

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

REPORT ON PROPOSED CHANGE OF WELL DESIGNATION

Ventura _____, California

November 12, 1991

R. D. Phillips, Agent
SOUTHERN CALIFORNIA GAS COMPANY
P.O. Drawer 3249 Mail Location 22GO
Los Angeles, CA 90051-1249

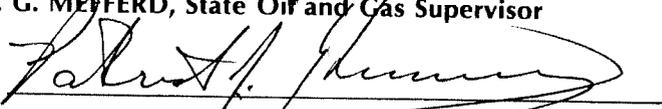
Your request, dated July 24, 1991, proposing to change the designation of well(s) in Sec. 29, T. 3N, R. 16W, S.B. B. & M., Aliso Canyon field, Los Angeles County, District No. 2, has been received.

The proposed change in designation, in accordance with Section 3203, Public Resources Code, is authorized as follows:

<u>FROM</u>	<u>TO</u>
"SFZU" F-2 (037-00665)	"Frew" 2 (037-00665)
"SFZU" F-3 (037-00666)	"Frew" 3 (037-00666)
"SFZU" F-4 (037-00667)	"Frew" 4 (037-00667)
"SFZU" F-5 (037-00668)	"Frew" 5 (037-00668)
"SFZU" F-6 (037-00669)	"Frew" 6 (037-00669)
"SFZU" F-7 (037-00670)	"Frew" 7 (037-00670)
"SFZU" F-8 (037-00671)	"Frew" 8 (037-00671)
"SFZU" F-9 (037-00672)	"Frew" 9 (037-00672)
"SFZU" SS-4 (037-00757)	"Standard Sesnon" 4 (037-00757)
"SFZU" SS-12 (037-00764)	"Standard Sesnon" 12 (037-00764)
"SFZU" SS-4-0 (037-22063)	"Standard Sesnon" 4-0 (037-22063)
"SFZU" SS-10 (037-00040)	"Standard Sesnon" 10 (037-00040)

M. G. MEFFERD, State Oil and Gas Supervisor

By



Deputy Supervisor

PATRICK J. KINNEAR

SUBMIT IN DUPLICATE
 RESOURCES AGENCY OF CALIFORNIA
 DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

DIVISION OF OIL AND
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 JAN 1 9 1988
 DIVISION OF OIL AND GAS
 CALIFORNIA

History of Oil or Gas Well

Operator Southern Calif. Gas Co. Field Aliso Canyon County L.A.
 Well Frew #4 "SFZU" F-4, Sec. 29, T. 3N, R. 16W S.B.B. & M.
 A.P.I. No. #037-00667 Name R.W. Weibel Title Agent
 Date Sept. 26, 1988 (Person submitting report) (President, Secretary or Agent)

Signature [Handwritten Signature] 1/31/89
 N.W. Buss for R.W. Weibel
 P.O. Box 3249 Terminal Annex, Los Angeles, CA 90051 (213) 689-3951
 (Address) (Telephone Number)

History must be complete in all detail. Use this form to report all operations during drilling and testing of the well or during redrilling or altering the casing, plugging, or abandonment with the dates thereof. Include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests and initial production data.

Date

GWO No: 91637: was issued to install protective innerstring

1988

- 8-31 Rigged up. Removed xmas tree. Installed and tested BOPE.
to Mr. Stephen Mulqueen of the DOG witnessed test. Pulled
9-2 2-7/8" tubing.
- 9-3 Ran in well with 6-5/8" bit and casing scraper to packer
at 8228'. Backscuttled well clean. Set bridge plug at
8205'. Pressure tested casing to 2000 psi for 20 minutes-
OK.
- 9-5 HOLIDAY
- 9-6 Set bridge plug at 1000'. Removed 13-5/8" x 8" 5000 psi
tubing head. Installed 13-5/8" x 13-5/8" 5000 psi inner-
string landing spool.
- 9-7 Tested innerstring landing spool to 1000 psi for 20 minutes-
OK. Unloaded well to 940' with nitrogen. Shooting flange
leaked at threads.

- 9-8 Ran noise log from 950' to surface with 875 psi nitrogen in casing. Found leak in first collar at 32'. Recovered bridge plugs at 1000' and 8205'. Made up test seals on 2-7/8" tubing.
- 9-9 Pressure tested seals and packer at 8224' for 20 minutes - OK.
- 9-10 Rig idle, waiting for casing.
- 9-12 Changed pipe rams to 5-1/2". Rigged up and ran 5-1/2" 20# innerstring, hydrotesting to 4000 psi and monitoring torque makeup. Ran to 4400'.
- 9-13 Continued running 5-1/2". Shut rig down for repairs.
- 9-14 Rig shut down for repairs.
- 9-15 Finished running innerstring and latched into packer at 8224'. Pulled 20,000# over weight. With 20,000# on packer, tested at 1500 psi for 15 minutes (tested ok). Set bridge plug at 300', tested plug at 1000 psi (tested ok).
- 9-16 Lifted BOPE and installed slips on 5-1/2" casing with 20,000# on packer, 146,000# in slips. Installed packing, 13-5/8" x 13-5/8" x 5-1/2" 5000 psi seal flange, and tubing head. Reinstalled BOPE. Retrieved bridge plug from 300'. Set Otis AWB 5-1/2" packer at 8160' with wireline.
- 9-17 Ran 2-3/8" 4.7# 8rd EUE N-80 tubing, hydrotesting to 4000 psi. Latched into packer at 8160'. Spaced out and pulled 20,000# over weight. Landed with 10,000# on packer, testing at 1500 psi for 15 minutes. Removed BOPE and installed 8-1/2" xmas tree.
- 9-19 Tested seal flange, tubing head and xmas tree at 5000 psi-OK. Released rig at 11:00 A.M.

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JAN 13 1980

STOCKTON, CALIFORNIA

WELLHEAD DESCRIPTION TYPE V

DIVISION OF OIL AND GAS
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JAN 17 1989

VENTURA, CALIFORNIA

Well No: Frew #4
Field: ALiso Canyon
Date Prepared: 9-17-88
Wellhead Mfr: Shaffer

1. Casing Head Shafco Size 13-5/8" x 13-3/8" x 5000 psi
Slips & Pack-Off 13-5/8" x 7"
A. Surface Csg Size 13-3/8" Wt 54.5# Grade J-55
B. Casing Head Valve Marpac Size 2" x 3000 psi Fig#
2. Seal Flange None Size
Ring Type
3. Inner String Landing Spool Shaffer Ring Type Bx 160
Size 13-5/8" x 13-5/8" x 5000 psi SD
A. Outlets Flanged Sec. Seal PS Valve Removal Thrd 1-1/2"
B. Spool Valve Rockwell Size 2"
4. Seal Flange Shaffer Type Seal PS
Seal 13-5/8" x 13-5/8" x 5000 psi Ring Type Bx 160
5. Tubing Head Cameron Type Seal PS
Size 13-5/8" x 9" x 5000 psi
Outlets N/A Sec. Seal PS Valve Thrd 2-7/8" EUE 8rd
Ring Type Bottom Bx 160 Top Rx50 Outlets N/A
A. Tubing Hanger Cameron Size 8"x2-7/8" Bore 6-3/8" drift 2-1/2"
Type Neck seal Thread 2-7/8" 8rd EUE
B.P.V. Size and Thread 2-7/8" 4-thread LH
B. Tubing Head Valves McEvoy Size 3-1/8" x 5000 psi
C. Automatic Csg. Valve WKM Size 3-1/8" x 5000 psi

WELLHEAD DESCRIPTION TYPE V

Page 2

FREW #4
9-17-88

6. Adapter Seal Flange Cameron Bore 2-9/16"
Size 9' x 2-9/16" AJS Ring Size RX50 R27
7. Master Valve McEvoy Size 2-9/16" x 5000 psi Fig# 129
8. Xmas Tree Cross Cameron Size 2-9/16" x 2-1/16"
Bore Thru 2-9/16" Bore Across 2-1/16"
9. Tbg. Wing Valves Rockwell Size 2-1/16" x 5000 psi
A. Auto Tbg. Prod. Valve WKM Size 2-1/16" x 5000 psi
10. Unibolt Size 3-1/8" x 5000 psi Inside Thrds 2-7/8" EUE
11. Tubing Head to Ground Level 1.10'
12. Csg. Size 7" Wt 23# & 26# Wt Landed 200,000#
13. Inner Csg. Size 5-1/2" 20# Type K-55 FL-4S
Wt 20# Wt Landed 20,000# on packer 146,000# in s
14. Tubing Size 2-3/8" Type Thrd 8rd EUE
Type N-80 Wt. Landed on Doughnut 10,000#
Tubing Depth 8160' T.D. 8602'

DIVISION OF OIL AND GAS
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JAN 12 1980

BERKELEY, CALIFORNIA

DIVISION OF OIL AND GAS

Report on Operations

R. M. Morrow, Agent
Southern California Gas Co.
810 S. Flower Street
Los Angeles, CA. 90051

Ventura, Calif.
September 28, 1988

Your operations at well "SFZU" F-4, API No. 037-00667,
Sec. 29, T. 3N, R. 16W S.B.B. & M. Aliso Canyon Field, in Los Angeles County,
were witnessed on 9-1-88 by S. Mulqueen, representative of
the supervisor, was present from 1000 to 1300. There were also present Gerry Woods

Present condition of well: 13 3/8" cem 770'; 7" cem 8280', cp 8218', perfs 8200' &
8270'; 5" ld 8244' - 8602', perfs @ int 8279' - 8416', 8416' - 8435'
(cem off) & 8435' - 8602'. TD 8604'.

The operations were performed for the purpose of testing the blowout prevention equipment
and installation.

DECISION:

THE BLOWOUT PREVENTION EQUIPMENT AND ITS INSTALLATION ON THE 7" CASING ARE APPROVED.

SM:bg

M. G. MEFFERD

By Patrick J. Kinneer
Patrick J. Kinneer
Deputy Supervisor

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

No. P 288-322
Field Code 010
Area Code 00
New Pool Code --
Old Pool Code 30

PERMIT TO CONDUCT WELL OPERATIONS

R. M. Morrow, Agent
So. Calif. Gas Co.
810 S. Flower St.
Los Angeles, CA 90017

Ventura, California
August 2, 1988

Your proposal to rework well "SFZU" F-4,
A.P.I. No. 037-00667, Section 29, T. 3N, R. 16W, S.B. B.&M.,
Aliso Canyon field, any area, Sesnon-Frew pool,
Los Angeles County, dated 7/27/88, received 7/28/88, has been
examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. Hole fluid of a quality and in sufficient quantity is used to control all subsurface conditions in order to prevent blowouts.
2. Blowout prevention equipment conforming to DOG Class III 3M B requirements shall be installed and maintained in operating condition at all times.
3. This office shall be consulted before initiating any changes or additions to this proposed operation, or if operations are to be suspended.
4. THIS DIVISION SHALL BE NOTIFIED:
 - a. To witness a pressure test of the blowout prevention equipment before commencing downhole operations.

Blanket Bond
PK:b

Engineer Patrick Kinnear
Phone (805) 654-4761

M.G. MEFFERD, State Oil and Gas Supervisor
By Patrick I. Kinnear
Patrick I. Kinnear
Deputy Supervisor

A copy of this permit and the proposal must be posted at the well site prior to commencing operations. Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended.
OG111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
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JUL 28 1988

VENTURA, CALIFORNIA

Notice of Intention to Rework Well

This notice and indemnity or cash bond shall be filed, and approval given, before rework begins. If operations have not commenced within one year of receipt of the notice, this notice will be considered cancelled.

FOR DIVISION USE ONLY		
BOND	FORMS	
	OGD 114	OGD 121
BB	✓	✓

DIVISION OF OIL AND GAS

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to rework well Frew #4, API No. 037-00667
(Well designation)
Sec. 29, T. 3N, R. 16W, S.B. B. & M., Aliso Canyon Field, Los Angeles County.

The present condition of the well is as follows:

- Total depth 8604'
- Complete casing record, including plugs and perforations (present hole)
 - 13-3/8" cemented 770'
 - 7" cemented 8280', WSO 8270'
 - squeezed 8220', 8218', 8219', WSO 8200'
 - 358' 5" landed 8602', top 8244', slotted 8279'-8602'
 - scab cemented 8416'-8435'
- Present producing zone name Sesnon; Zone in which well is to be recompleted _____
- Present zone pressure 2800 psi; New zone pressure _____
- Last produced Gas Storage Well
(Date) *(Oil, B/D)* *(Water, B/D)* *(Gas, Mcf/D)*
(or)
Last injected _____
(Date) *(Water, B/D)* *(Gas, Mcf/D)* *(Surface pressure, psig)*
- Is this a critical well according to the definition on the reverse side of this form? (Yes) (No)

The proposed work is as follows:

- Move in and rig up. Kill well. Install BOPE and pressure test.
- Pull tubing. Pressure test casing. Repair if necessary.
- Install innerstring spool. Run 5-1/2" innerstring and land on packer.
- Set packer and run tubing. Return well to gas storage service.

Note: If well is to be redrilled, show proposed new bottom-hole coordinates and true vertical depth.

It is understood that if changes in this plan become necessary, we are to notify you immediately.

Address Box 3249, Terminal Annex
(Street)
Los Angeles, CA 90051
(City) *(State)* *(Zip)*
Telephone Number (213) 689-3925

Southern California Gas Company
(Name of Operator)
By R.M. Dowell for R. M. Morrow
(Name, Printed)
R. M. Dowell 7/27/88
(Name - Signature) *(Date)*

Type of Organization Corporation
(Corporation, Partnership, Individual, etc.)

SOUTHERN CALIFORNIA GAS
 FREW 4
 ALISO
 LOS ANGELES COUNTY CALIFORNIA
 GYROSCOPIC MULTISHOT

037-00667

29-3N-16W

SPERRY-SUN, INC.
 RECORD OF SURVEY

DATE OF SURVEY DECEMBER 4, 1979
 VERTICAL SECTION DIRECTION CLOSURE
 Red 12/12/79 SU 1.75-12.554

MEASURED DEPTH	TRUE VERTICAL DEPTH	SUB SEA TVD	COURSE INCLINATION DEG MIN	COURSE DIRECTION DEG	DOG-LEG DEG/100	RECTANGULAR COORDINATES		TOTAL	VERTICAL SECTION
						NORTH/SOUTH	EAST/WEST		
0	0.	0.				0.	0.	0.	0.
100	100.00	100.00	0 35	S 60 W	0.58	0.25 S	0.44 W	0.25	0.05
200	199.99	199.99	0 45	S 53 W	0.19	0.90 S	1.40 W	0.90	0.26
300	299.98	299.98	1 0	S 52 W	0.25	1.83 S	2.61 W	1.83	0.62
400	399.96	399.96	1 0	S 51 W	0.01	2.92 S	3.98 W	2.92	1.06
500	499.95	499.95	1 0	S 49 W	0.03	4.04 S	5.32 W	4.04	1.55
600	599.93	599.93	1 0	S 53 W	0.07	5.14 S	6.67 W	5.14	2.01
700	699.92	699.92	1 5	S 51 W	0.09	6.26 S	8.10 W	6.26	2.45
800	799.91	799.91	0 30	N 77 W	0.87	6.76 S	9.26 W	6.76	2.44
900	899.90	899.90	0 50	S 52 W	0.65	7.11 S	10.26 W	7.11	2.36
1000	999.89	999.89	0 55	S 52 W	0.08	8.05 S	11.47 W	8.05	2.73
1100	1099.88	1099.88	0 55	S 51 W	0.01	9.04 S	12.72 W	9.04	3.13
1200	1199.87	1199.87	0 50	S 53 W	0.09	9.98 S	13.92 W	9.98	3.51
1300	1299.86	1299.86	0 40	S 41 W	0.23	10.86 S	14.88 W	10.86	3.92
1400	1399.85	1399.85	0 30	S 55 W	0.22	11.55 S	15.62 W	11.55	4.25
1500	1499.85	1499.85	0 30	S 62 W	0.06	12.00 S	16.36 W	12.00	4.37
1600	1599.84	1599.84	0 35	S 74 W	0.14	12.35 S	17.24 W	12.35	4.33
1700	1699.84	1699.84	0 25	S 79 W	0.17	12.56 S	18.09 W	12.56	4.18
1800	1799.84	1799.84	0 25	S 86 W	0.05	12.65 S	18.80 W	12.65	3.98
1900	1899.83	1899.83	0 30	N 75 W	0.17	12.57 S	19.59 W	12.57	3.58
2000	1999.83	1999.83	0 30	N 78 W	0.02	12.36 S	20.44 W	12.36	3.05
2100	2099.83	2099.83	0 30	N 80 W	0.01	12.20 S	21.29 W	12.20	2.56
2200	2199.82	2199.82	0 25	N 81 W	0.08	12.06 S	22.08 W	12.06	2.12
2300	2299.82	2299.82	0 35	N 77 W	0.17	11.89 S	22.94 W	11.89	1.61
2400	2399.82	2399.82	0 25	N 88 W	0.19	11.77 S	23.80 W	11.77	1.15
2500	2499.81	2499.81	0 20	S 83 W	0.10	11.79 S	24.45 W	11.79	0.91
2600	2599.81	2599.81	0 25	S 77 W	0.09	11.91 S	25.09 W	11.91	0.75
2700	2699.81	2699.81	0 25	N 80 W	0.17	11.92 S	25.80 W	11.92	0.48
2800	2799.81	2799.81	0 15	S 75 W	0.22	11.92 S	26.37 W	11.92	0.25
2900	2899.81	2899.81	0 20	S 83 W	0.09	12.01 S	26.87 W	12.01	0.13

SOUTHERN CALIFORNIA GAS
 FREW 4
 ALISO
 LOS ANGELES COUNTY CALIFORNIA
 GYROSCOPIC MULTISHOT

DATE OF SURVEY DECEMBER 4, 1979
 VERTICAL SECTION DIRECTION CLOSURE
 SU 1.75-12553

PAGE 2

SPERRY-SUN, INC.
 RECORD OF SURVEY

MEASURED DEPTH	TRUE VERTICAL DEPTH	SUB SEA TVD	COURSE INCLINATION DEG MIN	COURSE DIRECTION		DOG-LEG DEG/100	RECTANGULAR COORDINATES		TOTAL NORTH/SOUTH	TOTAL EAST/WEST	VERTICAL SECTION
				DEG	W		NORTH	WEST			
3000	2999.80	2999.80	0 15	S	60 W	0.14	12.15	S	27.35	W	0.07
3100	3099.80	3099.80	0 0	S	71 E	0.25	12.26	S	27.54	W	0.09
3200	3199.80	3199.80	0 5	S	81 E	0.08	12.27	S	27.47	W	0.13
3300	3299.80	3299.80	0 5	S	68 E	0.02	12.31	S	27.33	W	0.22
3400	3399.80	3399.80	0 0	S	13 W	0.08	12.34	S	27.26	W	0.28
3500	3499.80	3499.80	0 5	S	71 E	0.08	12.36	S	27.19	W	0.33
3600	3599.80	3599.80	0 35	S	62 E	0.50	12.63	S	26.67	W	0.78
3700	3699.80	3699.80	0 40	S	62 E	0.08	13.14	S	25.71	W	1.63
3800	3799.79	3799.79	0 35	S	60 E	0.09	13.67	S	24.76	W	2.50
3900	3899.78	3899.78	0 50	S	61 E	0.25	14.27	S	23.68	W	3.49
4000	3999.77	3999.77	0 50	S	75 E	0.20	14.81	S	22.34	W	4.53
4100	4099.76	4099.76	0 45	S	79 E	0.10	15.13	S	21.00	W	5.36
4200	4199.75	4199.75	0 45	S	81 E	0.02	15.35	S	19.71	W	6.09
4300	4299.74	4299.74	1 0	N	79 E	0.39	15.29	S	18.20	W	6.63
4400	4399.73	4399.73	0 40	S	80 E	0.45	15.22	S	16.77	W	7.15
4500	4499.72	4499.72	0 50	S	68 E	0.23	15.60	S	15.53	W	8.00
4600	4599.71	4599.71	0 45	S	73 E	0.11	16.06	S	14.23	W	8.95
4700	4699.70	4699.70	0 45	S	80 E	0.09	16.37	S	12.96	W	9.74
4800	4799.69	4799.69	0 50	S	81 E	0.08	16.59	S	11.59	W	10.50
4900	4899.68	4899.68	0 50	S	75 E	0.09	16.90	S	10.17	W	11.35
5000	4999.67	4999.67	0 50	S	74 E	0.01	17.28	S	8.77	W	12.27
5100	5099.66	5099.66	0 55	S	74 E	0.08	17.71	S	7.30	W	13.25
5200	5199.65	5199.65	1 0	S	69 E	0.12	18.24	S	5.72	W	14.37
5300	5299.63	5299.63	0 55	S	74 E	0.12	18.77	S	4.14	W	15.50
5400	5399.62	5399.62	1 0	S	70 E	0.11	19.29	S	2.55	W	16.62
5500	5499.61	5499.61	0 55	S	63 E	0.14	19.95	S	1.02	W	17.84
5600	5599.59	5599.59	0 55	S	67 E	0.06	20.63	S	0.43	E	19.05
5700	5699.58	5699.58	0 50	S	69 E	0.09	21.20	S	1.85	E	20.14
5800	5799.57	5799.57	0 35	S	75 E	0.26	21.59	S	3.02	E	20.97
5900	5899.57	5899.57	0 40	N	79 E	0.29	21.61	S	4.08	E	21.42

LOS ANGELES COUNTY CALIFORNIA
TELESCOPIC MULTISHOT

SU 1.75-12558

SPERRY-SUN, INC.
RECORD OF SURVEY

MEASURED DEPTH	TRUE VERTICAL DEPTH	SUB SEA TVD	COURSE INCLINATION DEG MIN	COURSE DIRECTION DEG		DUG-LEG SEV DEG/100	RECTANGULAR NORTH/SOUTH		COORDINATES EAST/WEST		VERTICAL SECTION	
				DIRECTION DEG	DIRECTION DEG		NORTH/SOUTH	EAST/WEST	EAST/WEST	EAST/WEST		
6000	5999.56	5999.56	0 45	S	50	E	0.61	21.92	S	5.15	E	22.14
6100	6099.55	6099.55	1 0	N	81	E	0.76	22.21	S	6.52	E	22.95
6200	6199.54	6199.54	0 45	N	62	E	0.38	21.76	S	7.96	E	23.12
6300	6299.53	6299.53	1 0	S	85	E	0.55	21.53	S	9.40	E	23.50
6400	6399.52	6399.52	0 50	N	34	E	0.94	21.01	S	10.68	E	23.53
6500	6499.51	6499.51	0 30	N	60	E	0.44	20.19	S	11.47	E	23.10
6600	6599.51	6599.51	0 35	N	64	W	0.96	19.74	S	11.39	E	22.66
6700	6699.51	6699.51	0 45	S	75	E	1.33	19.69	S	11.56	E	22.68
6800	6799.50	6799.50	0 25	N	69	W	1.17	19.73	S	11.85	E	22.84
6900	6899.50	6899.50	0 10	S	41	E	0.57	19.71	S	11.61	E	22.72
7000	6999.50	6999.50	0 15	S	66	E	0.12	19.91	S	11.90	E	23.02
7100	7099.50	7099.50	0 45	N	26	W	0.96	19.41	S	11.82	E	22.53
7200	7199.49	7199.49	1 0	S	83	E	1.54	18.93	S	12.40	E	22.32
7300	7299.49	7299.49	0 20	S	31	W	1.18	19.28	S	13.11	E	22.94
7400	7399.49	7399.49	0 30	N	45	E	0.83	19.22	S	13.27	E	22.95
7500	7499.48	7499.48	1 5	N	74	W	1.40	18.65	S	12.67	E	22.18
7600	7599.47	7599.47	1 0	N	38	E	1.73	17.71	S	12.30	E	21.16
7700	7699.47	7699.47	0 45	S	82	W	1.63	17.11	S	12.19	E	20.57
7800	7799.46	7799.46	0 35	N	47	E	1.27	16.85	S	11.91	E	20.23
7900	7899.46	7899.46	1 5	S	55	W	1.66	17.05	S	11.51	E	20.24
8000	7999.44	7999.44	1 30	N	60	W	1.43	16.94	S	9.60	E	19.37
8100	8099.41	8099.41	1 30	N	44	W	0.42	15.34	S	7.56	E	17.09
8200	8149.38	8149.38	2 15	N	54	W	1.63	14.29	S	6.31	E	15.62

** THE CALCULATIONS ARE BASED ON THE MINIMUM RADIUS OF CURVATURE METHOD **

HORIZONTAL DISPLACEMENT = 15.62 FEET AT SOUTH 23 DEG 49 MIN EAST (TRUE)
DIVISION OF OIL AND GAS RECEIVED

SUBMIT IN DUPLICATE
RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED

DEC - 1 1977

SANTA PAULA, CALIFORNIA

History of Oil or Gas Well

Operator SOUTHERN CALIFORNIA GAS COMPANY Field or County Aliso Canyon
Well name and No. FREW #4, Sec. 29, T. 3N, R. 16W, S.B.B. & M.
A.P.I. well No. 037-00667 Name P. S. Magruder, Jr. Title Agent
Date November 4, 19 77 (Person submitting report) (President, Secretary or Agent)

Signature P. S. Magruder, Jr.

P.O. Box 3249, Terminal Annex, California 90051
(Address)

(213) 689-3561
(Telephone Number)

History must be complete in all detail. Use this form to report all operations during drilling and testing of the well or during redrilling or altering the casing, plugging, or abandonment with the dates thereof. Include such items as hole size, formation test details, amount of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests and initial production data.

Date

1977

- 8-30 Rigged up Halliburton pump truck. Casing pressure 2900 psi. Tubing pressure 2900 psi. Baker tank volume 488 barrels of 75# brine-polymer fluid (12.4 W.L., 6.4 PH., 40 Seconds). Calculated hole volume 329 barrels. Using an average rate of 20 cu.ft./minute killed well with 336 barrels of brine-polymer drilling fluid.
- 9- 1 Rigged down from I.W. #61. Moved California Production Service Rig #D-3 to Frew #4 and rigging up.
- 9- 2 Finished rigging up. Circulated hole with 75#cu.ft. brine-polymer drilling fluid. Installed tubing hanger plug. Removed Christmas tree. Installed 8" Class III 5000 psi B.O.P.E. (Shaffer bag, Shaffer double gate with 2 7/8" pipe rams).
- 9- 3 Using H. & H. pump, tested B.O.P.E. with water as follows:
Blind rams under 4000 psi for 20 minutes
2 7/8" pipe rams under 4000 psi for 20 minutes
Shaffer bag on 2 7/8" tubing under 3000 psi for 20 minutes
All above tests O.K.
Using NOWSCO, tested B.O.P.E. with nitrogen as follows:
Blind rams under 4000 psi for 20 minutes
2 7/8" pipe rams under 4000 psi for 20 minutes
Shaffer bag on 2 7/8" tubing under 3000 psi for 20 minutes
Had to change 2-door gaskets due to leaks. Above tests all O.K.
Tested choke manifold under 2000 psi with water for 20 minutes - O.K. B.O.P.E. and tests approved by D.O.G. Installed working platform and completed rigging up.
- 9- 4 Rig and crew idle.
- 9- 5 Rig and crew idle (Holiday)

1977

- 9- 6 Attempted to free tubing hanger. Unable to unscrew four locking studs. Unflanged and picked up B.O.P. Worked locking studs free from hanger. Replanted B.O.P. - tested tubing flange and B.O.P. at 4000 psi for 20 minutes - O.K. Pulled and rotated to free Brown Husky "M-1" packer. Pulled out and laid down production equipment. Running in hole with Otis retrieving tool on 2 3/8" and 2 7/8" tubing.
- 9- 7 Continued running in hole with Otis packer retrieving tool. Latched into 5" Otis Permatrieve packer at 8414'. Pulled 20,000# over weight of string and packer came free. Pulled out. Ran in hole with 6 1/8" bit and 7" casing scraper to top of 5" liner at 8244'. Pulled out. Ran in hole with 4 1/8" bit and 5" casing scraper to 8601' - no fill. Pulled up in 7" casing.
- 9- 8 Ran in hole with 4 1/8" bit and 5" casing scraper to 8602' and circulated bottoms up. Pulled out. Laid down 2 3/8" tubing. Ran in with Baker Model "B" Lok-Set retrievable bridge plug and set in 7" casing at 8235' - tested same at 1800 psi with rig pump. Changed over from polymer drilling fluid to fresh water treated with surface tension agent. Pulling out.
- 9- 9 Finished pulling out Baker retrieving tool. Ran in with Baker 7" fullbore squeeze tool and tested 7" casing, as follows:
- | | | | | | | | | | | | | | |
|-------|----|---------|------|------|-----|-----|----|---------|---|---------|---------|------|------|
| 4300' | to | 8235' | with | 2500 | psi | for | 60 | minutes | - | dropped | to | 2300 | |
| 4300' | to | Surface | with | 2600 | psi | for | 60 | minutes | - | O.K. | | | |
| 8100' | " | 8235' | " | 2500 | psi | " | 10 | " | " | - | dropped | to | 2100 |
| 8224' | " | 8235' | " | 2500 | psi | " | 10 | " | " | - | O.K. | | |
| 8154' | " | Surface | " | 2500 | psi | " | 60 | " | " | - | O.K. | | |
| 3800' | " | " | " | 2800 | psi | " | 60 | " | " | - | dropped | to | 2700 |
| 3200' | " | " | " | 3000 | psi | " | 60 | " | " | - | O.K. | | |
- Four tests left. Secured well. WSO holes 8200' and 8218' are leaking.
- 9-10 Continued testing 7" casing with Baker fullbore squeeze tool, using Halliburto pump, as follows:
- | | | | | | | | | | |
|----|----|-------|------|------|-----|-----|----|---------|--|
| 0' | to | 2800' | with | 3300 | psi | for | 60 | minutes | |
| 0' | " | 2250' | " | 3450 | psi | " | 60 | " | |
| 0' | " | 1600' | " | 3700 | psi | " | 60 | " | |
| 0' | " | 1350' | " | 4000 | psi | " | 60 | " | |
- All above tests O.K.
Pulled out fullbore. Ran in open-end 2 7/8" tubing to 8207'. Pumped and equalized three sacks of sand on top of bridge plug. Changed back to 75#/cu.f polymer drilling fluid. Pulling out.
- 9-11 Rig and crew idle.
- 9-12 Pulled out of hole. Made up Lynes WSO test tools (3 pressure bombs, hook wall 7" packer, hydraulic bean, jars, safety joint, perforated tail). Set packer at 8142' with perforated tail to 8161'. Opened bean (1/2") for one hour - had puff blow for 45 seconds with faint blow for balance of test. Pulled out of hole. Pressure bombs showed bean open and had net rise of 65' of brine-polymer completion fluid. WSO by Company. Original holes at 8200'. Loaded out Lynes. Replaced packing element in 8", 5000 psi, Shaffer bag B.O.P with new natural rubber element. Ran in hole with open-end 2 7/8" tubing to squeeze WSO holes at 8200' and 8218'.

- 9-13 Ran in hole with open-end 2 7/8" EUE tubing to 8218'. Established break down at 4 cu.ft. in 10 minutes. Pressure declined from 3000 psi to 2500 psi. Equalized 40 sacks of Grade "G" cement (0.75% CRF-2) from 8218' to 8020'. Used 30 cu.ft. fresh water ahead and 15 cu.ft. behind. Pulled bottom of tubing slowly up from 8218' to 7075' and backscuttled. Squeezed WSO holes with 9 cu.ft. cement under a final pressure of 2850 psi. Cement in place at 11:37 A.M. Mixing time to application of squeeze pressure = 37 minutes. Pulled B.O.P.E. as a unit from Cameron tubing head. Removed four tubing hanger set screws (keeper bolts and packing). Re-tapped threads and installed new keeper bolts and packing. Reinstalled B.O.P.E. Ran in hole with 6 1/8" bit and 7" casing scraper.
- 9-14 Using H. & H. pump, tried to test 2 7/8" pipe rams at 4000 psi - no good. Changed pipe rams and door gaskets. Tested pipe rams using water under 4000 psi for 20 minutes - O.K. Tested Shaffer bag under 3000 psi for 20 minutes - O.K. Drilled out soft cement from 8105' to 8128'. Circulated well.
- 9-15 With 6 1/8" bit and 7" Shorty casing scraper, drilled out cement from 8128' to 8221'. Circulated hole. Pulled up to 8211'. Using Halliburton and their pressure test assembly, pressure tested with completion fluid as follows:
- | | |
|----------------------------|------------------------------------------------------------|
| | Pipe rams at 2610 psi to 2370 psi (240 psi) for 27 minutes |
| | Shaffer bag "2420 psi " 2355 psi (65 psi) " 6 " |
| Pumped 1 cu.ft. in Casing- | |
| | 2580 psi to 2440 psi (140 psi) for 12 minutes |
| | 2440 psi " 2360 psi (80 psi) " 20 " |
| | 2360 psi " 2330 psi (30 psi) " 20 " |
| Pumped incu.ft. | |
| | 2600 psi to 2440 psi (160 psi) for 30 minutes |
| | 2440 psi " 2405 psi (35 psi) " 50 " |
- Test no good. Started out of hole.
- 9-16 Ran in well with open-end 2 7/8" EUE to 8220'. Mixed 40 sacks Grade "G" cement with 0.75% CFR-2 and displaced to equalization. Used 40 cu.ft. water ahead and 8 cu.ft. behind. Pulled up to 7970' and backscuttled with 300 cu.ft. Squeezed away 13 cu.ft. of cement under 2800 psi and shut in for four hours with no pressure bleed-down. Pulled out of well. Ran in hole with 6 1/8" bit and 7" Baker casing scraper to top of cement at 8088'.
- 9-17 Using Midway power swivel, drilled out cement from 8088' to 8221'. Circulated hole. Pulled up to 8180'. Rigged up Halliburton, pressure tested WSO holes at 8200' and 8218' under 2560 psi for 60 minutes - O.K. Drilled out cement from 8221' to 8225' (top of sand). Pulled up to 2000'.
- 9-19 Ran in hole with Baker Retrieving tool. Circulated sand off of Baker Model "B" bridge plug at 8235' and recovered bridge plug. Rigged up GO-International Wireline. Ran and set Otis 7" Permatrieve packer at 8224'. Repaired collar locator before setting packer. Ran open-end tubing to 2000'.

- 9-20 Made up Otis mule shoe, seal assembly, latch-in locator, 10' blast joint, "X-N" nipple, 20' blast joint and tested assembly under 5000 psi with water for five minutes - O.K. Rigged up H. & H. Tong Service and Hydrotest Ran assembly, Otis annular safety system and 2 7/8" EUE tubing. Broke off existing couplings on tubing and cleaned pins. Used cleaned and inspected used couplings. Applied Baker Seal lubricant, drifted 2.347" and hydro-tested tubing under 5000 psi for one minute.
- 9-21 Continued drifting and hydrotested tubing as before. Spaced out and landed tubing on Otis 7" Permatrieve packer at 8224'. Pulled 25,000# over hook load of 44,000# to test latch-in. Landed tubing with 8,000# compressive load. Installed tubing hanger plug and made up doughnut lock screws. Pulled B.O.P.E. and installed Christmas tree. Using Associated Services, tested above upper tubing hanger seals and between upper and lower tubing hanger seals under 5000 psi with oil for 20 minutes. Using rig pump, changed circulation system to lease salt water.
- 9-22 Rigged up Otis piano wire. Pulled side-door choke from safety system. Set tubing plug in "X-N" nipple at 8214'. Tested packer and seals with water under 1500 psi for 20 minutes. Pulled Otis plug from "X-N" nipple at 8214'. Rigged down H. & H. and Otis blind flanged tubing and casing valves. RELEASED RIG at 2:00 P.M. (9-22-77)

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

Report on Operations

No. T 277-227

Mr. P. S. Magruder, Jr., Agent
So. Calif. Gas Co.
P.O. Box 54790 Terminal Annex
Los Angeles, Calif. 90054

Santa Paula, Calif.
Sept. 8, 1977

DEAR SIR:

Operations at well No. "SFZU" F-4, API No. 037-00667, Sec. 29, T. 3N, R. 16W,
S.B., B & M. Aliso Canyon Field, in Los Angeles County, were witnessed
on 9/3/77 by Mr. Ms. T. M. Callaway, representative of the supervisor was
present from 1500 to 1900. There were also present C. Downey, consulting
engineer

Present condition of well: No additions to the casing record since proposal dated
8/15/77.

The operations were performed for the purpose of testing and inspecting the blowout preventi
equipment and installation.

DECISION:

THE BLOWOUT PREVENTION EQUIPMENT AND INSTALLATION ARE APPROVED.

M. G. MEPPERD

~~JOHN F. MATTHEWS, JR.~~
State Oil and Gas Supervisor

By John L. Hardoin Deputy

REPORT ON PROPOSED OPERATIONS

Santa Paula, California

Aug. 24, 1977

Mr. P. S. Magruder, Jr., Agent
Southern Calif. Gas Co.
P.O. Box 54790 Terminal Annex
Los Angeles, Calif. 90054

Your proposal to rework gas storage well "SFZU" F-4
(Name and number)
A.P.I. No. 037-00667, Section 29, T. 3N, R. 16W
S.B.B. & M., Aliso Canyon field, Los Angeles County,

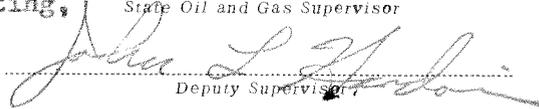
dated 8-15-77, received 8-19-77, has been examined in conjunction
with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. The drilling fluid used shall be of a quality and in sufficient quantity to control all subsurface conditions in order to prevent blowouts; and a reserve supply of the material shall be kept on hand to meet any emergency.
2. Blowout prevention equipment, at least of the Division of Oil and Gas Class III, 3M rating, shall be installed and maintained in operating condition at all times.
3. THIS DIVISION SHALL BE NOTIFIED TO WITNESS A PRESSURE TEST OF THE BLOWOUT PREVENTION EQUIPMENT BEFORE COMMENCING DOWNHOLE OPERATIONS.

NOTE: A COPY OF THIS APPROVAL SHALL BE POSTED AT THE WELL SITE PRIOR TO COMMENCING OPERATIONS.

Blanket Bond
MD:b

M. G. MEFFERD
Acting, State Oil and Gas Supervisor
By 
Deputy Supervisor

John L. Hardoin

DIVISION OF OIL AND
RECEIVED

AUG 19 1977

DIVISION OF OIL AND GAS
Notice of Intention to Rework Well

SANTA PAULA, CALIFOR

This notice and indemnity or cash bond shall be filed, and approval given, before rework begins. If operations have not commenced within one year of receipt of the notice, this notice will be considered cancelled.

FOR DIVISION USE ONLY		
BOND	FORMS	
	114	121
BB	✓	✓

DIVISION OF OIL AND GAS

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to rework well No. FREW #4, API No. -, Sec. 29, T. 3N, R. 16W, S.B. B. & M., Aliso Canyon Field, Los Angeles County. The present condition of the well is as follows:

- Total depth. 8604'
- Complete casing record, including plugs and perforations:
 - 13 3/8" cemented 770'
 - 7" cemented 8280' WSO 8270'
squeezed 8220', 8218', 8219', WSO 8200'
 - 358' 5" landed 8602', top 8244'
slotted 8279'-8602', scabbed with cement
from 8416' to 8435'

- Present producing zone name SESNON Zone in which well is to be recompleted -
- Present zone pressure 3600 psi New zone pressure -
- Last produced Gas Storage Well
 (Date) (Oil, B/D) (Water, B/D) (Gas, Mcf/D)
 or
- Last injected _____
 (Date) (Water, B/D) (Gas, Mcf) (Surface pressure, psig.)

The proposed work is as follows:

- Move in and rig up. Kill well. Install B.O.P.E. and pressure test.
- Pull tubing and packer. Recover second packer. Clean out to 8602'.
- Pressure test 7" casing. Perform any remedial work indicated by pressure testing.
- Run packer and tubing with down-hole safety system.
- Return well to gas storage operation.

It is understood that if changes in this plan become necessary we are to notify you immediately.

Address P.O. Box 3249, Terminal Annex
(Street)
Los Angeles, California 90051
(City) (State) (Zip)
Telephone Number (213) 689-3561

SOUTHERN CALIFORNIA GAS COMPANY
(Name of Operator)
By P.S. Magruder, Jr. (Date) 8-15-77
Type of Organization Corporation
(Corporation, Partnership, Individual, etc.)

D.O.G.

DIVISION OF OIL AND
RECEIVED

AUG 19 1977

SANTA PAULA, CALIFOR

FREW #4 - ALISO CANYON

Program to install new packer, pressure test casing and install down hole safety valve.

WITHDRAWAL THROUGH TUBING AND CASING

Take all measurements from original derrick floor 8.25' above ground.

PRESENT CONDITIONS:

13 3/8" cemented 770' 54.5# J-55
 7" cemented 8280', WSO 8270'
 squeezed hole at 8220' with 90 sacks
 WNSO 8218' - squeezed with 43 sacks
 WNSO 8217' - squeezed with 40 sacks
 WSO 8200'
 358' 5" landed 8602', slotted 8279' 8602'
 top 8244', scabbed with cement 8416' - 8435'
 18# J-55

7" CASING DETAILS:

			100% Safety Factor	
			Burst	Collapse
0 - 186'	26#	N-80	7240	5320
186' - 1314'	23#	N-80	6340	4300
1364' - 4746'	23#	J-55	4360	3290
4746' - 6780'	23#	N-80	6340	4300
6780' - 8280'	26#	N-80	7240	5320

TUBING DETAILS:

2 7/8" and 2 3/8" 8rd EUE landed 8424'
 2 3/8" 8192' - 8424'
 Otis Permatrieve packer 8414' (5")
 Otis 2 3/8" "XN" nipple 8382'
 Otis 2 3/8" sliding sleeve 8349' (open)
 Brown Husky M-1 packer 8192' (7")
 Otis 2 7/8" "X" nipple 8157'
 Otis 2 7/8" sliding sleeve 8074' (open)

FREW #4 - Aliso Canyon

PROGRAM:

1. Move in and rig up. Pressure test well head seals to 4500 psi.
2. Kill well with 75#/cu.ft. brine polymer drilling fluid. Check bottom hole pressure before moving in rig. Well volume=345 barrels.
3. Set back pressure valve in doughnut. Remove Christmas tree and install class III 5000 psi B.O.P.E. Pressure test complete shut-off rams and pipe rams to 4000 psi with water and nitrogen. Also test Hydril bag to 3000 psi with water and nitrogen. Use float valve.
4. Unseat packer and pull tubing. Run retrieving tool and recover Otis Permatrieve packer from 8414'. We suspect Brown packer has been leaking.
5. Run 6 1/8" bit and casing scraper. Clean out to top of 5" liner at 8244'. Run 4 1/8" bit and casing scraper. Clean out to bottom of 5" liner 8602'. Note fill and type of material.
6. Set bridge plug at 8235'. Pressure test bridge plug with rig pump. Circulate polymer fluid out of well with fresh water treated with surface tension agent. Pressure test casing using cement retainer and cement pump truck equipped with calibrated pressure chart and pressure gauge, as follows:

4300'	to	8235'	with	2500 psi	for	60 minutes
Surface	"	4300'	"	2600 psi	"	60 "
"	"	3800'	"	2800 psi	"	60 "
"	"	3200'	"	3000 psi	"	60 "
"	"	2800'	"	3200 psi	"	60 "
"	"	2250'	"	3400 psi	"	60 "
"	"	1600'	"	3700 psi	"	60 "
"	"	1300'	"	4000 psi	"	60 "

Change to polymer fluid.

7. Perform any remedial work indicated by pressure testing. Recover bridge plug.
8. Run Otis permatrieve packer on wire line and using reference collars set packer near 8230'. DO NOT set packer in a collar.
9. Run tubing, change collars, clean pins, apply Baker seal and hydrotest to 5000 psi holding each test for one minute.

PROGRAM (Continued)

10. Land tubing on packer with up to a maximum of 10,000 pounds on packer - pull up 25,000 pounds over weight of tubing to check latch.
Tubing to include:
 - Otis production tube
 - Otis four seals
 - Otis latch-in-locator
 - Otis 10' heavy wall tube
 - Otis 1.79" "XN" "NO GO" nipple with 2 7/8" threads
 - Otis 20' heavy wall tube
 - Otis annular flow safety system
11. Install back pressure valve in doughnut. Remove B.O.P.E. and reinstall Christmas tree. Pressure test Christmas tree to 5000 psi.
12. Circulate drilling fluid out of well with waste salt water. Set tubing plug in "NO GO" nipple. Pressure test seals and packer to 1500 psi. Remove tubing plug and release rig.

G. C. ABRAHAMSON
August 13, 1977

cc: Rig Supervisor
Contract pusher (2)
Relief Rig Supervisor
Book Copy

B. Jones
D. Smiley
J. Melton
D. Justice)
M. Grijalva)

Well File
Spare Copy

**UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY**

SUBMIT IN TRIPLICATE*
(Other instruction re-
verse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.

FREW LA 055641-A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL GAS WELL OTHER **Gas Storage Well**

2. NAME OF OPERATOR
SOUTHERN CALIFORNIA GAS COMPANY

3. ADDRESS OF OPERATOR
P.O. Box 3249, Terminal Annex, Los Angeles, California 90051

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*
See also space 17 below.)
At surface
**Aliso Canyon Field, Los Angeles County, California
Sec. 29 T. 3N R. 16W S.B. B. & M.**

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, OR, etc.)
2428 D.F.

7. UNIT AGREEMENT NAME
SFZU

8. FARM OR LEASE NAME
FREW

9. WELL NO.
4

10. FIELD AND POOL, OR WILDCAT
Aliso Canyon - Sesnon

11. SEC., T., R., M., OR BLK. AND SURVEY OR ARMA
29, 3N, 16W

12. COUNTY OR PARISH
Los Angeles

13. STATE
California

16. **Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data**

NOTICE OF INTENTION TO:

SUBSEQUENT REPORT OF:

TEST WATER SHUT-OFF
FRACTURE TREAT
SHOOT OR ACIDIZE
REPAIR WELL

PULL OR ALTER CASING
MULTIPLE COMPLETE
ABANDON*
CHANGE PLANS

WATER SHUT-OFF
FRACTURE TREATMENT
SHOOTING OR ACIDIZING
(Other)

REPAIRING WELL
ALTERING CASING
ABANDONMENT*

(Other) **Install down-hole safety system X**

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

PRESENT CONDITIONS: 13 3/8" cemented 770'
7" cemented 8280', WSO 8200'
358' 5" landed 8602', slotted 8679'-8602'

PROGRAM

1. Move in and rig up. Kill well. Install B.O.P.E. and pressure test.
2. Pull tubing and recover packer. Clean out to 8602'.
3. Pressure test 7" casing. Perform any remedial work indicated by pressure testing.
4. Run packer and tubing with down-hole safety system.
5. Return well to gas storage operation.

18. I hereby certify that the foregoing is true and correct

SIGNED Guy C. Abrahamson TITLE Consulting Engineer DATE 8-10-77

(This space for Federal or State office use)

APPROVED BY John P. Wagner TITLE District Engineer

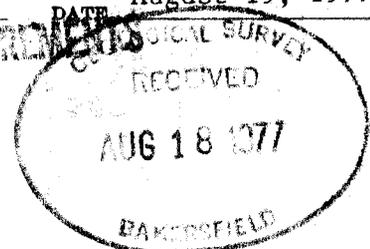
DATE August 19, 1977

CONDITIONS OF APPROVAL, IF ANY: John P. Wagner

cc: DOG, Long Beach

SEE ATTACHED CONDITIONS AND REQUIREMENTS

*See Instructions on Reverse Side



DIVISION OF OIL AND GAS

History of Oil or Gas Well

OPERATOR Pacific Lighting Service Co. FIELD Aliso Canyon

Well No. SFZU Frew #4, Sec. 29, T. 3N, R. 16W, S.B. B. & M.

Date June 11, 19 74 Signed P.B. Magruder Jr.

P. O. Box 54790, Terminal Annex
Los Angeles, Cal. 90054 (213) 689-3561 Title Agent
(Address) (Telephone Number) (President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting and initial production data.

Date	
1974	
4-17	Moved in California Production Service rig and pump. Rigged up. Pumped 330 bbls. of polymer drilling fluid down tubing with drilling fluid returns to the surface. Set tubing plug at 200', removed Xmas tree, installed BOPE and tested to 1500 psi.
4-18	Pulled tubing plug. Measured tubing while pulling out of well. Ran 6-1/8" bit and casing scraper to top of 5" liner at 8244'. Ran 4-1/8" bit, casing scraper and wire brush.
4-19	Cleaned out fill 8594'-8602'. Cleaned perforations while circulating 8602'-8279'. Ran Dresser Atlas cement bond log and recorded 8591'-7040'. Ran Dresser Atlas neutron lifetime log and recorded 8591'-7400'.
4-20	Ran Baker bridge plug and set same at 5025'.
4-21	Idle.
4-22	Removed BOPE and tubing head. Could not install reconditioned tubing head on old casing head because ring size was different. Reinstalled old tubing head and BOPE. Retrieved bridge plug. Ran 2-7/8" tubing with 12 joints of 2-3/8" tubing on bottom to 8588' and displaced polymer drilling fluid with lease waste salt water.

SFZU Frew #4 History (Continued)

Page 2

1974

- 4-23 Using Halliburton pump truck, displaced 45 sacks of sand in three stages at 8588', 8464', and 8340'. Pulled tubing to 8090' and stood for 2 hours waiting for sand to settle. Located top of sand at 8370'. Displaced an additional 40 sacks of sand in two stages at 8370' and 8277'. Located top of sand at 8220'.
- 4-24 Located top of sand at 8086'. Backscuttled sand out of well to 8240'. Using Hercules wireline cementer, plugged 7" casing with cement from 8230'-8223'. Using McCullough 4" jet gun, shot four 1/2" holes at 8220'. Ran Baker fullbore retainer.
- 4-25 Located top of cement plug at 8223' with Baker fullbore retainer and set retainer at 8096'. Obtained break down at 3000 psi with rate of 12 cu. ft./min. Mixed and displaced 100 sacks of Class "G" cement with 0.2% HR7. Average slurry 118#/cu. ft. Squeezed holes at 8220' with 90 sacks of cement with pressure increasing from 2100 psi to 2800 psi. Held pressure which bled off to 2100 psi in 85 minutes.
- 4-26 Using power swivel, drilled out cement 8155'-8223'. Using McCullough 4" jet gun, shot four 1/2" holes at 8218'.
- 4-27 TO TEST HOLES AT 8218': Set Halliburton tester at 8166' with tail to 8185'. Opened tool for 90 minute test. Weak blow increasing to light blow in 30 minutes with gas to surface in 45 minutes. Recovered 60' rise of hole fluid. Hydrostatic pressure 3545 psi, Initial flow 50 psi, Final flow 183 psi. Test not approved by Company. Ran Baker fullbore retainer and set at 8098'. Using Halliburton pumping equipment, obtained breakdown under 3250 psi at 8 cu. ft./min. rate. Mixed and displaced 100 sacks of Class "G" cement with 0.2% HR7. Average slurry 118#/cu. ft. Pressure increased from 2800 psi to 3500 psi after displacing 43 sacks of cement through holes at 8218'. Backscuttled 53 sacks of cement.
- 4-28 Idle.
- 4-29 Using power swivel, drilled out cement 8098'-8218' and cleaned out to 8223'. Using McCullough 4" jet gun, shot four 1/2" holes at 8217'.

SFZU Frew #4 History (Continued)

Page 3

1974

- 4-30 TO TEST HOLES AT 8217': Set Halliburton tester at 8174' with tail to 8189'. Opened tool with very light blow, increasing to strong blow in 18 minutes - gas to surface. Shut in and turned flow to gas trap. Flowed to trap for 65 minutes at 17 M/D rate with surface pressure of 230 psi. Pulled and recovered 860' rise of oily gassy mud. Pressure charts showed plugging. Initial flow 99 psi, Shut-in 616 psi, Final flow 345 psi. Test not approved by Company. Ran Baker fullbore retainer, which stopped at 8198' on fill.
- 5-1 Ran 6-1/8" bit and casing scraper and cleaned out to 8226'. Ran Baker fullbore retainer and set at 8098'. Using Halliburton pump truck, obtained breakdown at 3200 psi at 6 cu. ft./min. rate. Mixed and displaced 100 sacks of Class "G" cement with 0.2% HR7. Average slurry 118#/cu. ft. Squeezed holes at 8217' with 40 sacks of cement with pressure increasing from 2600 psi to 3400 psi. Backscuttled 50 sacks of cement.
- 5-2 Using power swivel, drilled out cement 8070'-8125' when drill collars plugged with cement. Pulled out of hole. Drilled out cement 8125'-8205'.
- 5-3 Using McCullough 4" jet gun, shot four 1/2" holes at 8200'. Ran Halliburton tester and set packer at 8149' with tail to 8164'. Made 63 minute test with light steady blow and no gas to surface. Recovered 75' rise of hole fluid. Pressure charts showed 50 psi during test. Test approved by Company. Dropped 4 joints of tubing in well.
- 5-4 Ran socket and jars and recovered 4 joints of tubing. Ran 2-7/8" tubing, landed at 8157' and on doughnut in tubing head. Reinstalled Xmas tree. Circulated corrosion inhibitors in lease waste salt water. Rig released. Well left shut-in with zone plugged with sand and cement pending conversion to gas storage.

DIVISION OF OIL AND GAS
 RECEIVED

JUL 3 1975

DIVISION OF OIL AND GAS

History of Oil or Gas Well

SANTA PAULA, CALIFORNIA

OPERATOR PACIFIC LIGHTING SERVICE CO., FIELD Aliso Canyon

Well No. Frew #4, Sec. 29, T. 3N, R. 16W, S.B. B. & M.

Date January 7, 1975, 19

Signed

P. S. Magruder, Jr.
 P. S. Magruder, Jr.

P. O. Box 54790, Terminal Annex
 Los Angeles, California 90054

Title Agent

(Address)

(Telephone Number)

(President, Secretary or Agent)

(213) 689-3561

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting and initial production data.

Date

12-12-74

Moved in California Production Service rig, pump and shaker tank. Rigged up same and lines to kill well. Changed over from salt water to 80#/cu.ft. of brine-polymer workover fluid - used 320 barrels. Closed well in at 10:00 P.M.

12-13-74

Removed Christmas tree and installed Class III B.O.P.E. Tested 2 7/8" rams with water to 2900 psi for 20 minutes. Tested Hydril bag to 2500 psi for 20 minutes. Tested 2 7/8" rams with nitrogen to 3000 psi for 20 minutes. Tested Hydril bag to 2500 psi for 20 minutes. All above tests O.K. Pulled and measured tubing. Ran in with 6 1/8" bit and 7" casing scraper to 8205'. Closed well in at 10:00 P.M.

12-14-74

Circulated bottoms up. Pulled out 6 1/8" bit and 7" casing scraper. Ran in with Baker full-bore squeeze tool in 7" casing and made the following casing test from full-bore squeeze tool to surface:

<u>DEPTH</u>	<u>PRESSURE</u>	<u>MINUTES</u>
1300'	3400	20
2529'	2800	20
4017'	2600	20
6000'	2400	20
8175'	2200	20

All tests O.K. Pulled out Baker full-bore. Ran in with Baker Model "B" retrievable bridge plug. Bridge plug would not set at 1160'. Closed well in at 10:00 P.M.

12-15-74

Rig idle.

12-16-74

Pulled bridge plug and ran second Baker Model "B" retrievable retainer and

set in 7" casing at 1150' and tested same at 1500 psi - pulled out. Removed Class III B.O.P.E. and tubing head. Removed 13 3/8" x 7" pack off seals. Rigged up jacks and took hold of 7" casing with Midway spear. Pulled 200,000#. Welder split down both sides of 13 3/8" casing head to free casing slips. Removed slips and unlanded 7" casing. Tore out jacks. Rigged up jack hammer unit and hammered out cellar floor. Shut rig down at 12 Midnight.

12-17-74 Using jack hammer, lowered cellar floor 15". Cut off 20" conductor pipe and trimmed off 13 3/8" casing. Welded on Cameron 13 3/8" - 5000# casing head and wrapped same. After three hours, X-rayed weld - O.K. Rigged up jacks and Midway spear. Took hold of 7" casing and landed 7" casing in 13 3/8" head with 180,000#. Installed 13 3/8" x 7" tubing head and tested seals at 3500 psi for 20 minutes each. Shut rig down at 12 Midnight.

12-18-74 Installed Class III B.O.P.E. Rigged up H & H and tested blind rams at 3000 psi for 20 minutes. Tested 2 7/8" pipe rams to 2950 psi for 20 minutes. Tested Hydril bag to 2500 psi for 20 minutes. All tests O.K. Ran in with 6 1/8" bit and 7" casing scraper to top of cement at 8205'. Rigged up power swivel, cleaned out cement from 8205' to top of 5" liner. Circulated hole clean. Pulled out. Closed well in at 10:00 P.M.

12-19-74 Finished pulling out 6 1/8" bit and 7" casing scraper. Ran in with 4 1/8" bit and 5" casing scraper and cleaned out sand from 8244', top of 5" liner to 8602'. Circulated hole clean with no fluid loss. Pulled 12 stands and closed well in at 10:00 P.M.

12-20-74 Pulled 4 1/8" bit and 5" casing scraper. Rigged up Dresser-Atlas wireline unit. Ran in with 5" casing feeler and gauge to 8450' - O.K. Made up and ran in with Otis Permatrieve production packer and set in 5" - 18# liner at 8414' by collar measurements. Made up Otis bottom hole production string on 2 3/8" and 2 7/8" tubing and hydrotest at 5000 psi. Tubing string very scaley and having trouble testing and broaching. Approximately 4300' in. Closed well in at 10:00 P.M.

12-21-74 Finished running and hydrotesting tubing at 5000 psi. Total tubing string with Otis production sleeves and nipples landed on Brown Husky M-1 packer with 14,000#, 10.42' below K.B. Total string 8413.23'. Removed Class III B.O.P.E. Installed Christmas tree, tested seals and ring at 4800 psi for 30 minutes. Tested tree and doughnut seals at 4500 psi for 25 minutes - O.K. Tore out rig and laid down derrick. Rigged up to change over to lease salt water. Closed well in at 10:00 P.M.

12-22-74 Idle.

12-23-74 Changed over from 79# polymer fluid to lease salt water. Used 325 barrels for complete change over. Finished job and rig released at 10:00 A.M.

TUBING DETAIL

<u>Frew #4</u>	<u>Length</u>	<u>Depth</u>
12-21-74		
K. B. to doughnut	10.42	
Doughnut	.70	
1 - 2-7/8" 6.5# EUE 8rd. pup	2.00	
3 - 2-7/8" 6.5# EUE 8rd. pups	18.20	31.32
263 jts. 2-7/8" 6.5# EUE 8rd. tubing	8059.33	8090.65
Otis 2-7/8" SSD sleeve 2.313 I.D.		
Up to close	3.10	8093.75
1 - jt. 2-7/8" 6.5# EUE 8rd. tubing	30.50	8124.25
Otis X nipple 2-7/8" 8rd. 2.313 I.D.	1.00	8125.25
1 jt. 2-7/8" 6.5# EUE 8rd. tubing	30.37	8155.62
Otis X nipple 2-7/8" 8rd. 2.313 I.D.	1.00	8156.62
1 jt. 2-7/8" 6.5# EUE 8rd. tubing	31.00	8187.62
Brown Husky M-1 mechanical packer		
7", 26-32# 8rd. EUE 14,000# on pkr.	4.48	8192.10
1 - 2-3/8" x 2-7/8" EUE 8rd. X-Over	1.10	8193.20
5 jts. 2-3/8" 4.85# EUE 8rd. tubing	153.16	8346.36
Otis 2-3/8" SSD sleeve 8rd. 1.875 I.D.	2.92	8349.28
Up to close		
1 jt. 2-3/8" 4.85# EUE 8rd. tubing	31.10	8380.38
Otis XN No-Go nipple 8rd. 1.791 I.D.	1.20	8381.58
1 jt. 2-3/8" 4.85# EUE 8rd. tubing	31.10	8412.68
Otis 3.48' Permatrieve prod. packer		
2.55 I.D. set with wireline in 5"		
18# casing at 8414'		
Total seal unit with stop and 8' seals		8423.65
2.60 O.D. 10.97'		8423.65
Bottom of tubing string at		
(Sleeves run open)		

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS No. P 274-191

Mr. P. S. Magruder, Jr.
Pacific Lighting Service Co.
P. O. Box 54790, Terminal Annex
Los Angeles, California 90054

Santa Paula, Calif.
May 3, 1974

DEAR SIR:

(037-00667)

Your proposal to alter casing Well No. "SFZU" F-4
Section 29, T. 3N, R. 16W, S.B.B. & M., Aliso Canyon Field, Los Angeles County,
dated 4/24/74, received 5/2/74, has been examined in conjunction with records filed in this office.

THE PROPOSAL, COVERING WORK ALREADY COMPLETED IN ACCORDANCE WITH PRIOR AGREEMENT, IS APPROVED.

Blanket Bond
ALL:B
cc: U.S.G.S.
Operator

JOHN F. MATTHEWS, JR., State Oil and Gas Supervisor

By *W.C.P. Ritzius*, Deputy

MAY 2 1974

DIVISION OF OIL AND GAS

Notice of Intention to Deepen, Redrill, Plug or Alter Casing in Well

This notice must be given before work begins; one copy only

SANTA PAULA, CALIFORNIA

Los Angeles, Calif. April 24, 1974

DIVISION OF OIL AND GAS

In compliance with Section 3203, Chapter 93, Statutes of 1939, notice is hereby given that it is our intention to commence the work of deepening, redrilling, plugging or altering casing at Well No. SFZU F-4

(Cross out unnecessary words)

, Sec. 29, T. 3N, R. 16W, S.B. B. & M.

Aliso Canyon Field, Los Angeles County.

The present condition of the well is as follows:

1. Total depth. 8604'

2. Complete casing record, including plugs:

13-3/8" Cemented 770'

7" Cemented 8280'

358' 5" landed 8602', perforated 8602' - 8279'
scabbed w/ cement 8435' - 8410'.

3. Last produced. April 17, 1974 6 2 996
(Date) (Oil, B/D) (Water, B/D) (Gas Mcf/D)

The proposed work is as follows: Per telephone conversation with Larry Bright - G. C. Abrahamson
April 23, 1974

- 1.) Run cement bond log & Neutron Lifetime logs.
- 2.) Fill with sand 8602' - 8230'.
- 3.) Using wire line cementer, cap with cement 8230' - 8223'.
- 4.) Shoot 4-1/2" Jet holes at 8220' & squeeze with cement.
- 5.) Shoot 4-1/2" Jet holes at 8219' & test segregation.
- 6.) Leave well suspended until converted to gas storage in 1974.

MAP	MAP EXPLAN	GAPDS	DATE	FOUNDS	
				114	12
			BB	✓	✓

P. O. Box 54790 Terminal Annex
Los Angeles, California 90054
(Address)

(213) 689-3561
(Telephone No.)

Pacific Lighting Service Company
(Name of Operator)

By P. S. Magruder, Jr.
P. S. Magruder, Jr.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE
(Other instructions
verse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.

LA 055641

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT" for such proposals.)

<p>1. OIL WELL <input type="checkbox"/> GAS WELL <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> Gas Storage</p> <p>2. NAME OF OPERATOR Pacific Lighting Service Company</p> <p>3. ADDRESS OF OPERATOR P. O. Box 54790 Terminal Annex L. A. Cal. 90054</p> <p>4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface Aliso Canyon Field, Los Angeles County, California Sec. 29, T3N, R16W, S.B. B.&M.</p> <p>14. PERMIT NO.</p>	<p>7. UNIT AGREEMENT NAME Season-Frew Zone</p> <p>8. FARM OR LEASE NAME Frew</p> <p>9. WELL NO. 4</p> <p>10. FIELD AND POOL, OR WILDCAT Aliso Canyon SFZU</p> <p>11. SEC., T., R., M., OR BLE. AND SURVEY OR AREA Sec. 29, T3N, R16W.</p> <p>12. COUNTY OR PARISH Los Angeles</p> <p>13. STATE Cal.</p>
<p>15. ELEVATIONS (Show whether DF, RT, GR, etc.) 2428 DF</p>	

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input checked="" type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(Other) <input type="checkbox"/>	

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

The present condition of the well is as follows:

- 1.) Total depth 8604'.
- 2.) Complete casing record:
 13-3/8", 54.5# cemented 770'
 7" 23 and 26# cemented 8280'
 Four holes WSOK at 8270'
 5", 18# 8244' to 8602' perforated 8279' to 8602' with
 80 M, 16 rows, 6" centers, 2" slots.
 Sealed with cement 8410' to 8435'.

Proposed work:

- 1.) Run cement bond log & Neutron Lifetime logs.
- 2.) Fill with sand 8602' - 8230'.
- 3.) Using wire line cementer, cap with cement 8230' - 8223'.
- 4.) Shoot 4-1/2" Jet holes at 8220' & squeeze with cement.
- 5.) Shoot 4-1/2" Jet holes at 8219' & test segregation.
- 6.) Leave well suspended until converted to gas storage in 1974.

18. I hereby certify that the foregoing is true and correct

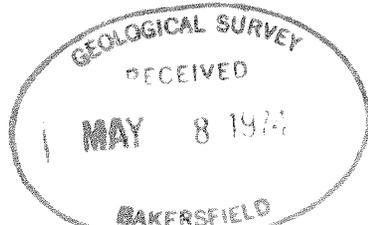
SIGNED John Melton TITLE Reservoir Engineer DATE May 6, 1974

(This space for Federal or State office use)

APPROVED BY John P. Wagner TITLE Acting District Engineer DATE May 8, 1974

CONDITIONS OF APPROVAL, IF ANY: John P. Wagner

SEE ATTACHED CONDITIONS AND REQUIREMENTS
 *See Instructions on Reverse Side



DOG, Long Beach *copy*

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

REPORT ON PROPOSED CHANGE OF WELL DESIGNATION

830 North La Brea Avenue
Inglewood, California

September 24, 1968

Mr. Mr. C. G. Nelson, Agent
Getty Oil Co., Operator
P. O. Box 811
Agent for Ventura, California 93001

DEAR SIR:

Your request dated letter dated August 26, 1968, relative to change in designation of well(s) in Sec. 29, T. 3 N., R. 16 W., S.B.B. & M., Aliso Canyon field, Los Angeles County, District No. 1, has been received; and in accordance with Section 3203, Public Resources Code, reading in part as follows:

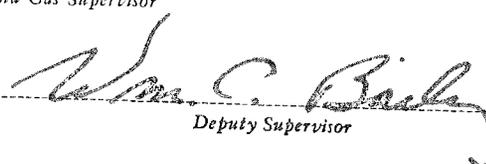
"* * * The number or designation by which any well heretofore drilled has been known, and the number or designation specified for any well in a notice filed as required by Section 3203, shall not be changed without first obtaining a written consent of the Supervisor."

the proposed change in designation is hereby authorized as follows: (formerly owned by Standard Oil Co. of Calif.)

Old Designation	New Designation
"Frew 1" 2	"SFZU" F-2 (037-00665)
" 3	" F-3 (037-00666)
" 4	" F-4 (037-00667)
" 5	" F-5 (037-00668)
" 6	" F-6 (037-00669)
" 7	" F-7 (037-00670)
" 8	" F-8 (037-00671)
" 9	" F-9 (037-00672)

ag
cc: F. E. Kasline
Production Dept.
Conservation Committee

F. E. KASLINE
~~E. R. MURRAY-AARON~~
State Oil and Gas Supervisor

By 
Deputy Supervisor

DOG-2
GWC
HCB
RWN
MC-File

RE-COMPLETION OR ABANDONMENT REPORT PRO-319-D

STANDARD OIL COMPANY OF CALIFORNIA

DIVISION OF OIL AND GAS
RECEIVED

APR 16 1956

LOS ANGELES, CALIFORNIA

FIELD: Aliso Canyon

PROPERTY: " Frew 1"

WELL NO: 4 Sec. 29, T. 3-N., R. 16-W., S.B. B. & M.

Following is complete and correct record of all work done on the well since the previous record dated January 16, 1948.

PURPOSE OF WORK: Scab Cement to Exclude Gas.

DATE OF REPORT: April 4, 1956

By W. C. JOHNSON
Manager, Prod., Dept., So., Dist.

WORK DONE BY: California Production Service, contractor, using portable equipment.

COMMENCED OPERATIONS: December 20, 1955 COMPLETED OPERATIONS: January 10, 1956

DATE WELL LAST PROD: April 15, 1955 DATE RETURNED TO PROD: January 9, 1956

PRODUCTION:	*27 DAY AVERAGE PRIOR TO WORK		**14 DAY AVERAGE AFTER WORK	
	Oil	85	B/D	35
Water	1	B/D	9	B/D
Gas	343	Mcf/D	199	Mcf/D
Gravity	20.8	°API	22.2	°API
Tubing	1935	PSIG	435	PSIG
Casing	2235	PSIG	2160	PSIG
Method of Production: Pumping				
Flowing	x		x	
Gas Lift				

*March 1955 Pro-420 figures.

**January 1956 Pro-420 figures.

S U M M A R Y

TOTAL DEPTH: 8604'

PLUGS: None

CASING: 20" cemented 47' Not tested.
 13-3/8" cemented 770' with 600 sacks. Not tested. 17-1/2" hole.
 7" cemented 8280' with 300 sacks. W.S.O. on holes at 8270' by D.O.G. Hole Size: 12-1/4" 770-6187'; 11-3/4" to 7421'; 11" to 8280'.
 358' 5" hung 8602' Perforated 8279-8602'. Scabbed with cement 8410-8435'. Top at 8244'. Hole Size: 11" 8280-8300'; 7" to 8604'.

(Summary continued next page.)

Fres 1-74
Aliso Canyon

Standard Oil Company of California

S U M M A R Y (Continued)

PERFORATIONS: 7" gun perforated with four 1/2" holes at 8270' (W.S.O.),
Johnston gun.
5" perforated 8279-8602' with 16 rows, 2" x 80 mesh, 6" centers,
6° undercut Kobe torch-cut slots.

JUNK: None

	<u>Type</u>	<u>Intervals Logged</u>
LOGS RUN:	Schlumberger electric log	47-1150'
	Schlumberger electric log	1150-7522'
	Schlumberger electric log	7522-8150'
	Schlumberger electric log	8150-8602'

Frew 1-#4
Aliso Canyon

Standard Oil Company of California

Discussion

Frew 1-#4, was completed exposing the entire Seanon zone in January 1948 flowing 169/1 B/D curtailed production with a 390 cu.ft./bbl. gas-oil ratio. During the last few years the gas-oil ratio has increased and it became necessary to pinch the well back to control the gas-oil ratio. Well was shut in on April 15, 1955 as an unsatisfactory producer.

Proposal (Dated December 6, 1955)

1. Seal perforations in 5" liner with cement 8410-8430'.
2. Set packer in cemented section and return well to production.

Work Done

December 20, 1955, California Production Service Company, contractor, using a portable hoist and spark plug equipment, commenced work at 9:00 a.m. Killed well with salt water and installed Class III B.O.P.

December 21-22, 1955, pulled tubing and set 7" retrievable bridge plug at 28'. Removed B.O.P. and replaced casing head. Reinstalled B.O.P. and retrieved bridge plug.

December 23, 1955, spotted 10 barrels of Geo-Pak at 8602'. Pulled up to 8440' and backscuttled excess Geo-Pak.

December 23, 1955, set Hercules plug at 8442' and dumped 3/4 sack of cement on top of plug. Located top of cement at 8436'.

To Scab Perforated Interval in 5" Liner from 8410' to 8435' with Cement:
December 24, 1955, using McGaffey-Taylor straddle tool with 12" spacing made trial run through interval to determine timing to displace 30 cubic feet. Pumped in 10 cubic feet of fresh water followed by 36 cubic feet of cement, mixed to an average 115#/cu.ft. slurry. Displaced cement with 10 cubic feet of fresh water and 136 cubic feet of salt water. Closed circulating ports and pumped in an additional 20 cubic feet of salt water. Displaced 6 cubic feet of cement at 8435' and 30 cubic feet across interval 8410' to 8435'. Good circulation under 2000# operating pressure. Pulled to 8400' and backscuttled. No returns to surface. Eighteen minutes mixing and pumping cement to place. Used Halliburton Cementing Company power equipment and bulk cement.

December 26, 1955, drilled out cement from 8406' to 8409'; cement stringers to 8419' and cleaned out to 8436'. Pressure tested interval from 8410' to 8435' and found no build up.

Frow 1-#4
Aliso Canyon

Standard Oil Company of California

To Re-Scab Perforated Interval in 5" Liner from 8410' to 8435' with Cement: December 27, 1955, using McGaffey-Taylor straddle tool with 12" spacing made trial run through interval to determine timing to displace 30 cubic feet. Pumped in 10 cubic feet of fresh water followed by 36 cubic feet of cement, mixed to an average 115#/cu.ft. slurry. Displaced cement with 10 cubic feet of fresh water and 166 cubic feet of salt water. Displaced 6 cubic feet of cement at 8435' and 30 cubic feet across interval from 8410' to 8435'. Pulled to 8400' and back-scuttled estimated 5 cubic feet of cement. Good circulation throughout under 500# working and final pressure. Twenty-seven minutes mixing and displacing cement. Used Halliburton Cementing Company power equipment and bulk cement.

December 27, 1955, drilled out cement stringers from 8385' to 8403'; solid cement to 8418'; cement stringers to 8428' and solid cement to 8436'.

December 28, 1955, pressure tested interval from 8410' to 8435' with no build up.

To Re-Scab Perforated Interval in 5" Liner from 8410' to 8435' with Cement: December 28, 1955, set McGaffey-Taylor straddle tool with 12" spacing at 8432'. Pumped in 10 cubic feet of fresh water followed by 36 cubic feet of cement, mixed to an average 116#/cu.ft. slurry. Displaced cement with 10 cubic feet of fresh water and 134 cubic feet of salt water. Closed B.O.P. and squeezed away 6 cubic feet of cement at 8432' under 1500# pressure. Opened B.O.P. and displaced 30 cubic feet of cement across interval 8410' to 8432'. Pulled to 8400' and back-scuttled approximately 22 cubic feet of cement. Good circulation throughout under 100-1200# pressure. Thirty-three minutes mixing and pumping cement to place. Finished job at 3:17 p.m. Used Halliburton Cementing Company power equipment and bulk cement.

December 29, 1955, drilled out cement stringers from 8387' to 8393' and solid cement to 8439'.

December 30, 1955, ran McGaffey-Taylor straddle tool to 8426' (would not go lower). Pressure tested interval from 8426' to 8418' in one foot stages. Through interval 8426' to 8423' pressure bled from 1500# to about 1000# in one minute. Had circulation from 8423' to 8418' except at 8421' where pressure remained at 1500#.

December 31, 1955, pressure tested interval from 8410' to 8434' with McGaffey-Taylor straddle tool. Interval from 8427' to 8429' held under 1500# pressure; balance of interval bled off in pressure.

To Re-Scab Perforated Interval in 5" Liner from 8410' to 8435' with Cement: December 31, 1955, set McGaffey-Taylor straddle tool at 8434'. Pumped in 10 cubic feet of fresh water followed by 36 cubic feet of type "O" cement, mixed to an average 116#/cu.ft. slurry, followed with 144 cubic feet of salt water. Closed McGaffey-Taylor tool and pumped away 6 cubic feet of cement at 8434'. Scabbed interval 8434' to 8429' and 8427' to 8410' with 30 cubic feet of cement under 200# pressure. Pulled up to 8385' and backscuttled approximately 13 cubic feet of cement. Pulled up to 8205' and closed B.O.P. Squeezed away 10 cubic feet under 1500# pressure. Bled off to 1100# in seven minutes. Bled back 7 cubic feet of cement. Twenty-seven minutes mixing and pumping cement to place. Used Halliburton Cementing Company power equipment and bulk cement.

January 1, 1956, drilled out cement from 8387' to 8439'. Pressure tested interval 8434' to 8410' with McGaffey-Taylor straddle tool. Interval 8434' to 8412' was tested in one foot intervals and held 1500# for one minute. Interval 8412' to 8411' bled from 1500-1000# in one minute. Interval 8411' to 8410' bled from 1500# to 0# in one-half minute.

January 2, 1956, displaced salt water with oil base mud and drilled out cement from 8439' to 8442' and cleaned out to 8602'.

January 3, 1956, washed perforations from 8440' to 8602' with McGaffey-Taylor circulating type washer.

January 4, 1956, ran tubing but unable to set packer. Pulled tubing.

January 5, 1956, reran tubing and packer stopped at 8430' - unable to work lower. Displaced oil base mud with salt water and pulled tubing. Scraped 5" liner from 8390' to 8464'.

January 6, 1956, reran and hung 2-1/2" tubing (including 251' of 2" on bottom) at 8427' with packer at 8427'.

Tubing Detail:

Bottom 8 joints, or 251', are 2", 4.7#, grade unknown, range 2, short 8-round thread, secondhand, unknown make, seamless blank tubing. Fitted from 8425' to 8427' with a 2" x 2" x 5" Guiberson packer.

Top 263 joints, or 8176', are 2-1/2", 6.5#, grade unknown, range 2, short 8-round thread, secondhand, unknown make, seamless blank tubing. Fitted from 8175' to 8176' with a 1" x 2" x 2-1/2" crossover and from 8174' to 8175' with a 2" x 2-1/2" Otis side door choke nipple.

Total 271 joints, or 8427'

Frow 1-#4
Aliso Canyon

Standard Oil Company of California

January 7, 1956, recovered Otis choke with retrieving tool on sand line and displaced salt water with oil.

January 8, 1956, injected gas and well would not flow. Swabbed, lowering fluid level to 1500'.

January 9, 1956, swabbed and recovered 150 barrels of fluid from 4600' and well commenced to flow.

January 10, 1956, released crew at 5:00 p.m.

Well re-completed in the Seamon zone.

PRODUCTION TREND

<u>1956</u> <u>Date</u>	<u>Hrs.</u> <u>Flwg.</u>	<u>B/D</u> <u>Oil</u>	<u>B/D</u> <u>Wtr.</u>	<u>%</u> <u>Cut</u>	<u>°API</u> <u>Grav.</u>	<u>MCF/D</u> <u>Gas</u>	<u>#</u> <u>C.P.</u>	<u>#</u> <u>T.P.</u>	<u>Remarks</u>
1-9	14	49	51				1550	1550	12/64" bean.
1-10	5	21	23	51.0	14.7	444	1850	50	Ran 2/64" Choke and well died.
1-11	0								Well dead.
1-12	0						1200	1200	Well shut in.
1-13	15	77	11	12.0	21.7	618	1950	1650	
1-14	24	85	10	10.0	21.4		1950	1800	
1-15	24	95	13	11.8	21.0		2025	1875	
1-16	24	38	4	9.6	21.0		2025	1875	
1-17	24	16	2	10.0			2175	350	
1-18	24	31	5	14.0	19.2	191	2175	450	
1-19	24	26	4	12.0	19.0		2150	325	
1-20	24	29	4	12.0	19.0	130	2150	375	
1-21	24	26	4	14.0	20.5	140	2150	375	
1-22	24	37	5	12.0	22.3	140	2150	325	

During January, 1956, well averaged 35 B/D oil, 9 B/D water, 199 MCF/D gas, 22.2° gravity, for 14 days. (Pro-420 figures)

Contractor: California Production Service

Drillers: Underwood
Fortenberry
Chambers

N. TWERELL

NT
April 4, 1956

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCESDIVISION OF OIL AND GAS
REPORT ON PROPOSED OPERATIONSNo. P 155-1844Mr. W C Johnson
P O Box 397
La Habra California
Agent for STANDARD OIL CO OF CALIFORNIALos Angeles 15 Calif.
December 8, 1955

DEAR SIR:

Your proposal to alter casing Well No. "Frew 1" 4
Section 29, T. 3 N, R. 16 W, S B B. & M., Aliso Canyon Field, Los Angeles County,
dated Dec. 6, 1955, received Dec. 7, 1955, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES

"The present condition of the well is as follows:

1. Total depth. 8604' Plugs: None
2. Complete casing record.

20"	cemented	47'
13-3/8"	cemented	770'
7"	cemented	8280' WSO 8270'
358'-5"	landed	8602' Perforated 8279- 8602'
3. Last produced. April, 1955 62 B/D oil, 0 B/D water 20.8° API
(Date)"

PROPOSAL

"The proposed work is as follows:

1. Seal perforations in 5" liner with cement 8410-8430'.
2. Set packer in cemented section and return well to production."

DECISION

THE PROPOSAL IS APPROVED.

FEK:OH

cc Mr K B McNamara

4
1
6

Mr C W Gibbs, Asst Gen Mgr Producing Dept
Standard Oil Co of California
225 Bush Street
SAN FRANCISCO 20 California

E. H. MUSSER, State Oil and Gas Supervisor

Blanket bond.

By R. H. Halliday Deputy

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL AND
RECEIVED
DEC 7 1955
LOS ANGELES, CALIFORNIA

Notice of Intention to Deepen, Redrill, Plug or Alter Casing in Well

This notice must be given before work begins; one copy only

Oxnard, Calif. December 6, 19 55

DIVISION OF OIL AND GAS

Los Angeles, Calif.

In compliance with Section 3203, Chapter 93, Statutes of 1939, notice is hereby given that it is our intention to commence the work of ~~deepening, redrilling, plugging or~~ altering casing at Well No. Frew 1-#4
(Cross out unnecessary words)

, Sec. 29, T. 3N, R. 16W, S.B. B. & M.
Aliso Canyon Field, Los Angeles County.

The present condition of the well is as follows:

1. Total depth. 8604' Plugs: None

2. Complete casing record.

20"	cemented	47'	
13-3/8"	cemented	770'	
7"	cemented	8230'	WSO 8270'
358' - 5"	landed	8602'	Perforated 8279- 8602'

3. Last produced. April, 1955 62 B/D oil, 0 B/D water 20.8° API
(Date) (BOPD) (API)

The proposed work is as follows:

1. Seal perforations in 5" liner with cement 8410-8430'.
2. Set packer in cemented section and return well to production.

MAP	MAP BOOK	CARDS	BOND	FORMS	
				114	121
			<i>Blanket</i>	<i>LB</i>	<i>GB</i>

Standard Oil Company of California
(Name of Operator)

By W.C. Johnson
W.C. Johnson, Mgr., Prod. Dept., So. Dist.

COMPLETION REPORT—NEW WELL

DIVISION OF OIL AND GAS
 RECEIVED
 JAN 27 1948
 JET
 OCG-2
 H.C. File

FIELD ALISO CANYON STANDARD OIL COMPANY OF CALIFORNIA LOS ANGELES, CALIFORNIA COMPANY

PROPERTY FREN 1 WELL NO. 4 SEC. 29 T. 3-N R. 16-W B & M

LOCATION From San Fernando Rancho Pt. #19 on the W. boundary of Ex-mission San Fernando Rancho 1368.6' S'ly along the rancho line; thence 416.0 W'ly at r/as. ELEV. 2417.95 D.F. U.S.G.S.

FOLLOWING IS COMPLETE AND CORRECT RECORD OF ALL WORK DONE ON THIS WELL:

COMMENCED: RIGGING UP September 20, 1947 COMMENCED DRILLING October 2, 1947
 COMPLETED: RIGGING UP October 1, 1947 COMPLETED DRILLING January 7, 1948
 DEPTH 8604'. PLUGGED TO None DATE OF INITIAL PRODUCTION January 7, 1948
 PRODUCTION (Daily Average 1st 30 Days) { FLOWING } BBL. OIL: BBL. WATER P.A. P. I.
 GAS PRODUCTION (Daily Average 1st 30 Days) { SHUTTING } M. CU. FT. GALS. GASOLINE PER M. CUBIC FEET
 TUBING PRESS. CASINGHEAD PRESS. FLOW NIPPLE

CASING RECORD

SIZE OF CASING	LENGTH OF CASING	DEPTH LANDED	CEMENTED (Depth if thru perf)	WEIGHT PER FOOT	THREADS PER INCH	MAKE OF CASING	SEAMLESS OR LAPWELDED	MAKE OF SHOE
20"	36	47	Yes	78.6#	Pl.E.	Nat'l.(new)	Seals.	Welded
13-3/8"	759	770	Yes	54.5#	8-rnd.	Spang&top. (new)	"	Baker
7"	8269	8280	"	23&26#	8-rnd.	*	"	Baker
5"	358	8602	No	18#	8-rnd.	Nat'l.(new)	"	"

* See history for details.

CEMENTING OR OTHER SHUT OFF RECORD

SIZE OF CASING	DEPTH LANDED	DEPTH CEMENTED	No. SACKS USED	No. SACKS TREATED	KIND OF CEMENT	METHOD	TIME SET DAYS	RESULT OF TEST
20"	47	47	50	None	Vic. cons.	Outside casing	1	Not tested.
13-3/8"	770	770	600	"	Perm. cons.	Plug	2	Not tested.
7"	8280	8280	300	"	Colt.h.t.	"	5	W.S.O.

PERFORATION RECORD

SIZE OF CASING	FROM	TO	SIZE OF HOLES OR SLOTS	NUMBER OF ROWS	SPACING (INCHES)	HOW PERFORATED
5"	8279	8602	2" x 80 mesh	16	6	6° undercut Kobe torch-cut slots.

PLUG: No KIND - LENGTH - SET AT -
 ADAPTER: Yes KIND Burns lead seal liner hanger SIZE 5" x 7" TOP AT 8244'
 ROTARY TOOLS: FROM 0 TO 8604 FEET CABLE TOOLS: FROM - TO - FEET

SIDETRACKED PIPE AND LOST TOOL RECORD

None

MAP	MAP BOOK	CARDS	BOND	FORMS	
				114	121

DRILLERS NAMES ON LAST SHEET

DATE January 16, 1948

STANDARD OIL COMPANY OF CALIFORNIA

BY J.H. Thacher
 J.H. Thacher, Mgr., Prod. Dept.

JAN 27 1948

F-4
Frow 1-4
Aliso Canyon

LOS ANGELES, CALIFORNIA

From To Feet Formation Drilled and Cored

Well drilled by Santa Fe Drilling Company, contractor, with spark plug equipment and standard derrick.

October 1, 1947, drilled 24" hole:

0	47	47	surface shale
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October 1, 1947, cemented 20" conductor pipe at 47' with 50 sacks of Victor construction cement. Used Halliburton power equipment and bulk cement.

Casing Detail:

All 1 joint, or 47', is 20" O.D., 78.6#, new National seamless casing, fitted on bottom, or at 47', with a 1/2" x 4" steel band welded on for a shoe.

October 2, 1947, spudded in at 4:00 a.m., and drilled 12 1/2" hole:

47	215	168	no formation logged
215	363	148	surface hard sand and gravel

Lost circulation while drilling at 363'. Conditioned mud and regained circulation.

Drilled 12 1/2" hole:

363	438	75	surface hard sand and gravel
438	535	97	surface sand and gravel
535	790	255	surface and hard sand
790	805	15	shale
805	845	40	hard sand
845	865	20	hard sand and shale
865	965	100	shale and sand
965	1150	185	gray sand and streaks of shale

October 9, ran Schlumberger electric log and recorded from 47-1150'.

Reamed 12 1/2" hole to 17 1/2" from 47-770'.

October 10, 1947, cemented 13-3/8" casing at 770' with 600 sacks of Permanent construction cement, mixed to 118#/cu.ft. slurry. Used 1 bottom plug and 1 top plug with a 4" x 6" x 7' wooden spacer. Plugs bumped under 400# final pressure. Casing free and circulation good through-out job. Worked casing while cement was going around shoe. Used International power equipment and bulk cement.

Casing Detail:

All 21 joints, or 770', are 13-3/8", 54.5#, J-55, 8-round thread, range 3, new mixed Spang and Republic seamless casing, fitted on bottom, or at 770', with a Baker cement guide shoe, fitted 5' and 25' above shoe with two Stepp centralizers, and with three B&W wall cleaning guides 3', 13' and 23' above shoe.

Frew 1-4
 Aliso Canyon

Standard Oil Company of California

LOS ANGELES, CALIFORNIA

From To Feet Formation Drilled and Cored

Cut and recovered 11' of 20" conductor pipe, all of which was below the derrick floor.

Cut and recovered 36' of 13-3/8" casing, 11' of which was below the derrick floor.

October 12, drilled out cement and plugs from 739-770' and cleaned out to 1150'.

Drilled 12 1/4" hole:

1150	1190	40	gray sand, streaks of sand
1190	1238	48	shale and sand
1238	1393	155	no formation logged
1393	1686	293	shale and streaks of sand
1686	1807	121	sand and shale
1807	1906	99	hard gray sand
1906	2116	210	shale and sand
2116	2303	187	shale, streaks sand
2303	2469	166	shale, streaks of sand
2469	3054	585	no formation logged
3054	3279	225	shale and streaks of sand
3279	3501	222	shale, streaks sand
3501	4446	945	no formation logged
4446	4652	206	hard shale and streaks of sand
4652	5073	421	shale and streaks of sand
5073	5513	440	shale and sand
5513	5675	162	no formation logged
5675	5838	163	shale and sand
5838	5897	59	no formation logged
5897	6187	290	shale and sand

Drilled 11-3/4" hole:

6187	6294	107	shale and sand
6294	6429	135	no formation logged
6429	6562	133	shale and sand
6562	6632	70	no formation logged
6632	6860	228	shale and sand
6860	7203	343	no formation logged
7203	7421	218	shale and sand

Drilled 11" hole

7421	7529	108	shale and sand
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November 30, ran Schlumberger electric log and recorded from 1150-7522'.

Drilled 11" hole:

7529	7624	95	no formation logged
------	------	----	---------------------

Frow 1-4
Aliso Canyon

Standard Oil Company of California

4.
DIVISION OF OIL AND GAS
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JAN 27 1948

From To Feet Formation Drilled and Cored

LOS ANGELES, CALIFORNIA

December 3, took Homco sidewall cores as follows:

- 4435' - recovered 2"± fragments of medium gray silty shale with occasional thin streaks of very fine light gray sand.
4480' - recovered 1"± small pieces of silty shale, similar to above.
4720' - recovered 3"± medium-grained to very fine gray sand to silt.
4730' - recovered 4"± broken fragments of gray silty shale as above.
5925' - recovered 3" gray to slightly brownish-gray silty shale.
5955' - recovered 5" massive silty dark-gray to brownish-gray shale.
6070' - recovered 6" massive gray silty shale, somewhat mottled.
6410' - recovered 1" olive-gray massive silty shale.

Drilled 11" hole:

7624	7675	51	no formation logged
7675	7900	225	shale and sand
7900	7970	70	cherty shale
7970	8150	180	hard brown shale

Drilled 6-3/4" hole:

8150	8172	22	hard brown shale
8172	8201	29	sand and small streaks of shale
8201	8220	19	no formation logged

December 14, 1947, ran Schlumberger electric log and recorded from 7522-8150'.

Reamed 6-3/4" hole to 11" from 8150-8220' and drilled 11" hole:

8220	8228	8	shale and sand
8228	8250	22	no formation logged

Cored 11" hole:

8250	8260	10	recovered 6'
8250	8253	3	3' hard gray massive silty micaceous shale having many small calcareous inclusions
8253	8254	1	1' firm fine-grained to silty brown friable OIL SAND. Good cut and odor.
8254	8256	2	2' hard gray massive silty micaceous shale having many small calcareous inclusions
8256	8260	4	4' no recovery; cored like sandy shale
8260	8265	5	recovered 5'
8260	8265	5	5' hard gray massive silty micaceous shale having many small calcareous inclusions

JAN 27 1948

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Frew 1-4
Aliso Canyon

From	To	Feet	Formation Drilled and Cored
8265	8270	5	recovered 5'
8265	8270	5	5' hard gray massive silty micaceous shale having many small calcareous inclusions
8270	8280	10	recovered 10'
8270	8280	10	10' hard gray massive silty shale with many small calcareous inclusions
8280	8290	10	recovered 9'
8280	8282	2	2' hard gray massive silty micaceous shale with many calcareous inclusions
8282	8289	7	7' very firm fine to silty brown massive OIL SAND. Good cut and odor.
8289	8290	1	1' no recovery; cored like sand
8290	8300	10	recovered 10'
8290	8300	10	10' very firm fine to silty massive OIL SAND. Good cut and odor

December 17, 1947, took Homco sidewall cores as follows:

- 7850' - recovered 1½" broken and mud contaminated silty friable gray shale
- 7868' - recovered 0" made two runs, had seven tons weight on tool both times evidently very hard
- 7877' - recovered 0" made 2 runs, could not contact walls of hole with longest tube.
- 7885' - recovered 4" mud contaminated soft silty gray limy shale
- 7895' - recovered 4" broken and mud contaminated hard gray silty to limy shale

Remained 11" hole from 8150-8300'.

December 19, 1947, cemented 7" casing at 8280' with 300 sacks of Colton high temperature oilwell cement. Worked casing from 8280-8290' while cement was going around. Casing free and circulation good. Flugs bumped under 400# working and 1200# final pressure. Used one wooden plug and one rubber top cup plug, no bottom plug. One hour and five minutes mixing and pumping to place. Used International power equipment and bulk cement.

Casing Detail:

Bottom 36 joints, or 1500', are 7" O.D., 26#, N-80, range 3, 8-round thread, new mixed National, Youngstown and Pittsburgh seamless casing, fitted on bottom or at 8200' with a Baker float shoe and fitted at 8236' with a Baker float collar. Fitted with three B&W wall cleaning guides at 8275', 8265', 8255' and fitted at 8270' and 8245' with 7" x 11" Stepp centralizers.

Next 48 joints, or 2034', are 7" O.D., 23#, N-80, range 3, 8-round thread, new Jones and Laughlin seamless casing.

Frew 1-4
Aliso Canyon

Standard Oil Company of California

DIVISION OF OIL AND GAS
RECEIVED
JAN 27 1948

From To Feet Formation Drilled and Cored LOS ANGELES, CALIFORNIA

Casing Detail: Cont'd.

Next 81 joints, or 3382', are 7" O.D., 23#, J-55, range 3, 8-round thread, new Jones and Laughlin seamless casing.
Next 27 joints, or 1178', are 7" O.D., 23#, N-80, range 3, 8-round thread, new mixed Pittsburgh and Jones and Laughlin seamless casing.
Top 7 joints, or 186', are 7" O.D., 26#, N-80, range 2, 8-round thread, new Youngstown seamless casing.
Total 201 joints, or 8280'.

Cut and recovered 33' of 7" casing, 11' of which was below the derrick floor.

December 23, 1947, drilled out cement from 8231-8275'.

December 24, Johnston Water Shut-Off Test on Gun Holes in 7" Casing at 8270':
Ran Johnston combination gun and tester and shot four 1/2" holes at 8270'. Set packer at 8229'; tail to 8251'. Open one hour. Light blow for two minutes. Occasional heads for twenty-two minutes. Light steady blow for four minutes, then dead for balance of test. Recovered 135' rise in 3 1/2" drill pipe all slightly gassy drilling fluid. Test witnessed and water shut-off approved by Inspector J. L. White of the Division of Oil and Gas.

Tool Assembly: 7" Olympic packer, 3/8" bean, 2-7/8" x 22' tail including 5' perforated. Bottom 10' two pressure recorders.

December 24, cleaned out cement from 8275-8300'.

Changed to lube seal emulsion mud.

Cored 6-1/8" hole:

8300	8320	20	recovered 20'
8300	8320	20	20' hard gray massive silty shale with few calcareous inclusions. One 6" streak of hard silty to fine-grained slightly OIL-STAINED light brown sand at 8318'
8320	8340	20	recovered 20'
8320	8321	1	1' hard gray massive silty shale with slight OIL-STAINING in bottom 6" and having thin stringers of silty to fine-grained light brown OIL SAND having good cut and odor
8321	8330	9	9' firm semi-friable well-sorted silty to fine-grained brown massive OIL SAND. Good cut and odor. Looked tight.
8330	8340	10	10' hard silty to fine-grained well-sorted light brown sand. Good cut and odor. Looked tight.

Frow 1-4
 Aliso Canyon

Standard Oil Company of California

From	To	Feet	Formation Drilled and Cored
8340	8345	5	recovered 5'
8340	8342	2	2' hard semi-friable silty brown finely micaceous sand. Good cut and odor
8342	8345	3	3' hard silty gray finely micaceous sand with slight OIL STAINING and few calcareous inclusions. OIL STAINS give amber cut and no odor.
8345	8355	10	recovered 7'
8345	8346	1	1' hard gray silty finely micaceous shale with few OIL STAINS.
8346	8347	1	1' medium to coarse-grained friable firm dark brown OIL SAND. Good cut and odor.
8347	8349	2	2' hard silty gray finely micaceous sand with frequent OIL STAINS having good cut and odor.
8349	8352	3	3' medium to coarse-grained friable firm dark brown OIL SAND. Good cut and odor.
8352	8355	3	3' no recovery
8355	8360	5	recovered 1'
8355	8356	1	1' hard gray silty well-sorted finely micaceous shale with few OIL STAINS giving light cut and no odor.
8356	8360	4	4' no recovery
8360	8365	5	recovered 5'
8360	8365	5	5' medium to coarse-grained well-sorted firm friable dark brown OIL SAND. Good odor and cut
8365	8370	5	recovered 0'
8365	8370	5	5' no recovery
8370	8388	18	recovered 18'
8370	8380	10	10' very firm, difficulty friable, medium to fine-grained dark brown OIL SAND. Good cut and odor. Looked tight
8380	8388	8	8' friable firm medium to fine-grained dark brown OIL SAND. Good cut and odor
8388	8408	20	recovered 18'
8388	8394	6	6' fine to coarse-grained well-cemented hard tight difficulty friable dark brown OIL SAND. Good cut and odor. One 6" streak of fine to medium-grained soft friable dark brown OIL SAND at 8388'. Good cut and odor.
8394	8404	10	10' silty to fine light brown difficulty friable hard OIL SAND. Good cut and odor. Looked very tight.
8404	8406	2	2' hard silty finely micaceous massive light gray shale with many calcareous inclusions.
8406	8408	2	2' no recovery

Frew 1-4
Aliso Canyon

Standard Oil Company of California

DIVISION OF OIL AND GAS
RECEIVED

JAN 27 1948

LOS ANGELES, CALIFORNIA

From	To	Feet	Formation Drilled and Cored
8408	8428	20	recovered 20'
8408	8412	4	4' hard silty finely micaceous massive light gray shale with many calcareous inclusions. Two 6" streaks of fine to silty grained hard difficulty friable brown OIL SAND at 8409' and 8410' having good cut and odor. Looked tight.
8412	8417	5	5' fine to silty grained hard tight looking difficulty friable brown OIL SAND. Good cut and odor.
8417	8428	11	11' hard silty finely micaceous massive light gray shale with many calcareous inclusions. One 8" streak of broken and mud contaminated fine to medium grained friable dark brown OIL SAND on bottom or 8428'. Good cut and odor
8428	8448	20	recovered 17'
8428	8436	8	8' medium to coarse-grained friable firm dark brown OIL SAND. Good dark brown cut and odor appeared well-saturated. One 8" streak of hard difficulty friable medium to coarse-grained, well cemented brown OIL SAND at 8430'.
8436	8445	9	9' very firm difficulty friable silty well-sorted dark brown OIL SAND. Good dark brown cut and odor. Entire core 8428-8448' badly washed due to having to pump core from barrel
8445	8448	3	3' no recovery
8448	8468	20	recovered 8'
8448	8456	8	8' very firm difficulty friable silty well-sorted dark brown OIL SAND. Good dark brown cut and odor
8456	8468	12	12' no recovery; cored like hard sand
8468	8488	20	recovered 20'
8468	8488	20	20' very firm silty well-sorted finely micaceous dark brown OIL SAND. Good dark brown cut and good odor.
8488	8508	20	recovered 20'. (Core stuck in barrel. Unable to pump out. Had to spud out of barrel).
8488	8496	8	8' very firm silty well-sorted finely micaceous dark brown OIL SAND. Good dark brown cut and good odor.
8496	8496	2	2' hard gray silty to fine-grained shale with many calcareous inclusions.
8498	8508	10	10' very firm silty well-sorted finely micaceous dark brown OIL SAND. Good dark brown cut and good odor. Entire core badly broken due to spudding.
8508	8528	20	recovered 20'
8508	8511	3	3' fine-grained, silty micaceous, well-sorted, difficulty friable, well-cemented, evenly-saturated light brown OIL SAND. Good petroleum odor, dark brown cut. Looks tight.
8511	8515	4	4' sand as above except mottled gray and light brown OIL SAND. Looks tight.
8515	8521	6	6' fine to coarse-grained, friable, well-cemented, evenly saturated light brown OIL SAND. Good petroleum odor. Dark brown cut. Looks tight.

Frew 1-4
Aliso Canyon

Standard Oil Company of California

DIVISION OF OIL AND GAS
RECEIVED
JAN 27 1948

From	To	Feet	Formation Drilled and Cored
8521	8528	7	7' fine-grained, friable, well cemented gray sand with patches of light brown OIL SAND in core. Looks tight.
8528	8548	20	recovered 20'
8528	8548	20	20' fine-grained, well-cemented, difficulty friable, gray sand with patches of light brown OIL SAND. Fair streak of evenly-saturated light brown OIL SAND 8540-8543. Good petroleum odor but looks tight.
8548	8568	20	recovered 9'
8548	8557	9	9' fine-grained, well-cemented difficulty friable gray sand with patches of light brown OIL SAND. Two of streak of hard gray sandstone shell at 8552' and 8557'. Looks tight.
8557	8568	11	11' no recovery
8568	8588	20	recovered 11'. (Brown Cut)
8568	8579	11	11' medium gray siltstone- massive locally very fine-grained sandy, no bedding, finely micaceous, OIL-STAINED throughout, sweet petroleum odor
8579	8588	9	9' no recovery
8588	8604	16	recovered 13'
8588	8601	13	13' medium gray sandy siltstone, lithology as above. OIL STAINED sweet petroleum odor
8601	8604	3	3' no recovery.

January 3, 1948, ran Schlumberger electric log and recorded from 8150-8604'.

Underreamed 6-1/8" hole to 7" from 8314-8604'.

January 4, 1948, landed 358' of 5" liner at 8602'. Perforated 8279-8602'.

Liner and Perforation Detail:

Bottom 10 joints, or 323', are 5" O.D., 18#, J-55, range 2, 8-round thread, new National seamless casing, perforated 8602-8279' with 16 rows, 2" x 80 mesh, 6" centers, 6° undercut Kobe torch-cut slots, fitted on bottom, or at 8602', with a Baker cement guide shoe.

Top 1 joint, or 35', is 5" O.D., 18#, J-55, range 2, 8-round thread, new National seamless casing, fitted on top, or at 8244', with a 5" x 7" Burns lead seal liner hanger.

Total 11 joints, or 358'.

Frew 1-4
Aliso Canyon

Standard Oil Company of California

10.
DIVISION OF OIL AND GAS

RECEIVED

JAN 27 1948

January 6, 1948, hung 2 1/2" tubing at 8562' (including 407' bottom).

Tubing Detail:

LOS ANGELES, CALIFORNIA

Bottom 13 joints, or 407', are 2" O.D., 4.7#, range 2, 8-round thread, new, unknown make, seamless tubing, fitted on bottom, or at 8562' with a 1-3/4" I.D. x 3" O.D. tubing shoe as a swab catcher.

Top 263 joints, or 8155', are 2 1/2" O.D., 6.7#, range 2, 8-round thread, new unknown make, seamless tubing.

Total 276 joints, or 8562'.

Circulated mud out of hole with salt water and salt water out of hole with oil.

Injected gas into casing and well started flowing to tanks at 4:00 a.m. January 7, 1948. Used and recovered 300 bbls. circulating oil.

Crew released at 8:00 a.m., January 7, 1948.

January 8, 24 hours flowed *1053 bbls. oil, 10 bbls. water, gravity 21.5°, cut 0.9% (mud), 35/64" bean, tubing pressure 525#, casing pressure 0#, 395 MCF gas. *836 bbls. new production.

January 9, 24 hours flowed 1045 bbls. oil, 2 bbls. water, gravity 21.9°, cut 0.2%, 35/64" bean, tubing pressure 500#, casing pressure 650#, 430 MCF gas.

S U M M A R Y

Total Depth: 8604' Plugs: None.

Casing: 20" cemented 47'. Not tested.
 13-3/8" " 770'. Not tested.
 7" " 8280'. W.S.O.
 5" landed 8602'. Perforated 8279-8602'.

Junk: None.

<u>Electric Log Marker:</u>	<u>In Hole Depth</u>	<u>Sub-Sea Depth</u>
S ₄	8320'	-5902'

Perforation Detail:

5" - 8279-8602', 2" x 80 mesh, 16 rows, 6" centers, 6° undercut Kobe torch-cut slots.

Drillers:

Walt Sala
Ray V. Dysinger
J. P. French
R. J. Sullivan

B. RICHARDS

BR:bs
January 16, 1948

MAP	MAP BOOK	CARDS	BOND	FORMS	
				114	121

CORE ANALYSIS RESULTS
WELL FREW 1-4 ALISO CANYON

To: M. W. Morris
From: M. B. Standing

California Research Corporation
La Habra, Calif., Jan. 12, 1948

The cores from Well Frew 1-4 Aliso Canyon have been analyzed for permeability, porosity and fluid content.

Formation factor determinations have also been made.

This work was authorized under GO-113, J 16220.

The results are reported as follows:

Table I - Routine Core Analysis Results
Table II - Formation Factor Determinations.

cc: J. E. Toussaint (2)
J. H. Thacher
M. C. File (2)
L. A. File (1)
E. G. Gaylord (2)
La Habra Lab. (2)

03700667

IBM

TABLE I

WELL FREW 1-4 ALISO CANYON
ROUTINE CORE ANALYSIS RESULTS

<u>Depth</u> <u>Ft.</u>	<u>Flu.</u>	<u>Perm.</u> <u>Md.</u>	<u>Porosity</u> <u>%</u>	<u>Water Sat.</u> <u>%</u>	<u>Oil Sat.</u> <u>%</u>	<u>Oil-Water</u> <u>Ratio</u>
8252	Neg.	3.0	18.6	26	0	0.00
8282	Neg.	0.39	18.7	51	0	0.00
8285	Neg.	0.05	17.6	71	0	0.00
8289	Neg.	0.05	21.5	51	0	0.00
8295	Neg.	0.05	17.4	60	0	0.00
8300	Neg.	0.05	18.2	68	0	0.00
8301	Neg.	0.05	13.1	82	0	0.00
8310	Neg.	0.05	12.9	56	0	0.00
8318	Neg.	0.05	14.6	49	0	0.00
8322	Neg.*	71	23.9	37	18	0.49
8324	Neg.*	67	25.0	37	22	0.59
8326	Neg.*	11	21.5	50	16	0.32
8329	Neg.*	67	24.5	37	22	0.59
8332	Neg.*	0.05	16.4	63	9	0.14
8334	Neg.*	0.05	19.3	61	3	0.05
8336	Neg.*	26	17.5	65	5	0.08
8338	Neg.*	1.7	20.4	54	16	0.30
8340	Neg.	2.4	16.9	83	0	0.00
8342	Neg.	2.5	22.9	66	0	0.00
8344	Neg.	0.32	19.4	76	0	0.00
8346	Neg.	0.67	19.3	73	0	0.00
8347	Neg.	1.2	19.6	58	0	0.00
8348	Dull	150	31.2	21	31	1.47
	Pos.					
8349	Dull	606	24.0	18	60	3.31
	Pos.					
8356	Dull	12	22.3	35	35	1.00
	Pos.					
8360	Dull	1020	20.4	36	30	0.83
	Pos.					
8361	Dull	1132	21.9	37	32	0.87
	Pos.					
8362	Dull	832	19.8	27	40	1.48
	Pos.					
8363	Dull	1185	20.1	20	45	2.25
	Pos.					
8364	Dull	1459	21.2	12	53	4.42
	Pos.					

* These cores cut positive in CCL₄

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<u>Depth</u> <u>Ft.</u>	<u>Flu.</u>	<u>Perm.</u> <u>Md.</u>	<u>Porosity</u> <u>%</u>	<u>Water Sat.</u> <u>%</u>	<u>Oil Sat.</u> <u>%</u>	<u>Oil-Water</u> <u>Ratio</u>
8370	Dull Pos.	790	23.3	40	20	0.50
8371	Dull Pos.	935	24.7	30	24	0.80
8372	Dull Pos.	785	23.4	29	30	1.03
8373	Dull Pos.	1210	24.1	28	26	0.93
8374	Dull Pos.	**-	24.7	27	29	1.07
8375	Dull Pos.	**-	24.4	31	24	0.77
8376	Dull Pos.	**-	27.4	26	21	0.81
8377	Dull Pos.	**-	23.2	38	24	0.63
8378	Dull Pos.	730	25.2	35	28	0.80
8379	Dull Pos.	410	23.9	38	26	0.69
8380	Dull Pos.	212	30.1	23	19	0.83
8382	Dull Pos.	386	26.8	46	25	0.54
8383	Dull Pos.	65	25.8	41	26	0.63
8389	Dull Pos.	1370	21.2	32	23	0.72
8391	Dull Pos.	275	23.3	36	20	0.56
8383	Dull Pos.	53	22.3	54	8	0.15
8395	Dull Pos.	9.6	22.6	50	7	0.14
8397	Neg.	0.05	18.1	60	0	0.00
8399	Dull Pos.	113	21.9	49	10	0.20
8401	Dull Pos.	86	24.3	41	13	0.32
8403	Neg.	0.05	13.3	68	0	0.00
8428	Neg.*	**-	20.9	55	26	0.47
8430	Neg.*	**-	16.2	54	22	0.41
8432	Neg.*	62	17.7	55	15	0.27
8434	Neg.*	6.9	15.3	61	0	0.00
8437	Neg.*	**-	17.8	45	15	0.33

* These cores cut positive in CCl_4

** Samples too badly fractured for permeability measurements.

IBM

Depth Ft.	Flu.	Permeability Md.	Porosity %	Water Sat. %	Oil Sat. %	Oil-Water Ratio
8440	Neg.*	21	19.1	55	15	0.27
8442	Neg.*	23	17.3	61	13	0.21
8449	Dull Pos.	144	22.0	46	8	0.17
8450	Dull Pos.	36	20.0	56	5	0.09
8451	Dull Pos.	67	21.7	52	5	0.10
8452	Dull Pos.	**-	25.9	40	16	0.40
8454	Dull Pos.	81	25.0	41	10	0.24
8470	Pos.	24	21.0	38	19	0.50
8473	Pos.	**-	17.6	47	26	0.55
8476	Pos.	20	23.0	33	28	0.85
8479	Pos.	22	20.9	39	26	0.67
8482	Pos.	19	23.6	42	34	0.81
8485	Pos.	13	23.2	45	25	0.56
8487	Pos.	393	21.4	43	21	0.49
8490	Dull Pos.	32	17.2	58	30	0.52
8493	Neg.	0.20	11.3	53	0	0.00
8496	Dull Pos.	2.6	17.5	58	26	0.45
8497	Dull Pos.	19	18.5	55	42	0.76
8499	Dull Pos.	4.3	18.1	58	17	0.29
8507	Dull Pos.	13	23.4	43	33	0.77
8509	Dull Pos.	0.05	17.4	67	12	0.18
8511	Dull Pos.	1.1	17.6	70	11	0.16
8513	Dull Pos.	0.05	16.5	58	11	0.19
8515	Dull Pos.	**-	17.0	60	11	0.18
8517	Dull Pos.	0.05	21.9	53	8	0.15
8519	Dull Pos.	0.05	15.0	78	9	0.11
8521	Dull Pos.	2.3	15.6	80	5	0.06
8523	Dull Pos.	0.99	17.3	75	7	0.09
8525	Neg.	0.05	16.9	83	0	0.00
8527	Neg.	0.05	16.6	92	0	0.00

* These cores cut positive in GCL₄

** Samples too badly fractured for permeability measurements.

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<u>Depth</u> <u>Ft.</u>	<u>Flu.</u>	<u>Md.</u>	<u>Porosity</u> <u>%</u>	<u>Water Sat.</u> <u>%</u>	<u>Sat.</u> <u>%</u>	<u>Oil-Water</u> <u>Ratio</u>
8528	Dull Pos.	6.3	19.1	57	25	0.44
8532	Neg.	1.5	15.5	88	0	0.00
8534	Neg.	0.05	16.5	89	0	0.00
8537	Dull Pos.	28	19.6	60	13	0.22
8540	Dull Pos.	2.8	16.5	72	10	0.14
8546	Dull Pos.	0.05	15.7	79	20	0.25
8547	Neg.	0.05	15.7	84	0	0.00
8549	Dull Pos.	6.0	18.7	62	11	0.18
8552	Dull Pos.	3.4	21.0	57	10	0.18
8554	Dull Pos.	26	21.3	51	10	0.20
8556	Dull Pos.	12	21.9	48	13	0.27
8568	Dull Pos.	0.05	19.6	68	13	0.19
8571	Dull Pos.	10	19.7	55	44	0.80
8573	Dull Pos.	1.2	18.2	69	13	0.19
8588	Dull Pos.	0.43	19.4	56	15	0.27

This well cored with lubesal and crude oil drilling fluid.

Analysts:

R. R. Reese
H. I. Shaffer
L. R. Mallory
R. G. Dunlap

IBM

TABLE II

WELL FREQ 1-4 ALISO CANYON
FORMATION FACTOR DETERMINATIONS

<u>Depth</u>	<u>Permeability</u>	<u>Porosity</u>	<u>"F" Factor</u>
8310	0.05	12.9	179
8322	71	23.9	9.6
8326	11	21.5	11.8
8332	0.05	16.4	192
8336	26	17.5	21.3
8340	2.4	16.9	22.5
8344	0.32	19.4	40.0
8347	1.2	19.6	21.0
8349	606	24.0	14.2
8356	12	22.3	16.0
8360	1020	20.4	12.6
8362	832	19.8	14.8
8364	1459	21.2	14.4
8371	935	24.7	21.7
8373	1210	24.1	17.1
8375	-	24.4	20.6
8377	-	23.2	49.6
8379	410	23.9	29.1
8382	386	26.8	30.7
8389	1370	21.2	15.3
8393	53	22.3	20.5
8397	0.05	18.1	138
8403	0.05	13.3	120
8430	-	16.2	27.1
8434	6.9	15.3	198
8440	21	19.1	79.5
8449	144	22.0	30.3
8451	67	21.7	78.3
8454	81	25.0	50.7
8473	-	17.6	40.5
8479	22	20.9	178
8485	13	23.2	56.7
8490	32	17.2	26.9
8497	19	18.5	56.4
8499	4.3	18.1	63.5

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<u>Depth</u>	<u>Permeability</u>	<u>Porosity</u>	<u>"F" Factor</u>
8509	0.05	17.4	128
8513	0.05	16.5	123
8519	0.05	15.0	29.5
8521	2.3	15.6	26.3
8525	0.05	16.9	16.8
8527	0.05	16.6	20.6
8532	1.5	15.5	31.8
8537	28	19.6	14.4
8546	0.05	15.7	46.6
8549	6.0	18.8	24.6
8554	26	21.3	34.9
8568	0.05	19.6	34.2
8573	1.2	18.2	25.1

Analysts:

R. R. Reese
H. I. Shaffer
L. R. Mallory
R. G. Dunlap

WELL LOG-PRO-25

Standard Oil Company of California COMPANY

DISTRICT

LOG OF WELL No. Frew 1-#4

DESCRIPTION OF PROPERTY

LOCATION OF WELL Sec. 29-3N-16W

ELEVATION ABOVE SEA LEVEL 2417.95' DF FEET

ROTARY TOOLS FEET TO FEET

COMMENCED RIGGING UP

CABLE TOOLS FEET TO FEET

COMMENCED DRILLING

WELL COMPLETED

FINISHED DRILLING

COMMENCED PRODUCING

DEPTH FROM	TO	FEET	FORMATION
Conventional Cores			
8300	8320	22	Flat gray siltstone, massive to poorly bedded, finely micaceous with occasional shell fragments
8320	8340	24	10 Dark brown OIL sand, very fine grained, very silty good PETROLEUM ODOR
		14	Flat gray siltstone, lithology as above
Wireline cores			
8340	8345	4	Flat gray to light brown OIL stained siltstone, lithology as above
8345	8355	7	3 Medium brown OIL sand, medium to coarse grained friable
		4	Medium gray siltstone, lithology as above
8355	8360	1	Flat gray siltstone and sandstone shell
8360	8365	5	Dark brown OIL sand, medium to coarse grained, friable, fairly well sorted, good PETROLEUM ODOR
8370	8388	18	Dark brown OIL sand, medium to coarse grained, firm, good PETROLEUM ODOR
8388	8406	6	Medium brown OIL STAINED sand, lithology as above with gray streaks
		12	Medium gray sandy siltstone, firm, massive
8408	8428	20	Medium gray sandy siltstone, lithology as above with Mega fossils with light streak of gray sand badly mud cut in top 3'. Dip 22° ±
8428	8448	18	9 Gray slightly OIL STAINED sand, medium to coarse grained
		9	Medium gray sand siltstone, lithology as above
8448	8468	9	Medium gray sandy siltstone, lithology as above, OIL STAINED
8468	8488	20	Medium gray sandy siltstone, lithology as above
8488	8508	20	Medium gray sandy siltstone, lithology as above, badly chewed up in coring
8508	8528	20	Medium gray sandy siltstone, lithology as above
8528	8548	20	Medium gray sandy siltstone, lithology as above
8548	8568	12	Medium gray sandy OIL STAINED siltstone as above
8568	8588	11	Medium gray siltstone, slightly fractured and bit chewed, but with drilling mud
8588	8604	13	5 Light brown OIL STAINED fine silty massive tough sandstone with sparsely distributed pebbles of dark gray quartz, dark green coarse sandstone with varicolored grains and dark gray tough shale
		2	Dark gray tough shale with numerous gray silt laminae. Dip 42°, Eocene
			Dark gray very tough shale with gray siltstone laminae
			dark gray tough sandy shale with numerous dark green bedded grains and occasional pebbles greenish gray

IBM 6

MEMORANDUM GO-144

TO: MR. _____

19

FROM: MR. _____

SUBJECT: _____

OUR FILE: _____

YOUR FILE: _____

- 10) Std - Frew 4 (29 3N, 16W) Sample from 2060' which contains
 Santa Susana fossils (reportedly up at least as high as
 1860'). 2185'D contains # glauconite Top of Frew
 placed at 2350'. 2570'D contains Vc v. colored gr's
 & 1/2 within Frew zone Monterey
 Tertiary (Frew zone) / Cretaceous contact placed at
 2780'± / ^{1st} Cretaceous in ditch at 2850' (reported)
 2870'D contains c blk & bronze micas, & Mang 930 in
 SWC 4435'

Standard Oil Company-Frew 1-No. 4
Sec. 29, T. 3 N., R. 16 W.
Aliso Canyon

Side-Wall Cores - Sample Description

<u>Depth</u>	<u>Recovery</u>	<u>Description</u>
4,435	2"±	Fragments of medium gray silty shale with occasional thin streaks of very fine light-gray sand. Scarce forams
4,480	1"±	Small pieces of silty shale, similar to above. Rather common fine bronze mica
4,720	3"±	Medium-grained to very fine gray sand to silt. Very common bronze micas. Whole shot with mud
4,730	4"±	Broken fragments of gray silty shale as above
5,925	3"	Gray to slightly brownish-gray silty shale, little darker color than above
5,955	5"	Massive silty dark-gray to brownish-gray shale, streaks common of mollusk fragments, including one piece with pearly luster. Rare forams
6,070	6"	Massive gray silty shale, somewhat mottled
6,410	1"	Olive-gray massive silty shale, scarce mollusk fragments and forams

JWR:AD

J. W. RUTH



Los Angeles, California
January 12, 1948

IBM

50.6 - Frew 1-4

29-3N-16W

Info Cretaceous from Paleocene (Monting) around 2850'±

- possibility that 5955' SWC Paleocene rather than Cretaceous
 - 6100' to 6220' flowy & boulders? (possible fault gouge etc)
- apparent change in sed's at 6240' & SWC at 6410' is within lower Pico. Unexamined 6440-7820'

IBM

12/4 1947

TO

FROM

SUBJECT: 50 Co

FILE: Sample Description

Frow 1-4

Sec 29 T 3N R 16W

Alio Canyon

(SIDEWALL CORES)

- 4435 ± 2" Rec Frags med gy silty shale w/ occ thin shls very fine light gy sand - S. Forams.
- 4480 ± 1" Rec Small pebb silty shale - similar to above - RC fine bronze mica.
- 4720 ± 3" Rec Med grained to very fine gy sd to silt - w/ bronze mica - cobble silt w/ mud.
- 4730 ^{Kc} ± 4" Rec Broken frags gy silty shale - as above.
- 5925 ^{Ta} 3" Rec Gy to slightly brownish gy silty sh - little darker color than above.
- 5955 5" Rec Mass., silty dk gy to brn-gy shale shls @ Mollusc frags incl one pec w/ pearly luster R. forams. incl Rob. sp. RL, Nod. of 211, Nod. of 255. S. Ech. spines - part lge, thick type w/ fine striae One third of sample (one end) fragmentary & mixed w/ mud - this soaked separately - = well cake?
- 6070 6" Rec Massive gy silty sh - somewhat mottled -
^{Ta}/_{TP} Fault (1/3 of core = well cake? - soaked separately)
- 6410 1" Rec Olive gy mass. silty shale S. Mollusc frags & forams (indet.)

IBM

TO _____ 194

FROM _____

SUBJECT: SO Co FILE: _____

Fresno #1-4

Sampled

- 8499-2508 Lt. br. oil stained massive fine silty tough ss.
 (gy. - - - - - " " " " very hd. ss. &
 numerous $\frac{1}{4}$ " shells preserved \bigcirc of variety
 part shows vertical fracture \bigcirc
 planes without perceptible movement
- 8508-28 Lt. br. oil stained massive fine silty tough ss.
 ditto w/ incomplete oil stain
 part w/ numerous $\frac{1}{4}$ " shells
 2 frags. P. anderseni?
- 8528-48 Med. gray massive fine silty tough to hard ss.
 " part w/ Lt. br.
 oil stain. occ. frags. indet. mollusks
 " sh. scales w/ fine ornamentation
- 8548-68 ditto w/ occ. pockets see sd.
 part very hd. cemented & calcite vein.
- 8568-88 Lt. br oil stained fine silty mass. friable ss.
 " " " " tough ss. - incompletely
 stained w/ oil some vertical fract. without percept-
 ible movement. occ. indet. mollusks frags.
- 8588-8604 top 7' ⁽¹⁾ Lt. brown fine silty massive tough ss. streaked
 w/ $\frac{1}{4}$ " \bigcirc pebbles dk gy. qtz., dk. green ss w/
 varicolored grains, and principally dk gy. tough **LBM**
 occasional frags. P. anderseni?, ostraes?
 (2) Dk gy. tough sh. w/ thin gy. silt laminae. Dip \pm 42°

TO _____ 194

FROM _____

SUBJECT: Frew #1-4

FILE:

8588-8604 bot. 6' Dk gy. very tough shale w/
numerous gy. siltstone laminae -
part much deformed

Dk gy. very tough sdy. sh. w/ very sh.
stks. shwg. numerous reddish brown,
pink, and green grains. x = 1/2"
pebble gtz. - epidote rock.

8588-8604 Detail samples

8588-93 Lt. br oil stained massive fine ss. - friable w/
difficulty occasional 1/2" dk gy. quartz
pebbles " minute frags. pelecypod shell.

8593-95 (1) Ditto + (2) dk. lead gy. tough silty sh. w/ numerous
irregular distorted stks. and laminae gy. mica-
ceous siltstone w/ H. brown fine mica.

top Eocene at 8594'

8595-98 Ditto (2) above part shwg. comparatively
undistorted laminae dipping = 30°.

8598-99.5 ditto + lt. gy. hd. biotitic fine hard ss.

8599.5-8601 (1) dk gy. tough silty sh. w/ numerous distorted stks.
and lam. gy. siltstone

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(2) dk gy tough argill. ss. w/ numerous yellowish-brown
weathered quartz grains; minor green, and pink, gtz. grains
and pebbles up to = 3/4 dia. varicolored quartz
chloritic gtz.

8601-04 ditto (2) above + 2 3" cobble gray quartz in argill. ss. matrix
part matrix w/ maroon and green stks.

TO _____ 194

FROM _____

SUBJECT: Frew #1-4 OUR FILE

S.O. Co

YOUR FILE

29 3d 16th

Aliso Canyon

8250-8260 Rec 6' Dip 11°
 6' Med Gy Siltstone - Hard, finely
 micaceous w/ R small pebbles

8260-8265 Rec 6' over 1'
 6' Med Gy Siltstone with as above

8265-8270 Rec 6' over 1'
 6' Med Gy Siltstone - with as above

8270-8280 Rec 10'
 10' Med Gy Siltstone - as above

8280-8290 Rec 10'
 10' Med Gy Siltstone - with as above

8290-8300 Rec 10'
 10' Med Gy Siltstone - as above

TO _____

Feb 27 - 1948

FROM _____

OUR FILE Frew 1-4

SUBJECT: Sample desc

YOUR FILE SO Co

- 8250-60 Med br gy massive hard mic silty sh, occas
thin irreg lt gy silty streaks
- 8260-65 ditto + more mottling probably due to slight
oil staining.
- 8265-70 Med br gy massive hard med silty sh, occas
dk vertical fracture planes
- 8270-80 ditto + occas pelecoped frags & slight oil stain
- 8280-90 Med br gy, massive hard mic silty sh, half
of sample oil stained, fair cut.
- 8290-8300 As above - mottled and completely stained

Well FRLW 1-4
 Company STANDARD
 Sec 29 T. 3-N R. 16-W
 District Aliso Canyon

Elevation
 Date Spudded
 Date Finished
 Date of Report

Casing	log	Oil Zones	Depth FOOT CORE	Faunal Zones	Remarks
			1		
			2		
			3		
			4		
			5		
			6		
			7		
			8		
			9		
			10		
			11		
			12		
			13		
			14		
			15		
			16		
			17		
			18		
			19		
			20		
			21	R. Te. forams - <i>Ammonia</i> <i>Chicoides</i> <i>Molluscaria</i> <i>Urgin. olivacea</i> etc. - <i>Calococcone</i>	Sandy w/ gy shale - Calococcone Wax-colored grains -
		22			
		23			
		24			
		25			
			26		
			27		
			28	28' - ^{TC} _{HC} ± 1050 (By Est. Log)	
			29		
			30		
			31		
			32		
			33	Scattered Te. forams only	Very sandy - loss gy sh sh gray with H. BK & <i>Baculites</i>
			34		
			35		
			36		
			37		
			38		
			39		
			40		

undiff.



[Faint handwritten notes on the left side of the scale]

[Faint handwritten notes on the right side of the scale]

Dist
2' Glycerin in Brn subst

7928 - Brk limestone
7940 - DK Brk Nodular ss

Pin 3 7500 - Eled. Lm
evidently placed at least 20'
too low.

Base of sea coral - no samples

8300' within *Valvulineria californica* (Lur'sian)

Poor $\pm 20'$
 $\pm 22'$

8554' Miocene (Lur'sian) - Eocene contact -
unconformity

$\pm 42'$

DIVISION OF OIL AND GAS

Report on Test of Water Shut-off
(FORMATION TESTER)No. T 1-47570

Los Angeles 15, Calif. December 30, 1947

Mr. W. C. Johnson
Los Angeles 54, Calif.
Agent for STANDARD OIL COMPANY OF CALIFORNIA

DEAR SIR:

Your well No. "Fraw 1" 4, Sec. 29, T. 3 N., R. 16 W., S. P. R. & M.
Aliso Canyon Field, in Los Angeles County, was tested for water shut-off
on December 24, 1947. Mr. J. L. White, Inspector, designated by the supervisor,
was present as prescribed in Sec. 3222 and 3223, Ch. 93, Stat. 1939; there were also present
G. F. Stanford and A. L. Plackopp, Drilling Foremen

Shut-off data: 7 in. 23, 26 lb. casing was cemented at 8280 ft. on December 19, 1947
in 11" hole with 300 sacks of cement of which 9 sacks was left in casing.
Casing record of well: 20" cem. 45'; 13-3/8" cem. 770'; 7" cem. 8280'; 4, 1/2" test holes
8270', U.S.O.

Reported total depth 8300 ft. Bridged with cement from 8280 ft. to 8275 ft. Cleaned out to 8275 ft. for this test.
A pressure of xxx lb. was applied to the inside of casing for xxx min. without loss after cleaning out to xxx ft.
A Johnston gun and tester was run into the hole on 3-1/2 in. drill pipe, with 930 ft. of water cushion,
and packer set at 8229 ft. with tailpiece to 8251 ft. Tester valve, with 3/8" bean, was opened at 9:36 a.m.
and remained open for 1 hr. and 2 min. During this interval there was a light blow for
2 minutes, no blow for 22 minutes, a light blow for 4 minutes and no blow thereafter.

THE INSPECTOR ARRIVED AT THE WELL AT 2:10 P.M. AND MR. STANFORD REPORTED THE FOLLOWING:

1. A 12-1/4" rotary hole was drilled from 770' to 4700' and an 11" rotary hole from 4700' to 8300'.
2. The 7" casing was shot-perforated with 4, 1/2" holes at 8270', using a Johnston gun and tester, and the test was made as noted above.

THE INSPECTOR NOTED THE FOLLOWING:

1. When the drill pipe was removed, 135' (net) of slightly gassy drilling fluid was found in the drill pipe above the tester, equivalent to 1.0 bbl.
2. The fluid sample taken from the bottom of the drill pipe tasted fresh.
3. The recording pressure bomb chart showed that the tester valve was open throughout the test.

The test was completed at 3:00 p.m.

THE WATER SHUT-OFF ABOVE THE PERFORATIONS AT 8270' IS APPROVED.

cc - J. E. Toussaint
M. W. Morris

JLW:ES

copy to W.D.S.
5/13/48 ORN

R. D. BUSH, State Oil and Gas Supervisor

By E. H. Murrain, Deputy

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Special Report on Operations Witnessed

No. T 1-47376

Los Angeles 15, Calif. November 6, 1947

Mr. W. C. Johnson
Los Angeles 54, Calif.
Agent for STANDARD OIL COMPANY OF CALIFORNIA

121

DEAR SIR:

Operations at your well No. "Frew 1" 4 Sec. 29, T. 3 N., R. 16 W., S. B. B. & M.,
Aliso Canyon Field, in Los Angeles County, were witnessed by
J. L. White, Inspector, representative of the supervisor,
on November 3, 1947. There was also present J. P. French, Driller;
C. R. Coan, Derrickman.

Casing Record	20" cem. 45'; 13-3/8" cem. 770'; T. D. 4683'.	Junk	None

The operations were performed for the purpose of inspecting blowout prevention equipment and installation.

The inspector arrived at the well at 3:00 p.m. and Mr. French reported:

1. A 12-1/4" rotary hole was drilled from 45' to 770' (opened to 17-1/4").
2. On October 10, 1947, 13-3/8", fifty-four lb. casing was cemented at 770' with 600 sacks of cement.
3. A 12-1/4" rotary hole was drilled from 770' to 4683'.

THE INSPECTOR NOTED THAT THE WELL WAS EQUIPPED WITH THE FOLLOWING BLOWOUT PREVENTION EQUIPMENT:

1. A Shaffer double cellar control gate for closing in the well with the drill pipe out of the hole and for closing around the 4-1/2" drill pipe.
2. A Hydril blowout preventer for closing in the well with the drill pipe out of the hole.
3. The controls for the above equipment were located outside the derrick.
4. A 2" mud fill-up line with a 2" high pressure stopcock into the 13-3/8" casing below the above equipment.
5. A high pressure stopcock on the kelly.
6. An 8" shut-off gate on the mud discharge line.

The inspection was completed at 3:20 p.m.

THE BLOWOUT PREVENTION EQUIPMENT AND INSTALLATION ARE APPROVED.

JLW:OH

R/ma

cc- J. E. T oussaint
M. W. Morris
United States Geological Survey

R. D. BUSH
State Oil and Gas Supervisor

By *E. A. Mussler* Deputy

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Report on Proposed Operations

No. P 1-43896

Los Angeles 15, Calif. September 23, 1947

Mr. W. C. Johnson
Los Angeles 5th, Calif.
Agent for STANDARD OIL COMPANY OF CALIFORNIA

DEAR SIR:

Your proposal to drill Well No. "Frow 1" 4,
Section 29, T. 3 N., R. 16 W., S. E.B. & M., Aliso Canyon Field, Los Angeles County,
dated Sept. 17, 1947, received Sept. 22, 1947, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:

"The well is From San Fernando Rancho Pt #19 on the west boundary of Ex-Mission San Fernando Rancho 1368.6' southerly along the Rancho line thence 416.0' westerly at right angles. (Final)

Elevation of derrick floor above sea level 2417.95 feet. U998 (Final)

All depth measurements taken from top of derrick floor, which is _____ feet above ground.

We estimate that the first productive oil or gas sand should be encountered at a depth of about _____ feet."

PROPOSAL:

"We propose to use the following strings of casing, either cementing or landing them as herein indicated:

Size of Casing	Weight	Grade and Type	Depth	Landed or Cemented
20"	78.6	LV	45'	Cemented
13 3/8"	54.5	J-55	1000' $\frac{1}{2}$	"
7"	23 & 26	J-55 & H-80	8200' $\frac{1}{2}$	"
5"	18	J-55	8500' $\frac{1}{2}$	Landed, liner

Well is to be drilled with rotary tools. Note: Derrick may be removed and well serviced with a portable mast if necessary.

It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing."

DECISION:

THE PROPOSAL IS APPROVED PROVIDED THAT

1. Mud fluid consistent with good drilling practice shall be used and the column of mud fluid maintained at all times to the surface, particularly while pulling the drill pipe
2. Any hole to be sidetracked in any oil or gas zone shall be filled with cement, if possible.
3. THIS DIVISION SHALL BE NOTIFIED AS FOLLOWS
 - (a) To inspect the installed blowout prevention equipment before drilling below 1500'.
 - (b) To witness a test of the effectiveness of the 7" shut-off at about 8200'.

NOTE: The Supervisor, United States Geological Survey, requests that the operator be informed that notices to and approval of the United States Geological Survey is required before operations are commenced in all cases on this lease.

cc - J. E. Toussaint
M. W. Morris
United States Geological Survey

R. D. BUSH
State Oil and Gas Supervisor

AH:ES
Blanket bond. *B.W.*

By *E. H. Messer* Deputy

DIVISION OF OIL & GAS
RECEIVED
SEP 22 1947
LOS ANGELES, CALIFORNIA

037-00667
F-4

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Notice of Intention to Drill New Well

This notice must be given and surety bond filed before drilling begins

Los Angeles Calif. September 17 1947

DIVISION OF OIL AND GAS

Los Angeles Calif.

U.S.L. Lease

In compliance with Section 3203, Chapter 93, Statutes of 1939, notice is hereby given that it is our intention to commence the work of drilling well No. Frew 1" #4, Sec. 29, T. 3N, S. 16W, S.B. B. & M., Aliso Canyon Field, Los Angeles County.

From San Fernando Rancho Pt #19 on the west boundary of Ex-Mission San Fernando Rancho ~~1368.6'~~ 1368.6' southerly along the Rancho thence 416.0' westerly at right angles. (Final) line

The ~~derrick~~ derrick floor (Give location in distance from section corners or other corners of legal subdivision) Elevation of ~~ground~~ 2417.95 feet. USGS (Final)

All depth measurements taken from top of derrick floor, which is --- feet above ground.

We estimate that the first productive oil or gas sand should be encountered at a depth of about --- feet.

We propose to use the following strings of casing, either cementing or landing them as herein indicated:

Size of Casing, Inches	Weight, Lb. Per Foot	Grade and Type	Depth	Landed or Cemented
20"	78.6	LW	45'	Cemented
13 3/8"	54.5	J-55	1000' ±	"
7"	23 & 26	J-55 & N-80	8200' ±	"
5"	18	J-55	8500' ±	Landed, liner

Note: Derrick may be removed and well serviced with a portable mast if necessary.

Well is to be drilled with ~~rotary~~ rotary tools.

It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing.

Address 605 W. Olympic Blvd.
Los Angeles 20, California
Telephone number MIchigan 2711

18A SLW
SLW
Standard Oil Company of California
(Name of Operator)

By J.H. Hooper J.H.
Mgr., Prod. Dept., So. District

cc-DOG
JET
JET
MO