BELCO PETROLEUM
CORPORATION OF PERU
(SUCURSAL DEL PERU)

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APARTADO No. 1
TALARA - PERU

WELL FILE

Setiembre 10, 1984
E- 067, 1984

To : Drilling and Production Superintendents
From : Engineering
Subject : Completion Program for well
Z2A-21-575-D-L06 (L06-21) - File
Lobitos - Offshore

Attached, you will find the Completion Program for the well in the reference to be completed in the Rio Bravo formation.

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

An initial stabilized production of ± 500 BOPD from this well is being expected.

José Zamalloa V.
Pet. Eng. Dept.

V°B°: Carlos Valdizán M
Asst. Eng. Supt.

C. E. Myers : Approved
Eng. Supt.

Approved : Gordon Villanueva
Drlg. Superintendent

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

BELCO PETROLEUM CORP. OF PERU
DPTO. TECNICO
2 0 SET. 1984
RECIBIDO

BELCO ENGINEERING

COMPLETION PROCEDURE

WELL	Z2A-21-575-D-L06 OFFICIAL NUMBER	L06-21 BELCO NUMBER	Lobitos Offshore AREA	AFE No.

1.- Run and cement the 5 1/2'' production casing as per program in the attachment #2.

2.- Install the 10''-3000# W.P. x 6''- 5000# WP tbg. head spool with 2''-5000# WP seal wing valves and 6'' x 5000# W.P. 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 a GR-CCL log in the interval 5210' - 3700'.

5.- Test the shooting valve, well head and casing with pressure up to 5000#, 24 hrs. after plug down.

6.- Perforate the first stage as per program in the attachment # 3.

7.- Run SI BHP to record the original pressure of the reservoir.

8.- Shoot-frac the rest of the stages as per program in the attachment 4 and 5.

9.- Check the top of the sand six hours after displacement.

10.- Hook-up the well into the production facilities.

11.- Open the well 12 hrs. after frac-job and put it on production for cleaning.

12.- Put the well on production test selecting the optium choke size (start with 1/4'')

13.- If the well does not flow by itself, make a round trip with 2 7/8'' tbg. and clean the well down to bottom.

14.- Run in the hole the G/L installation as per design in attachment 6.

15.- Kick off the well and put it on production tests.

Ivan Rodriguez ENGINEER	V° B°	DATE: HOUR:	DISTRIBUTION

Attachment 2

BELCO ENGINEERING

CASING AND CEMENT PROGRAM

WELL	Z2A-575-D-L06 (OFFICIAL NUMBER)	L06-21 (BELCO NUMBER)	Lobitos Offshore (AREA)	02452 (AFE No.)

5503 ft. TOTAL DEPTH	5098 ft. TOTAL VERT. DEPTH	27 1/2 MAX ANGLE	25 AVERAGE ANGLE	9 5/8 in at 1805 ft. LAST CASING

CASING PROGRAM

CASING DESIGN SIZE: m	SECTION 1	5250'-Surf. INTERVAL	5250 ft. LENGTH	J-55 GRADE	17 lb/ft WEIGHT	LT&C THREADS
	SECTION 2	INTERVAL	ft. LENGTH	GRADE	lb/ft WEIGTH	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)	5250 ft. DEPTH
	COLLAR	Diff. fill float collar (TYPE)	5210 ft. DEPTH
	OTHER	TYPE	ft. DEPTH

CENTRALIZERS	5100-4100 INTERVAL	EVERY One joint	25 TOTAL	INTERVAL	EVERY	TOTAL
	INTERVAL	EVERY	TOTAL	INTERVAL	EVERY	TOTAL
	INTERVAL	EVERY	TOTAL	INTERVAL	EVERY	TOTAL

CEMENTING PROGRAM

WASHER	Mud flush TYPE	20 bbl VOLUME	200 lbs MF-1 + 10 gls Morflo II COMPOSITION		
SLURRY 1	500 sxs CEMENT	4 o/o GEL	CFR-2, 0.75% + ADDITIVE	0.5 gl/1000gl ADDITIVE	NF-1 ADDITIVE
	14.1 lb/gl DENSITY	1.55 ft³/sx YIELD	7.8 gl/sx WATER REQ	± 2.00 Hr. Min T.T.	2900 ft EST. TOP
SLURRY 2	200 sxs CEMENT	neat o/o GEL	0.5% Halad -9 ADDITIVE	+ 0.5gl/1000gl ADDITIVE	NF-1 ADDITIVE
	15.6 lb/gl DENSITY	1.18 ft³/sx YIELD	5.2 gl/sx WATER REQ.	± 2.00 Hr. Min T.T	4750 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	121 Bbls. VOLUME	Sea water FLUID	7-8 BPM RATE	± 1500 Psi PRESS AT PLUG BUMPING
WELLHEAD	SIZE: 9 5/8'' x 5 1/2'' WORKING PRESSURE: 3000 - 5000 Psi			

REMARKS

- Circulate the well after running casing
- Estimated hole at 4900 = 10 1/2''
- Estimated hole at 3500 = 9 1/2''

Jorge Perez ENGINEER	V° B°	DATE: Set. 05, 1984 HOUR: 10:45 a.m.	DISTRIBUTION

Attachment 3

BELCO ENGINEERING

PERFORATING AND FRACCING PROGRAM

WELL	Z2A-21-575-D-L06 OFFICIAL NUMBER	L06-21 BELCO NUMBER	Lobitos Offshore AREA	1 STAGE
Rio Bravo FORMATION	5100'-4841' INTERVAL	124 MD (113 VD) NET SAND		28 SHOTS

PERFORATING PROGRAM

PERFORATIONS							CORRECTED COLLARS			
	5100	5055	5005	4967						
	5096	5032	5000	4850						
	5092	5028	4996	4845						
	5078	5026	4991	4841						
	5075	5024	4987							
	5070	5016	4983							
	5066	5012	4976							
	5061	5008	4971							

PERFORATING GUN		JETS	TYPE : ENTRY HOLE : IN

FRACCING PROGRAM

FRACCING FLUID			
	WG-11 30# ADDITE	GBW 3 0.5#s ADDITIVE	Clasta II 1 gal ADDITIVE
	FRACFLO 1 gal ADDITIVE	KCL 1% of water weight ADDITIVE	ADDITIVE

ADDITIVE REQUIRE PER 1000 GLS OF BASE FLUID, UNLESS OTHERWISE IS INDICATED.

BASIC FRAC STEP	FRACCING FLUID		PROPPANT		
	PRE — PAD	GLS	MESH	LB / GL	LBS
	Water PAD	0 - 5000 GLS	- MESH	- LB / GL	- LBS
	Water CARRY	5000 - 7000 GLS	20/40 MESH	1 LB/GL	20 LBS
	Water CARRY	7000 - 9500 GLS	20/40 MESH	2 LB/GL	50 LBS
	Water CARRY	9500 - 12,000 GLS	10/20 MESH	2 LB / GL	50 LBS
	Water CARRY	12,000 - 13,000 GLS	10/20 MESH	3 LB / GL	30 LBS
	Water BLENDER — FLUSH	0 - 300 GLS	- MESH	- LB / GL	- LBS
	Water DISPLACEMENT	4800 GLS	- MESH	- LB / GL	- LBS
	Inject ± 10 RCN after 1st. step				

OPERATING CONDITIONS	2 TOTAL STEPS	25 BPM RATE	3000 Psi PRESSURE	4500 MAXIMUM PRESSURE

REMARKS

No collars ?

BELCO ENGINEERING

PERFORATING AND FRACCING PROGRAM

WELL	Z2A-21-575-D-L06 OFFICIAL NUMBER	L06-21 BELCO NUMBER	Lobitos Offshore AREA	2 STAGE
Rio Bravo FORMATION	4506'-4314' INTERVAL	123 MD (113 VD) NET SAND	29 SHOTS	

PERFORATING PROGRAM

PERFORATIONS						CORRECTED COLLARS			
4506	4432	4390	4332						
4501	4428	4385	4328						
4498	4424	4381	4322						
4492	4418	4351	4318						
4488	4414	4348	4314						
4444	4400	4344							
4440	4398	4340							
4436	4396	4336							

PERFORATING GUN		JETS	TYPE : ENTRY HOLE : IN

FRACCING PROGRAM

FRACCING FLUID				
WG-11 30# ADDITE	GBW3 0.5#s ADDITIVE	CLASTA II 1 gal ADDITIVE
FRACFLO 1 gal ADDITIVE	KCl 1% of water weight ADDITIVE	ADDITIVE

ADDITIVE REQUIRE PER 1000 GLS OF BASE FLUID, UNLESS OTHERWISE IS INDICATED.

BASIC FRAC STEP	FRACCING FLUID		PROPPANT		
	PRE - PAD	GLS	MESH	LB / GL	LBS
	Water PAD	0 - 5000 GLS	- MESH	- LB / GL	- LBS
	Water CARRY	5000 - 7000 GLS	20/40 MESH	1 LB/GL	20 LBS
	Water CARRY	7000 - 9,500 GLS	20/40 MESH	2 LB/GL	50 LBS
	Water CARRY	9,500 - 12,000 GLS	10/20 MESH	2 LB / GL	50 LBS
	Water CARRY	12,000 - 13,000 GLS	10/20 MESH	3 LB / GL	30 LBS
	Water BLENDER — FLUSH	0 - 300 GLS	- MESH	- LB / GL	- LBS
	Water DISPLACEMENT	4,250 GLS	- MESH	- LB / GL	- LBS

Inject ± 10 RCN after 1st. step

OPERATING CONDITIONS	2 TOTAL STEPS	25 BPM RATE	3000 PRESSURE	4500 MAXIMUM PRESSURE

REMARKS

BELCO ENGINEERING

PERFORATING AND FRACCING PROGRAM

WELL	Z2A-21-575-D-L06 OFFICIAL NUMBER	L06-21 BELCO NUMBER	Lobitos Offshore AREA	3 STAGE
Rio Bravo FORMATION	4136'-3976' INTERVAL	58 MD (52 VD) NET SAND		16 SHOTS

PERFORATING PROGRAM

PERFORATIONS							CORRECTED COLLARS			
4136	4065									
4132	4061									
4128	4057									
4124	4053									
4119	4039									
4092	4035									
4088	4016									
4068	3976									

PERFORATING GUN		JETS	TYPE : ENTRY HOLE : IN

FRACCING PROGRAM

FRACCING FLUID			
	WG-11 30# ADDITE	GBW3 0.5#s ADDITIVE	* CLASTA II 1 gal. ADDITIVE
	FRACFLO 1 gal ADDITIVE	KCl 1% of water weight ADDITIVE	ADDITIVE

ADDITIVE REQUIRE PER 1000 GLS OF BASE FLUID, UNLESS OTHERWISE IS INDICATED.

BASIC FRAC STEP	FRACCING FLUID		PROPPANT		
	- PRE -- PAD	- GLS	- MESH	- LB / GL	- LBS
	Water PAD	0 - 5000 GLS	- MESH	- LB / GL	- LBS
	Water CARRY	5000 - 7000 GLS	20/40 MESH	1 LB/GL	20 LBS
	Water CARRY	7000 - 9500 GLS	20/40 MESH	2 LB/GL	50 LBS
	Water CARRY	9,500 - 12,000 GLS	10/20 MESH	2 LB / GL	50 LBS
	Water CARRY	12,000 - 13,000 GLS	10/20 MESH	3 LB / GL	30 LBS
	Water BLENDER — FLUSH	0 - 300 GLS	- MESH	- LB / GL	- LBS
	Water DISPLACEMENT	3,500 GLS	MESH	LB / GL	LBS

OPERATING CONDITIONS	1 TOTAL STEPS	25 BPM RATE	3000 PSI PRESSURE	4500 MAXIMUM PRESSURE

REMARKS

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APARTADO No. 1
TALARA - PERU

L06 - 21
FRAC MATERIALS

Sea water	80,000 gal
WG-11	2,400 lbs
CLA-STA	80 Gal
GB-W-3	40 Lbs
FRAC-FLO	80 Gal
KCL	6,700 Lbs
Sand 10/20	400 sxs
Sand 20/40	350 sxs
7/8'' RCN Balls	20

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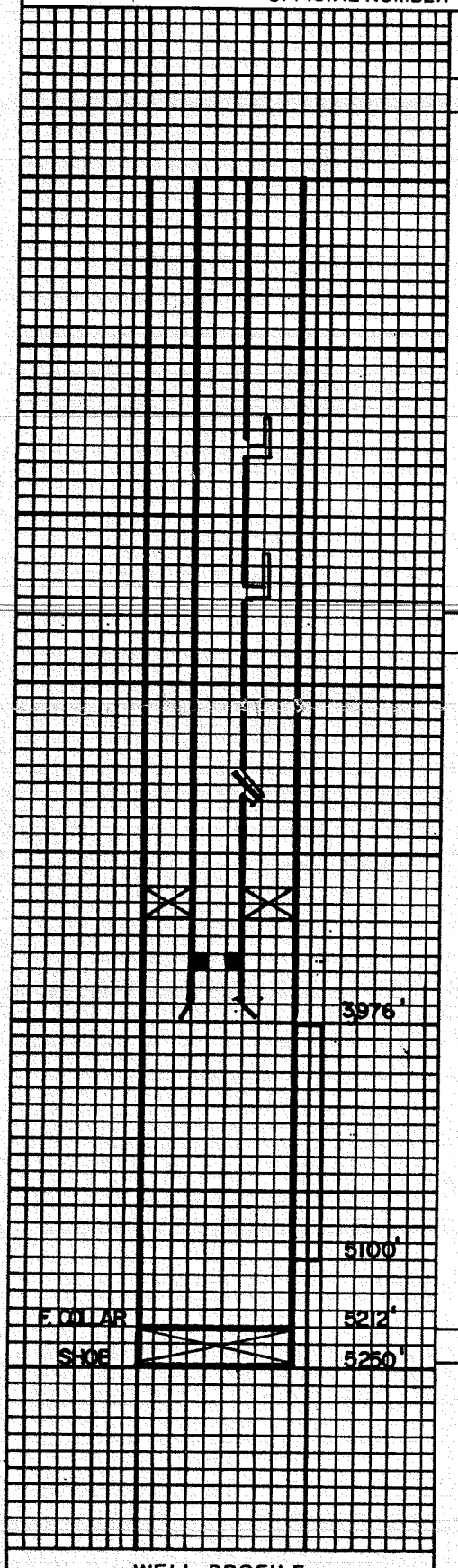
BELCO ENGINEERING

PRODUCTION STRING

WELL	Z2A-21-575-D-206	L06-21	Lobitos Offshore	
	OFFICIAL NUMBER	BELCO NUMBER	AREA	AFE No.

CONVENTIONAL G/L INSTALLATION
INSTALLATION TYPE



WELL PROFILE

WELL DATA

Zero point	:	33'
Well head	:	13 3/8'' x 9 5/8'' x 5 1/2''
Float collar	:	5212'
Casing	:	5 1/2'', J-55, 17#/ft LT&C
Interval	:	5100'-3976'
Formation	:	Rio Bravo
Max. angle	:	27 1/2°

EQUIPMENT TO BE RUN

± 3950' of 2 7/8'', J-55, 6.5#/ft EUE tubing fitted as follows :

- 3'' x 2 7/8'' swage at 3950'
- 2 7/8'' seating nipple for s.d. valve at 3940'.
- 5 1/2'' x 2 7/8'' R-4 packer at 3890'
- KBMG-2 mandrel w/BK-1 G/L valve 5/16'' port size at 3860' Ptro : 740 PSI at 60°F
- B mandrel w/J-40 G/L valve 1/4'' port size at 2800' Ptro = 770 PSI at 60°F.
- B mandrel w/J-40 G/L valve 1/4'' port size at 1700' Ptro = 800 PSI at 60°F.

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REMARKS