

BELCO PETROLEUM
CORPORATION OF PERU
(SUCURSAL DEL PERU)

Teléf. - Negritos
863 - 864 - 865

BELCO PETROLEUM CORP. OF PERU
DPTO. TECNICO
29 MAR. 1985

RECIBIDO

WELL FILE

Apartado No. 1
Talara - Perú

PE-096-85

March 19th., 1985

TO : Drilling and Production Superintendents
FROM : Petroleum Engineering
SUBJECT : COMPLETION PROGRAM - WELL Z2A-21-610-D-
L06 (L06-6) LOBITOS OFFSHORE

Attached you will find the completion program for well L06-6,
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 at 5300' with cement.
- Run GR-CCL from 5260' - 4700'.
- Perforate 1st. stage and take BHP, if necessary. Then frac the 1st. stage and shoot-frac the 2nd. stage. 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 Reservoir Lima is 250 BOPD but we expect only 150 BOPD from analysis of neighbour wells performance.

Ivan Rodriguez
Petroleum Engineer

Vo.Bo. C.A. Valdizán
Senior Pet. Engineer

Approved: C.E. Myers
Engineering Supt.

IR/yt
cc: O.M.
Drlg. Supt.
Prod. Supt.
Workover
Lima (Reservoir)
Well File

BELCO PETROLEUM CORP. OF PERU
RESERVORIOS - LIMA
29 MAR. 1985
RECIBIDO



CASING AND CEMENT PROGRAM

WELL	22A-21-610-D-106 OFFICIAL NUMBER	L06-6 BELCO NUMBER	LOBITOS OFFSHORE AREA	AFE No.
5929	4622	46	42	9 5/8 in at 1512 ft.
TOTAL DEPTH	TOTAL VERT. DEPTH	MAX ANGLE	AVERAGE ANGLE	LAST CASING

CASING PROGRAM

CASING DESIGN SIZE: 5 1/2"	SECTION 1	Surf - 5300 INTERVAL	5300 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				5300 ft. DEPTH
	COLLAR	DIFF. FILL FLOAT COLLAR TYPE				5260 ft. DEPTH
	OTHER	TYPE				ft. DEPTH
CENTRALIZERS 14 ea.	5260 - 4700 INTERVAL	EVERY One Joint	14 TOTAL	INTERVAL	EVERY	TOTAL
	INTERVAL	EVERY	TOTAL	INTERVAL	EVERY	TOTAL
	INTERVAL	EVERY	TOTAL	INTERVAL	EVERY	TOTAL

CEMENTING PROGRAM

WASHER	MUD FLUSH TYPE	40 bbl VOLUME	400 LB. MF-1 COMPOSITION	80 GAL MORFLO
SLURRY 1	850 CEMENT	4 GEL	1.25% CFR-2 ADDITIVE	0.5 GAL/100GAL NF-1 ADDITIVE
	14.1 lb/gal DENSITY	1.55 ft ³ /sx YIELD	7.8 gl/sx WATER REQ.	1.55 Hr. Min T.T.
SLURRY 2	350 CEMENT	NET GEL	0.5% HALAD 9 ADDITIVE	0.5 GAL/100GAL NF-1 ADDITIVE
	15.6 lb/gal DENSITY	1.18 ft ³ /sx YIELD	5.2 gl/sx WATER REQ.	2:30 Hr. Min T.T.
SLURRY 3	 CEMENT	 GEL	 ADDITIVE	 ADDITIVE
	lb/gal DENSITY	ft ³ /sx YIELD	gl/sx WATER REQ.	Hr. Min T.T.

DISPLACEMENT	122 BBL VOLUME	SEA WATER FLUID	6-7 RATE	1000 - 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: 3000 PSI - 5000 PSI			

R E M A R K S	- CIRCULATE THE WELL AND MAINTAIN YP= 10 LB/100 ft., VP = 15
	- RUN 5 1/2" CSG. AND CEMENT IT.
	- BEFORE TO CEMENT SET CEMENT BASKET ON 5 1/2" CSG AT 200' ABOVE SHOE OF 9 5/8" CSG.
	- USE OF BOTTOM AND TOP PLUGS.
	- CEMENT TOP IS EXPECTED.

ENGINEER	V ⁰ R ⁰	DATE:	DISTRIBUTION
		HOUR:	



COMPLETION PROCEDURE

WELL	Z2A-21-610-D-L06 OFFICIAL NUMBER	L06-6 BELCO NUMBER	LOBITOS OFFSHORE AREA	AFE No.
1. Run and cement 5 1/2" csg. as per program. 2. Install a 10" x 3000# WP x 6" x 5000# WP tbg. head spool with 2" x 500# 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 the cement. 4. Run GR-CCL in the interval 5260' - 4700'. 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. 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. 9. Shoot frac the rest of the stages according to the program. 10. Leave the well shut-in for about 12 hours after displacement. 11. Open the well and put it on production for cleaning (wide-open). 12. Hook-up the well into the production facilities.				
ENGINEER	V0 80	DATE: HOUR:	DISTRIBUTION	



PERFORATING AND FRACING PROGRAM

WELL	Z2A-21-610-D-106 OFFICIAL NUMBER	L06-6 BELCO NUMBER	LOBITOS OFFSHORE AREA	1 STAGE
RIO BRAVO FORMATION	5182' - 4991' INTERVAL	148' MD (110')	NET SAND	29 SHOTS

PERFORATING PROGRAM

PERFORATIONS	5182	5103	5058	5014			CORRECTED COLLARS	TO BE PROVIDED AT	
	5179	5097	5054	5005				WELL SITE.	
	5176	5090	5048	5002					
	5136	5084	5043	4997					
	5132	5079	5038	4991					
	5126	5073	5032						
	5120	5069	5027						
	5116	5063	5021						
PERFORATING GUN	3 3/8" SELECTIVE FIRE GUN						JETS	TYPE XVI ENTRY HOLE : IN	

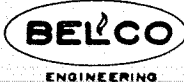
FRACING PROGRAM

FRACING FLUID	WG -11 30 LBS. ADDITIVE	GBW -3 0.5 LBS. ADDITIVE	FRAC -FLO , 1 GAL ADDITIVE
	CLA-STA , 1 GAL 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	8000-13000 GLS	20/40 MESH	1 LB/GL	5000 LBS
	TREATED SEA WATER CARRY	13000-18500 GLS	20/40 MESH	2 LB/GL	11000 LBS
	TREATED SEA WATER CARRY	18500-24000 GLS	10/20 MESH	2 LB / GL	11000 LBS
	TREATED SEA WATER CARRY	24000-26500 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	0-4900 GLS	MESH	LB / GL	LBS

OPERATING CONDITIONS	1 TOTAL STEPS	25 - 30 RATE	3500 PRESSURE	5000 MAXIMUM PRESSURE
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REMARKS	DO NOT EXCEED 5000 PSI DUE TO CASING LIMITATION .
	KEEP 1000 PSI IN THE 9 5/8" x 5 1/2" CASING ANNULUS WHILE TRACING.



PERFORATING AND FRACING PROGRAM

WELL	Z2A-21-610-D-L06 OFFICIAL NUMBER	L06-6 BELCO NUMBER	LOBITOS OFFSHORE AREA	2 STAGE
RIO BRAVO FORMATION	4956' - 4794 INTERVAL	82' MD (68 VNF) NET SAND	16 SHOTS	

PERFORATING PROGRAM

PERFORATIONS	4956	4902					CORRECTED COLLARS	TO BE	PROVIDED AT
	4953	4898						WELL SITE.	
	4932	4816							
	4928	4812							
	4924	4808							
	4918	4804							
	4915	4800							
	4909	4794							
PERFORATING GUN								JETS	TYPE : TRU JET XVI ENTRY HOLE : IN

FRACING PROGRAM

FRACING FLUID	WG-11 ; 30 LBS ADDITIVE	GBW-3 ; 0.5 LBS ADDITIVE	FRAC-FLO ; 1 GAL ADDITIVE
	CLA-STA ; 1 GAL ADDITIVE	SURFLO B-17 200PPM 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	8000-11000 GLS	20/40 MFSH	1 LB/GL	3000 LBS
	TREATED SEA WATER CARRY	11000-14500 GLS	20/40 MESH	2 LB/GL	7000 LBS
	TREATED SEA WATER CARRY	14500-18000 GLS	10/20 MESH	2 LB / GL	7000 LBS
	TREATED SEA WATER CARRY	18000-20000 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	0-4600 GLS	MESH	LB / GL	LBS

OPERATING CONDITIONS	1 TOTAL STEPS	25-30 RATE	3500 PRESSURE	5000 MAXIMUM PRESSURE
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REMARKS	- DO NOT EXCEED 5000 PSI DUE TO CASING LIMITATION.
	- KEEP 1000 PSI IN THE 9 5/8" x 5 1/2" CASING ANNULUS WHILE FRACING THE WELL.

FRAC MATERIALS

WATER	57000	GALLONS
WG-11 (30 lb/1000 gls)	1710	LBS.
GBW-3 (0.5 lb/1000 gls)	30	LBS.
CLA-STA (1.0 gl/1000 gls)	57	GALLONS
FRAC-FLO (1.0 gl/1000 gls)	57	GALLONS
SURFLO-B-17 (200 PPM)	11	GALLONS
KEL (1.0 Pct by Weight of Water)	4800	LBS.
SAND 20/40	260	SX
SAND 10/20	315	SX