

BELCO PETROLEUM

CORPORATION OF PERU
(SUCURSAL DEL PERU)

TELEF. — NEGRITOS
843-884-865

APARTADO N° 1
TALARA-PERU

WELL FILE

April 08, 1985.-
P.E.,- 131, 1985-

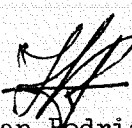
To : Drilling and Production Superintendents
From : Petroleum Engineering
Subject : Completion program of well
Z2A-21-615-D-L06 (L06-3) ✓
Lobitos - Offshore

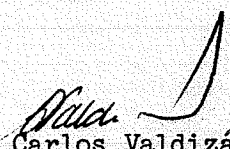
Attached you will find the Completion Program for well L06-3, which will be completed in the Rio-Bravo formation.

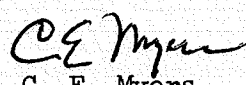
Completion program for this well can be summarized as follows :

- Run and cement 5 1/2" casing.
- Run GR-CCL.
- Shoot frac the Rio Bravo formation in three stages. Frac-fluid to be used is gelled sea water with 30 lbs/1000 gls, WG-11.
- Open the well for clean out wide open to ensure maximum differential pressure for clean out. Then place well on production test. Once well stops producing frac water adjust choke size to optimize production.
- In the event that the well is unable to flow by itself or when production performance indicates so, clean out frac sand and run artificial lift installation. Program will be submitted accordingly.
- The IPR estimated for this well is 200 BOPD.

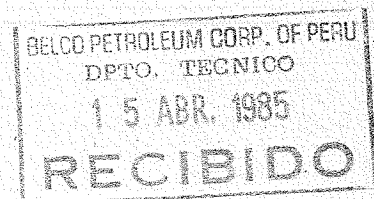
April 09/85 : 1999 BOPD @ 838 W @ 9/16", 380 psi C.F.P.
The well does not present any potential sand for later recompletion.


Ivan Rodriguez
Petroleum Engineer


V°B°; Carlos Valdizán M
Sen. Pet. Eng.


Approved : C. E. Myers
Eng. Supt.

IR/rzz
cc: O.M.
Lima Tech.
Drlg. Spt.
Prod. Spt.
Workover
Geology
Well file





COMPLETION PROCEDURE

WELL	Z2A-21-615-D-L06 OFFICIAL NUMBER	L06-3 BELCO NUMBER	Lobitos Offshore AREA	AFE No.
1.- Run and cement 5 1/2" csg. as per program in the attachment # 1. 2.- Install A 10" x 3000# WP x 6" x 5000# WP csg. head spool with 2" x 500 # WP seal wing valves on top as shooting valve. 3.- Run a temperature survey 6 to 12 hrs. after plug down to locate the top of the cement. 4.- Run GR-CCL in the interval 5160'-3900'. 5.- Test the shooting valve well head and casing with pressure up to 5000# 24 lbs. after plug down. 6.- Perforate the Rio-Bravo formation in the 1st. stage according to the program in the attachment # 2. 7.- Take SI-BHP to record the original pressure of the reservoir, only if well head pressure is recorded. 8.- Frac the first stage according to the program in the attachment # 2. 9.- Shoot frac the rest of the stages according to the program in the attachment 3 to 4. 10.- Leave the well shut-in for about 4 1/2 hrs. after displacement then open same for clean out wide open. Note : If the gel has not borken all ready SI the well one more hour, and open the well again. 11.- Hook up the well into the production facilities and test same adjust chocke size.				
IR/rzz				
Ivan Rodriguez ENGINEER	V0 80	DATE: Apr. 7, 1985 HOUR: 12:00	DISTRIBUTION	



CASING AND CEMENT PROGRAM

WELL	Z2A-21-615-D-L06 OFFICIAL NUMBER		L06-3 BELCO NUMBER		Lobitos Offshore AREA		02478 AFE No.
5472 TOTAL DEPTH	ft.	4598 TOTAL VERT. DEPTH	ft.	39° MAX ANGLE	34 1/2° AVERAGE ANGLE	9 5/8 LAST CASING	in at 1703 ft.

CASING PROGRAM							
CASING DESIGN SIZE: 5 1/2 in	SECTION 1	5200 - Surf. INTERVAL	5200 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					5200 ft. DEPTH
	COLLAR	Diff. fill float collar TYPE					5160 ft. DEPTH
	OTHER	TYPE					DEPTH
	5160-3880 INTERVAL	EVERY Joint	32 TOTAL	INTERVAL	EVERY	TOTAL	
CENTRALIZERS 5 1/2	INTERVAL	EVERY	TOTAL	INTERVAL	EVERY	TOTAL	
	INTERVAL	EVERY	TOTAL	INTERVAL	EVERY	TOTAL	

CEMENTING PROGRAM							
WASHER	Mud flush TYPE	30 bbl VOLUME	300 lb MF-1 plus 15 gln MORFLO COMPOSITION				
SLURRY 1	500 sxs CEMENT	4 o/o GEL	1.25% CFR-2 ADDITIVE	0/5 gln/1000 gln ADDITIVE	NF-1 ADDITIVE		
	14.1 lb/gl DENSITY	1.55 ft³/sx YIELD	7.8 gl/sx WATER REQ	1:55 Hr. Min T. T.	1650 ft EST. TOP		
SLURRY 2	500 sxs CEMENT	neat o/o GEL	0.5% Halad-9 ADDITIVE	0.5 gln/1000 gln ADDITIVE	NF-1 ADDITIVE		
	15.6 lb/gl DENSITY	1.18 ft³/sx YIELD	5.2 gl/sx WATER REQ.	2:30 Hr. Min T. T.	3600 ft EST. TOP		
SLURRY 3	sxs CEMENT	o/o GEL	ADDITIVE	ADDITIVE	ADDITIVE		
	lb/gl DENSITY	ft³/sx YIELD	gl/sx WATER REQ.	Hr. Min T. T.	ft EST. TOP		
DISPLACEMENT	120 VOLUME	Sea water ** FLUID	6-8 RATE	BPM	1500 psi PRESS AT PLUG BUMPING		
WELLHEAD	SIZE 13 3/8" x 9 5/8" x 5 1/2" x 2 7/8" WORKING PRESSURE: 2000 - 3000 - 5000 psi.						
REMARKS	* If no diff fill float collar is available use diff. fill float shoe instead of guide shoe and diff fill float collar.						
	** In the displacement use 1 gln/1000 gln FRACFLO plus 0.2 gln/1000 gln of SURFLO B-17.						
	- Do not weld casing shoe or the first two joints of casing, use baker lock or Howco weld.						
C. Espíritu O. ENGINEER		v° B°		DATE: April 6, 84 HOUR: 9:00 a.m.		DISTRIBUTION	



PERFORATING AND FRACING PROGRAM

WELL	22A-21-615-D-L06 OFFICIAL NUMBER	L06-3 BELCO NUMBER	Lobitos-Offshore AREA	1ra STAGE
Rio Bravo	5083'-4750'	93 MD (77' VNF)		18
FORMATION	INTERVAL	NET SAND		SHOTS

PERFORATING PROGRAM

PERFORATIONS	5083	4808	4754				CORRECTED COLLARS	Corrected collar		
	5080	4804	4750					Will be submitted		
	5079	4796						at the field		
	4927	4792								
	4923	4782								
	4860	4767								
	4856	4763								
	4821	4758								
PERFORATING GUN	3 1/2 selective fire gun						JETS	TYPE : XVI 0.49 ENTRY HOLE : IN		

FRACING PROGRAM

FRACING FLUID	WG-11 : 30 lbs ADDITIVE	GBW-3 : 0.75 lbs ADDITIVE	FRAC-FLO : 1 gl. ADDITIVE
	CLA-STA : 1 gl ADDITIVE	SURFLO B-17 : 200 ppm ADDITIVE	KCL 1% by weight 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 - 8000 GLS	MESH	LB / GL	LBS
	Treated sea water CARRY	8000 - 11,000 GLS	20/40 MESH	1 LB/GL	3000 LBS
	Treated sea water CARRY	11,000 - 14,500 GLS	20/40 MESH	2 LB/GL	7000 LBS
	Treated sea water CARRY	14,500 - 18,000 GLS	10/20 MESH	2 LB / GL	7000 LBS
	Treated sea water CARRY	18,000 - 20,500 GLS	10/20 MESH	3 LB / GL	7500 LBS
	Treated sea water BLENDER - FLUSH	0 - 300 GLS	MESH	LB / GL	LBS
	Treated sea water DISPLACEMENT	4600 GLS	MESH	LB / GL	LBS

OPERATING CONDITIONS	1 TOTAL STEPS	25-30 BPM RATE	3,500 PRESSURE	5000 MAXIMUM PRESSURE
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REMARKS	



PERFORATING AND FRACING PROGRAM

WELL	Z2A-21-615-D-L06 OFFICIAL NUMBER	L06-3 BELCO NUMBER	Lobitos Offshore AREA	2da. STAGE	
Rio Bravo FORMATION	4613'-4273' INTERVAL	89' MD (70' VNF) NET SAND	20 SHOTS		
PERFORATING PROGRAM					
PERFORATIONS	4613	4364	4292	CORRECTED COLLARS	Corrected collar
	4611	4336	4288		will be submitted
	4605	4332	4275		at the field.
	4447	4328	4273		
	4443	4320			
	4427	4304			
	4404	4300			
	4402	4296			
PERFORATING GUN	3 1/8" selective fire gun			JETS	TYPE : XVI 0.49 ENTRY HOLE : IN
FRACING PROGRAM					
FRACING FLUID	WG-11 : 30 lbs ADDITIVE	GBW-3 : 0.75 lbs ADDITIVE	FRAC-FLO : 1 gl ADDITIVE		
	CLA-STA : 1 gl ADDITIVE	SURFLO B-17: 200 ppm ADDITIVE	KCl 1% by weight 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 - 8000 GLS	MESH	LB / GL	LBS
	Treated sea water CARRY	8000 - 11,000 GLS	20/40 MESH	1 LB/GL	3000 LBS
	Treated sea water CARRY	11,000 - 14,500 GLS	20/40 MESH	2 LB/GL	7000 LBS
	Treated sea water CARRY	14,500 - 18,000 GLS	10/20 MESH	2 LB / GL	7000 LBS
	Treated sea water CARRY	18,000 - 20,000 GLS	10/20 MESH	3 LB / GL	6000 LBS
	Treated sea water BLENDER - FLUSH	0 - 300 GLS	MESH	LB / GL	LBS
	Treated sea water DISPLACEMENT	4200 GLS	MESH	LB / GL	LBS
OPERATING CONDITIONS		1 TOTAL STEPS	25-30 BPM RATE	3300 PSI PRESSURE	5000 PSI MAXIMUM PRESSURE
REMARKS					

 PERFORATING AND FRACGING PROGRAM									
WELL		Z2A-21-615-D-106 OFFICIAL NUMBER		106-3 BELCO NUMBER		Lobitos Offshore AREA		3ra. STAGE	
Rio Bravo FORMATION		4241'-4071' INTERVAL		106' MD (82' VNF) NET SAND				25 SHOTS	
PERFORATING PROGRAM									
PERFORATIONS	4241	4182	4109	4071			CORRECTED COLLARS	Corrected collar	
	4239	4178	4106					will be submitted	
	4223	4173	4103					at the field	
	4221	4163	4094						
	4214	4161	4092						
	4210	4156	4090						
	4206	4147	4077						
	4186	4143	4074						
PERFORATING GUN		3 1/8" selective fire gun					JETS	TYPE : XVI 0.49 ENTRY HOLE : IN	
FRACGING PROGRAM									
FRACGING FLUID		WG-11 : 30 Lbs ADDITIVE		GBW-3 : 0.75 lbs ADDITIVE		FRAC-FLO : 1 gl ADDITIVE			
		CLA-STA : 1 gl ADDITIVE		SURFLO B-17: 200 ppm ADDITIVE		KCl 1% by weight ADDITIVE			
		ADDITIVE REQUIRE PER 1000 GLS OF BASE FLUID, UNLESS OTHERWISE IS INDICATED.							
BASIC FRAC STEP	FRACGING FLUID				PROPPANT				
	PRE -- PAD				GLS		MESH	LB / GL	LBS
	Treated sea water PAD				0 - 8000 GLS		MESH	LB / GL	LBS
	Treated sea water CARRY				8000 - 11,000 GLS		20/40 MFSH	1 LB/GL	3000 LBS
	Treated sea water CARRY				11,000 - 15,000 GLS		20/40 MESH	2 LB/GL	8000 LBS
	Treated sea water CARRY				15,000 - 19,000 GLS		10/20 MESH	2 LB / GL	8000 LBS
	Treated sea water CARRY				19,000 - 21,500 GLS		10/20 MESH	3 LB / GL	7500 LBS
	Treated sea water BLENDER - FLUSH				0 - 300 GLS		MESH	LB / GL	LBS
	Treated sea water DISPLACEMENT				3900 GLS		MESH	LB / GL	LBS
	OPERATING CONDITIONS								
		1 TOTAL STEPS		25-30 BPM RATE		3100 PRESSURE		5000 MAXIMUM PRESSURE	
REMARKS									

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APARTADO N° 1
TALARA-PERU

FRAC MATERIALS

Water	:	76,000 Gls.
WG-11	:	2,300 Lbs.
GBW-3	:	60 lbs.
FRAC-FLO	:	76 Gls.
CLA-STA	:	76 Gls.
Surflo B-17	:	15 gls.
KCL	:	6,400 lbs.
Sand 20/40	:	310 sx.
Sand 10/20	:	430 sx.

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