

STATE OF CALIFORNIA  
DEPARTMENT OF CONSERVATION  
DIVISION OF OIL AND GAS

REPORT ON PROPOSED CHANGE OF WELL DESIGNATION

R.D. Phillips, Agent  
Southern Calif. Gas Company  
810 S. Flower St.  
Los Angeles, CA. 90017

Ventura, California  
February 23, 1990

Your request, dated February 13, 1990, proposing to change the designation of well in Sec. 29, T. 3N, R. 16W, SB B.&M., Aliso Canyon field Los Angeles County, District No. 2, has been received.

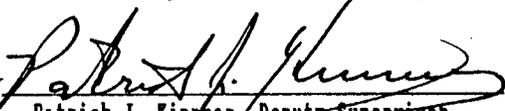
The proposed change in designation, in accordance with Section 3203, Public Resources Code, is authorized as follows:

From:  
IW 70 (037-21375)

To:  
"Standard Sesnon" 4A (037-21375)

bb

M.G. MEFFERD, State Oil and Gas Supervisor

By   
Patrick J. Kinneary, Deputy Supervisor

OPERATOR \_\_\_\_\_  
 LSE & NO LW 710  
 MAP 7512

	(1)	(2)	(3)	( )	( )	( )
INTENTION	DRILL	SUPP (1) REDRILL	REWORK GPS STAKE	ALTER COP.		
NOTICE DATED	1-10-74	12-10-74	5-21-76	12-14-78		
P-REPORT NUMBER	274-40	275-5	276-45	277-338		
CHECKED BY/DATE				1-4-00 SM		
MAP LETTER DATED	1-26-74 <small>LOC</small>	10-11-75	N/C	1-6-00		
SYMBOL						

	REC'D NEED		REC'D NEED		REC'D NEED		REC'D NEED		REC'D NEED		REC'D NEED	
NOTICE	1-21-74		1-2-75		6-10-76		12-14-78					
HISTORY			4-22-75		9-10-76		11-23-77					
SUMMARY			4-22-75									
IES/ELECTRIC LOG			4-21-75									
DIRECTIONAL SURV			7-5-78									
CORE/SWS DESCRIP			4-22-75									
<small>CNR</small>			2-3-75									
OTHER												
RECORDS COMPLETE	✓		✓		✓		✓					

ENGINEERING CHECK

CLERICAL CHECK

T-REPORTS \_\_\_\_\_  
 OPERATOR'S NAME \_\_\_\_\_  
 WELL DESIGNATION \_\_\_\_\_  
 LOC & ELEV \_\_\_\_\_  
 SIGNATURE \_\_\_\_\_  
 SURFACE INSPECTION \_\_\_\_\_  
 FINAL LETTER OK \_\_\_\_\_

POSTED TO 121 \_\_\_\_\_ 170 MAILED \_\_\_\_\_ FINAL LETTER  
 MAILED \_\_\_\_\_  
 RELEASED BOND \_\_\_\_\_

REMARKS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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

**History of Oil or Gas Well**

Operator Southern California Gas Co. Field or County Aliso Canyon  
Well I. W. #70, Sec. 29, T. 3N, R. 16W., SB. B. & M.  
A.P.I. No. 037-21375 Name P. S. Magruder, Jr. Title Agent  
Date February 22, 1979, 19.....  
(Person submitting report) (President, Secretary or Agent)

Signature PSM/O.S. Hill

P.O. Box 3249 Terminal Annex, Los Angeles, Ca. 90051 (213) 689-3561  
(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	
<u>1978</u>	Program: To pull tubing and 5" innerstring. Correct leak in 6 5/8" liner. Set packers in 6 5/8" and 8 5/8" casings and connect with blank tubing. Rerun safety system and return the well to gas storage operation.
12-15	0 Day. Killed well with 400 barrels of 80# brine-polymer completion fluid and began rigging up.
12-16	1st Day. Moved California Production Service Co. rig #D-6 onto wellsite and began rigging up.
12-17	Rig and crew idle.
12-18	2nd Day. Completed rig up. Circulated well. Installed back pressure valve in tubing hanger. Removed tree and installed BOPE.
12-19	3rd Day. Pressure tested blank rams, 2 7/8" pipe rams and choke manifold to 4,000 psi with water and nitrogen for 20 minutes - OK. Tested Hydril bag to 3,000 psi with water and nitrogen for 20 minutes. All tests were witnessed and approved by D.O.G. Released from Otis "Permatrieve" packer at 8,200'. Pulled up to 8,138'.
12-20	4th Day. Laid down 115 joints of 2 7/8" tubing and 121 joints of 2 3/8" tubing. Ran Otis retrieving tool on 2 7/8" drill pipe. Picked up 2,100' of 2 7/8" drill pipe.
12-21	5th Day. Continued picking up 2 7/8" drill pipe. Latched into Otis "Permatrieve" packer at 8,209'. Pulled packer loose - could not pull packer above 8,178'.
12-22	Rig and crew idle.
12-23	Rig and crew idle.

1978

## History of Well Report for I.W. #70, Aliso Canyon

- 12-24 Rig and crew idle.
- 12-25 Rig and crew idle.
- 12-26 6th Day. Retrieved Otis 5" "Permatrrieve" packer. Ran 7 5/8" bit and 8 5/8" casing scraper on 2 7/8" drill pipe to 3,894'. Circulated and pulled out of well. Ran 5" inside cutter on 2 7/8" drill pipe and cut 5" casing at 3,916'. Started out of well with cutter.
- 12-27 7th Day. Pulled 5" cutter out of well. Ran 5" spear and attached to top liner hanger. Retrieved 8 5/8" x 5" liner hanger and 14' of casing. Ran 5" overshot and attached to 5" liner. Ran Free-point and found 5" innerstring free above 7,490'.
- 12-28 8th Day. Released overshot from 5" innerstring and pulled out of well. Ran 5" inside casing cutter to 7,315' and cut casing. Ran 5" overshot and attached 5" casing. Jarred innerstring loose (180,000#) and started out of well.
- 12-29 9th Day. Finished pulling out of well with overshot and recovered 5" innerstring from 3,916' to 7,315' (3,399'). Ran 5" spear in well and latched into 5" innerstring at 7,315'. Jarred and pulled 190,000# for one hour. Innerstring would not move. Released spear and started out of well.
- 12-30 10th Day. Finished pulling out of well with spear. Ran 5" cutter to 7,395' and cut 5" innerstring. Started in well with 5" spear.
- 12-31 Rig and crew idle.

1979

- 1-1 Rig and crew idle.
- 1-2 11th Day. Stood by with crew waiting for wind to subside.
- 1-3 12th Day. Attached 5" spear to innerstring. Pulled out of well. Recovered 80' of 5" casing from 7,315' to 7,395'. Ran 5" cutter to 7,555' and cut 5" innerstring. Started in well with 5" spear.
- 1-4 13th Day. Attached 5" spear to innerstring. Pulled innerstring from 7,395' to 7,555' out of well (Recovered 160'). Ran 6 5/8" casing scraper to 7,455' and circulated well. Ran 5" inside cutter to 7,875'. Cut 5" innerstring and started out of well.
- 1-5 14th Day. Finished pulling out of well with 5" cutter. Ran 5" spear to 7,555' and attached to 5" innerstring. Pulled out of well with innerstring from 7,555' to 7,875' (Recovered 320'). Started in well with 5" inside cutter

1979

## History of Well Report for I.W. #70, Aliso Canyon

- 1-6 15th Day. Cut 5" innerstring at 8,190'. Ran 5" spear and attached to innerstring at 7,875'. Pulled out of well recovering 5" innerstring from 7,875' to 8,217'. Ran 6 5/8" casing scraper to 8,217', circulated well, and started out of well.
- 1-7 Rig and crew idle.
- 1-8 16th Day. Finished pulling out of well with 6 5/8" scraper. Ran 6 5/8" retrievable plug and retrievable retainer in well. Set plug at 8,200' and retainer at 8,185'. Pressure tested plug to 1,500 psi - OK. Started out of 6 5/8" casing, pressure testing below retrievable retainer. Isolated hole between 7,488' and 7,518'; had pressure loss of 500 psi in 2 minutes. Pressure tested annulus to 1,500 psi with retainer at 7,488'. Pressure loss of 500 psi in 1 minute. Continued testing 6 5/8" annulus to isolate top hole.
- 1-9 17th Day. Continued testing 6 5/8" annulus. Isolated top hole between 4,291' and 4,296'. Released retainer and pulled out of well. Reset retrievable bridge plug at 7,618'. Spotted 3 sacks of sand on retrievable plug and pulled out of well. Made up 300' of 2 3/8" tubing tail on retrievable retainer and started in well.
- 1-10 18th Day. Checked sand fill above retrievable plug at 7,618'. Mixed and spotted 5 sacks of sand on plug at 7,618'. Conditioned mud.
- 1-11 19th Day. With tubing tail at 7,530', mixed spotted and balanced 25 sacks (29 cu.ft.) of class "G" cement with 0.75% "CFR-2" from 7,530' to 7,380'. Pulled tail to 7,200', backscuttled drill pipe; set retrievable retainer and displaced 2 cu.ft. of cement out casing at 1,500 psi in 2 hours. Shut well in for four additional hours. Released retainer and pulled out of well. Started in well with 6 5/8" casing scraper and 5 5/8" bit.
- 1-12 20th Day. Drilled out cement from 7,488' to 7,530'; cleaned out to 7,598'. Ran retrievable retainer to 4,800'. Pressure tested below retainer to 1,000psi (Held OK). Started out of well.
- 1-13 21st Day. Finished pulling out of well with retrievable retainer. Made up 180' of tubing tail on 6 5/8" retainer; ran tail to 4,394'. With retainer at 4,204', spotted, equalized, and balanced 25 sacks of class "G" cement with 0.75% "CFR-2" from 4,394' to 4,244'. Pulled tail up to 4,210', backscuttled tubing and set retainer. Displaced 23 cu.ft. at 1,500 psi with pressure dropping to 1,200 psi. Shut well in for four hours. Released retainer and pulled out. Ran 6 5/8" bit and scraper to 5,000'. Did not find any cement. Started out of well.
- 1-14 Rig and crew idle.

- 1-15 22nd Day. Pulled out of well with bit and scraper. Made up Johnston "Positrievie" squeeze tool and ran in well. Set squeeze tool at 4,324'. Tested casing with 1,500 psi for 15 minutes, OK. Pulled up to 4,268' and set squeeze tool. Pressured up to 1,500 psi. Pressure bled down to 800 psi and held. Pulled out of well and made up Johnston "Bobcat" bridge plug. Ran in well and set bridge plug at 4,400'. With pipe hung at 4,396', pumped 5 sacks of sand on top of bridge plug. Tagged sand at 4,390' and pulled up to 2,000'.
- 1-16 23rd Day. Pulled out of well. Ran 8 5/8" squeeze tool with 381' of 2 3/8" tubing tail. With 2 3/8" tubing hung at 4,296', pumped 25 cu.ft. of water ahead of 50 sacks of class "G" cement with 0.75% "CFR-2" with 5 cu.ft. water behind. Displaced with 95 cu.ft. of mud. Pulled up to 3,816'. Backscuttled out. Set squeeze tool at 3,435'. Squeezed 3 cu.ft. out holes at 1,500 psi. Pulled out of well. Made up 5 5/8" bit and 6 5/8" casing scraper. Ran in well and drilled out cement from 4,046' to 4,325'. Cleaned out to 4,392'. Pulled up to top of 6 5/8" liner.
- 1-17 24th Day. Tested from 4,400' to surface with 1,000 psi for 20 minutes, OK. Pulled out of well with bit and scraper. Made up Johnston retrieving tool and ran in well. Circulated sand out and retrieved bridge plug from 4,400'. Ran in well and cleaned out sand from 7,593' to 7,618'. Retrieved bridge plug from 7,618'. Made up 3 7/8" bit and casing scraper. Ran in well to 2,362'.
- 1-18 25th Day. Ran in well with 3 7/8" bit and 4 1/2" casing scraper. Cleaned out fill from 8,522' to 8,672'. Changed over from 74# to 68# polymer completion fluid. Pulled out of well with bit and scraper (lost two cones in well). Made up Servco 3 7/8" mill on 2 3/8" tubing. Ran in well milling on junk. Pulled up to 7,983'.
- 1-19 26th Day. Ran in well. Milled on junk from 8,672' to 8,676'. Pulled out of well and made up Midway washover junk shoe with wire fingers inside. Ran in well. Washed over junk from 8,676' to 8,680'. Pulled out of well and recovered no junk. Ran in well to 2,000' with 3 7/8" mill.
- 1-20 27th Day. Pulled out of well. Made up Servco 3 3/4" junk mill and ran in well. Milled on junk from 8,680' to 8,687'. Pulled out of well. Made up Servco 3 3/4" "Econo-mill" and ran in well.
- 1-21 Rig and crew idle.
- 1-22 28th Day. Cleaned out with 3 3/4" O.D. Servco "Econo-mill" from 8,687' to 8,698'. Mill stopped. Pulled out of well, ran new 3 3/4" O.D. "Econo-mill" and cleaned out from 8,698' to 8,702'.
- 1-23 29th Day. Cleaned out well with Servco "Econo-mill" from 8,702' to 8,704'. Pulled out of well and ran 3 3/4" O.D. Servco junk mill. Measured in well. Corrected clean out depth to 8,764'. Started out of well.

- 1-24 30th Day. Ran 555' of 2 3/8" tubing tail on 2 7/8" drill pipe to 8,733'. Mixed spotted and balanced 5 sacks of sand in well. Filled from 8,764' to 8,748'. Mixed, spotted and balanced 10 additional sacks of sand in well, waited 2 hours and cleaned excess fill out to 8,712'.
- 1-25 31st Day. Tagged fill at 8,677'. Backscuttled out to 8,710' and pulled out of well. Ran 4 1/2" casing scraper to 8,710'. Pulled out of well. Made up 4 1/2" wash tools and started in well.
- 1-26 32nd Day. Washed liner from 8,710' to 8,230'. Pulled out of well with wash tool. Started in well with sawtooth collar on 600' of 2 3/8" tubing tail.
- 1-27 33rd Day. Cleaned out fill from 8,702' to 8,710'. Circulated well, then backscuttled well. Pulled out of well and installed 4 1/2" wash tools on 600' of 2 3/8" tubing. Started in well.
- 1-28 Rig and crew idle.
- 1-29 34th Day. Spotted 15% acid (10% HCL and 5% HF) to Atlas wash tools; washed from 8,710' to 8,620', acid back-check valve failed. Backscuttled acid out of well and started out of well. Drill pipe parted 1,024' from surface. Ran 7 5/8" x 3 7/8" Bowen overshot and 3 1/2" bumper sub to 1,024'; attached overshot to fish and pulled out of well. Recovered all fish (7,116' 2 7/8" drill pipe and 570' of 2 3/8" tubing with Atlas wash tool).
- 1-30 35th Day. Laid down and loaded out 2 7/8" drill pipe. Unloaded 2 7/8" tubing and started in well.
- 1-31 36th Day. Finished picking up 2 7/8" tubing. Installed 555' of 2 3/8" tubing tail and 4 1/2" wash tool on 2 7/8" tubing and started in well.
- 2-1 37th Day. Using 10% HCL and 5% HF acid with inhibitor, washed perforations from 8,710' to 8,230' (30 gallons per foot). Circulated spent acid out of well, and started out of well with wash tools.
- 2-2 38th Day. Pulled 4 1/2" washing tools out of well. Ran 6 5/8" Retrievable retainer to 8,212'. Pressure tested annulus at 1,000 psi for 30 minutes. Pulled 6 5/8" Retrievable retainer out of well. Ran 6 5/8" Otis "Permatrieve" packer and set at 8,194'. Started out of well with line when engine on truck failed. Shut well in with 8,000' of line in well by packing off lubricator and closing Hydril bag.
- 2-3 39th Day. Retrieved McCullough wireline from well leaving wireline setting tool and collar locator.
- 2-4 Rig and crew idle.
- 2-5 40th Day. Ran 4 11/16" O.D. x 2 1/2" overshot on 2 7/8" bumper sub to 8,194', attached to wireline setting tool and retrieved from well. Ran Otis seal assembly to 6 5/8" "Permatrieve" packer at 8,192'. Pressure tested to 500 psi, OK. Spotted inhibited mud from 8,190' to 3,800'. Pulled out of well laying down excess 2 7/8" tubing and 2 3/8" tubing tail.
- 2-6 41st Day. Finished pulling out of well. Set 8 5/8" Otis "Permatrieve"

1979

## History of Well Report for I.W. #70, Aliso Canyon

2-6

Continued

packer on electric line at 3,915'. Ran Otis latch-type seal to packer and pressure tested to 1,500 psi, Ok. Pulled out of well, changing collars.

2-7

42nd Day. Made up Otis Production tube and 3.25" O.D. x 16' seal assembly on 3 1/2" Hydril flush joint tubing and started in well pressure testing to 5,000 psi for 1 minute.

2-8

43rd Day. Finished picking up 3 1/2" flush joint tubing; made up Otis 4" x 4' latch-type seal assembly, 10' blast joint, 2.25" NO-GO nipple, 20' blast joint, and 2 7/8" Otis Annular flow safety system; ran assembly to their pack off seats; checked lower seal spacing when top packer latch was in place (6' of seals below packer, 8' of seals above packer). Installed doughnut and landed in tubing head with 10,800# setdown weight on top packer at 3,915'. Installed back pressure valve in doughnut. Removed BOPE and installed tree.

2-9

44th Day. Pressure tested tree and doughnut seals to 5,000 psi. Removed back pressure valve and retrieved Otis separation tool from safety mandrel. Displaced 68# polymer completion fluid from well with 63# lease water. Closed well in, blind flanged valves and released rig at 7:00 p.m.

DIVISION OF OIL AND GAS

Report on Operations

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

Santa Paula, Calif.  
Dec. 20, 1978

Your operations at well IW 70, API No. 037-21375, Sec. 29, T. 3N, R. 15W  
S.B., B. & M. Alicc Canyon Field, in Los Angeles County, were witnessed  
on 12/19/78 by Ed Hickey, representative of the supervisor, was  
present from 1600 to 1800. There were also present Lonnie Conell, SoCa Gas  
foreman

Present condition of well: No additions to the casing record since proposal dated 12/14/78.

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

DECISION:

**THE BLOWOUT PREVENTION EQUIPMENT AND INSTALLATION ARE APPROVED.**

b

M. G. MEFFERD  
State Oil and Gas Supervisor  
By [Signature]  
Deputy Supervisor  
John L. Hardoin

## REPORT ON PROPOSED OPERATIONS

Santa Paula, California

Mr. P. S. Magruder, Jr., Agent  
Southern Calif. Gas Co.  
P.O. Box 54220 Terminal Annex  
Los Angeles, CA 90054

Dec. 15, 1978

Your..... proposal to alter casing well TW 70  
(Name and number)  
....., A.P.I. No. Aliso Canyon, Section 29, T. 3N, R. 16W  
S.E. B. & M., Aliso Canyon field, Los Angeles County,  
dated 12-14-78, received 12-14-78, has been examined in conjunction  
with records filed in this office.

**THE PROPOSAL IS APPROVED PROVIDED THAT:**

1. Hole fluid of sufficient quality and quantity shall be maintained in the hole to control any subsurface condition, and a reserve supply shall be on hand for emergencies.
2. Blowout prevention equipment of at least DOG Class III 5M, 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 AVAILABLE AT THE WELL SITE DURING THE PROPOSED OPERATIONS.**

Blanket Bond  
MD:b

M. G. MEFFERD

State Oil and Gas Supervisor

By

[Signature]  
Deputy Supervisor

John L. Hardoin

DIVISION OF OIL AND GAS  
RECEIVED  
DEC 14 1978

**DIVISION OF OIL AND GAS**  
**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. SANTA BARBARA, CALIFORNIA

FOR DIVISION USE ONLY		
BOND		
	OGD114	OGD121
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. I.W. #70, API No. 037-21375, Sec. 28, 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. 8740'
- Complete casing record, including plugs and perforations:
  - 13 3/8" cemented 928'
  - 8 5/8" cemented 4065'
  - 4321' 6 5/8" cemented 8248', WSO 8220', squeezed with 100 sacks, WSO splice 3927'
  - 520' 4 1/2" landed 8737' wire-wrapped 18-mesh, gravel flow packed
  - 4322' 5" landed 8217' with lead seals top and bottom
- 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:

- Kill well. Move in and rig up. Install B.O.P.E. and pressure test.
- Pull tubing. Cut and recover 5" from 3910'. Recover balance of 5" liner string. Locate leak in 6 5/8" liner and seal with cement.
- Run packers and set in 6 5/8" and 8 5/8" casing.
- Run tubing with blank tubing between packers and with 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. by GCA.  
(Name) P.S. Magruder, Jr. (Date) 12-14-78  
Type of Organization Corporation  
(Corporation, Partnership, Individual, etc.)

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

REPORT OF CORRECTION OR CANCELLATION

Santa Paula California

July 18, 1978

Mr. P. S. Magruder, Jr.  
Southern California Gas Co.  
P. O. Box 54790 Terminal Annex  
Los Angeles, CA 90051

In accordance with the corrected projected section lines on the new  
Division map No. 254

the following change pertaining to your well IW 70 (037-21375),  
Aliso Canyon field, Los Angeles County,

Sec. 28, T. 3N, R. 16W, S.B. B. & M., is being made in our records:

The corrected location is Section 29, T. 3N., R. 16W., S.B.B. & M.

The corrected elevation is

Report No. , dated , has been  
corrected as follows:

Your notice to (Drill, abandon, etc.) dated ,  
and our report No. P. , issued in answer thereto, are hereby cancelled  
inasmuch as the work will not be done. If you have a drilling bond on file covering  
this notice it will be returned. No request for such return is necessary.

Other:

MAP	MAP BOOK	CARDS	BOND	FORMS
				114 121

*Eloy Well file*  
*EDP*

State Oil and Gas Supervisor

By *[Signature]*  
John L. Hardoin, Deputy Supervisor

STATION NO.	MEASURED DEPTH	COURSE LENGTH	DRIFT ANGLE	VERTICAL COURSE	VERTICAL DEPTH	SECTION	COURSE DEVIATION	COORDINATE DIFFERENCES				RECTANGULAR COORDINATES						
								NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST			
38	4190		22°	-	3913	50		N 72 W				664	54			1157	41	
39	4315	125	22°	-	115	90	46	83	N 73 W	13	69	44	78	678	23		1202	19
40	4441	126	22°	-	116	83	47	20	N 71 W	15	32	44	67	693	60		1246	82
41	4598	157	21°	30'	146	07	42	54	N 72 W	17	78	54	72	711	38	OK	1301	54
42	4832	234	20°	30'	219	18	48	25	N 70 W	28	02	77	04	739	11		1378	55
43	4999	167	18°	45'	158	14	62	68	N 72 W	16	59	51	05	756	00		1429	60
44	5030	311	19°	30'	29	22	84	35	N 75 W	2	68	10	00	758	68		1439	60
45	5060	30	20°	00'	28	19	03	26	N 80 W	1	79	10	11	760	47		1449	71
46	5119	59	18°	30'	55	95	98	73	N 88 W		66	18	22	761	13		1468	43
47	5244	125	18°	45'	118	36	54	15	S 89 W			40	17	760	43		1508	60
48	5399	155	18°	45'	146	27	11	82	S 88 W			49	79	758	69		1558	39
49	5538	139	18°	30'	131	82	93	11	S 87 W			44	04	756	38		1602	43
50	5744	206	19°	30'	194	18	11	76	S 88 W			68	72	753	98		1671	15
51	5930	186	20°	00'	174	78	89	62	S 86 W			63	46	749	54		1734	61
52	6122	192	20°	30'	179	84	73	24	S 84 W			66	87	742	51		1801	48
53	6495	373	21°	45'	346	45	18	22	S 80 W			24	12	718	51		1937	60
54	6537	42	21°	45'	39	01	15	56	S 82 W			2	17	716	34		1953	00
55	6622	85	24°	15'	77	50	69	21	S 87 W			1	83	714	51		1987	39
56	6684	62	24°	30'	56	42	11	71	S 88 W			25	20	713	61		2013	52
57	6775	91	22°	30'	84	07	18	82	N 87 W	1	82	34	78	715	43		2048	30
58	6838	63	22°	30'	58	21	39	22	N 88 W			24	09	716	27		2072	39
59	6901	63	22°	30'	58	20	59	24	N 88 W			24	09	717	11		2096	48
60	6994	93	22°	00'	86	23	82	34	N 88 W	1	82	34	82	718	33		2131	70
61	7090	96	22°	30'	88	69	51	74	N 89 W			36	73	718	97		2168	03
62	7184	94	23°	30'	86	20	71	48	N 89 W			37	47	719	63		2205	50
63	7278	94	24°	30'	85	54	25	98	N 89 W			38	98	720	31		2244	48
64	7373	95	25°	15'	85	92	17	52	N 89 W			40	52	721	02		2285	00
65	7477	104	26°	15'	93	27	44	19	N 89 W			45	99	721	82		2330	99
66	7572	95	26°	30'	85	02	46	39	N 88 W	1	48	42	36	723	30		2373	35
67	7667	95	27°	00'	84	65	11	13	N 88 W	1	51	43	10	724	81		2416	45
68	7761	94	28°	00'	83	00	11	13	N 87 W	2	31	44	07	727	12		2460	52
69	7858	97	28°	30'	85	25	36	55	N 88 W	1	62	46	26	728	74		2506	78
70	7951	93	28°	30'	81	22	09	38	N 88 W	1	55	44	35	730	29		2551	13
71	8046	95	27°	15'	84	46	53	50	N 87 W	2	28	43	44	732	67		2594	53
	157							22										
73	8250	93	27°	00'	82	86	31	22	N 86 W	2	95	42	13	739	11		2686	93
74	8350	26	00'					03	N 89 W	1	30	78		740	17		2707	15
	8450	25	00'						N 86 W									
	8550	24	00'						N 86 W									
	8650	23	00'						N 86 W									
	8000	22	00'						N 86 W									

7842  
2903  
4939

NORTH SOUTH EAST WEST NORTH SOUTH EAST WEST

DIRECTIONAL SURVEY DATA

**U.S. DIRECTIONAL DRILLING SYSTEMS**

2852 Gardena Ave., Long Beach, Calif. 90806 Phone (213) 424-2254

COMPANY Pacific Lighting Service Co.

LOCATION ALISO CANYON SANTA PAULA, CALIFORNIA

DATE 11-14-74

CONTRACTOR Peter Bowden

OPERATOR

WELL 1W-70

ELEVATION 2880 GPD

STATION NO.	MEASURED DEPTH	COURSE LENGTH	DRIFT ANGLE	VERTICAL COURSE	VERTICAL DEPTH	SECTION	COURSE DEVIATION	DRIFT DIRECTION	COORDINATE DIFFERENCES				RECTANGULAR COORDINATES						
									NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST			
1	204	-	2	203	88		7	S 8 W	7	05		0	99	7	05	880	2635	99	
2	297	93	1	92	97		2	S 27 W	2	16		1	11	9	21			2	10
3	380	83	4	82	74		6	S 4 E	6	56	0	46		15	71			1	64
4	453	73	4	72	77		5	S 11 E	5	23	1	09		21	34			0	55
1	154	154	1	153	96		3	S 34 W	2	79		1	88	2	79			1	89
2	122	25	1	27	99		73	S 46 W		51				3	30			2	41
3	212	30	2	29	98		1	S 46 W		82				4	12			3	26
4	243	31	3	30	95		1	S 16 W		69				5	81			3	74
5	304	66	4	65	82		4	S 22 E		54	1	83		10	34			1	91
6	371	62	2	61	94		2	S 9 W		57				13	02			2	33
7	432	61	3	60	92		3	S 78 W		66				13	59			5	45
	462	30	3	29	96		1	S 63 W		71				14	39			6	85
9	492	30	3	29	94	2.00	1	S 84 W		19				14	58			8	67
10	551	62	4	61	81	6.27	4	N 44 W	3	50				11	08			12	05
11	615	61	7	60	48	12.41	7	N 33 W	6	68				4	40			16	39
12	646	31	8	30	64	16.77	4	N 50 W	3	03				1	37			20	00
13	729	83	9	81	86	29.83	13	N 55 W	7	86				6	49			31	28
14	902	173	13	168	22	37.66	40	N 52 W	24	86				31	35			63	04
15	1051	149	16	142	86	38.10	42	N 47 W	28	86				30	95			93	99
16	1323	272	16	260	46	46.75	78	N 53 W	47	18				62	60			156	59
17	1679	356	19	336	60	55.21	115	N 49 W	76	04				87	47			244	06
18	1869	190	20	178	26	65.97	65	N 50 W	112	27				50	38			294	41
19	2022	153	18	145	51	75.94	47	N 59 W	24	35				90	53			334	97
20	2138	116	20	109	65	81.27	40	N 58 W	21	53				34	45			369	42
21	2327	189	25	170	59	81.37	37	N 56 W	45	50				67	46			436	88
22	2433	106	28	93	59	75.49	76	N 55 W	28	54				40	76			477	64
23	2528	95	28	83	68	39.44	97	N 54 W	26	43				36	38			574	02
24	2621	93	27	82	49	87.42	94	N 53 W	25	84				34	29			578	31
25	2925	304	25	271	50	23.66	130	N 52 W	80	43				102	94			651	25
26	2995	70	25	63	18	37.79	30	N 52 W	18	55				23	75			675	00
27	3028	33	25	29	85	34.14	08	N 55 W	8	07				11	53			686	53
28	3060	32	25	28	88	68.13	78	N 58 W	7	30				11	68			698	21
29	3206	46	25	132	05	28.62	28	N 70 W	21	31				58	52			756	33
30	3268	62	26	55	56	98.27	91	N 72 W	8	62				76	55			783	29
31	3380	112	28	98	43	41.53	45	N 71 W	17	41				50	54			833	82
32	3468	88	28	77	34	75.41	99	N 71 W	13	67				39	71			873	53
33	3620	162	28	142	71	46.76	68	N 71 W	24	96				72	50			946	03
34	3733	103	26	92	17	63.45	96	N 72 W	14	21				43	71			989	74
35	3828	95	24	86	45	08.39	40	N 73 W	11	52				37	68			1027	42
36	3953	125	22	115	49	57.47	84	N 73 W	13	99				45	75			1073	17
37	4065	112	21	104	03	60.41	51	N 73 W	12	14				39	20			1112	87
38	4190	125	22	115	90	50.46	83	N 72 W	14	47				44	54			1157	41

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

30981-705 2-75 10M © CSP  
 DIVISION OF OIL AND GAS  
 RECEIVED  
 SEP 10 1976

**History of Oil or Gas Well**

SANTA PAULA, CALIFORNIA

OPERATOR SOUTHERN CALIFORNIA GAS COMPANY FIELD Aliso Canyon

Well No. I.W. #70, Sec. 28, T. 3N, R. 16W, S. B. B. & M.

Date August 30, 1976 Signed P. S. Magruder, Jr.

P. O. Box 3249, Terminal Annex Title Agent  
Los Angeles, California 90051 (Address) (Telephone Number) (President, Secretary or Agent)  
(213) 689-3561

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

8-13-76 Moved in Pool Rig #38. Rigged up. Circulated hole. Built up drilling fluid weight from 75# to 78#.

8-14-76 Circulated hole. Installed tubing hanger plug in Cameron tubing hanger. Removed Christmas tree. Installed 10 3/4" - 5000 psi - Class III B.O.P.E. (Shaffer double gate 2 7/8" and Shaffer bag). Rigged up H. & H. triplex pump and tested with water, as follows:

Blind rams	4300 psi for 20 minutes	- O.K.
Pipe rams - 2 7/8"	4150 psi " 20 "	- O.K.
Shaffer bag	4100 psi " 20 "	- O.K.

Tests witnessed and approved by D.O.G.

Rigged up Newsco and tested with nitrogen, as follows:

Blind rams	4000 psi for 20 minutes	- O.K.
Pipe rams - 2 7/8"	3900 psi " 20 "	- O.K.
Shaffer bag	4000 psi " 20 "	- O.K.

8-15-76 Rig and crew idle.

8-16-76 Conditioned mud to 78#, 42 viscosity, 6.4 water loss and unseated packer. Pulled out of hole. Ran in hole with 3 3/4" bit and casing scraper to 8095'.

8-17-76 Cleaned out to 8737'. Circulated hole clean. Pulled out of hole. Ran bridge plug to 3950' but could not set. Ran second plug and set at 3950'. Going in hole with 8 5/8" retainer to pressure test casing.

8-18-76 Finished going in hole to pressure test, as follows:

3000' to 3950'	2000 psi for 20 minutes
3000' to surface	2500 " " 20 "
2000' " "	3000 " " 20 "
1000' " "	3500 " " 20 "
250' " "	4000 " " 20 "

Ran in hole and recovered bridge plug at 3950'. Ran 4" bit and casing

8-18-76  
(cont'd)

scraper to 8217'. Circulated for two hours. Started out of hole.

8-19-76

Finished pulling out of hole. McCullough set Otis permatrieve packer at 8200'. Going in hole with production equipment. Changing collars and hydrotesting to 5000 psi for one minute. (34 doubles in hole).

8-20-76

Going in hole with tubing. Spaced out to land tubing.

8-21-76

Landed tubing with 10,000# on packer. Kelly bushing to hanger 15'. 116 joints 2 7/8" and 4 pup joints 3792.32'; 141 joints 2 3/8" 4358.38'; safety valve 9.33'; blast joint (20') 19.88'; "XN" No-Go nipple 1.12"; 10' blast joint 9.88'; J-Latch .58'; 4 production seals 4.38'; extension 2.12'; guide .48'. Picked up 15,000# over weight - O.K. Removed B.O.P.E. Installed Christmas tree and tested seals and tree to 5000 psi for 20 minutes - O.K. Installed Otis plug in No-Go nipples. Tested packer and seals at 2000 psi for 20 minutes - O.K. Changed to lease water. Released rig at 10:00 P.M.

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

**Report on Operations**

No. T 276-213

Mr. F. S. Magruder, Jr., Agent  
Southern California Gas Co.  
P.O. Box 54790 Terminal Annex  
Los Angeles, Calif. 90024

Santa Paula, Calif.  
Aug. 19, 1976

DEAR SIR:

Operations at well No. TW 70, API No. 037-21375, Sec. 28, T. 3N, R. 16W,  
S.B., B & M. Aliso Canyon Field, in Los Angeles County, were witnessed  
on 8/14/76. Mr. T.M. Callaway, representative of the supervisor was  
present from 1900 to 2100. There were also present C.E. Downy

Present condition of well: 13 3/8" cem. 928'; 8 5/8" cem. 4065'; 6 5/8" cem. 8248', c.p.  
8220'; 5" id. 3893-8217'; 4 1/2" id. 8217-8237', (all perfs.) T.D. 8240'.

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

DECISION:

**THE BLOWOUT PREVENTION EQUIPMENT AND INSTALLATION ARE APPROVED.**

b

HAROLD W. BERTHOLF  
XXXXXXXXXXXXXXXXXXXX  
State Oil and Gas Supervisor

By [Signature] Deputy

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

REPORT ON PROPOSED OPERATIONS No. P 276-195

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

Santa Paula, Calif.  
June 11, 1976

DEAR SIR:

(037-21375)

Your proposal to rework gas storage Well No. IV 70  
Section 28, T. 3N, R. 16W, S.B.B. & M., Aliso Canyon Field, Los Angeles County,  
dated 5/21/76, received 6/10/76, 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 this 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 rating, shall be installed and maintained in operating condition at all times.
3. THIS DIVISION SHALL BE NOTIFIED TO WITNESS A PRESSURE TEST OF 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

HAROLD W. BERTHOFF  
JOHN P. MATTHEWS, JR., State Oil and Gas Supervisor  
By *[Signature]* Chief, Deputy

JUN 10 1976

DIVISION OF OIL AND GAS  
Notice of Intention to Rework Well

SANTA PAULA, CALIFORNIA

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	
	T14	T21
<i>FB</i>	✓	✓

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. L.W. #70, API No. \_\_\_\_\_, Sec. 28 T3N, R. 16W, S. B. B. & M., Aliso Canyon Field, Los Angeles County.

The present condition of the well is as follows:

- Total depth. 8740'
- Complete casing record, including plugs and perforations:
  - 13 3/8" cemented 928'
  - 8 5/8" cemented 4065'
  - 4321' 6 5/8" cemented 8248', top 3927' - WSO 8220' and lap
  - 4325' 5" landed 8217', top 3893'
  - 520' 4 1/2" " 8737', top 8217', w.w. gravel packed

- Present producing zone name Sesnon Zone in which well is to be recompleted ---
- Present zone pressure 2600 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 rig, kill well, install B.O.P.E. and test.
- Pull tubing. Clean out to 8738'. Pressure test 8 5/8" casing.
- Perform any remedial work indicated.
- Run packer, safety valve and tubing.
- Recomplete as gas storage well.

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) 689-9001

SOUTHERN CALIFORNIA GAS COMPANY  
 (Name of Operator)  
 By J. S. Magruder 5-21-76  
 (Name) (Date)  
 Type of Organization Corporation  
 (Corporation, Partnership, Individual, etc.)

DIVISION OF OIL AND GAS

WELL SUMMARY REPORT

SUBMIT IN DUPLICATE

DIVISION OF OIL AND GAS  
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APR 22 1975

SANTA PAULA, CALIFORNIA

Operator PACIFIC LIGHTING SERVICE CO., Well No. TW-70  
Sec. 28, T. 3N, R. 16W, S.B. B. & M. Aliso Canyon Field Los Angeles County.

Location 7708.70' Westerly and 881.29' Southerly at right angle from  
(Give location from property or section corner, or street center lines)  
Station 84 Elevation of ground above sea level 2885.58 feet USGS

All depth measurements taken from top of Kelly Bushing which is 17 feet above ground.  
(Derrick Floor, Rotary Table or Kelly Bushing)

In compliance with Sec. 3215, of the Public Resources Code, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date April 10, 1975

Signed P. S. Magruder, Jr.  
Title P. S. Magruder, Jr., AGENT  
(President, Secretary or Agent)

E. A. Olson  
(Engineer or Geologist)

B. F. Jones  
(Superintendent)

Commenced drilling	Completed drilling	Total depth	Plugged depth	Junk	GEOLOGICAL MARKERS	DEPTH
<u>November 12, 1974</u>	<u>February 8, 1975</u>	<u>8740'</u>	<u>Not</u>	<u>None</u>	<u>Top Sesnon S-4</u>	<u>8428'</u>

Geologic age at total depth: Miocene

Commenced producing \_\_\_\_\_ Flowing/gas lift/pumping \_\_\_\_\_ Name of producing zone Sesnon  
(Date) (Cross out unnecessary words)

Initial production  
Production after 30 days

Clean Oil bbl. per day	Gravity Clean Oil	Per Cent Water including emulsion	Gas Mcf. per day	Tubing Pressure	Casing Pressure
	<u>GAS</u>	<u>STORAGE</u>	<u>WELL</u>		

CASING RECORD (Present Hole)

Size of Casing (A. P. I.)	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cementing if through perforations
<u>13 3/8"</u>	<u>928</u>	<u>Sfc.</u>	<u>54.5#</u>	<u>N</u>	<u>S</u>	<u>K-55</u>	<u>17 1/2"</u>	<u>500 cu. ft.</u>	
<u>8 5/8"</u>	<u>4065</u>	<u>Sfc.</u>	<u>36#</u>	<u>N</u>	<u>S</u>	<u>K&amp;N</u>	<u>11"</u>	<u>1140 cu. ft.</u>	
<u>6 5/8"</u>	<u>8248</u>	<u>3927</u>	<u>24# &amp; 28#</u>	<u>N</u>	<u>S</u>	<u>K</u>	<u>7 5/8"</u>	<u>493 cu. ft.</u>	
<u>4 1/2"</u>	<u>8737</u>	<u>8217</u>	<u>11.6#</u>	<u>N</u>	<u>S</u>	<u>K</u>	<u>5 5/8"</u>		<u>opened to 8" gravel packed liner</u>
<u>5"</u>	<u>8217</u>	<u>3892</u>	<u>18#</u>	<u>N</u>	<u>S</u>	<u>PERFORATED CASING</u>	<u>11 1/2"</u>		<u>inner liner</u>

(Size, top, bottom, perforated intervals, size and spacing of perforation and method.)

6 5/8" - four holes per foot at 8220', WSO squeezed.

4 1/2" perforated liner 8217'-8737'

Was the well directionally drilled? YES Electrical Log Depths 8740' (Attach Copy of Log)

RESOURCES AGENCY OF CALIFORNIA  
DEPARTMENT OF CONSERVATION

## DIVISION OF OIL AND GAS RECEIVED

## History of Oil or Gas Well

APR 22 1975

OPERATOR PACIFIC LIGHTING SERVICE CO., FIELD Aliso Viejo SANTA PAULA, CALIFORNIAWell No. IW-70, Sec. 28, T. 3N, R. 16W, S. E. B. & M.Date April 10, 1975

Signed

*P. S. Magruder, Jr.*P.O. Box 54790, Terminal Annex  
Los Angeles, California 90054

P. S. Magruder, Jr.

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

1974

11-12

Peter Bawden Drilling, Inc., contractor, using rig #10, spudded 17 1/2" hole at 4:30 A.M., 11-12-74, and drilled to 175'. All measurements taken from top of Kelly bushing which is 17' above ground.

11-13

Drilled and surveyed 11" hole to 45'. Hole drifted 2' from IW-59 cellar. Mud: 69#, 50 sec vis.

11-14

TO BRIDGE HOLE WITH CEMENT FOR RE-DRILL:

Ran 4 1/2" open end drill pipe to 408'. Pumped in 422 sacks of Class "C" cement treated with 80 sacks of sand and 12 sacks of calcium chloride mixed to 125#/cu. ft. slurry. Displaced with 9 cu. ft. of water. Good circulation. Cement in place at 2:40 A.M. Used Byron-Jackson equipment.

After standing cemented 8 hours, located top of soft cement at 134' and drilled out to 155'. Waited on cement two hours, then drilled out with 11" bit to 181'. Ran Hydro-Bore directional tool and kicked off plug and drilled 11" hole to 222'. Mud: 71#, 55 sec, 12.6 cc, 10% solids.

11-15

Hydro-Bore to 269'. Dyna-Drill #1, 11" hole to 660' where circulation was lost. Mud: 70#, 52 sec, 13.2 cc, 10% solids.

Hauled and mixed mud adding walnut shells, cottonseed, rubber and sawdust attempting to regain circulation. Dyns-Drill #1, 11" hole to 678'.

11-16

Ran 11" bit and reamed 269' to 678' and directionally drilled to 761' without circulation.

DIVISION OF OIL AND GAS  
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Page 2 - IW-70 History

APR 22 1975

1974

SANTA PAULA, CALIFORNIA

- 11-17 Directionally drilled 11" hole to 962' without circulation. Ran Grant Oil tool expanding hole opener and opened hole from 155' to 292'. Regained circulation at 185'. Reamed and closed out hole 285' to 370'. Lost circulation at 370'.
- 11-18 Opened 11" hole to 17 1/2" from 292' to 481' with Grant hole opener. Made clean out runs at 315' and 351'. Circulation O.K.  
Mud: 65#, 40 sec, 22.4 cc.
- 11-19 Continued opening hole to 585'. Made clean out run to 615'. Hole taking fluid.  
Mud: 68#, 55 sec.
- 11-20 Continued opening hole to 610'. Made clean out run to 650' and lost circulation. Opened hole to 643' with Grant hole opener and to 766' with 17 1/2" bit. No circulation.
- 11-21 Opened hole to 17 1/2" with bit to 962' without returns.  
TO CEMENT 13 3/8" SURFACE CASING:  
Ran 23 joints or 931.75' of 13 3/8" 54.50#, K-55 buttress thread, R-3 new seamless casing and cemented same at 928' with 500 cu. ft. of 2% lodense followed by 150 sacks Class "G" with 3% calcium chloride. Casing filled on bottom with fill-up float shoe with one centralizer 10' above shoe. Moved casing 5' while mixing and displacing cement with no circulation. Displaced with 785 cu. ft. of mud. Cement in place at 5:55 P.M. Used Byron-Jackson.
- 11-22 Cut and recovered 13 3/8" casing, welded on Cameron 13" - 5000# casing head and tested O.K. with 4500 psi.  
TO CEMENT 13 3/8" CASING TO SURFACE:  
Using Active Concrete Pumping Service, pumped in 17 yards of 6 sack pea gravel mix between 13 3/8" casing and 17 1/2" hole to bring cement to surface. Cement in place at 10:30 A.M.  
Installed double Shaffer and GK Hydril.
- 11-23 Tested BOP valves and manifold with 2000 psi water pressure. Re-tested with 2500 psi nitrogen - O.K. Witness and approved by L. Bright of Division of Oil and Gas. Drilled out cement 865' and drilled 11" hole from 962' to 996' where circulation was lost. Added sawdust, rubber, cottonseed hulls, walnut hulls and mica.

1974

11-24

Drilled 11" hole to 1019' without circulation. Unable to regain same with heavy treatment of LCM.

TO PLUG HOLE WITH CEMENT FOR LOST CIRCULATION:

Ran 4 1/2" open end drill pipe to 1011' and pumped in 100 sacks of Class "G" mixed with 200 cu. ft. of perlite, 4% gel and 3% calcium chloride. Displaced with 200 cu. ft. of water with drill pipe hanging at 741'. Cement in place at 10:25 A.M. Used Byron-Jackson. Hole stood full after cementing. Drilled out cement 928' to 1019' and drilled 11" hole to 1084' where circulation was lost.

11-25

TO PLUG HOLE WITH CEMENT FOR LOST CIRCULATION:

Ran 4 1/2" open end drill pipe to 1066' and pumped in 150 sacks Class "G" mixed with 20#/sack Gilsonite and 3% calcium chloride. Displaced with 56 cu. ft. of mud. Pulled to 660' and displaced additional 288 cu. ft. and obtained circulation. Closed rams and squeezed with 100 cu. ft. of mud down drill pipe. Cement in place at 2:10 A.M. Used Byron-Jackson.

After standing 7 hours, drilled out cement 950' to 1084' without partial circulation. Drilled 11" hole to 1110' without circulation.

TO PLUG HOLE WITH CEMENT FOR LOST CIRCULATION:

Ran 4 1/2" drill pipe to 1096' and pumped in 150 sacks of Class "G" treated with 16 sacks of Cal Seal, 3 sacks of gel, 3180# Gilsonite mixed to 102#/cu. ft. slurry. Equalized with 58 cu. ft. of water. Pulled to 720'. Fluid level at 36'. Closed rams and squeezed down drill pipe with 174 cu. ft. of water. Hole standing full. Cement in place at 4:50 P.M. Used HOWCO. After standing three hours, located cement at 952' and drilled out to 1110' and drilled 11" hole to 1152' where circulation was lost. Drilled 11" hole without returns to 1186'.

11-26

Ran Geotex radioactive tracer and located fluid loss on bottom at 1186'. Drilled 11" hole to 1207' without circulation.

TO PLUG HOLE WITH CEMENT FOR LOST CIRCULATION:

Ran 4 1/2" open end drill pipe to 1190' and pumped in 159 sacks of Glass "G", 16 sacks Cal Seal, 3 sacks calcium chloride, 3180# Gilsonite mixed to 102#/cu. ft. slurry. Displaced to equalization with 62 cu. ft. water, fluid level at 50'. Filled hole, pulled to 814', closed rams and squeezed with 200 cu. ft.

1974

11-26  
(cont'd)

After standing 4 1/2 hours, drilled out cement 1041' to 1207' and drilled 11" hole to 1253' with circulation.  
Mud: 66#, 40 sec.

11-27

Drilled 11" hole to 1284' where circulation was lost. Mixed gel and LCM.

TO PLUG HOLE WITH CEMENT FOR LOST CIRCULATION:

Ran 4 1/2" open end drill pipe to 1282' and pumped in 53 sacks Class "G", 5 sacks Cal Seal, 3% calcium chloride, 2% gel, 1000# Gilsonite mixed to 102#/cu. ft. slurry. Fluid level at 311'. Displaced with 91 cu. ft. of water. Fluid level at 120'. Closed rams and squeezed down drill pipe with 46 cu. ft. water. Cement in place at 11:10 A.M. Used HOWCO.  
Mud: 67#, 50 sec.

After standing 5 hours, drilled out cement 1145' to 1284' and lost circulation. Drilled 11" hole to 1302'.

11-28

HALLIBURTON INJECTROL TREATMENT FOR LOST CIRCULATION:

Ran 4 1/2" drill pipe to 1290' and pumped in 66 cu. ft. of Halliburton Injectrol. Displaced with 95 cu. ft. of water. Pulled to 1103' and pumped in annulus 200 cu. ft. of mud. Injectrol in place at 11:30 A.M. Waited one hour and could not obtain circulation.

Drilled 11" hole to 1364' without returns.

HALLIBURTON INJECTROL TREATMENT FOR LOST CIRCULATION:

Ran 4 1/4" drill pipe with bit to 1290' and pumped in 66 cu. ft. of Injectrol slurry. Displaced with 95 cu. ft. of mud. Pulled to 1200' and pumped in annulus 150 cu. ft. of mud. Slurry in place at 2:30 A.M.

Drilled 11" hole to 1364' without circulation.

TO PLUG HOLE WITH CEMENT FOR LOST CIRCULATION:

Ran 4 1/2" open end drill pipe to 1348' and pumped in 53 sacks of Class "G", 5 sacks Cal Seal, 3% calcium chloride, 2% gel, 1000# Gilsonite mixed to 98#/cu. ft. slurry and displaced with 91 cu. ft. of mud. Fluid level at 258'. Filled hole, closed rams and squeezed with 200 cu. ft. of mud. Cement in place at 11:05 A.M. Used HOWCO.

After standing 4 hours, located cement at 1135' and drilled same out to 1208' without circulation. Spotted 18#/bbl. LCM treated mud at 1208' (65 bbls). Fluid level at 15'.

1974

11-29

TO PLUG HOLE WITH CEMENT FOR LOST CIRCULATION:

Ran open end drill pipe to 1214' and pumped in 80 sacks Class "G", 8 sacks Cal Seal, 7 sacks gel, 1600# Gilsonite and 10 sacks mica mixed to 85#/cu. ft. slurry. Displaced with 81 cu. ft. water. Partial returns on last 10 cu. ft. of mixing. Pulled to 930', fluid level dropped to 120'. Filled hole, closed rams and squeezed with 100 cu. ft. Cement in place at 10:25 A.M. Used HOWCO. Ran in to 1178' with no circulation after standing 5 hours. Could not fill hole.

MILCHEM MIL-SQUEEZE TREATMENT FOR LOST CIRCULATION:

Ran 4 1/2" drill pipe to 920'. Pumped in 1 bbl of caustic water followed by 2 bbls of fresh water. Mixed 90 sacks of Mil-Squeeze in 32 bbls of fresh water for 72#/cu. ft. slurry. Displaced with 74 cu. ft. water. Slurry in place at 8:50 P.M. Used HOWCO. No results. Repeated process with drill pipe hanging at 973'. Slurry in place at 11:00 P.M.

11-30

Ran drill assembly to 920' and obtained circulation. Ran into 1040' and obtained partial circulation while cleaning out to 1114'.

MILCHEM MIL-SQUEEZE TREATMENT FOR LOST CIRCULATION:

Ran bit to 1072' and pumped in 45 sacks of Mil-Squeeze in 17 bbls of water. Preceded with 3 bbls of caustic and followed with 10 bbls of water. Slurry in place at 6:00 A.M. Pulled to 1009' and repeated Mil-Squeeze. Slurry in place at 9:15 A.M. Used HOWCO. Attempted to fill hole with no success. Cleaned out to 1125'. Ran open end drill pipe to 911'. Ran Geotex tracer survey which showed fluid loss at bottom (1125').

BENTONITE-DIESEL OIL TREATMENT FOR LOST CIRCULATION:

Ran 4 1/2" open end drill pipe to 1098'. Pumped in 62 sacks of gel in 12 bbls of diesel. Preceded with 2 bbls diesel and followed with 1 bbl of diesel. Displaced to bottom of drill pipe with 88 cu. ft. water. Pulled to 911' and pumped in 55 sacks gel in 18 bbls diesel with 3 bbls diesel ahead and 2 bbls diesel behind. Displaced with 73 cu. ft. water. Slurry in place at 8:00 P.M.

12-1

Cleaned out in stages to Mil-Squeeze plug at 1125' and cleaned out to 1208' with partial circulation.

BENTONITE-DIESEL OIL TREATMENT FOR LOST CIRCULATION:

Ran 4 1/2" drill pipe to 1160' and pumped in 34 sacks of gel in 10 bbls of diesel with 3 bbls diesel ahead and 2 bbls behind slurry. Displaced with 93 cu. ft. of mud. Pulled to 784'. Hole standing full. Slurry in place at 11:00 A.M. Ran drill assembly and cleaned out to 1229' with no circulation.

1974

12-1  
(cont'd)

BENTONITE-DIESEL OIL TREATMENT FOR LOST CIRCULATION:

Ran open end drill pipe to 1224' and pumped in 34 sacks gel as above. Pulled to 1035' and pumped in 34 sacks gel as above. Slurry in place at 11:00 P.M. Used HOWCO.

12-2

Staged in hole to 1229' with circulation O.K. Drilled hard cement to 1302' where circulation was lost. Pulled to 856', mixed LCM pill and drilled 11" hole to 1387' with partial circulation.

12-3

ATTAPULGITE TREATMENT FOR LOST CIRCULATION:

Ran 4 1/2" drill pipe to 924' and pumped in 55 bbls of slurry consisting of 35 sacks of salt gel, 50 sacks of Barite, 4 sacks of lime, 10 sacks of Kwikseal and 5 sacks of walnut shells. Displaced with 74 cu. ft. of mud. Pulled to 720', closed rams and squeezed with 200 cu. ft. of water. No pressure. Fluid level below 180'. Could not fill hole. Slurry in place at 2:30 A.M. Repeated treatment with slurry in place at 8:30 A.M. Used HOWCO. Mixed mud and LCM.

12-4  
and  
12-5

Drilled 11" hole to 1700' with partial returns and to 1869' with full returns. Ran Dyna-Drill #2 and drilled 11" hole to 1924' where Dyna-Drill plugged with LCM. Partial returns. Ran Welex IEL and microseismogram log. Ran Production Data Inc., spinner, tracer and temperature surveys. Located major loss at 1075'-1150'; minor loss at 1240'-1540'; possible loss at 1790'-1860'.

BENTONITE-DIESEL OIL TREATMENT FOR LOST CIRCULATION:

Ran open end drill pipe to 1060'. Filled hole, closed rams and preceded slurry with 2 bbls of diesel. Pumped in 45 sacks gel, 6 sacks Ben-Gum, 10 sacks mica, 10 sacks walnut shells in 12 bbls of diesel mixed to 84#/cu. ft. slurry with yield of 100 cu. ft. Pumped mud down annulus at 1 bbl per 8 bbls of slurry pumped down drill pipe, reducing drill pipe rate to 3 bbls to 1 bbl in annulus. Displaced with 85 cu. ft. of fluid to squeeze slurry to place at 10:30 P.M. under 200 psi. Used HOWCO. After standing 2 hours, circulated hole clean in stages to 1350' - 50% returns.

12-6

After standing 3 1/2 hours, staged in hole and circulated clean to 1300'.

BENTONITE-DIESEL OIL TREATMENT FOR LOST CIRCULATION:

Repeated above process with drill pipe hanging at 1224', 1412' and 1727'. Final squeeze at 11:00 P.M.

12-7

After standing 3 hours, staged in hole with circulation and drilled 11" hole to 2085' where circulation was lost. Pulled to 920' and pumped in LCM and drilled 11" hole to 2486' with decreasing loss of fluid.

1974

- 12-8 Drilled 11" hole to 2994' with partial to full circulation. Hole took approximately 700 bbls. Ran Dyna-Dril #3. Some plugged with LCM. Mud: 67#, 36 sec by-passing shaker.
- 12-9 Ran Dyna-Dril #3A, broke circulation at 1050'. Cleaned out fill 2974'-2994' and Dyna-drilled 11" hole to 3104'. Changed bits and located fill at 3068'. Bit plugged. Pulled.
- 12-10 Ran Dyna-Dril #3B and drilled 11" hole to 3177'. Losing approximately 30 bbls/hr.  
TO BRIDGE HOLE WITH CEMENT FOR LOST CIRCULATION:  
Ran 4 1/2" drill pipe to 1225' and pumped in 115 sacks Class "G" 87# Halad-9, 2% calcium chloride mixed to 117#/cu. ft. slurry. Placed 20 cu. ft. water ahead and displaced with 5 cu. ft. of water and 77 cu. ft. of mud. Pulled to 1025' and filled hole and pumped in 50 sacks of Class "G" 1000# of Gilsonite, 2% gel, 2% calcium chloride mixed to 97#/cu. ft. slurry. Closed rams after mixing 42 sacks. Squeezed with 97 cu. ft. mud. Cement in place at 6:00 P.M. under 150 psi. Used HOWCO.
- 12-11 After standing cemented 13 hours, located top of cement at 1112' and drilled same out to 1217' with full circulation. While cleaning out bridge at 2294', circulation was lost. Pulled to 920', mixed LCM and staged in hole. Cleaned out bridge at 2294' to 2630' and reamed from 2994' to 3177' and directionally drilled 11" hole to 3180', with partial circulation. Mud: 68#, 38 sec.
- 12-12 Directionally drilled 11" hole to 3619'. Lost 180 bbls in 1 1/4 hours. Loss decreasing. Mud: 68#, 38 sec, 14.2 cc, 7% solids.
- 12-13 Directionally drilled 11" hole to 3953'. Fluid loss 10 bbls/hr. Mud: 70#, 43 sec.
- 12-14 Directionally drilled 11" hole to 4377'. Fluid loss 10-20 bbls/hr. Mud: 70#, 38 sec, 8.4 cc, 8% solids.
- 12-15 Directionally drilled 11" hole to 4546'. Tight hole 4054'-3754' on bit change. Mud: 71#, 38 sec, 7.0 cc, 10% solids.

1974

- 12-16 Directionally drilled 11" hole to 4665'. On trip, pipe stuck at 4258' at 10:30 A.M. Mixed 55 galls of Torq-Trim in 60 bbls of mud. Pumped 40 bbls around bit, waited two hours and unsuccessfully worked pipe. At 1/2 hour intervals, displaced 5 bbls of Torq-Trim until all 60 bbls around shoe. Pipe did not free and bumper sub not working. Circulated and worked pipe for about 30 minutes and pipe came free at 6:00 P.M. Mud: 70#, 42 sec, 6.5 cc, 9% solids.
- 12-17 Reamed 4556'-4665' and conditioned hole for log. Ran Welex Induction Electric log and recorded from 4834'-1700'. Unlead 8 5/8" casing. Ran into 4200' and conditioned hole for casing. Mud: 70#, 40 sec, 6.8 cc, 7% solids.
- 12-18 TO CEMENT 8 5/8" CASING TO PROTECT FOR LOST CIRCULATION:  
Ran 96 joints or 4066.99' of 8 5/8", 36#, K-55, 8rd, L.T. and C, R-3. New seamless casing and cemented same at 4065' with 1000 cu. ft. of 2% Lodense, followed by 140 cu. ft. of Class "G" with 3% calcium chloride. Circulated 15 minutes prior to pumping and moved casing 10' while mixing and displacing. Preceded cement with 50 cu. ft. of water and displaced with 1420 cu. ft. of mud. Did not bump one top plug. Casing fitted on bottom with Halliburton, fill-up float shoe and on top of 1st joint with fill-up float collar. Turbolizers at top of 1st, 2nd, 3rd, 4th, 5th and 6th joints.
- 12-19 Started mixing at 3:00 A.M. Cement in place at 3:55 A.M. under 3500 psi. Held 3500 psi - O.K. for 15 minutes. Bled back 14 cu. ft. Used Byron-Jackson power and bulk cement. Landed 8 5/8" casing in lips and packing. Cut and recovered 8 5/8" casing. Welded bit guide to 8 5/8" stub, reinstalled BOP and tested O.K. with 3000 psi nitrogen. Ran 7 5/8" bit and located cement at 4021', drilled out to shoe at 4065' and drilled to 4795'. Circulation O.K. Mud: 69#, 39 sec, 7.6 cc, 6% solids.
- 12-20 Drilled 7 5/8" hole to 4996' and Dyna-Drill #4, 7 5/8" hole to 5029', where circulation was lost. Rubbered pipe. Mud: 70#, 40 sec, 7.4 cc, 7% solids.
- 12-21 Mixed mud with LCM and regained circulation. Continued Dyna-drilling 7 5/8" hole to 5090' with partial circulation. Reamed 4966' to 5090' and directionally drilled 7 5/8" hole to 5150' with partial circulation. Pulled to shoe and mixed mud with LCM. Mud: 70#, 43 sec, 7.4 cc, 6% solids.

1974

- 12-22 Regained partial circulation and directionally drilled 7 5/8" hole 5538'. Full circulation from 5290'.  
Mud: 71#, 44 sec, 8.0 cc, 8% solids.
- 12-23 Directionally drilled 7 5/8" hole with full circulation until 5744' where complete circulation was lost. Pulled to shoe, mixed mud and LCM. Ran in to bridge at 5720', circulated hole clean and lost circulation at 5744'. Lost 600 bbls of mud.  
Mud: 69-70#, 38-44 sec.
- 12-24 Pulled to shoe, mixed mud and LCM. Directionally drilled 7 5/8" hole to 5839' with partial to no circulation. Pulled, removed bit and tools and ran open end drill pipe to 5668' and pumped in 250 bbls of mud treated with 22# to 26#/bbl LCM. Closed rams and squeezed 50 bbls. Pulled to shoe, closed rams and let well stand until midnight, 12-25-74.
- 12-25 Operations suspended for Christmas.
- 12-26 Ran 9 5/8" bit, cleaned out bridge at 5739' with 70% returns. Cleaned out to 5806' with 40% returns. Reamed 5806'-5839' and directionally drilled 9 5/8" hole to 6320'. Returns increased to 100%. By-passing Shaker.  
Mud: 69#, 39 sec, 7.2 cc, 10% solids.
- 12-27 Directionally drilled 9 7/8" hole to 6526'. Tight hole at 5483' on bit change. Ran Dyna-Dril #5, cleaned out fill at 6485'-6526' and Dyna-Dril plugged.  
Mud: 69#, 40 sec, 7.5 cc, 10% solids.
- 12-28 Ran Dyna- Dril #5 and drilled 7 5/8" hole to 6587'. Circulation 90-100%. Lost about 100 bbls of mud.  
Mud: 69#, 44 sec, 6.2 cc, 10% solids.
- 12-29q Reamed from 6526' to 6587' and directionally drilled 7 5/8" hole to 6684'. Circulation O.K. Ran Dyna-Dril #6 and same plugged with LCM. Commenced running mud over shaker.  
Mud: 69#, 42 sec, 6.5 cc, 10% solids.
- 12-30 Ran Dyna-Dril #6 and drilled 7 5/8" hole to 6717'. Shook out major portion of LCM. Circulation O.K. Pulled for bit change. Ran Wellex Microseismogram and recorded 4065' to 900' to check cement job. O.K. Ran 7 5/8" bit.

1974

12-31 Reamed 6684'-6717' and directionally drilled 7 5/8" hole to 6729' where circulation was lost. Exhausted mud volume. Ran Triangle Service Co. differential temperature survey which showed loss circulation zone from 4655'-4675' and 4770'-4785'.  
TO TREAT HOLE FOR LOST CIRCULATION USING BRINADD CO. T-Z PILL: Ran 4 1/2" open end drill pipe to 4900' and pumped in 60 bbls of Brinadd T-Z lost circulation slurry. Pulled to 4045'. Hole now standing full. Closed rams and squeezed with 30 bbls of mud. Slurry in place at 9:30 P.M.

1975

- 1-1 Mixed mud with LCM. Ran 7 5/8" bit and broke circulation O.K. at 4060' and 5487'. Cleaned out bridge at 6385' to 6445' and filled from 6698' to 6729'. Directionally drilled 7 5/8" hole to 6758' when had to pull to shoe for repairs to light plant. Down 8 hours for repairs. Lost approximately 150 bbls of mud when reached 6729', but but circulation improved to 98% when had to pull. Mud: 69#, 45 sec, 9.8cc, 10% solids. By-passing shaker.
- 1-2 Directionally drilled 7 5/8" hole to 6912' while attempting to increase mud weight to 73#/cu. ft. to control Senon Zone. Lost 300 bbls in 4 hours while increasing weight from 69# to 70#. Mud: 69#, 45 sec, 7.4 cc, 9% solids. By-passing shaker.
- 1-3 Directionally drilled 7 5/8" hole to 7022' where complete circulation was lost (250 bbls loss). Mud: 69#, 43 sec, 9.0 cc, 10% solids. By-passing shaker.
- 1-4 Mixed mud with LCM and regained circulation with bit at 4060'. Staged in hole and directionally drilled 7 5/8" hole to 7193' where complete loss occurred. Mud: 69#, 43 sec, 9.0 cc, 10% solids. By-passing shaker.
- 1-5 Mixed mud with LCM and directionally drilled 7 5/8" hole to 7278'. Complete loss 7201' to 7278'. Mud: 68#
- 1-6 Pulled to shoe and mixed LCM. Plugged bit with LCM. Ran 4 1/2" open end drill pipe to 7270' and pumped in 200 bbls of mud with LCM (30#/bbl). In last three days, used 22,000# of beet pulp. Last 24 hours used 2200 bbls of mud. Hole would circulate while pipe was moving, but no circulation when pipe was still. Removed protective rubbers (7" O.D.) and bit jets. Mud: 69#

1975

- 1-7 Staged in hole with about 75% returns. Directionally drilled 7 5/8" hole to 7477'. Lost 300 bbls mud.  
Mud: 67-68#, 40 sec, 6.6 cc, 9% solids.
- 1-8 Directionally drilled 7 5/8" hole to 7678' with 75% returns.  
Mud: 67-68#, 40 sec, 9.4 cc, 6% solids.
- 1-9 Directionally drilled 7 5/8" hole to 7815' with 40-50 bbls/hr. mud loss.  
Mud: 67-68#, 45 sec, 9.7 cc, 6% solids.
- 1-10 Directionally drilled 7 5/8" hole to 7925' with returns increasing from 75% to 90%. 600 bbls loss.
- 1-11 Directionally drilled 7 5/8" hole to 7995'. Checked pipe measurement - O.K. 90% returns.  
Mud: 68#, 45 sec, 7.0 cc, 6% solids.
- 1-12 Directionally drilled 7 5/8" hole to 8228'. Tight hole 5582' to 5113' on bit change. Did not have to ream.  
Mud: 68#, 44 sec, 6.4 cc, 7% solids.
- 1-13 Directionally drilled 7 5/8" hole to 8250'. Conditioned hole for log. Tight hole 5582'-5113'. Ran Welex Induction Electric log from 8250' to 4065'. Ran Grant 6 point reamer with 7 5/8" bit on bottom. Reamed 5100' to 6370'.  
Mud: 68#, 50 sec, 6.0 cc, 7.0% solids.
- 1-14 Reamed 7 5/8" hole to 8250' and drilled 7 5/8" hole to 8266'. Lost circulation. Mixed mud and LCM.  
Mud: 68#, 44 sec, 6.8 cc, 7% solids.
- 1-15 Removed reamer, ran 7 5/8" bit in stages to 8266' and conditioned mud for liner.  
TO CEMENT 6 5/8" LINER:  
Ran 108 joints or 4321' of 6 5/8" 24# and 28# K-55, R 1 and 3 Vetco and Security flush joint new seamless blank casing to 8239'. Could not pump away with rig pump at 2000 psi. Using Halliburton power, pumped fluid away at 13 CFM under 3000 psi. Pressure decreased to 1600 psi. Could not work pipe past 8248'. Set Burns hanger at 3927', bottom of liner at 8248'. Cemented liner with 443 cu. ft. of 1-1 Perlite, 8% gel, 3/4% CFR2, (84#/cu. ft. slurry) and 50 cu. ft. of Class "G" cement, 3/4% CFR mixed with 14% salt water (120#/cu. ft. slurry). Started mixing at 10:20 P.M. Finished at 10:43 P.M.

1975

- 1-15  
(cont'd) Displaced with 1120 cu. ft. of mud to hump plug under 2000 psi final pressure at 11:20 P.M. Bled back 7 cu. ft. Preceded cement with 10 bbls of Samm 4 flush . No circulation throughout job. Used HOWCO.
- LINER DETAIL  
Bottom 77 joints or 3151.39' (8248'-5097') 6 5/8" 24#, K-55, R-3, Vetco flush joint new seamless blank casing fitted on bottom with Baker cement guide shoe on top of bottom joint with Baker differential fill-up float collar and with Gemco centralizers at 8265', 8230', 8190', 8150', 8110', 8070', 8030', 7920', 7800', 7570', 7370', 7330', 7200', 7050', 6870', 6750', 6600', 6365', 6330', 5175' and 5140'. Gemco Metal Petal cement baskets at 7350', 6350' and 5160'. Used thread locking compound on bottom 3 joints. Next 21 joints or 882.91(5097'-4214') 6 5/8" 28#, K-55, R-3 Vetco flush joint new seamless blank casing with 8 rd thread coupling turned to 7.092" 00 on top. Fitted with Gemco centralizer at 4300'. Next 10 joints or 286.82' (4214'-3927') 6 5/8", 24#, K-55, R-1, security flush joint new seamless blank casing fitted on bottom with 8 rd thread and on top with Burns 8 5/8" x 6 5/8" liner hanger grooved for cementing.  
Total 108 joints or 4321.12' (8248'-3927')
- 1-16 Pulled liner hanging and cementing tools and laid down 4 1/2" drill pipe, heavy wall and 6" drill collars. Unloaded 2 7/8" drill pipe and 4 1/4" drill collars.
- 1-17 Measured in 2 7/8" and 4 1/2" drill pipe with 5 5/8" bit and located cement at 8204'. Drilled out to 8235'. Conditioned mud to 73#/cu.ft.
- 1-18 Removed B.O.P. and installed single Shaffer gate. Reinstalled B.O.P. which now consists of GK Hydril, double and single Shaffer gates. Ran Welec Microseismogram log and Neutron correlation log. Using 4" O.D. Welex jet gun, perforated four 1/2" jet holes at 8220'.
- 1-19 TO TEST WATER SHUT-OFF ON HOLE IN 6 5/8" CASING AT 8220'  
Ran Johnston tester on 2 7/8" and 4 1/2" drill pipe. Set packer at 8162' with tail to 8179'. Opened tool at 1:20 A.M. for 90 minute test. Very light steady blow throughout test. Recovered 180' rise of drilling fluid. Charts showed tool open with no pressure increase. Water shut-off approved by Division of Oil and Gas.

1975 TO SEAL HOLES OR BRIDGE 6 5/8" CASING FOR CEMENTING  
6 5/8" x 8 5/8" LAP"

1-19 Ran 2 7/8" and 4 1/2" drill pipe to 8233'. Lost circulation and  
Cont'd. hole would not stand full. Pumped in 20 sacks Class "G" cement and  
displaced with 300 cu. ft. of watery mud. Started mixing at 2:00 P.M.  
Finished at 2:02 with cement in place at 2:15 P.M. Used HOWCO.

TO SQUEEZE 6 5/8" x 8 5/8" LAP AT 3927' WITH CEMENT:

Ran Johnston Positrieve cement tool on 4 1/2" drill pipe. Set tool  
at 3777'. Lap tool fluid at 20 cu. ft./min. under 900 psi. Pumped  
in 330 sacks Class "G" cement mixed to 112#/cu. ft. slurry. Displaced  
with 427 cu. ft. of mud to over displace to clear lap area. Started  
mixing at 9:40 A.M. Cement in place at 10:20 A.M. under 100 psi  
Used HOWCO.

1-20 RAN 5 5/8" BIT AND LOCATED CEMENT BRIDGE AT 7782' TO RESQUEEZE  
6 5/8" x 8 5/8" LAP AT 3927' WITH CEMENT:

Ran Johnston Positrieve cement tool on 4 1/2" drill pipe. Set tool  
at 3777'. Lap took fluid at 16 cu. ft/min. under 1350 psi. Pumped  
in 200 cu. ft. 1-1 Perf-A-Lite, 4% gel followed by 50 sacks of Class  
"G" cement treated with 3% calcium chloride. Displaced with 350 cu.  
ft. of watery mud. Stage last 50 cu. ft. under 1000 to 1700 psi.  
Started mixing at 8:40 A.M. Finished mixing at 9:00 A.M. Cement in  
place at 10:05 A.M. under 1350 psi. Used HOWCO. After standing cemented  
8 hours, applied 2000 psi and casing held O.K. After standing 10 hours,  
drilled out cement from 3892' to 3927'. Closed rams and lap took fluid  
under 1800 psi rig pressure.

1-21 TO RECEMENT 8 5/8" x 6 5/8" LAP AT 3927':

Ran Johnston Positrieve tool on 4 1/2" drill pipe and set at 3777'.  
Lap took fluid at 24 CFM rate under 1500 psi. Pumped in 200 sacks of  
Class "G" cement, mixed with 3% calcium chloride. Started mixing at  
3:10 A.M. Finished mixing at 3:40 A.M. Displaced with 425 cu. ft.  
of mud. Stage last 40 cu. ft. under 200 psi. Cleared lap of cement.  
Cement in place at 4:50 A.M. Used HOWCO.

TO RECEMENT 8 5/8" x 6 5/8" LAP AT 3927':

After standing cemented 4 hours, set Johnston Positrieve at 3777. Lap  
took fluid at 24 CFM rate under 1600 psi. Pumped in 150 sacks of Class  
"G" cement, mixed with 3% calcium chloride. Started mixing at 7:40 A.M.  
Finished mixing at 8:05 A.M. Displaced 353 cu. ft. of watery mud.  
Stage last 40 cu. ft. Cement in place under 1850 psi at 9:15 A.M.  
Bled back 30 cu. ft. Used HOWCO.  
Pressure tested BOP O.K. with 2000 psi. After standing cemented  
8 hours, located top of cement at 3880'. Rigged up NOWSCO and tested  
GK Hydril with 300 psi for 30 minutes - O.K. After standing cemented  
12 hours, drilled out cement 3880' to 3927'. Closed rams and fluid  
pumped away under 1800 psi.

1975

- 1-22 TO RECEMENT 8 5/8" x 6 5/8" LAP AT 3927':  
Set Johnston Positrieve at 3775'. Lap took fluid at 9 CFM rate under 1800 psi. Pumped in 100 sacks Class "G" cement mixed with 3% calcium chloride. Displaced with 130 cu. ft. of watery mud, closed by-pass and squeezed with additional 218 cu. ft. of mud water under 1700-2200 psi. Final pressure 2500 psi. Started mixing at 2:20 A.M. Finished mixing at 2:30 A.M. Cement in place at 3:35 A.M. Used HOWCO.  
Rubbered drill pipe. After standing cemented 8 hours, located top of cement at 3860' and drilled out to top of lap at 3927'. Closed rams and lap held 2000 psi, O.K. for 15 minutes. Ran 5 5/8" bit and cleaned out to 3960'. Closed rams and lap held 2000 psi O.K. for 15 minutes.
- 1-23 TO TEST WATER SHUT-OFF ON 8 5/8" x 6 5/8" LAP AT 3927':  
Ran Johnston tester on 4 1/2" drill pipe, set packer at 3872', tail to 3888'. Opened tool at 11:45 P.M. (1-22-75) for one hour test. Faint blow 10 minutes, dead balance of test. Recovered 15' of drilling fluid. Charts O.K. Water shut-off approved by D.O.G.  
Tested BOP and valves with Nitrogen. Malfunction in nitrogen truck. Waited for replacement truck. Retested and found CSO leaking. Repaired same.
- 1-24 CSO and blind rams tested O.K. for 30 minutes with 3000 psi nitrogen. Switched nitrogen truck for NOWSCO. Drilled out cement from 3960' to 4115', cleaned out to 7822'. Tested Hydril with nitrogen to 2200 psi where nitrogen pumped away. Lap broke down on holes at 8220' taking fluid. Rig commenced mixing mud for possible redrill of Fernando Fee #33 at noon 1-24.
- 1-25 Mixing mud and part of crew assisting in killing well Fernando Fee #33  
and with mud until 4:30 P.M. Pulled.
- 1-26 TO RECEMENT 8 5/8" x 6 5/8" LAP AT 3927':  
Ran Johnston Positrieve on 4 1/2" drill pipe. Set tool at 3829'. Lap took fluid at 4 CFM rate under 2000 psi. Pumped in 50 sacks Class "G" cement mixed with 3% calcium chloride. Used 20 cu. ft. of water ahead of cement. Displaced with 10 cu. ft. of water and 220 cu. ft. of mud. Closed tool and displaced additional 108 cu. ft. of mud. Stage last 20 cu. ft. Started mixing at 12:28 A.M. Finished mixing at 12:30 A.M. Cement in place at 1:20 A.M. under 1500 psi final pressure. Held 1500 psi on annulus. Bled back 16 cu. ft. Used HOWCO. After standing cemented 10 hours, ran 7 5/8" bit and scraper and located cement at 3844' and drilled out to 3927'. Closed rams and lap held 2300 psi O.K. for 15 minutes. Ran 5 5/8" bit and scraper and drilled out cement to 4100' and 7822'-7832'.

1975

- 1-27 Tested BOP with nitrogen and pumped away at 2600 psi, indicating lap or holes taking fluid.  
Ran 5 5/8" bit and scraper and cleaned out to 8230'. Ran Johnston 6 5/8" Positrieve and set at 4121' and holes at 8220' took fluid at 13 CFM rate under 2600 psi.  
TO SQUEEZE HOLES IN 8 5/8" CASING AT 8220' WITH CEMENT:  
Set Positrieve tool at 8037' and holes took fluid at 13 CFM rate under 2200 psi. Preceded cement with 20 cu. ft. of water. Pumped in 100 sacks of Class "G" cement mixed with 3% calcium chloride. Displaced with 10 cu. ft. of water and 242 cu. ft. of mud. Closed tool and squeezed with additional 175 cu. ft. of mud. Held 1500 psi on annulus. Started mixing at 5:00 P.M. Five minutes mixing and 20 minutes displacing cement to place at 5:25 P.M. under 2000 psi final pressure. Held 2000 psi for 30 minutes. Bled back 5 cu. ft. Used HOWCO.
- 1-28 TO TEST WATER SHUT-OFF ON 8 5/8" x 6 5/8" LAP AT 3927':  
Ran Johnston tester on 4 1/2" drill pipe. Set packer at 3876' with tail to 3893'. Opened tool at 3:40 P.M. for one hour test. Puff blow 3 minutes, dead balance of test. Recovered 25' rise of drilling fluid. Charts O.K. Water shut-off approved by D.O.G.  
Tested Hydril with 3000 psi nitrogen - O.K. for 30 minutes. Ran 5 5/8" bit and casing scraper and drilled out cement from 8110' to 8230'. Closed rams, applied 2300 psi rig pressure and lap and holes held O.K. for 15 minutes. Built mud weight to 73#/cu. ft. Drilled out cement and 6 5/8" shoe at 8248'.
- 1-29 Drilled out cement to 8266' and drilled 5 5/8" hole to 8291'.  
Mud: 74#, 42 sec, 6.2 cc, 13% solids.
- 1-30 Drilled 5 5/8" hole to 8365'. Ran Christensen 4 5/8" outside diameter x 60' core barrel with diamond core bit and same stuck at 8299'. Worked pipe for 4 hours without success. Rigged up "poor boy" swivel.  
Mud: 74#, 43 sec, 6.0 cc, 12% solids.
- 1-31 Swivel leaked. Rigged up Halliburton head and circulated and worked pipe. Mixed and pumped in 60 barrel pill of Pipe Lay. Spotted around core barrel and let soak 3 hours. Worked pipe and moved 2 barrels of Pipe Lay every 1/2 hour for nine hours. Backed off in safety joint above core barrel.
- 2-1 Ran Brown Oil Tools jars, safety joint and bumper sub on 2 7/8" and 4 1/2" drill pipe and screwed into fish at 8299'. Jars worked once. Pulled and recovered entire fish. Ran 5 5/8" bit and reamed 8248' to 8365'.  
Mud: 74#, 40 sec, 6.2 cc, 11% solids.

1975

- 2-2 Ran 4 5/8" outside diameter x 31' Christensen core barrel with 5 5/8" diamond core head. Reamed 8300' to 8365' and core #1 from 8365' to 8395' - 30' recovered 16'. Core #2 from 8395 to 8419'. Mud: 74#, 40 sec, 6.2 cc, 11% solids.
- 2-3 Core #2 to 8421', 26' recovered 12'.  
Core #3 from 8421' to 8451', 30' recovered 9'.  
Core #4 from 8451' to 8469', 18' recovered 18'.  
Mud: 73 1/2#, 38 sec, 6.4 cc, 10% solids.
- 2-4 Core #5 from 8469' to 8500', 31' recovered 30'.  
Core #6 from 8500' to 8513', 13' recovered 11'.  
Mud: 73 1/2#, 40 sec, 6.2 cc, 10% solids.
- 2-5 Core #7 from 8513' to 8535', 23' recovered 22'.  
Core #8 from 8535 to 8547', 12' recovered 12'.  
and Generator failed while coring at 8540'. Core barrel stuck, but was jarred loose with 250,000# pull. Pulled to shoe while repairing
- 2-6 generator. Down 12 hours.  
Core #9 from 8547' to 8577', 30' recovered 30'.  
Mud 74#, 40 sec, 6.8 cc, 12% solids.
- 2-7 Ran 5 5/8" bit and reamed from 8248' to 8577' and drilled to 8636'.  
Mud: 74#, 42 sec, 6.8 cc, 12% solids.
- 2-8 Drilled 5 5/8" hole to 8740' TOTAL DEPTH  
Mud: 73 1/2#, 42 sec, 6.4 cc, 12% solids.
- 2-9 Ran Sperry-Sun 1 3/4" multi shot survey in open hole and 3" gyro-survey in cased hole. Ran 5 5/8" bit to 8740' and conditioned hole for logging. Ran Wellex Induction Electric Log.
- 2-10 Ran Grant hole opener #1 and opened 5 5/8" hole to 8" from 8248' to 8281'.  
Ran hole opener #2 and opened hole to 8301'.  
Mud: 73#, 40 sec, 6.8 cc, 11% solids.
- 2-11 Ran Grant hole openers #3 and #4 and opened hole to 8430' where 4 1/2" outside diameter drill collar twisted off in pin, leaving 6 drill collars and tools in hole. Top of fish at 8254'. Rig down 4 hours for electrical repair.  
Mud: 73 1/2#, 42 sec, 6.2 cc, 12% solids.
- 2-12 Ran Brown Oil Tool fishing tools, engaged fish and jarred same loose. Recovered entire fish. Ran hole opener #5 and regauged hole to 8430'.  
Mud: 74#, 44 sec, 6.4 cc, 13% solids.

1975

- 2-13 Ran Hole Opener #5 from 8430' to 8436' where tool appeared to malfunction. Ran hole opener #6 and while attempting to work arm open, pipe stuck at 8490'. Worked pipe loose and pulled. Ran Servco hole opener #7. Rig down 2 1/2 hours for clutch repair. Mud: 74#, 43 sec, 6.6 cc, 12% solids.
- 2-14 Hole Opener #7 from 8436' to 8471'. Rig down 5 3/4 hours for electrical repairs. Ran hole opener #8 and opened hole from 8471' to 8516'. Mud: 74#, 42 sec, 6.4 cc, 12% solids.
- 2-15 Hole Opener #8 from 8516' to 8533'. Hole Opener #9 from 8533' to 8539' where safety valve on Kelly failed. While breaking out safety valve, pipe stuck at 8516'. Mixed 60-barrel "Pipe Lax" pill, spotted around fish and jarred on fish. Reduced mud weight to 71#. Believe pipe to be differentially stuck.
- 2-16 Reduced mud weight to 68 1/2#. Worked jar on pipe. Spotted 17-barrel pill of N10. Alternately soaked, jarred and moved 5 barrels of N10 past fish. Pipe could not be worked loose. Ran Dia-Log free point which showed pipe stuck 8266'-8516'. Backed off pipe at 8190'.
- 2-17 Ran Johnston tester, safety joint and jars and screwed into fish at 8190'. Set packer at 8145' and fish came free as soon as tool opened. Immediately closed tool. Pulled to shoe, dropped bar and opened backscuttle valve. Backscuttled hole clean. No evidence of gas. Ran 5 5/8" bit to bridge at 8554' and cleaned out to 8740'. Mud: 69#, 42 sec, 5.8 cc, 10%.
- 2-18 Ran Servco hole opener #10 from 8541' to 8618'. Hole Opener #11 from 8618' to 8641'. Mud: 69#, 40 sec, 5.2 cc, 10%.
- 2-19 Hole Opener #11 from 8641' to 8712'. Ran hole opener #12 and re-gauged hole from 8248' to 8712' and opened hole from 8712' to 8715'. Terminated hole opening due to extremely hard formation. Mud: 69#, 41 sec, 6.0 cc, 10% solids.
- 2-20 Ran Welex Compensated Neutron-Density log. Sixteen hours logging due to malfunction in tool. Mud: 69 1/2#, 41 sec, 6.2 cc, 10% solids.
- 2-21 Ran 5 5/8" bit, cleaned out to 8740' and conditioned hole for liner. Ran 16 joints or 520' of 4 1/2", 11.6#, K-55, 8 rd, ST & C Gru-V-Kut, wire weld screen 0.018" gauge with Burns 4 1/2" x 6 5/8" lead seal

1975

- 2-21  
(cont'd) liner hanger and port collar on top. Hung liner at 8737' (3' off) bottom) with top at 8217'. Set lead seal and tested okay with 1000 psi. Unable to open port collar. Pulled and found center keys plugged with sand and pieces of iron.
- 2-22 Reran gravel packing tools, opened port collar and gravel packed with 104 cu. ft. of 12-20 mesh gravel. Backscuttled 1 cu. ft. Washed liner and repacked with 12 cu. ft. Backscuttled 1 cu. ft. Reran wash tools.
- 2-23  
and  
2-24 Second wash of liner showed equal pressure throughout length of liner indicating gravel pack. Reran gravel packing tools and pumped in additional 8 sacks of gravel before pressure pack-off. Backscuttled 3 cu. ft. Total gravel in place - 119 cu. ft. Theoretical fill from hole caliper is 182 cu. ft. Further washing and packing not justified.
- 2-25 Closed port collar and test O.K. with 1000 psi. Ran Johnston bridge plug on 2 7/8" and 4 1/2" drill pipe and set same at 8210'. Applied 2300 psi which bled off to 1250 psi in 6 minutes. Reset bridge plug at 7724'. Applied 2500 psi which bled off to 500 psi in 35 minutes. Reset bridge plug at 7526'. Applied 2500 psi which bled off to 1100 psi in 15 minutes. Indications are hole in 6 5/8" liner between 7222' to 7526'. Reset bridge plug at 7724' and dumped four sacks of gravel.
- 2-26 Ran Johnston Positrieve cementer and set at 7382'. Annulus held 2500 psi O.K. for 15 minutes. Reset bridge plug 6 intervals between 7415' to 7577'. Applied 2500 psi which bled back to 2250 psi in 10 minutes on annulus. Applied 2500 psi in drill pipe which bled back to 700 psi in 15 minutes. Appeared bridge plug now leaking. Reset Positrieve at 7382' where annulus previously held 2500 psi O.K. Applied 2500 psi to annulus, which bled off to 2250 psi in 10 minutes. Positrieve may now be faulty. Attempted to lower Positrieve to top of bridge plug to pressure down annulus to check bridge plug and tool malfunctioned. Pulled Positrieve and found pieces of rubber from drill pipe protectors in tool which caused tool to malfunction. Ran in with bridge plug retrieving tool, circulated out gravel, engaged plug and reset same at 7329' after circulating hole clean. No evidence of gas. Applied 2300 psi which bled off to 200 psi in 15 minutes due to leak in valve. Reset bridge plug at 8205'.
- 2-27 Ran Johnston Positrieve and set same at 6400'. Applied 2500 psi and found pipe rams and Hydril leaking. Pressure tested 3000 psi down drill pipe and pressure bled off to 1000 psi in 10 minutes. Shut rig down at 6:00 A.M. to repair BOP until 10:00 A.M. and then again from 4:45 P.M. to 11:00 P.M. to repair BOP.
- 2-28 Ran Dia Log survey in 6 5/8" and 8 5/8" casing. No evidence of worn

1975

2-27 thru 3-2 pipe. Cut off 8 5/8" casing for tubing head. Installed head and same leaked. Removed, checked seals and reinstalled tubing head. Tested O.K. with 3100 psi for 30 minutes. Installed BOP and tested CSO. Ran Johnston Positrieve and set at 8195'. Tested bridge plug at 8205' with 3500 psi for 15 minutes. Pressured annulus with 2500 psi which bled off to 350 psi in 15 minutes. Reset Positrieve at 8132', dumped 4 sacks of 12-20 gravel on bridge plug. Pulled to 7759' and could not reset tool. Backscuttled one hour to clean out tool. Could not reset tool. Pulled and found gravel in tool. Ran 6 5/8" Positrieve tool which un-jayed running in hole and tool hung up on 6 5/8" liner. When tool hit liner, one packer rubber and 4 slips were knocked off. The tool un-jayed because while running in hole the driller allowed the pipe to rotate while making a connection. Ran spear to 3947' to recover packer rubber. No success. Ran 5 1/4" outside diameter junk basket to recover rubber and slips. Located top of gravel at 8183' and worked over junk to 8188'. No recovery.

3-3 Ran Bowen 7 5/8" outside diameter x 6 3/4" inside diameter washover shoe with 4 1/2" surge tool above on 4 1/2" drill pipe to top of 6 5/8" liner at 3927'. Dropped bar, sheered disc. No recovery. Ran 5 1/2" outside diameter Midway flat bottom magnet on 4 1/2" and 2 7/8" drill pipe and worked down to 8189'. Recovered small pieces of iron and drill pipe rubbers. Reran magnet with saw tooth skirt on bottom and worked over junk to 8189'. Recovered one slip and small piece of iron. Reran magnet and worked over junk to 8190'.

3-4 Recovered one arm of slip and small piece of iron. Ran #4 with magnet to 8192'. No recovery. Ran Industrial Concepts Corp., 5" outside diameter junk snatcher and backscuttled and worked over junk to 8198' for one hour. Recovered 3" piece of rubber and two pieces of iron.

3-5 Ran Bowen 5 1/2" outside diameter junk basket out circulating port 2' above basket. Worked over fish to 8200' without circulation. Recovered entire balance of junk. Ran open drill pipe to 8127' and strung in 4 sacks of 12-20 mesh gravel. Ran Johnston Positrieve on 2 7/8" and 4 1/2" drill pipe and tested as follows:

<u>Set Tool</u>	<u>PRESSURE PSI</u>		<u>Annulus</u>	<u>RESULTS</u>
	<u>Annulus</u>	<u>D.P.</u>		
7750		3500		Held 3500 - 15 minutes
7740		3500		" " " "
7723		3500		" " " "
7712		3500		Held 3250 - 15 minutes
7709		3500		" " " "
7700		3500		" " " "
7694		3500		" " " "

1975

3-5 cont'd	Set Tool	PRESSURE PSI		RESULTS	
		Annulus	D.P.	Annulus	
	7688	2500	3500	1250 in 15 mins.	Held 3000 - 15 minutes
	7680		3500		" 3250 - " "
	7663		3500		" " - " "
	7620	2500	3000	2000 in 15 mins.	Held 3000 - 15 minutes
			3000		" 2750 " "
	7182	2500	3000	2000 in 15 mins.	" " " "
	4042	2500	2500	2500 in 15 mins.	Held O.K. for 30 minutes, then dropped to 1150

Tests indicate minor leaks (probably joint leaks) from 8217' to at least 7182'. Pulled tester and found 1 slip missing.

- 3-6 Ran 5 1/2" outside diameter Midway magnet on wireline to 8183'. No recovery. Ran Baker 8 5/8" full bore squeeze tool on 4 1/2" drill pipe and set at 2000'. Applied 3000 psi to annulus and held same, O.K. for 30 minutes. Reset full bore at 1000', applied 3400 psi and held same O.K. for 30 minutes. 8 5/8" casing okay.
- 3-7 Ran 5 1/4" outside diameter Bowen junk basket with circulating sub 2' above shoe. Checked top of gravel at 8182'. Rotated down to 8186' without circulation. No recovery. Ran 5 1/4" outside diameter Bowen junk basket with circulating sub and backscuttled out sand 8182' to 8186'. Conditioned mud from 66# to 69#. Without circulation, worked basket down to 8189'. Recovered sand, no iron. Ran 5 1/2" outside diameter flat bottom magnet on wire line. No recovery in two runs. Ran 5 1/4" junk basket without circulating sub and circulated over junk to 8192'. No recovery.
- 3-8 Down one hour for repairs. Reran 5 1/2" magnet on 2 7/8" and 4 1/2" drill pipe and backscuttled out to 8194'. Recovered all of junk. Ran Johnston retrieving tool to 8188' and conditioned mud. Backscuttled 8192' to 8205'. Engaged bridge plug. Pulled same loose and circulated out gas cut mud.
- 3-9 Ran 5 5/8" bit with casing scraper and scraped 6 5/8" liner from 3929' to 8217'. No indication of bad pipe. Conditioned drilling fluid adding 55 gallons of Tretolite KW-12 for corrosion and bactericide control. Ran 10 joints or 4320' of 5" 18#, P-110 Atlas-Bradford flush joint thread, R-3 new seamless blank casing as inner liner. Liner fitted on bottom with Burns Tool Company 6 5/8", 28# x 5", 18# lead seal bottom hole packer and on top with a Burns 8 5/8", 36# x 5", 18# lead seal adaptor. Ran liner to 8210' and circulated down drill pipe. Set liner on 4 1/2" liner stub and set lead seal on bottom hole packer. Applied 600 psi and seal held O.K. for 15 minutes. Set lead seal on 8 5/8" x 5" adaptor. Closed bag. Applied 1000 psi which bled off to 600 psi before holding. Pressured to 1600 psi and bled off rapidly. Drove down on lead seal. Retested and fluid went away at 400-600 psi. Pulled liner tools.

1975

- 3-10 Ran Brown Oil Tool 5" casing spear, jars and bumper sub, engaged 5" liner and jarred for one hour at 220,000#. Recovered and laid down 4320' of 5", 18# liner - 5 hours breaking out spear from liner. All 5" liner inspected and O.K.'d by Pacific Inspection Company.
- 3-11 Finished laying down liner. Ran 5 5/8" bit and casing scraper and cleaned out hole to 8217'. Conditioned mud.
- 3-12 TO PROTECT 6 5/8" LINER WITH 5" INNER LINER:  
 Ran 107 joints and 1 pup or 4323.64' of 5", 18# Atlas-Bradford flush joint FL4F thread fitted on bottom with Burns 6 5/8", 28# x 5", 18# lead seal bottom hole packer and on top with Burns 8 5/8", 36# x 5", 18# lead seal adaptor with two 8 5/8" GW swab cups below. Before setting liner, circulated with 375 psi. Set bottom packer on top of 4 1/2" liner hanger at 8217'. Closed rams, applied 600 psi down drill pipe and same held O.K. for 15 minutes. Set lead seal on adaptor at 3892'. Closed Hydril, applied 1600 psi and found leak in valve. Repaired valve, re-pressured to 1600 psi and held same for 15 minutes. Atlas-Bradford teflon "O" rings installed in 5" liner. Liner made up with 4500 ft. lbs. of torque and supervised by Joe Trahan of Atlas-Bradford. Laid down 4 1/2" and 2 7/8" drill pipe. Cleaned mud tanks and storage.
- 3-13 Ran 2 3/8" and 2 7/8" tubing to bridge at 8620'. Changed over to lease salt water, treated with 3#/bbl. DMS and cleaned bridges to bottom at 8737'. Backscuttled hole clean for two hours.
- 3-14 and  
 3-15 Pulled and laid down excess tubing. Ran 2 3/8" and 2 7/8" tubing - 2 3/8" tubing broached. All tubing Hydro tested to 5000 psi. Hydro test truck broke down. Wait on replacement 4 hours. Set Brown Husky M-1, 5", 18# packer at 8174' with 10,000 # on packer and landed tubing in doughnut.

TUBING DETAIL

	<u>LENGTH</u>	<u>DEPTH</u>
K.B. to tubing head	17.00	17.00
116 - Joints 2 7/8", 6.5#, 8rd, EUE tubing, new	3784.24	3801.24
2 7/8" x 2 3/8", 8rd X over	1.00	3802.24
138 - Joints 2 3/8", 4.5#, 8rd, EUE tubing, used	4269.59	8071.83
2 3/8", 8 rd, EUE Macco sliding sleeve with shield in open position - up to open	2.40	8074.23
1 - Joint 2 3/8" tubing	30.62	8104.85
2 3/8" 8rd, EUE Baker "F" nipple 1.87 I.D.	.90	8105.75
1 - Joint 2 3/8" tubing	31.13	8136.88
2 3/8", 8rd, EUE Baker "F" nipple 1.87 I.D.	.90	8137.78
1 - Joint 2 3/8" tubing	31.04	8169.82
2 3/8", 8rd, EUE x 5", 18# Brown Husky M-1 packer	4.33	8173.15
Baker NO-GO, Model "R" nipple 1.81 I.D.	.85	8174.00
2 3/8" mule shoe collar	.40	8174.40

1975

3-14 (cont'd) Set plug in doughnut, removed BOP. Installed Christmas tree.  
and Removed plug. Set blanking plug in doughnut and tested doughnut  
3-15 and Christmas tree to 5000 psi for 30 minutes. RIG RELEASED at  
3:00 A.M. on March 15, 1975.

PETROLEUM TESTING SERVICE

SOUTHERN CALIFORNIA GAS CO.

WELL: 1W-70 (SS4A)  
 FIELD: ALISO CANYON  
 COUNTY: LOS ANGELES  
 STATE: CALIFORNIA

LITHOLOGIC DESCRIPTION

<u>DEPTH INTERVAL</u>	<u>DESCRIPTION</u>
<u>CORE #1 - 8365'-8381'</u>	
8365'0"-8372'0"	Siltstone, massive, dark grey, hard, very fine grain, poorly sorted, subangular, micaceous, sandy, gas odor, no cut, no fluorescence. Acetone test indicates trace hydrocarbon presence.
8372'0"-8376'7"	Siltstone, massive, dark brown, hard, very fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, dark amber cut, dull brown fluorescence.
8376'7"-8377'10"	Siltstone, massive, dark grey, hard, very fine grain, poorly sorted, subangular, micaceous, sandy, gas odor, no fluorescence.
8377'10"-8378'0"	Claystone, laminated, mottled grey, firm, fine grain, poorly sorted, subangular, micaceous, gas odor, no fluorescence.
8378'0"-8381'0"	Siltstone, massive, dark brown, hard, very fine grain, poorly sorted, subangular, micaceous, sandy, gas odor, no fluorescence.
<u>CORE #2 - 8395'-8406'7"</u>	
8395'0"-8396'2"	Siltstone, laminated, dark grey, firm, very fine grain, poorly sorted, subangular, micaceous, fossiliferous, sandy, gas odor, no cut, no fluorescence. Acetone test indicates trace hydrocarbons presence.
8396'2"-8406'11"	Siltstone, massive, inclusions, dark grey, hard, very fine grain, poorly sorted, subangular, micaceous, fossiliferous, sandy, oil odor, light amber cut, dull brown fluorescence. Tightly cemented inclusions.
8406'11"-8406'7"	Siltstone, laminated, dark grey, soft, very fine grain, fair sorting, subangular, micaceous, arenaceous, silty, gas odor, no fluorescence.
<u>CORE #3 - 8421'0"-8429'6"</u>	
8421'0"-8422'5"	Siltstone, massive, dark grey, hard, very fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, dark amber cut, dull brown fluorescence.
8422'5"-8423'9"	Siltstone, massive, dark grey, hard, very fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, light amber cut, dull brown fluorescence.
8423'9"-8429'6"	Siltstone, massive, dark brown, hard, fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, dark amber cut, dull brown fluorescence.

PETROLEUM TESTING SERVICE

SOUTHERN CALIFORNIA GAS CO.

WELL: 1W-70  
 FIELD: ALISO CANYON  
 COUNTY: LOS ANGELES

LITHOLOGIC DESCRIPTION - (CONTINUED)

DEPTH INTERVAL	DESCRIPTION
<u>CORE #4 - 8451'-8462'7"</u>	
8451'0"-8453'4"	Siltstone, massive, dark brown, hard, fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, dark amber cut, dull brown fluorescence.
8453'4"-8454'10"	Siltstone, massive, inclusions, dark grey, very hard, very fine grain, poorly sorted, subangular, micaceous, sandy, gas odor, no cut, no fluorescence. Acetone test indicates trace hydrocarbon presence. Tightly cemented inclusions.
8454'10"-8458'0"	Siltstone, massive, dark brown, hard, fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, amber cut, dull brown fluorescence.
8458'0"-8461'2"	Siltstone, massive, dark grey, hard, very fine grain, poorly sorted, subangular, micaceous, fossiliferous, sandy, oil odor, light amber cut, dull brown fluorescence.
8461'2"-8462'3"	Siltstone, massive, dark grey, very hard/extremely hard, very fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, light amber cut, dull brown fluorescence.
8462'3"-8467'10"	Siltstone, massive, dark brown, firm, fine grain, poorly sorted, subangular, micaceous, fossiliferous, sandy, oil odor, amber cut, dull brown fluorescence.
8467'10"-8468'9"	Siltstone, massive, dark grey, very hard, very fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, light straw cut, bright yellow fluorescence.
8468'9"-8469'0"	Siltstone, massive, dark brown, firm, fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, amber cut, dull brown fluorescence.
<u>CORE #5 - 8469'0"-8499'0"</u>	
8469'0"-8477'7"	Siltstone, massive, dark brown, firm, fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, dark amber cut, dull brown fluorescence.
8477'7"-8482'0"	Siltstone, massive, inclusions, dark brown, firm, fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, medium dark amber cut, dull brown fluorescence. Tightly cemented inclusions.
8482'0"-8485'0"	Siltstone, massive, dark grey/brown, firm, fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, amber cut, dull brown fluorescence.
8485'0"-8489'8"	Siltstone, massive, dark grey, hard, fine grain, poorly sorted, subangular, micaceous, sandy, gas odor, no cut, no fluorescence. Acetone test indicates trace hydrocarbon presence.
8489'8"-8499'0"	Siltstone, massive, brown, firm, fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, amber cut, dull brown fluorescence.

PETROLEUM TESTING SERVICE

SOUTHERN CALIFORNIA GAS CO.

WELL: IW-70  
 FIELD: ALISO CANYON  
 COUNTY: LOS ANGELES

LITHOLOGIC DESCRIPTION - CONTINUED

DEPTH INTERVAL	DESCRIPTION
<u>CORE #6 - 8500'0"-8511'0"</u>	
8500'0"-8501'0"	Siltstone, massive, brownish grey, very hard, fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, light straw cut, dull brown fluorescence. Slickensides, bright yellow fluorescence.
8501'0"-8503'6"	Siltstone, massive, inclusions, dark brown, firm, fine grain, poorly sorted, subangular, micaceous, fossiliferous, sandy, oil odor, amber cut, dull brown fluorescence. Tightly cemented inclusions.
8503'6"-8507'3"	Sand, massive, dark brown, firm, barely friable, fine grain, poorly sorted, subangular, micaceous, silty, oil odor, light amber cut, dull brown fluorescence.
8507'3"-8511'0"	Siltstone, massive, dark brown, firm, barely friable, fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, amber cut, dull brown fluorescence.
<u>CORE #7 - 8513'-8524'2"</u>	
8513'0"-8514'4"	Siltstone, massive, dark grey, hard, very fine grain, poorly sorted, subangular, micaceous, sandy, gas odor, no cut, no fluorescence. Acetone test indicates trace hydrocarbon presence.
8514'4"-8516'4"	Sand, massive, dark brown, firm, barely friable, fine grain, poorly sorted, subangular, micaceous, fossiliferous, oil odor, amber cut, dull brown fluorescence.
8516'4"-8522'0"	Siltstone, massive, dark brown, hard, barely friable, fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, dark amber cut, dull brown fluorescence. Slickensides.
8522'0"-8523'3"	Siltstone, massive, dark grey, hard, very fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, amber cut, dull brown fluorescence.
8523'3"-8524'2"	Sand, massive, dark brown, firm, barely friable, fine grain, poorly sorted, subangular, micaceous, silty, oil odor, dark amber cut, dull brown fluorescence.
8524'2"-8524'9"	Sand, massive, dark brown, soft, moderately friable, medium grain, poorly sorted, subangular, micaceous, silty, oil odor, amber cut, dull brown fluorescence.
8524'9"-8525'2"	Sand, massive, dark brown, hard, medium grain, poorly sorted, subangular, silty, oil odor, amber cut, dull brown fluorescence. 80% quartz.
8525'2"-8527'2"	Siltstone, massive, brownish grey, hard, fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, light amber cut, dull brown fluorescence.
8527'2"-8530'9"	Siltstone, massive, dark brown, hard, fine grain, poorly sorted, subangular, micaceous, sandy, oil odor, amber cut, dull brown fluorescence.

PETROLEUM TESTING SERVICE

SOUTHERN CALIFORNIA GAS CO.

WELL: 1W-70  
 FIELD: ALISO CANYON  
 COUNTY: LOS ANGELES

LITHOLOGIC DESCRIPTION - (CONTINUED)

<u>DEPTH INTERVAL</u>	<u>DESCRIPTION</u>
<u>CORE #7 - (Continued)</u>	
8530'9"-8536'0"	Sand, massive, dark brown, soft, readily friable, medium grain, poorly sorted, subangular, silty, oil odor, light amber cut, dull brown fluorescence. 80% quartz.
<u>CORE #8 - 8536'0"-8547'0"</u>	
8536'0"-8540'0"	Sand, massive, dark brown, firm, moderately friable, medium grain, poorly sorted, subangular, silty, oil odor, light amber cut, dull brown fluorescence.
8540'0"-8541'6"	Sand, massive, dark brown, hard, barely friable, fine/medium grain, poorly sorted, subangular, silty, oil odor, light amber cut, dull brown fluorescence.
8541'6"-8542'0"	Sand, massive, brown, hard, fine grain, fair sorting, subangular, silty, oil odor, amber cut, dull brown fluorescence.
8542'0"-8547'0"	Siltstone, massive, dark brown, hard, fine grain, poorly sorted, subangular, sandy, oil odor, amber cut, dull brown fluorescence.
<u>CORE #9 - 8547'0"-8577'0"</u>	
8547'0"-8547'9"	Siltstone, massive, brown, very hard, fine grain, poorly sorted, subangular, sandy, oil odor, dark amber cut, dull brown fluorescence.
8547'9"-8550'6"	Siltstone, massive, brown, hard, fine grain, poorly sorted, subangular, sandy, oil odor, amber cut, dull brown fluorescence.
8550'6"-8552'11"	Siltstone, massive, brown, firm, fine grain, poorly sorted, subangular, sandy, oil odor, light amber cut, dull brown fluorescence.
8552'11"-8563'4"	Siltstone, massive, brown, hard, fine grain, poorly sorted, subangular, sandy, oil odor, amber cut, dull brown fluorescence.
8563'4"-8577'0"	Siltstone, massive, dark brown, firm with some harder pockets of silt, barely friable, fine grain, poorly sorted, subangular, sandy, oil odor, amber cut, dull brown fluorescence.

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

Report on Operations

No. T. 275-74

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

Santa Paula, Calif.  
February 14, 1975

DEAR SIR:

Operations at well No. IV 70, API No. 037-21375, Sec. 28, T. 3N, R. 16W,  
S.B. & M. Aliso Canyon Field, in Los Angeles County, were witnessed  
on Jan. 23, 1975. Mr. L. Bright, representative of the supervisor was  
present from 0200 to 0400. There were also present W. Brooks, Service Company  
Engineer

Present condition of well: 1 1/2" cas. 328'; 3 5/8" cas. 1065'; 6 5/8" cas. 3927-8248';  
c.p. 8220'. T.D. 8248'.

The operations were performed for the purpose of demonstrating that no fluid has access to the  
well from between the 3 5/8" and 6 5/8" casings.

DECISION:

THE OPERATIONS AS REPORTED AND WITNESSED ARE APPROVED AS INDICATING THAT NO  
FLUID HAS ACCESS TO THE WELL FROM BETWEEN THE 3 5/8" AND 6 5/8" CASINGS.

B  
Operator

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

By [Signature] Deputy

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

REPORT ON PROPOSED OPERATIONS No. P 275-5

3606 WELL

Mr. P. S. Magruder, Jr. Agent  
Pacific Lighting Service Co.  
P.O. Box 54700, Terminal Annex  
Los Angeles, California 90054

January 2, 1975 Calif.

DEAR SIR:

(037-21375)

Your supplementary proposal to drill Well No. IW 70,  
Section 28, T. 3N, R. 16W, S.B. B. & M. Aliso Canyon Field, Los Angeles County,  
dated 12/16/74, received 1/2/75, has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT IN ALL OTHER RESPECTS THE WELL SHALL BE DRILLED  
IN ACCORDANCE WITH THE PROVISIONS SET FORTH IN OUR REPORT NO. P274-40 DATED JAN. 22, 1974.

Blanket Bond

ALL:b

cc: Operator

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

By W. J. Putnam, Deputy

RESOURCES AGENCY OF CALIFORNIA  
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS  
ST. PAULI, CALIFORNIA

JAN 3 1975

SUPPLEMENTARY NOTICE

SANTA PAULA, CALIFORNIA

Los Angeles Calif. December 16, 1974

DIVISION OF OIL AND GAS

Santa Paula Calif.

A notice to you dated January 10, 1974, stating the intention to

drill well No. IW 70  
(Drill, deepen, redrill, abandon)

Sec. 28, T. 3N, R. 16W, S.B. B & M Aliso Canyon Field,

County, should be amended because of changed conditions.

The present condition of the well is as follows: 11" hole was drilled to 4665'.

Total depth 4665'

Complete casing record including plugs. 13-3/8", 54.5#, K-55, Buttress thread cemented at 928'.

We now propose, due to severe lost circulation & hole problems:

1. To cement 8-5/8", 36#, K-55, 8rd. LT&C casing at 4065'.
2. Drill 7-5/8" hole to 8840'.
3. Complete in Sesnon Zone.

*[Handwritten signatures and initials]*

P. O. Box 54790, T. A., LA 90051 Pacific Lighting Service Company  
(Address) (Name of Operator)

(213) 689-3561  
(Telephone No.)

By [Signature]  
Corporation

ADDRESS ONE COPY OF NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

RESOURCES AGENCY OF CALIFORNIA  
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Report on Operations

No. T. 275-74

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

Santa Paula, Calif.  
February 14, 1975

DEAR SIR:

Operations at well No. IV 70, API No. 037-21375, Sec. 28, T. 3N, R. 16W,  
S.B. & M. Aliso Canyon Field, in Los Angeles County, were witnessed  
on Jan. 23, 1975. Mr. L. Bright, representative of the supervisor was  
present from 0200 to 0400. There were also present E. Brooks, Service Company  
Engineer

Present condition of well: 13 3/8" cas. 928'; 8 5/8" cas. 4065'; 6 5/8" cas. 3927-8248';  
c.p. 8220'. T.D. 8248'.

The operations were performed for the purpose of demonstrating that no fluid has access to the  
well from between the 8 5/8" and 6 5/8" casings.

DECISION:

THE OPERATIONS AS REPORTED AND WITNESSED ARE APPROVED AS INDICATING THAT NO  
FLUID HAS ACCESS TO THE WELL FROM BETWEEN THE 8 5/8" AND 6 5/8" CASINGS.

B  
Operator

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

By WED Pitman Deputy

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS No. P 275-5

3606 WELL

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

January 2, 1975 Calif.

DEAR SIR:

(037-21375)

Your supplementary proposal to drill Well No. IW 70,  
Section 28, T. 3N, R. 16W, S.B. B. & M. Aliso Canyon Field, Los Angeles County,  
dated 12/16/74, received 1/2/75, has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT IN ALL OTHER RESPECTS THE WELL SHALL BE DRILLED  
IN ACCORDANCE WITH THE PROVISIONS SET FORTH IN OUR REPORT NO. P274-40 DATED JAN. 22, 1974.

Blanket Bond  
ALL:b

cc: Operator

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

By [Signature], Deputy

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

DIVISION OF OIL AND GAS  
**RECEIVED**

JAN 2 1975

**SUPPLEMENTARY NOTICE**

SANTA PAULA, CALIFORNIA

Los Angeles

Calif. December 16, 1974

DIVISION OF OIL AND GAS

Santa Paula

Calif.

A notice to you dated January 10, 19 74, stating the intention to

drill

well No. IW 70

(Drill, deepen, redrill, abandon)

Sec. 28

T. 3N

R. 16W

S.B. B & M

Aliso Canyon

Field,

County, should be amended because of changed conditions.

The present condition of the well is as follows: 11" hole was drilled to 4665'.

Total depth 4665'

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We now propose, due to severe lost circulation & hole problems:

1. To cement 8-5/8", 36#, K-55, 8rd. LT&C casing at 4065'.
2. Drill 7-5/8" hole to 8840'.
3. Complete in Sesnon Zone.

MAP	CARDS	BOND	FORMS
		bb	✓

P. O. Box 54790, T. A., LA 90051 Pacific Lighting Service Company

(Address)

(Name of Operator)

(213) 689-3561

(Telephone No.)

By AS Magruder Jr.

Corporation

ADDRESS ONE COPY OF NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

DIVISION OF OIL AND GAS

SEP 10 1976

History of Oil or Gas Well

SANTA PAULA, CALIFORNIA

OPERATOR SOUTHERN CALIFORNIA GAS COMPANY FIELD Aliso Canyon

Well No. I.W. #70, Sec. 28, T. 3N, R. 16W, S. B. B. & M.

Date August 30, 1976

Signed P. S. Magruder, Jr.

P. O. Box 3249, Terminal Annex  
Los Angeles, California 90051

P. S. Magruder, Jr.

(Address)

(Telephone Number)

Title Agent

(President, Secretary or Agent)

(213) 689-3561

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

8-13-76 Moved in Pool Rig #38. Rigged up. Circulated hole. Built up drilling fluid weight from 75# to 78#.

8-14-76 Circulated hole. Installed tubing hanger plug in Cameron tubing hanger. Removed Christmas tree. Installed 10 3/4" - 5000 psi - Class III B.O.P.E. (Shaffer double gate 2 7/8" and Shaffer bag). Rigged up H. & H. triplex pump and tested with water, as follows:

Blind rams	4300 psi for 20 minutes	- O.K.
Pipe rams - 2 7/8"	4150 psi " 20 "	- O.K.
Shaffer bag	4100 psi " 20 "	- O.K.

Tests witnessed and approved by D.O.G.

Rigged up Newsco and tested with nitrogen, as follows:

Blind rams	4000 psi for 20 minutes	- O.K.
Pipe rams - 2 7/8"	3900 psi " 20 "	- O.K.
Shaffer bag	4000 psi " 20 "	- O.K.

8-15-76 Rig and crew idle.

8-16-76 Conditioned mud to 78#, 42 viscosity, 6.4 water loss and unseated packer. Pulled out of hole. Ran in hole with 3 3/4" bit and casing scraper to 8095'.

8-17-76 Cleaned out to 8737'. Circulated hole clean. Pulled out of hole. Ran bridge plug to 3950' but could not set. Ran second plug and set at 3950'. Going in hole with 8 5/8" retainer to pressure test casing.

8-18-76 Finished going in hole to pressure test, as follows:

3000' to 3950'	2000 psi for 20 minutes	
3000' to surface	2500 " " 20 "	
2000' " "	3000 " " 20 "	
1000' " "	3500 " " 20 "	
250' " "	4000 " " 20 "	

Ran in hole and recovered bridge plug at 3950'. Ran 4" bit and casing

8-18-76  
(cont'd)

scraper to 8217'. Circulated for two hours. Started out of hole.

8-19-76

Finished pulling out of hole. McCullough set Otis permatrieve packer at 8200'. Going in hole with production equipment. Changing collars and hydrotesting to 5000 psi for one minute. (34 doubles in hole).

8-20-76

Going in hole with tubing. Spaced out to land tubing.

8-21-76

Landed tubing with 10,000# on packer. Kelly bushing to hanger 15'. 116 joints 2 7/8" and 4 pup joints 3792.32'; 141 joints 2 3/8" 4358.38'; safety valve 9.33'; blast joint (20') 19.88'; "XN" No-Go nipple 1.12"; 10' blast joint 9.88'; J-Latch .58'; 4 production seals 4.38'; extension 2.12'; guide .48'. Picked up 15,000# over weight - O.K. Removed B.O.P.E. Installed Christmas tree and tested seals and tree to 5000 psi for 20 minutes - O.K. Installed Otis plug in No-Go nipple. Tested packer and seals at 2000 psi for 20 minutes - O.K. Changed to lease water. Released rig at 10:00 P.M.

DIVISION OF OIL AND GAS

Report on Operations

No. T 276-213

Mr. P. S. Magruder, Jr., Agent  
Southern California Gas Co.  
P.O. Box 54790 Terminal Annex  
Los Angeles, Calif. 90024

Santa Paula, Calif.  
Aug. 18, 1976

DEAR SIR:

Operations at well No. IW 70, API No. 037-21375, Sec. 28, T. 3N, R. 16W,  
S.B., B & M. Aliso Canyon Field, in Los Angeles County, were witnessed  
on 8/14/76. Mr. C.E. Downy T.M. Callaway, representative of the supervisor was  
present from 1900 to 2100. There were also present C.E. Downy

Present condition of well: 13 3/8" cem. 928'; 8 5/8" cem. 4065'; 6 5/8" cem. 8248', c.p.  
8220'; 5" ld. 3893-8217'; 4 1/2" ld. 8217-8737', (all perfs.) T.D. 8740'.

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

DECISION:

**THE BLOWOUT PREVENTION EQUIPMENT AND INSTALLATION ARE APPROVED.**

b

HAROLD W. BERTHOLF  
~~XXXXXXXXXXXXXXXXXXXX~~  
State Oil and Gas Supervisor

By John L. [Signature] Deputy

RESOURCES AGENCY OF CALIFORNIA  
DEPARTMENT OF CONSERVATION

**DIVISION OF OIL AND GAS**

**Report on Operations**

No. T 274-384

Mr. P. S. Magruder, Jr., Agent  
Pacific Lighting Service Co.  
P.O. Box 54790, Terminal Annex  
Los Angeles, California 90017

Santa Paula, Calif.  
December 5, 1974

DEAR SIR:

Operations at well No. IV 70, API No. 037-21375, Sec. 28, T. 3N, R. 16W,  
S.B., B & M. Aliso Canyon Field, in Los Angeles County, were witnessed  
on Nov. 23, 1974, Mr. L. Bright, representative of the supervisor was  
present from 0630 to 0900. There were also present Mr. Wally Overton, contract  
foreman

Present condition of well: 13 3/8" con. 928'. T.D. 928'.

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

DECISION:

THE BLOWOUT PREVENTION EQUIPMENT AND INSTALLATION ARE APPROVED.

*Elmer Olson / DER 12/17/74*

*Losing circulation between 1060 + 1150. Presently have pipe stuck  
@ 4658. When get pipe loose will cem. 8 5/8" @ 4000' - a protective string.*

*Will then continue dalg to 9000' ±*

*Will file supplementary notice*

b  
cc: Operator

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

By *[Signature]* Deputy

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

APR 3 1974

LEASE DESIGNATION AND SERIAL NO.

LA 055641  
NAME OF LEASER OR TRICK NAME  
SAMPSON

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1. TYPE OF WORK  
DRILL  DEEPEN  PLUG BACK

2. TYPE OF WELL  
Oil Well  Hot Well  Other  Multiple Zone

3. NAME OF OPERATOR  
Pacific Lighting Service Company

4. ADDRESS OF OPERATOR  
P O Box 34790 Terminal Annex, Los Angeles 90054

5. LOCATION OF WELL (Report location clearly and in accordance with instructions)  
From Sta 84, 7708.7' westerly and 1229' southerly  
At proposed well 800'  
From Sfc, 1275' northerly and 2990' westerly

6. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR VILLAGE  
4 miles northwest of Granada Hills

7. DISTANCE FROM NEAREST PROPERTY OR LEASE LINE, BY  
LINE TO SURFACE SPEC. UNIT THIS IF UNIT  
unit lease; unit lease

8. DEPTH TO NEAREST SURFACE OF WATER OR OTHER LIQUID IN WELL, IN FEET  
1700

9. DEPTH TO NEAREST SURFACE OF WATER OR OTHER LIQUID IN WELL, IN FEET  
2825.58

10. DEPTH TO NEAREST SURFACE OF WATER OR OTHER LIQUID IN WELL, IN FEET

11. NAME OF RESERVOIR  
Sesnon Frew Zone

12. NAME OF LEASE  
Frew

13. NAME OF WELL  
LR 10

14. NAME OF WELL OR WILDCAT  
Aliso Canyon SFZ

15. SECTION, TOWNSHIP, OR RANGE  
Sec 29, T 3N, R16W

16. COUNTY OR PARISH OR STATE  
L.A. Calif.

17. NO. OF ACRES ASSIGNED TO THIS WELL  
unit lease

18. SURFACE CABLE LOG NO.  
R

19. APPROX. DATE WORK WILL BE STARTED  
1 April 1974

SIZE OF HOLE	DEPTH OF CASING	BY WHAT METHOD	DEPTH OF CASING	IF CEMENTED
17 1/2"	13 3/8"	48+	800'	800'
11"	8 5/8"	36+	8500'	8500' & 4000'
7 5/8"	6 5/8"	24+	4380'	liner

1. Drill 17 1/2" hole to 800' and cement 13 3/8" casing with sufficient cement to reach surface.
2. Install hydraulic Hydrill and double Shaifer blowout preventers.
3. Directionally drill 11" hole to intersect top of Sesnon zone S-4 marker at 4520 was at coordinates 1240 northerly and 2990 westerly from surface.
4. Run suite of logs and cement 8 5/8" casing at S-4 marker.
5. Obtain water shut-off above well.
6. Complete with perforated 6 5/8" liner. Liner may be gravel packed.

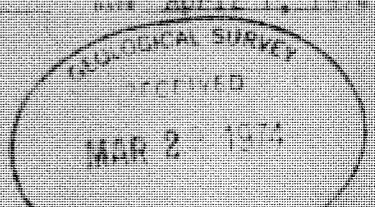
Note: Well to "pass through" Frew lease and be completed beneath standard "Del Aliso" lease. All lease involved are written unit boundary.

11. STATE WHICH SURFACE PROPOSED PRODUCTION. If proposal is to deepen or plug back, give data on present production zone and proposed new production zone. If proposal is to drill or deepen directionally, give sufficient data on subsurface locations and measured and true vertical depths. Give blowout preventer program if any.

23. APPROVED BY: B. P. Jones TITLE: Senior Reservoir Eng. DATE: March 27, 1974

(This space for Federal or State office use)

APPROVED BY: C. F. Russell DISTRICT ENGINEER DATE: April 1, 1974



DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS No. P. 274-40

3606 WELL

Mr. P. S. Magruder, Jr.  
Pacific Lighting Service Company  
P. O. Box 51790, Terminal Annex  
Los Angeles, California 90051

Santa Paula Calif.  
January 22, 1974

DEAR SIR:

(037-21375)

Your proposal to drill Well No. IN 70  
Section 28 T. 3N, R. 16W S.B.M. & M., Aliso Canyon Field, Los Angeles County,  
dated 1/10/74, received 1/21/74, has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. The provisions of Sec. 3606 relating to derricks and subsurface spacing shall be followed.
2. Sufficient cement shall be pumped back of the 13 3/8" casing to fill from the shoe to the surface.
3. Drilling fluid of proper weight and consistency shall be used to keep the well under control at all times; and a reserve supply of this material shall be kept on hand to meet any emergency. NO CONTAMINANTS OR TOXIC MATERIAL SHALL BE USED IN ANY DRILLING FLUID THAT IS TO BE PLACED IN AN UNLINED SUMP.
4. Any sump used during drilling operations shall be thoroughly cleaned of all drilling materials and the site restored to its prior condition as soon as drilling operations are completed.
5. Blowout prevention equipment, at least of the Division of Oil and Gas Class III rating, shall be installed and maintained in operating condition at all times.
6. Fresh waters back of the 8 5/8" casing shall be protected with cement.
7. A subsurface directional survey of this well shall be made and a plat of said survey filed with this Division within 15 days of the completion of drilling.
8. THIS DIVISION SHALL BE NOTIFIED TO WITNESS:
  - a. A pressure test of the blowout prevention equipment before drilling out of the shoe of the 13 3/8" casing.
  - b. A test of the 8 5/8" water shut-off above the Seaman zone.

Note: This approval is granted under Sec. 3606 of the Public Resources Code.

Blanket Bond  
All:R

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

By ADD Pitman, Deputy

JAN 21 1974

**DIVISION OF OIL AND GAS**  
**Notice of Intention to Drill New Well**  
This notice and surety bond must be filed before drilling begins

12

SANTA PAULA, CALIFORNIA

037-21375

Los Angeles Calif. January 10 19 74

DIVISION OF OIL AND GAS

In compliance with Section 3203, Division III, Article 4, Public Resources Code, notice is hereby given that it is our intention to commence drilling well No. IW 70, Sec. 28, T. 3N, R. 16W, S.B. B. & M., Aliso Canyon Field, Los Angeles County.

Legal description of mineral-right lease, consisting of 431.5 acres, is as follows: \_\_\_\_\_  
(Attach map or plat to scale)  
As Per Plat Previously Filed.

Do mineral and surface leases coincide? Yes  No \_\_\_\_\_ If answer is no, attach legal description of both surface and mineral leases, and map or plat to scale.

Location of Well: 7708.70 feet Westerly ~~along section line and~~ 881.29 feet Southerly  
(Direction) ~~property~~ ~~property~~ (Direction)

at right angles to said line from the Station 84 ~~corner of section~~ ~~property~~

Reference: Metrex Aerial Surveys Company, Drawing No. 11679,  
Sheet 2 of 5.

Elevation of ground above sea level 2885.58 feet USGS datum.

All depth measurements taken from top of Kelly bushing which is 17 feet above ground.  
(Derrick Floor, Rotary Table or Kelly Bushing)

**PROPOSED CASING PROGRAM**

SIZE OF CASING INCHES A.P.I.	WEIGHT	GRADE AND TYPE	TOP	BOTTOM	CEMENTING DEPTHS
13-3/8"	48#	H-40 Smls	Sfc	900	900
8-5/8"	36#	K-55 and N-80 Smls	Sfc	8650±	8650± and 4000±
6-5/8"	24&28#	K-55	8500	8950	Perforated Liner

Intended zone(s) of completion: Seson 8650 - 8950 Estimated total depth 8950  
(Name) (Depth, top and bottom)

MAP	MAP BOOK	GAUGES	OTHER	FORMS
250	1-26-74	✓	BB	114 ✓

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

Address P. O. Box 54790, Term Annex Pacific Lighting Service Company  
(Name of Operator)

Los Angeles, California 90051 By P.S. Magruder Jr.

Telephone Number 213/689-3621 or 689-3561 Type of Organization Corporation  
(Corporation, Partnership, Individual, etc.)