7/8" WORKING PRESSURE: 3000 psi - 5000 psi.					
R E M A R K S	- Circulate the well before and after running casing.					
	- Flo-check 21					
	- Plug plug.					
	- 800 sx 4% cement (at 1500' cement top was reported).					
	- block plug.					
	* 1 gal de bactericida + 5 gls Fracflo - CS + 5 gln CIA-STA.					
ENGINEER	Vº Bº	DATE: Feb/10/85 HOUR: 9:00 a.m.	DISTRIBUTION			

 PERFORATING AND FRACING PROGRAM											
WELL		Z2A-21-606-D-L06 OFFICIAL NUMBER			L06-5 BELCO NUMBER		Lobitos Offshore AREA			1 STAGE	
Rio Bravo FORMATION		5539'-5091' ✓ INTERVAL			82 MD - 64 VD NET SAND			27 ✓ SHOTS			
PERFORATING PROGRAM											
PERFORATIONS	5539	5395	74	5097			CORRECTED COLLARS	5548	5230		
	26	91	70	94				5509*	5190		
	24	60	67	91				5469	5150	3/4	
	09 3/4	57	63					5429	5110	3/4	
	03	5227	61					5390	5071		
	5471	23	23					5350			
	67	20	05					5310			
	63	5189	02					5270			
PERFORATING GUN		3 3/8" selective five gun						JETS		TYPE : 0.49 ENTRY HOLE : IN	
FRACING PROGRAM											
FRACING FLUID		WG-11, 30 lb ADDITIVE			GBW-3, 0.5 lb ADDITIVE			CLASTA 1 gal ADDITIVE			
		FRAC-FLO; 1 gal ADDITIVE			KCL 1% of water weight ADDITIVE			Surflo B-17 3 gal/16,000 ADDITIVE			
		ADDITIVE REQUIRE PER 1000 GLS OF BASE FLUID, UNLESS OTHERWISE IS INDICATED.									
BASIC FRAC STEP	FRACING FLUID						PROPPANT				
	PRE -- PAD				GLS		MESH	LB / GL	LBS		
	Treated sea water PAD				0 - 6000 GLS		MESH	LB / GL	LBS		
	Treated sea water CARRY				6000 - 9000 GLS		20/40 MFSH	1 LB/GL	30 LBS		
	Treated sea water CARRY				9000 - 12,500 GLS		20/40 MESH	2 LB/GL	70 LBS		
	Treated sea water CARRY				12,500 - 16,000 GLS		10/20 MESH	2 LB / GL	70 LBS		
	Treated sea water CARRY				16,000 - 17,500 GLS		10/20 MESH	3 LB / GL	45 LBS		
	Treated sea water BLENDER - FLUSH				0 - 300 GLS		- MESH	- LB / GL	- LBS		
	Treated sea water DISPLACEMENT				5180 GLS		- MESH	- LB / GL	- LBS		
OPERATING CONDITIONS		1 TOTAL STEPS			25 RATE		2500 PRESSURE		5000 MAXIMUM PRESSURE		
REMARKS	1.95 lb/gal 3.3 sx/VD										

 PERFORATING AND FRACING PROGRAM										
WELL		Z2A-21-606-D-L06 OFFICIAL NUMBER			L06-5 BELCO NUMBER		Lobitos-Offshore AREA		2 STAGE	
Rio Bravo FORMATION		4591'-4270' ✓ INTERVAL			72' MD 55 VD NET SAND		20 ✓ SHOTS			
PERFORATING PROGRAM										
PERFORATIONS	4591	33	4287				CORRECTED COLLARS	4632	4315	
	40	29	77					4593	4275	
	36	4366	74					4553 1/4		
	33	61	70					4513 3/4		
	10	33						4474		
	4447	28						4434		
	43	24						4394		
	37	12						4354 1/4		
PERFORATING GUN		3 3/8 selective fire gun					JETS		TYPE : 0.49 ENTRY HOLE : IN	
FRACING PROGRAM										
FRACING FLUID		WG-11, 30 lb ADDITIVE		GBW-3; 0.5 lb ADDITIVE		CLA STA 1 gal ADDITIVE				
		FRAC FLO; 1 gal ADDITIVE		KCL 1% water weight SURFLO B-17 ADDITIVE		3 gal/16,000 ADDITIVE				
		ADDITIVE REQUIRE PER 1000 GLS OF BASE FLUID, UNLESS OTHERWISE IS INDICATED.								
BASIC FRAC STEP	FRACING FLUID				PROPPANT					
	PRE -- PAD				GLS		MESH	LB / GL	LBS	
	Treated sea water PAD				0 - 5000 GLS		- MESH	- LB / GL	- LBS	
	Treated sea water CARRY				5000 - 7500 GLS		20/40 MESH	1 LB/GL	25 LBS	
	Treated sea water CARRY				7500 - 10,500 GLS		20/40 MESH	2 LB/GL	60 LBS	
	Treated sea water CARRY				10,500 - 13,500 GLS		10/20 MESH	2 LB / GL	60 LBS	
	Treated sea water CARRY				13,500 - 15,000 GLS		10/20 MESH	3 LB / GL	45 LBS	
	Treated sea water BLENDER - FLUSH				0 - 300 GLS		- MESH	- LB / GL	- LBS	
	Treated sea water DISPLACEMENT				4300 GLS		- MESH	- LB / GL	- LBS	
OPERATING CONDITIONS		1 TOTAL STEPS		25 RATE		2500 PRESSURE		5000 MAXIMUM PRESSURE		
REMARKS										
	1.9 lb/gal 3.4 sx/VNF									



PERFORATING AND FRACING PROGRAM

WELL	Z2A-21-606-D-L06	L06-5	Lobitos-Offshore	3
	OFFICIAL NUMBER	BELCO NUMBER	AREA	STAGE
Rio Bravo	4210-4121 ✓	77 MD 60 VD		15 ✓
FORMATION	INTERVAL	NET SAND	SHOTS	

PERFORATING PROGRAM										
PERFORATIONS	4210	62					CORRECTED COLLARS	4234		
	04	56						4195		
	4194	50						4155		
	92	40						4115		
	88	34						4075		
	80	23								
	74	21								
	68									

PERFORATING GUN	3 3/8" selective fire gun	JETS	TYPE : 0.49 ENTRY HOLE : IN
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FRACING PROGRAM			
FRACING FLUID	WG-11; 30 lb ADDITIVE	GBW-3; 0.5 lb ADDITIVE	CLA STA 1 gal ADDITIVE
	FRAC-FLO; 1 gal ADDITIVE	KCL 1% of water weight ADDITIVE	SURFLO B-17 3 gal/16000 ADDITIVE
	ADDITIVE REQUIRE PER 1000 GLS OF BASE FLUID, UNLESS OTHERWISE IS INDICATED.		

BASIC FRAC STEP	FRACING FLUID		PROPPANT		
	PRE -- PAD	GLS	MESH	LB / GL	LBS
	Treated sea water PAD	0 - 6000 GLS	MESH	LB / GL	LBS
	Treated sea water CARRY	6000 - 9000 GLS	20/40 MESH	1 LB/GL	25 LBS
	Treated sea water CARRY	9000 - 12,000 GLS	20/40 MESH	2 LB/GL	60 LBS
	Treated sea water CARRY	12,000 - 15,000 GLS	10/20 MESH	2 LB / GL	60 LBS
	Treated sea water CARRY	15,000 - 16,500 GLS	10/20 MESH	3 LB / GL	45 LBS
	Treated sea water BLENDER -- FLUSH	0 - 300 GLS	- MESH	- LB / GL	- LBS
	Treated sea water DISPLACEMENT	4060 GLS	- MESH	- LB / GL	- LBS

OPERATING CONDITIONS	1 TOTAL STEPS	25 RATE	2500 PRESSURE	5000 MAXIMUM PRESSURE
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REMARKS	1.95 lb/gl	3.1 sx/VNF

FRAC - MATERIAL REQUIREMENTS

Treated sea water	64,500 gal
WG-11	1,935 lb
GBW-3	32 lb
CLA-STA	65 gal
FRAC-FLO	65 gal

WC/rzz