



State of California • Natural Resources Agency  
Department of Conservation  
**Division of Oil, Gas, and Geothermal Resources**  
801 K Street • MS 18-05  
Sacramento, CA 95814  
(916) 445-9686 • FAX (916) 319-9533

Edmund G. Brown Jr., Governor  
Kenneth A. Harris Jr., State Oil and Gas Supervisor

January 3, 2017

**SENT VIA EMAIL**

Mr. Rodger Schwecke  
Vice President  
Transmission and Storage  
Southern California Gas Company  
[RSchwecke@semprautilities.com](mailto:RSchwecke@semprautilities.com)

FINDING THAT WELL PORTER 32C (API NO. 03721360) HAS PASSED THE FIRST BATTERY OF TESTS AND WAS TAKEN OUT OF SERVICE AND ISOLATED FROM THE UNDERGROUND GAS STORAGE RESERVOIR

Dear Mr. Schwecke:

I am writing regarding the safety review results of one of the 114 wells at the Aliso Canyon gas storage facility (Facility). Each of the wells are subject to the comprehensive safety review that State Oil and Gas Supervisor Order 1109 and SB 380<sup>1</sup> require to be completed before the Division of Oil, Gas, and Geothermal Resources (Division) may authorize resumption of injection operations at the Facility. Order 1109 describes two batteries of well tests. To complete the review, each well must (1) pass both batteries of tests, (2) pass the first battery of tests and be taken out of service and isolated from the underground gas storage reservoir, or (3) be properly plugged and abandoned.

The first battery of tests assesses the casing using temperature and noise logs to ensure that there is no migration of fluids near the wellbore. If a well passes those tests, it may (1) undergo the second battery of tests for potential approval to use for injection if and when injections may resume, or (2) be taken out of service and isolated from the underground gas storage reservoir as specified in Steps 4b through 7b of the Safety Review Testing Regime of Order 1109 (Testing Regime). The Division posts the current status and testing results for each of the 114 wells on its website at <http://www.conservation.ca.gov/dog/AlisoCanyon/Pages/Well-Detail.aspx>.

After receiving and evaluating all test results and other data concerning the well, I find for purposes of Order 1109 and SB 380, that well Porter 32C (API No. 03721360) has completed the first battery of the Testing Regime and was taken out of service and, on September 29, 2016, the well was isolated from the underground gas storage reservoir as specified in Step 6b of the Testing Regime. Monitoring and testing of the well must continue as required by Order 1109 and any applicable law. If the well does not pass the second battery of tests within one year of being isolated from the reservoir, then the well must be plugged and abandoned in accordance with Public Resources Code section 3208.

Sincerely,

Kenneth A. Harris Jr.,  
State Oil and Gas Supervisor

<sup>1</sup> Senate Bill 380 (Pavley, Chapter 14, Statutes of 2016) codified in part at Public Resources Code section 3217.

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

Rec'd 10-13-16 DOGGR Ventura.

**HISTORY OF OIL OR GAS WELL**

Operator Southern California Gas Company Field Aliso Canyon County Los Angeles  
Well Porter 32 C Sec 27 T3N R16W S.B.B.M.  
A.P.I. No. 03721360 Name Tom McMahon Title SIMP Project Manager  
Date 9/27/2016 (Person submitting report) (President, Secretary, or Agent)  
(Month, day, year) Signature Thomas McMahon  
Address PO Box 2300, SC9365, Chatsworth, CA, 91313-2300 Telephone Number 714-398-5020

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.

**Daily Operation Period: 8/30/2016 - 8/30/2016**

Operations this Report Period (DOGGR)

MIRU Slickline. RIH with 2.30" gauge ring to No-Go Seating Nipple at 7127'  
RIH and set plug body in No-Go Seating Nipple at 7127'  
RIH and set prong in plug body at 7127'  
RIH with shifting and open sliding sleeve at 7092'  
Secured well. RDMO

**Daily Operation Period: 9/6/2016 - 9/6/2016**

Operations this Report Period (DOGGR)

MIRU pump truck, separator, vac truck and carbon canisters  
Pressure tested lines and surface equipment.

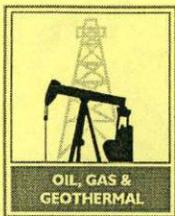
Rigged up to inner string annulus and filled with 3 bbl 3% KCL. Called DOGGR to witness test. Applied 619 psi and recorded with pump truck for 1hr. Test approved by Jay Huff w/ DOGGR

Rigged up to tubing and circulated well full of 3% KCl. Surface fluid at 223 bbl. Pumped additional 10 bbl. Applied preliminary pressure test of 1000 psi for 20 minutes. Good test. Bled down well. RDMO equipment

**Daily Operation Period: 9/7/2016 - 9/7/2016**

Operations this Report Period (DOGGR)

With DOGGR witness on location, applied 1100 psi to tubing to test packer, tubing plug and inner string casing. Recorded test for 1 hr with pump truck. Test approved.



NATURAL RESOURCES AGENCY OF CALIFORNIA  
DEPARTMENT OF CONSERVATION  
DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES  
1000 S. Hill Rd, Suite 116 Ventura, CA 93003-4458  
Phone:(805) 654-4761 Fax:(805) 654-4765

No. T 216-0422

## REPORT ON OPERATIONS

GAS STORAGE PROJECT  
"Sesnon-Frew" - Modelo (Miocene-Eocene) Formation

Amy Kitson  
Southern California Gas Company (S4700)  
12801 Tampa Ave., SC9382  
Northridge, CA 91326

Ventura, California  
October 19, 2016

Your operations at well "**Porter**" 32C, A.P.I. No. 037-21360, Sec. 27, T. 03N, R. 16W, SB B.&M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on 9/6/2016, by **Jay N. Huff**, a representative of the supervisor.

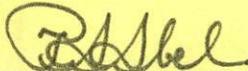
The operations were performed for the purpose of **determining casing integrity**.

DECISION:

**APPROVED**

JNH/TKC

Kenneth A. Harris Jr.  
\_\_\_\_\_  
State Oil and Gas Supervisor

By   
\_\_\_\_\_  
Patricia A. Abel, District Deputy

KG97.

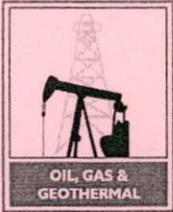
State of California  
 Department of Conservation  
 Division of Oil, Gas, and Geothermal Resources

No. T 216-0422  
 # 16, 1

**INTERNAL MECHANICAL INTEGRITY TEST (MIT)  
 (Standard Annulus Pressure Test-SAPT)**

|  |          |           |  |                                 |                     |
|--|----------|-----------|--|---------------------------------|---------------------|
| Operator:<br>SoCal Gas   |          |           |  | Well: Porter 32C                |                     |
| Sec.<br>27   | T.<br>3N | R.<br>16W | B.&M.<br>SB  | API No.:037-21360               | Field: Aliso Canyon |
| County: Los Angeles  |          |           |  | Witnessed/Reviewed on: 9/6/2016 |                     |
| Jay Huff   |          |           | , representative of the supervisor, was present from |                                 | 12:39 to 13:50      |
| Also present were: Dave Driskill   |          |           |  |                                 |                     |
| Casing record of the well:<br>13-3/8" 48# H40 @ 820'. Cemented<br>8-5/8" 36# J55/N80 @ 7,345'. Cemented.<br>6-5/8" 24# N80 to 7,160' (Innerstring). Uncemented with packer at 7,160'<br>6-5/8" liner<br>Production tbg with packer @ 7,160'. |          |           |  |                                 |                     |
| The Internal MIT was performed for the purpose of pressure testing the 8-5/8" casing above Packer at 7,160' (2) (prior to suspending well).  |          |           |  |                                 |                     |
| <input checked="" type="checkbox"/> The Internal MIT is approved since it indicates that the 8-5/8" casing has mechanical integrity above 7,160' at this time.   |          |           |  |                                 |                     |
| <input type="checkbox"/> The Internal MIT is not approved due to the following reasons: (specify)  |          |           |  |                                 |                     |
| <b>INDICATE WHERE PACKER WAS SET AND HOW LONG PRESSURE WAS HELD ALONG WITH ANY BLEEDOFF DATA.</b>  |          |           |  |                                 |                     |
| P & S Testing-6-5/8" Inner String x 8-5/8" casing with packer at 7,160ft -500psi for 1 hour  |          |           |  |                                 |                     |
| Pi=619 psi @ 12:42. Pf=548 psi @ 13:42.<br>(577 psi @ 13:12; 6.8% loss in first 30 minutes and 5% loss in 2nd 30 minutes)  |          |           |  |                                 |                     |





RAL RESOURCES AGENCY OF CALIFORNIA  
 DEPARTMENT OF CONSERVATION  
 DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES  
 1000 S. Hill Rd, Suite 116 Ventura, CA 93003 - 4458

No. **P 216-0206**

**PERMIT TO CONDUCT WELL OPERATIONS**

| Old        | New |
|------------|-----|
| 010        | 010 |
| FIELD CODE |     |
| 00         | 00  |
| AREA CODE  |     |
| 30         | 30  |
| POOL CODE  |     |

Gas Storage  
 Plugback and Suspend for One Year  
 "Sesnon-Frew" - Modelo (Miocene-Eocene) Formation

Ventura, California  
 August 24, 2016

Amy Kitson, Agent  
 Southern California Gas Company (S4700)  
 12801 Tampa Ave., SC9382  
 Northridge, CA 91326

Your proposal to **Rework** well "Porter" 32C, A.P.I. No. 037-21360, Section 27, T. 03N, R. 16W, SB B. & M., **Aliso Canyon** field, **Any** area, **Sesnon-Frew** pool, **Los Angeles** County, dated 8/22/2016, received 8/22/2016 has been examined in conjunction with records filed in this office. (Lat: 34.312476 Long: -118.550457 Datum:83)

**THE PROPOSAL IS APPROVED PROVIDED:**

1. Blowout prevention equipment, as defined by this Division's publication No. M07, shall be installed and maintained in operating condition and meet the following minimum requirements:
  - a. **Class I Note: work to be completed without the removal of the injection assembly.**
2. Hole fluid of a quality and in sufficient quantity to control all subsurface conditions in order to prevent blowouts shall be used.
3. A pressure test is conducted to demonstrate the mechanical integrity of the **8 5/8" casing and 8 5/8" x 6 5/8" annulus.**
4. This well is to be taken out of service and isolated from the storage reservoir. The well shall be re-evaluated or abandoned within 1 year of the completion of the pressure testing pursuant to Order #1109 and its amendments.
5. In all other respects, the provisions of Division Order #1109 and its amendments shall remain in effect.
6. This office shall be contacted by phone prior to making any program changes and no changes are made without Division approval.
7. **THIS DIVISION SHALL BE NOTIFIED TO:**
  - a. Witness a pressure test of the **8 5/8" casing to 500 psi and the 6 5/8" x 2 7/8" annulus to 1000 psi.**

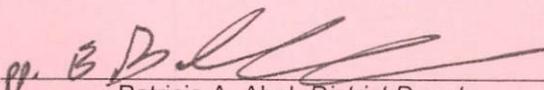
Continued on Next Page

Blanket Bond Dated: 7/6/1999  
 UIC Project No. 0100006

Engineer Kris Gustafson  
 Office (805) 654-4761

KG/kg

Kenneth A. Harris Jr.  
 State Oil and Gas Supervisor

By   
 Patricia A. Abel, District Deputy

A copy of this permit and the proposal must be posted at the well site prior to commencing operations. Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended. Issuance of this permit does not affect the Operator's responsibility to comply with other applicable state, federal, and local laws, regulations, and ordinances.

**NOTE:**

1. The base of the freshwater zone is at **800'±**.
2. No operation shall be undertaken or continued that will contaminate or otherwise damage the environment.
3. This permit is being issued as part of Division Order No. 1109 dated March 4, 2016. Any well that fails any of the testing must be taken out of service and isolated from the storage reservoir pursuant to the Safety Review Testing Regime.
4. The required History of Oil or Gas Well (OG103) shall include a complete description of the required pressure testing. **An updated casing and tubing diagram shall be included with the well history.**
5. **A Well Summary Report (Form OG 100)** and **Well History (Form OG 103)** shall to be submitted to the Division within 60 days after the well is drilled, reworked, plugged and abandoned, or if the work is suspended. Any additional well work will require an additional notice to be submitted to this office prior to resuming well operations.

**Enclosure: Attachment 1 to DOGGR Order 1109. Safety Review Testing Regime for the Aliso Canyon Natural Gas Storage Facility**

**ATTACHMENT 1  
TO DOGGR ORDER 1109**

**SAFETY REVIEW TESTING REGIME  
FOR THE ALISO CANYON NATURAL GAS STORAGE FACILITY**

This document identifies the requirements of this comprehensive safety review that shall be completed by the Southern California Gas Company (Operator) and verified by the Department of Conservation, Division of Oil, Gas, and Geothermal Resources (Division). The Operator shall use accepted industry practices and procedures.

The Division has consulted with independent technical experts from the Lawrence Berkeley, Lawrence Livermore, and Sandia National Laboratories ("National Laboratories") to develop the requirements of this facility safety review. The National Laboratories experts independently reviewed and concurred with the testing requirements for the safety review detailed below.

This comprehensive safety review requires that each of the active injection wells in the Aliso Canyon Storage facility either pass a thorough battery of tests in order to resume gas injection or be taken out of operation and isolated from the underground gas storage reservoir. Several steps, detailed below, are required in this safety review. Documentation of all testing required under this comprehensive safety review shall be provided electronically to the Division within 72 hours of completion of a test in digital (i.e. LAS) and printed (i.e. pdf) form. All pressure tests required under this comprehensive safety review shall be witnessed by Division staff. A well that is properly plugged and abandoned in accordance with Public Resources Code section 3208 is not subject to testing under this comprehensive safety review. A well that does not pass all tests must be repaired, retested, and pass all tests, or be plug and abandoned.

**REQUIRED TESTS FOR EACH WELL IN THE FACILITY**

- Step 1:** The Operator shall perform an initial casing assessment on the well consisting of temperature and noise logs.
- a. **Temperature Log:**  
A temperature survey shall be run from the surface to the packer to measure the temperature within the wellbore. A temperature survey that demonstrates no unexplained anomalous temperature changes in the well is one indication of casing integrity.
  - b. **Noise Log:**  
An acoustic sensor survey capable of detecting the sound of fluid flow will be conducted the length of the well above the packer to the surface. The survey will include stops at least every 250 feet and at the midpoint of any anomaly detected by the temperature survey. The absence of anomalous sound above the packer is an indication of well integrity

- Step 2:** The results of the Temperature Logs and Noise Logs will be independently reviewed by Division engineers. Any unexplained abnormal findings in this set of tests shall be addressed by the Operator in one of the following ways:
- a. Conduct further investigation and demonstrate to the Division's satisfaction that the abnormal finding is not an indicator of a lack mechanical integrity;
  - b. Remediate the well to the Division's satisfaction; or
  - c. With Division review and approval, remove the well from operation and isolate the well from the underground gas storage reservoir in accordance with Steps 4b through 7b below.

Necessary actions to remediate any abnormalities revealed by these tests will be reviewed by Division engineers. Once repairs or mitigations are completed, the Temperature Log and Noise Log must then be repeated on the well and reviewed by Division engineers to ensure that there are no additional abnormal test results and to confirm the issue was repaired.

- Step 3:** After these tests are completed on the well, and all required action has been completed, the operator shall either:
- a. Conduct the additional tests and evaluations on the well, outlined in Steps 4a through 7a below, in order to gain approval for injecting gas through that well; or
  - b. Remove the well from operation and isolate the well from the underground gas storage reservoir in accordance with Steps 4b through 7b below.

#### **REQUIRED TESTS IF A WELL IS INTENDED TO RESUME OPERATIONS**

If Temperature and Noise Logs have been completed on a well and they indicate well integrity, and the Operator designates the well to return to injection operations, then the Operator shall perform the additional testing outlined in Steps 4a through 7a. The results of these tests will be independently reviewed by Division engineers and posted publicly. Each of the following tests requires that the production tubing be removed from the well.

**Step 4a:** The Operator shall conduct a **Casing Inspection log**.

The Operator shall conduct a Casing Inspection log of the well that measures the thickness of the production casing, from the surface to the bottom of the gas storage reservoir cap rock. If the inspection reveals a reduction in wall thickness, the current minimum strength of the casing will be calculated. If the current minimum strength of the casing has diminished to the point that it cannot withstand authorized operating pressures for the well plus a built-in additional safety factor of pressure, the well has failed this test. *A passing test for a casing inspection log would show no thinning of the casing that diminishes the casing's ability to contain at least 115% of the well's maximum allowable operating pressure as authorized in the current Project Approval Letter.*

**Step 5a:** The Operator shall conduct a **Cement Bond Log** for the well.

The Operator shall conduct a Cement Bond Log (CBL) that measures the bonding between cement and the production casing of the well, and also the bonding between the annular cement and the formation. Cement should be solidly bonded to both the well's production casing and the geologic formation to ensure a seal that prevents fluids from migrating up or down the outside of the well. *A passing test for a cement bond log shows definitive bond, as demonstrated by sonic waveform,*

*between cement and casing and between cement and the gas storage formation and/or cap rock for at least 100 feet above the top of the gas storage reservoir.*

**Step 6a:** The Operator shall conduct a **Multi-Arm Caliper Inspection** of the well.

The operator shall conduct an inspection that measures any internal degradation or significant changes to the well's geometry from the surface to the top of the gas storage reservoir, using a minimum 32-arm caliper tool. If the inspection reveals a thinning or deformity of the casing, the current strength of the casing will be calculated. If the current strength of the casing has diminished, such that it cannot withstand authorized operating pressures plus a built-in safety factor of additional pressure, the well fails this inspection. *A passing test for a Multi-Arm Caliper Inspection would show no deformation or thinning of the casing that diminishes the casing from being able to properly contain at least 115% of each well's maximum operating pressure.*

**Step 7a:** The Operator will conduct a **Pressure Test** of the production casing and of the well once the production tubing has been reinstalled. The Operator may conduct the casing pressure test prior to reinstalling the production tubing. Using a digital recorder, the operator will conduct a liquid-filled positive pressure test within the production tubing of the well, and in the annular space between the production tubing and the casing, to determine the well's ability to withstand normal operating pressures. The production tubing will be isolated and then pressure tested. The annular space between tubing and casing will be pressure tested. This testing also evaluates the integrity of any packers, which seal the annular space between the tubing and casing. The pressure test will be one hour and begin at a pressure of 115% of the maximum operating pressure or the minimum yield strength of the casing and tubing, whichever is less. *A passing pressure test is a pressure loss not exceeding 10% for any 30 minute period during the hour long test.*

After conducting the above tests, the Operator will conduct any indicated remediation so that the well can pass these tests. All remediation will be subject to the review of Division engineers. The well would then be required to undergo the tests once again to demonstrate well integrity.

If the well passes the Casing Wall Thickness Inspection, the Cement Bond Log, the Multi-Arm Caliper inspection and the Pressure Test to the Division's satisfaction, then the Division may clear the well for use for gas injections and withdrawal, once the Division has authorized resumption of injection into the gas storage reservoir. As noted below, wells approved for operation will only be permitted to inject or withdraw gas through the production tubing.

**REQUIRED ACTIONS IF THE WELL IS TO BE TAKEN OUT OF OPERATION AND ISOLATED FROM THE GAS STORAGE RESERVOIR:**

If the operator elects to take a well out of service, then the following steps shall be taken to isolate the well from the gas storage reservoir:

**Step 4b:** The Operator shall confirm the presence of cement outside the well's external casing in the section of the well that prevents the movement of gas from the underground gas storage reservoir to shallower geologic zones above the gas storage reservoir. Existing cement bond logs and well construction

records may be used to make this confirmation. This confirmation requires concurrence from Division engineers.

**Step 5b:** The Operator shall install a mechanical seal or "packer" within the well's production casing and install a mechanical plug within the well's production tubing, if applicable. These seals shall be set in place near the bottom of the well, within the portion of the well surrounded by cement. This kind of seal is an industry standard practice for isolating a well from reservoir gases or fluids and will further protect the casing from internal gas pressure.

**Step 6b:** The Operator shall fill the well with fluid to the well's surface in order to create appropriate downward hydrostatic pressure in the well that further contributes to the integrity of the well seal.

These measures will isolate a well from the underground gas reservoir, as confirmed by National Laboratory experts. Each of the above actions is subject to review and approval by Division Engineers.

**Step 7b:** Once the Operator has completed steps 4b, 5b, and 6b, and the seal is in place at the bottom of the well and the well is filled with fluid above the seal, the operator shall:

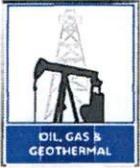
- a. Conduct daily gas monitoring at the surface of the non-operational well, including monitoring the area around the well perimeter and in the annular space between the plugged casing string and the outmost casing;
- b. Conduct noise log, temperature log and positive pressure test every six months;
- c. Conduct weekly monitoring of fluid levels in the well or, install and operate real-time pressure monitors that provide immediate notification to the operator when pressures deviate from normal in the well's interior tubing and its annular space.

The above monitoring shall be reported to Division engineers and maintained as a part of the well file. Division engineers will review all submitted information for evaluation on a regular basis to ensure that the well taken out of service has maintained safety, and the operator shall take all necessary steps maintain the safety of the well.

Any well taken out of operation cannot be approved to resume operations and gas injection until the successful completion of the battery of tests outlined above in Steps 4a through 7a (Casing Wall Thickness Inspection, the Cement Bond Log, the Multi-Arm Caliper Extension and the Pressure Test) is completed. Those tests must be successfully completed within one year of completing step 6b. If a well cannot successfully complete all necessary steps required in this safety review after one year of completing step 6b, then the well shall be properly plugged and abandoned in accordance with Public Resources Code section 3208.

#### **REQUIREMENTS FOR WELLS RESUMING OPERATIONS IN ALISO CANYON**

The Division's authorization to resume injection in the Aliso Canyon Storage Facility will be contingent on the successful completion of this comprehensive safety review. The State Oil and Gas Supervisor must confirm in writing that all wells in the facility have either completed and passed the full battery of tests required in the safety review, been taken out of service and isolated from the underground gas storage reservoir, or been properly plugged and abandoned in accordance with Public Resources Code Section 3208.



NATURAL RESOURCES AGENCY OF CALIFORNIA  
DEPARTMENT OF CONSERVATION  
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

| FOR DIVISION USE ONLY |         |       |
|-----------------------|---------|-------|
|                       | Forms   |       |
| Bond                  | OGD444  | OGM21 |
|                       | CAL WMS | 115   |

P216-0206

## NOTICE OF INTENTION TO REWORK / REDRILL WELL

Detailed instructions can be found at: [www.conservation.ca.gov/dog/](http://www.conservation.ca.gov/dog/)

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to rework  / redrill  well Porter 32C, API No. 037-21360  
(Check one)

Sec. 27, T. 3N, R. 16W, S.B. B.&M., Aliso Canyon Field, Los Angeles County.

The complete casing record of the well (present hole), including plugs and perforations, is as follows: (Attach wellbore schematics diagram also.)

See attached wellbore schematic and completed work summary.

The total depth is: 7850 feet. The effective depth is: 7435 feet.  
Present completion zone(s): Sesnon Anticipated completion zone(s): Same  
(Name) (Name)  
Present zone pressure: storage psi. Anticipated/existing new zone pressure: storage psi.

Is this a critical well as defined in the California Code of Regulations, Title 14, Section 1720(a) (see next page)? Yes  No

For redrilling or deepening only, is a California Environmental Quality Act (CEQA) document required by a local agency? Yes  No  If yes, see next page.

**The proposed work is as follows: (A complete program is preferred and may be attached.)**

The SCGC plans to take this well out of operation and isolate from the gas storage reservoir as per the First Amended Safety Review Testing Regime: Steps 4b-7b.

5b - Set plug set in XN nipple at 7127' and open SSD at 7092'.

6b - Circulate well with 8.5 ppg KCL brine down tbg. through SSD at 7092' and back to surface to completely fill well.

7b - With casing valve closed, pressure-up on tubing to 1000 psi. for 1 hour (will test csg., packer and tubing plug all at same time).

7b - Pressure-up on 8-5/8" x 6-5/8" annulus to 500 psi for 1 hour.

If well is to be redrilled or deepened, show proposed coordinates (from surface location) and true vertical depth

at total depth: \_\_\_\_\_ feet and \_\_\_\_\_ feet Estimated true vertical depth: \_\_\_\_\_  
(Direction) (Direction)

Will the Field and/or Area change? Yes  No  If yes, specify New Field: \_\_\_\_\_ New Area: \_\_\_\_\_

**The Division must be notified immediately of changes to the proposed operations. Failure to provide a true and accurate representation of the well and proposed operations may cause rescission of the permit.**

|   |                                     |   |
|---|-------------------------------------|---|
| Name of Operator<br>Southern California Gas Company             |                                     |   |
| Address<br>P. O. Box 2300                                       | City/State<br>Chatsworth            | Zip Code<br>91313-2300                                |
| Name of Person Filing Notice<br>A.J. Alshammasi                 | Telephone Number:<br>(818) 700-3887 | Signature<br><i>A.J. Alshammasi</i>                   |
| Individual to contact for technical questions:<br>Mike Giuliani | Telephone Number:<br>(805) 290-2074 | Date<br>8/22/16                                       |
|   |                                     | E-Mail Address:<br>mike.giuliani@interactprojects.com |

This notice and an indemnity or cash bond must be filed, and approval given, before the workover begins. (See the reverse side for bonding information.) If operations have not commenced within one year of the Division's receipt of the notice, this notice will be considered cancelled.

Rec'd 08-22-16 DOGGR Ventura.

# Well Porter 32C

API #: 04-037-21360-01  
Sec 27, T3N, R16W

Operator: So. California Gas Co.

Lease: Porter  
Field: Aliso Canyon  
Status: Active Gas Storage  
BFW:  
USDW:

Ground Elevation: 2075' asl  
Datum to Ground: 17' KB

Spud Date: 11/10/1973  
Sidetrack Kick-off Date: 12/28/1973  
Completion Date: 1/13/1974  
Last Rework Date: 10/12/1989

Junk: None

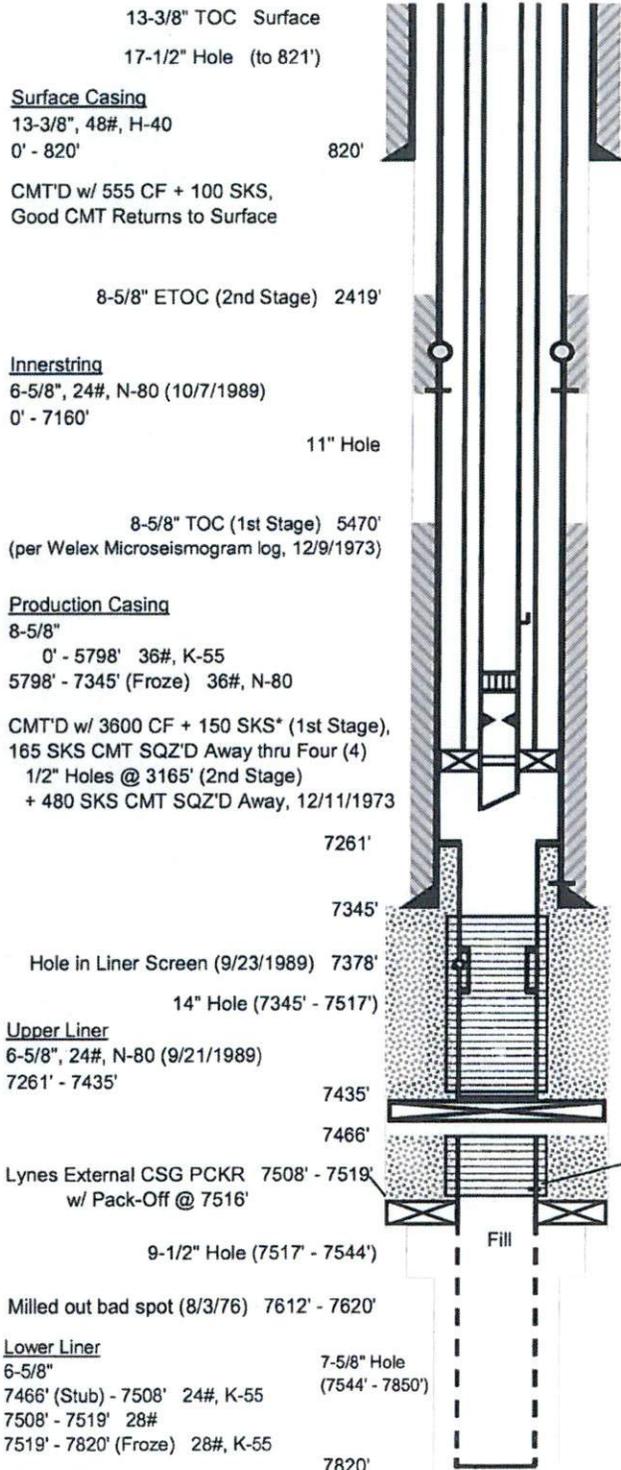
### Wellbore History

Orig. Hole (OH) TD @ 7377'  
(See Porter 32C OH)  
Sidetrack KOP @ 7503'  
TD @ 7850'

### Notes

\*Displaced CMT w/ 736 CF of mud when pressure reached maximum allowable of 4500 psi. No circulation while displacing. Malfunction of job may be result of hole caving, thus requiring higher displacement press. which dehydrated CMT causing a "flash" set.

"Unknown obstruction near GLM prevents passage of "XN" lock/BHC down to the No-Go" (per note on diagram, 12/5/1991)



Tubing  
2-7/8", 6.5#, N-80 (10/12/1989)  
0' - 7164'

3127' DV Collar (Not Used)\*  
3165' Four (4) 1/2" Holes for 2nd Stage  
CMT Job\* (SQZ'D 5's, Calc'd  
777 CF CMT SQZ'D Away, 6/23/77)

7047' BST MMA GLM 1-1/2" Pocket  
w/ RA Latch GLM (set BST 1.5"  
SOV [2700 psi], 12/5/1991)  
7092' Otis "XD" Sliding Sleeve  
7127' Otis "XN" No-Go Nipple  
7160' Otis WCB PCKR (10/5/1989)  
& J-Latch Extension w/ 2 Seal Units  
7164' Otis Guide Shoe

7335' Four (4) 1/2" Holes (12/9/1973) WSO

7374' - 7389' Homco Internal Steel CSG Patch (9/25/1989)

### Upper Liner Perfs:

7347' - 7433' 1/2" HPF, 0.008" ga. WWS

Upper Liner Gravel Packed w/ 295 CF 40-60

7436' - 7449' 7" x 14" Baker-Lynes Inflatable Bridge Plug (9/20/1989)

7503' Sidetrack KOP (from OH) into this wellbore (See History)

7505' 6-5/8" Liner Cut, Unable to Pull

### Lower Liner Perfs:

7466' - 7508' Gru-V-Kut WWS 0.018"  
ga., 24 Grooves, 72 1/4" SPF

7529' - 7820' 2" x 30 Mesh, 28R, 6"C Slots

Lower Liner Gravel Packed w/  
215 CF (148 CF Theoretical) 6-9

| Top of Zone Markers md (tvd) |       |         |
|------------------------------|-------|---------|
| UDA2                         | 5884' | (5654') |
| MDA                          | 6195' | (5947') |
| LDA                          | 6482' | (6218') |
| MP                           | 6767' | (6487') |
| S1                           | 7154' | (6850') |
| S4                           | 7346' | (7031') |
| S8                           | 7406' | (7088') |
| FREW                         | 7569' | (7242') |

TD 7850'  
TVD (7511')  
Directionally Drilled: Yes (TD is 392' E, 1779' N of Surf)

Prepared by: MAM (7/25/2016)  
Updated by: LD (8/16/2016)

**InteAct**

Rec'd 08-22-16 DOGGR Ventura.

| Completed Work Summary -Porter 32C |  |           |
|------------------------------------|--|-----------|
| Step                               | Work Completed   | Date      |
| 4b                                 | 375' of good cement in MP per CBL dated 12/9/1973                          | 12/9/1973 |
| 5b                                 | Inner string packer set in good cement at 7160' (per CBL dated 12/9/1973)* | 2/3/1976  |

*\*Inner string and tubing sealed to same packer at 7160'*

**Casing Pressure Test Safety Check (500 psi)**

| Well       | Packer Depth<br>MD/TVD | Casing<br>Size/Grade/Weight | Depth<br>MD | Burst<br>PSI | 85% of Burst<br>PSI | Pressure at Depth<br>w/500 psi Surface<br>Pressure | Press <<br>85% of<br>Burst |
|------------|------------------------|-----------------------------|-------------|--------------|---------------------|--|----------------------------|
| Porter 32C | 7160' / 6856'          | 8-5/8", 36#, K-55           | 5798        | 4460         | 3791                | 3063   | Yes                        |
|            |                        | 8-5/8", 36#, N-80           | 7160        | 6490         | 5517                | 3665   | Yes                        |

**Casing Pressure Test Safety Check (1000 psi)**

| Well       | Packer Depth<br>MD/TVD | Casing<br>Size/Grade/Weight | Depth<br>MD | Burst<br>PSI | 85% of Burst<br>PSI | Pressure at Depth<br>w/1000 psi<br>Surface Pressure | Press <<br>85% of<br>Burst |
|------------|------------------------|-----------------------------|-------------|--------------|---------------------|---|----------------------------|
| Porter 32C | 7160' / 6856'          | 6-58", 24#, N-80            | 7160        | 7440         | 6324                | 4165  | Yes                        |

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 wells in Sec. 27, 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:             | To:                               |
|-------------------|-----------------------------------|
| IW 56 (037-21354) | "Porter" 32F (037-21354)          |
| IW 57 (037-21355) | "Porter" 32D (037-21355)          |
| IW 58 (037-21321) | "Fernando Fee" 32E (037-21321)    |
| IW 60 (037-21276) | "Porter" 32B (037-21276)          |
| IW 61 (037-21277) | "Porter" 32A (037-21277)          |
| IW 62 (037-21313) | "Fernando Fee" 32F (037-21313)    |
| IW 73 (037-21358) | "Fernando Fee" 32B (037-21358)    |
| IW 75 (037-21356) | "Fernando Fee" 32D (037-21356)    |
| IW 76 (037-21359) | "Fernando Fee" 32C (037-21359)    |
| IW 77 (037-21323) | "Standard Sesnon" 25B (037-21323) |
| IW 78 (037-21360) | "Porter" 32C (037-21360)          |
| IW 81 (037-21363) | "Porter" 32E (037-21363)          |

bb

M.G. MEFFERD, State Oil and Gas Supervisor

By   
Patrick J. Kinneaf, Deputy Supervisor

Southern Calif Gas Co

OPERATOR Joe Link

LSE & NO IW 78

MAP NO. 250

INTENTION

|                  |                            |                      |          |          |   |
|------------------|----------------------------|----------------------|----------|----------|---|
|                  | drill 1 1/2 R/O            | Rework Gas Storage 2 | Rework 3 | Rework 4 | 5 |
| NOTICE DATED     | 2-13-73                    | 7-14-76              | 5-18-77  | 6-8-89   |   |
| P-REPORT NUMBER  | 273-114                    | 276-252              | 277-180  | 289-169  |   |
| CHECKED BY/DATE  |                            |                      |          |          |   |
| MAP LETTER DATED | 10-25-75 PMW<br>3-3-73 LOC | N/C                  | N/C      |          |   |
| SYMBOL           |                            |                      |          |          |   |

NOTICE

|                    |         |         |         |         |         |      |          |  |  |
|--------------------|---------|---------|---------|---------|---------|------|----------|--|--|
|                    | 2-27-73 | 7-16-76 | 5-23-77 | 6-12-89 |         |      |          |  |  |
|                    | REC'D   | NEED    | REC'D   | NEED    | REC'D   | NEED |          |  |  |
| HISTORY            | 4-12-74 | X       | 9-1-76  |         | 7-20-77 |      | 12/22/89 |  |  |
| SUMMARY            | 4-12-74 | X       |         |         |         |      |          |  |  |
| IES/ELECTRIC LOG   | 12-5-73 |         |         |         |         |      |          |  |  |
| DIRECTIONAL SURV.  | 1-21-74 |         |         |         |         |      |          |  |  |
| CORE/SWS DESCRIPT. |         |         |         |         |         |      |          |  |  |
| DIPMETER RESULTS   |         |         |         |         | 3-9-79  |      |          |  |  |
| OTHER              | SNP     |         |         |         |         |      |          |  |  |
| VERTILOG (CIL)     |         |         |         |         |         |      | 9/20/89  |  |  |
| CALAM LOG          |         |         |         |         |         |      | 9/20/89  |  |  |
| RECORDS COMPLETE   |         |         |         |         |         |      |          |  |  |

ENGINEERING CHECK

CLERICAL CHECK

|                    |                                     |               |                          |            |                          |              |                          |
|--------------------|-------------------------------------|---------------|--------------------------|------------|--------------------------|--------------|--------------------------|
| T-REPORTS          | <input checked="" type="checkbox"/> | POSTED TO 121 | <input type="checkbox"/> | 170 MAILED | <input type="checkbox"/> | FINAL LETTER | <input type="checkbox"/> |
| OPERATOR'S NAME    | <input type="checkbox"/>            |               |                          |            |                          | MAILED       | <input type="checkbox"/> |
| WELL DESIGNATION   | <input type="checkbox"/>            |               |                          |            |                          |              | <input type="checkbox"/> |
| LOC. & ELEV.       | <input type="checkbox"/>            |               |                          |            |                          |              | <input type="checkbox"/> |
| SIGNATURE          | <input type="checkbox"/>            |               |                          |            |                          | RELEASE      | <input type="checkbox"/> |
| SURFACE INSPECTION | <input type="checkbox"/>            |               |                          |            |                          | BOND         | <input type="checkbox"/> |
| LINAL LETTER OK    | <input type="checkbox"/>            |               |                          |            |                          |              | <input type="checkbox"/> |

REMARKS:

Still Need History Rec'd 12/22/89

SUBMIT IN DUPLICATE  
RESOURCES AGENCY OF CALIFORNIA  
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

RECEIVED

DEC 23 1989

STURTA, CALIFORNIA

History of Oil or Gas Well

Operator Southern California Gas Co. Field Aliso Canyon County Los Angeles  
Well IW #78 Sec. 27, T 3N, R 16W, S.B.B. & M.  
A.P.I. No. #037-210 Name R. W. Weibel Title Agent  
Date October 10, 1989 (Person submitting report) (President, Secretary or Agent)

Signature  
N. W. Buss for R. W. Weibel

P.O. Box 3249 Terminal Annex, Los Angeles, CA 90051 (213) 689-3925  
(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

MWO No. 99106: was issued to replace liner and gravel pack well  
GWO No. 91859: was issued to install protective innerstring

1989

- 6-22 Rigged up. Installed backpressure valve in donut. Removed  
to xmas tree and installed 9" Class III BOPE. Tested blind rams,  
6-24 pipe rams and choke manifold to 3000 psi, Hydril bag to 2300  
psi. Mr. Mulqueen of the DOG approved BOPE test.
- 6-26 Unlanded donut. Unable to release from packer at 7188'. Ran  
free point to packer, indicating tubing was free to latch.  
Backed off tubing at 2400' and removed donut. Screwed back into  
tubing and could not free latch from packer.
- 6-27 Fired back off shot across No-Go at 7178'. Unscrewed blast  
joint on top of No-Go.
- 6-28 Retrieved gas lift mandrel, 2-7/8" Camco safety system and  
2-7/8" Camco 20' blast joint'. Made up one joint of 2-7/8"  
tubing on 2-7/8" bumper sub, crossed over to 3-1/2" drill pipe.
- 6-29 Screwed into fish at 7156' and attempted to release seal  
assembly from packer at 7188' with no success.
- 6-30 Ran backoff shot across tool joint of last joint at 7189'.  
Released from seal assembly and started out of well.
- 7-1 Retrieved 2-7/8" No-Go and 10' blast joint.
- 7-3 Picked up 20' blast joint with two lugs welded on. Ran in  
to 7150'.
- 7-4 Holiday

- 7-5           Screwed into stub at 7189'. Jarred on fish. Unable to release from packer.
- 7-6           Ran Dyna Drill with 2" mill on 1-1/2" coiled tubing. Cleaned out to 7220'.
- 7-7           Ran Dia-Log in well and made cut below latch. Worked and jarred on pipe, unable to release from packer.
- 7-8           Made backoff at top of latch-in and pulled out of well.
- 7-10          Ran 5-3/4" x 3-5/8" overshot, 4-3/4" bumper sub, 4-3/4" hydraulic jars, four 4-5/8" OD drill collars, 4-3/4" accelerator, four 4-5/8" drill collars and 4-3/4" accelerator on 3-1/2" drill pipe to Baker latch at 7188'. Washed over and attached to latch. Jarred 3 times and tools came free.
- 7-11          Recoverd latch and part of seal assembly. Ran 3-1/8" to  
7-13          to concave mill to 7190' and milled out seal assembly to 7195'. Pulled out of well. Made up 7" casing spear, bumper sub and hydraulic jars on 3-1/2" drill pipe.
- 7-14          Attached spear to top swage of casing patch and retrieved from well. Ran 7-5/8" cup mandrel, 10' pup, Baker hookwall tool, 64' of drill collars, 7" spear, 38' of drill collars, 7-1/2" OD stop sub and drove bottom swage out of patch. Attached to patch with spear and pulled out of well. Recovered patch except for bottom pack-off ring and swage.
- 7-15          Ran 7-5/8" cup mandrel, 10' pup, 7" Baker hookwall index tool, bumper sub, jars, two drill collars, 7" spear, and four drill collars on 3-1/2" drill pipe to swage of patch. Retrieved remainder of patch from well.
- 7-17          Ran Baker 8-5/8" retrieving tool on fishing assembly to 7190'. Could not work thru packer. Pulled out of well with retrieving tool. Made up 3-13/16" OD mill on 3-1/8" OD drill collars, 4-3/4" bumper sub, eight 4-5/8" drill collars and started in well.
- 7-18          Ran 3-13/16" mill to 7190', worked mill to 7199' three times, and pulled out of well. Made up Baker retrieving tool on fishing assembly and attached to packer. Released packer.

- 7-19 Retrieved 8-5/8" packer. Cleaned out to 7206' with 7-5/8"  
to washover shoe and recovered several pieces of seal  
7-25 assembly. Cleaned out to 7447' using 2-3/8" tubing.  
Recovered 5' production tube on end of tubing. Ran 5-3/8"  
washover shoe and cleaned out to 7516'. Cleaned out to  
7623' with 2-7/8" drill pipe.
- 7-26 Ran casing inspection log from surface to 7222'. Ran  
casing collar log from 7111'-7590'.
- 7-27 Cut 6-5/8" liner at 7505' and 7335' with hydraulic cutter.
- 7-28 Set 6-5/8" spear at 7232' and attempted to jar liner loose.  
to Cut liner at 7230' and then attempted to jar liner hanger  
7-31 loose. Ran 5-5/8" gauge ring and junk basket--stopped at  
7413'.
- 8-1 Milled on 6-5/8" liner from 7222'-7337'. Cleaned out well  
to with 5-5/8" bit from 7340'-7512'.  
8-16
- 8-17 Washed and jarred on liner without success.  
to  
8-24
- 8-25 Set spear at 7348' and free pointed liner from 7368' to  
to 7470'. Attempted back offs at 7420' and 7390' without  
8-29 success. Cleaned out fill from 7541'-7623'.
- 8-30 Ran 5-1/2" x 8" section mill to locate bottom cut at  
to 7506'-7507' and made new cuts at 7466' and 7426'. Ran  
9-1 spear and set at 7345'. Jarred loose and recovered 10' of  
6-5/8" blank liner and two joints of wire wrapped liner  
from interval of 7337'-7426'.
- 9-2 Cleaned out well from 7372'-7505' and changed over fluid  
to from 70 lb/cu.ft. to 63 lb/cu.ft.  
9-8
- 9-9 Cleaned out fill and worked spear into liner to 7437'.  
to Jarred and recovered one joint of 6-5/8" wire wrapped  
9-13 liner from 7426'-7466'.
- 9-14 Cleaned out fill with 7-5/8" bit from 7418'-7455'. Unable  
to go deeper. Circulated bottoms up. Pulled out of well.  
Made up Baker 7" x 14" inflatable bridge plug with water  
cushion in pipe. Ran in well and plug stopped at 7432'.  
Pulled into shoe.
- 9-15 Pulled out of well and laid down plug. Made up 5-5/8"  
bit. Cleaned out to 7475'. Circulated bottoms up.

- 9-16 Ran back in well and circulated down from 7425'-7466'. Circulated well clean. Pulled out of well. Ran Baker 7" x 14" inflatable bridge plug. Packer stopped at 7433'.
- 9-18 Made up 7-5/8" bit and cleaned out from 7425'-7477'. Pumped 50 barrels of Tem Block at 7477'. Pulled up to 7163'. Backscuttled well clean. Pulled out of well. Ran Baker inflatable bridge plug--stopped at 7421'.
- 9-19 Pulled Baker bridge plug. Made up 6" pilot bit on bottom of Tri-State 6" x 12" hole opener.
- 9-20 Opened hole from 7403'-7462'. Equalized 25 barrels of Tem Block at 7462'. Pulled hole opener. Ran Baker 7" x 14" inflatable packer and set at 7436'-7449'.
- 9-21 Changed over from 63#/cu.ft. polymer completion fluid to 3% KCl water. Pulled out of well with Baker setting tool. Ran liner assembly as follows:

| <u>Description</u>            | <u>Length</u> |
|-------------------------------|---------------|
| Bull plug                     | 2.04'         |
| 6-5/8" 24# wire wrapped joint | 43.30'        |
| 6-5/8" 24# wire wrapped joint | 43.15'        |
| 6-5/8" 24# blank joint        | 38.30'        |
| 6-5/8" 24# blank joint        | 42.30'        |
| 6-5/8" landing nipple         | <u>1.72'</u>  |
| Total Length                  | 170.81'       |

Ran 133' of 4-1/2" Hydril CS casing tail below gravel packing tool and attached to liner. Landed liner at 7435' with top of landing nipple at 7264'. Rigged up to gravel pack liner.

- 9-22 Pumped a total of 474 cu.ft. 40-60 gravel in eight gravel pack slurries. Backscuttled 20 cu.ft. Pressured gravel pack to 2000 psi.
- 9-23 Pulled and laid down gravel pack tools. Found washed place on 4-1/2" tail pipe, indicating a hole in liner screen at 7378'. Using 2-7/8" drill pipe tail, backscuttled 9 cu.ft. gravel out of liner from 7390'-7435'. Estimated 150 cu.ft. gravel in surface pit, with 295 cu.ft. 40-60 gravel in place behind the liner.
- 9-25 Ran and set Homco internal steel casing patch from  
to 7374'-7389'. Ran re-gravel packing tool and set tool  
9-28 at top of liner. Pumped 3.5 cu.ft./minute at 2000 psi.

- 9-29 Pumped 10 barrels of resin gravel pack slurry containing 28 cu.ft. 40-60 gravel. Pressure dropped from 2200 psi to 600 psi. Backscuttled slurry out of well and pulled gravel pack tool (washed out).
- 9-30 Set lead seal drive over adaptor from 7261'-7264'. Pulled lead seal setting tool and ran 4-5/8" bit on drill pipe to top of fill at 7397'.
- 10-2 Cleaned out sand from 7397'-7435'. Laid down 3-1/2" drill pipe.
- 10-3 Picked up 2-7/8" tubing and set 8-5/8" retrievable bridge plug at 6500'. Set 8-5/8" retrievable bridge plug at 60'.  
to  
10-5 Removed BOPE and tubing head. Installed 11" x 11" 5000 psi innerstring spool. Reinstalled and tested BOPE to 1000 psi. Recovered bridge plug from 60'. Released bridge plug at 6500' and reset at 7200'. Tested 8-5/8" casing from surface-7200' to 1000 psi for 20 minutes. Recovered bridge plug. Set Otis 8-5/8" 36# WCB packer at 7160'.
- 10-6 Ran overshot test seals on 2-7/8" tubing and stung into packer. Tested seals and annulus to 1500 psi for 20 minutes.
- 10-7 Pulled test seals and changed pipe rams to 6-5/8". Made  
to  
up overshot seals and crossover to 6-5/8" 24# Atlas  
10-10 Bradford FL-4S innerstring casing and ran to 7160' using Torque-N-Turn, drifting and hydrotesting to 4000 psi. Latched into packer, pulled 20,000 lbs over casing weight on packer and tested annulus to 1000 psi. Released from packer and changed over annulus to 3% double inhibited KCl water. Set bridge plug in 6-5/8" casing at 120'.
- 10-11 Removed BOPE and set 6-5/8" slips with 20,000 lbs on packer. Cut off 6-5/8" casing. Installed packing, 11" x 6-5/8" 5000 psi double studed seal flange, and 11" x 9" 5000 psi tubing head. Reinstalled BOPE. Pressure tested seal flange and tubing head to 5000 psi. Tested BOPE to 1000 psi. Changed pipe rams to 2-7/8" and recovered bridge plug from 120'.
- 10-12 Made up production equipment, hydrotesting 2-7/8" N-80 tubing to 4000 psi. Latched packer at 7160'. Pulled 20,000 lbs over on latch and tested annulus to 1500 psi. Spaced out and landed tubing with 10,000 lbs on packer. Removed BOPE, installed xmas tree, and tested to 5000 psi. Opened Otis sliding sleeve at 7094'.
- 10-13 Displaced well fluid with 2% double inhibited KCL water. Tightened bolts on wellhead and xmas tree. Released rig at 9:00 A.M.

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

No.T 289-214

REPORT ON OPERATIONS

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

Ventura, California  
July 21, 1989

Your operations at well IW 78, API No. 037-21360,  
Sec. 27, T. 3N, R. 16W, S.B.B.&M. Aliso Canyon Field, in Los Angeles  
County, were witnessed on 6/26/89. Steve Mulqueen, representative of  
the supervisor, was present from 0800 to 0900. There were also  
present Ed Bradbury.

Present condition of well: 13 3/8" cem 820'; 8 5/8" cem 7345', perf 7331'  
WSO, cp 3165', casing patch 3140'-3180'; 6 5/8" ld 7222'-7820', perfs 7222'-  
7820'. TD 7850'.

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

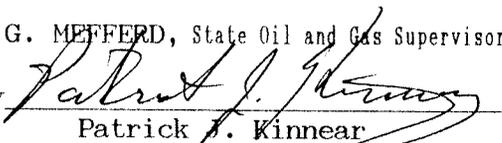
DECISION:

The blowout prevention equipment and its installation on the 8 5/8" casing  
are approved.

Fig

M.G. MEFFERD, State Oil and Gas Supervisor

By

  
Patrick J. Kinnear

Deputy Supervisor

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

No. P 289-169  
Field Code 010  
Area Code 00  
New Pool Code 30  
Old Pool Code 30

PERMIT TO CONDUCT WELL OPERATIONS  
GAS STORAGE

R.W. Weibel, Agent

Southern Calif. Gas Company

810 S. Flower St.

Los Angeles, CA. 90017

Ventura, California

June 19, 1989

Your                      proposal to rework well IW 78,  
A.P.I. No. 037-21360, Section 27, T. 3 N, R. 16W, S.B. B.&M.,  
Aliso Canyon field, any area, Sesnon pool,  
Los Angeles County, dated 6/8/89, received 6/12/89, has been  
examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. Blowout prevention equipment conforming to DOG Class III 3M requirements shall be installed and maintained in operating condition at all times.
2. Hole fluid of a quality and in sufficient quantity is used to control all subsurface conditions in order to prevent blowouts.
3. Blowout prevention practice drills are conducted at least weekly and recorded on the tour sheet.
4. A diligent effort shall be made to clean out the well to at least 7820'.
5. This office shall be consulted before initiating any changes or additions to this proposed operation, or if operations are to be suspended.
6. THIS DIVISION SHALL BE NOTIFIED:
  - a. To witness a pressure test of the blowout prevention equipment before commencing downhole operations.

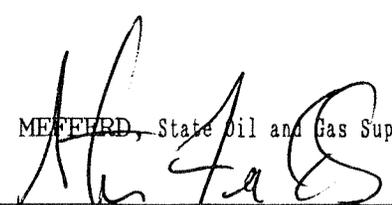
Blanket Bond

SF:ljpg

Engineer Steve Fields

Phone (805) 654-4761

M.G. MEFFERD, State Oil and Gas Supervisor

By 

Patrick J. Kinnear  
Deputy Supervisor

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

OG111

JUN 12 1989

VENTURA, CALIFORNIA

**Notice of Intention to Rework Well**

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

| FOR DIVISION USE ONLY |         |         |
|-----------------------|---------|---------|
| BOND                  | FORMS   |         |
|                       | OGD 114 | OGD 121 |
| <i>MB</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 I.W. #78, API No. 037-21360  
*(Well designation)*

Sec. 27, 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 7820'
- Complete casing record, including plugs and perforations (present hole)
  - 13-3/8" cemented 820'
  - 8-5/8" cemented 7345', stage collar 3127', casing patch 3140'-3180', squeezed 3165', WSO 7335'
  - 598' 6-5/8" landed 7820', top 7222', slotted 7352'-7820', Lynes inflatable packer 7519'-7508'.
- Present producing zone name Sesnon; Zone in which well is to be recompleted --
- Present zone pressure 3000 psi; New zone pressure \_\_\_\_\_
- Last produced Gas Storage Well \_\_\_\_\_  
*(Date) (Oil, B/D) (Water, B/D) (Gas, Mcf/D)*
- (or)
- Last injected Gas Storage Well \_\_\_\_\_  
*(Date) (Water, B/D) (Gas, Mcf/D) (Surface pressure, psig)*
- Is this a critical well according to the definition on the reverse side of this form?  (Yes)  (No)

The proposed work is as follows:

- Move in and rig up. Kill well. Install and test BOPE.
- Pull tubing. Recover casing patch and packer.
- Cut and pull existing liner from 7506'.
- Plug remaining portion of liner with cement from 7820' to 7506'
- Open hole to 15" from 7345' to 7506'

*(Continued on attachment)*

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

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

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

Southern California Gas Company  
*(Name of Operator)*  
By N.W. Buss for R.W. Weibel, Agent  
*(Name - Printed)*  
*[Signature]* 6/12/89  
*(Name - Signature) (Date)*  
Type of Organization Corporation  
*(Corporation, Partnership, Individual, etc.)*

*Fields / Walling*

Page 2  
Aliso Canyon Well I.W. #78  
API No. 037-21360  
Notice of Intention to Rework Well

The proposed work is as follows: (continued)

6. Run and gravel pack new 6-5/8" liner.
7. Run 6-5/8" casing as innerstring and land on packer at 7150'.
8. Run and land tubing.
9. Restore well to gas storage service.

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

DIVISION OF OIL AND GAS  
 RECEIVED  
 JUL 20 1977  
 SANTA PAULA, CALIFORNIA

**History of Oil or Gas Well**

Operator SOUTHERN CALIFORNIA GAS COMPANY Field or County Aliso Canyon  
 Well name and No. I. W. #78, Sec. 27, T 3N, R 16W, S. B. & M.  
 A.P.I. well No. 037-21360 Name P. S. Magruder, Jr. Title Agent  
 Date July 12, 1977 (Person submitting report) (President, Secretary or Agent)

Signature *P. S. Magruder, Jr.*

P. O. Box 3249, Terminal Annex, Los Angeles, California 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    |   |
|---------|---|
| 6-9-77  | Killed well with 433 barrels of 76#/cu.ft. polymer drilling fluid. Circulated 30 minutes.   |
| 6-10-77 | Circulated 60 minutes. Bled off 150 psi of gas. Mud weight returned 76#/cu.ft.  |
| 6-15-77 | Moved rig and equipment from Porter #47 to I.W. #78. Rigged up.   |
| 6-16-77 | Circulated gas cut polymer workover fluid out and free from gas. Took 50 barrels to obtain circulation. Installed plug in doughnut. Removed Christmas tree.   |
| 6-17-77 | Installed Class III 5000 psi B.O.P.E. Tested blind rams and pipe rams with water at 4000 psi. Tested Shaffer bag with water at 3000 psi. Witnessed by Peter Wygle. Tested blind rams and pipe rams with nitrogen at 4000 psi. Tested Shaffer bag with nitrogen at 3000 psi.   |
| 6-18-77 | Unlatched from Baker Retrieva-"D" packer, Circulated bottoms up. Pulled and measured out of hole. Ran in hole with 8 5/8" casing scraper and 7 5/8" bit to top of Baker Retrieva-"D" packer. Circulated bottoms up. Pulling out.  |
| 6-19-77 | Rig and crew idle.  |
| 6-20-77 | Pulled out of well with bit and scraper. Ran in well and set D.R. plug in Model "D" packer at 7188'. Changed over from polymer drilling fluid to fresh water with surface tension agent. Pulled out of well. Ran in well with full bore and set at 5413'. Tested from 5413' to 7188' with 1900 psi for 65 minutes - O.K.  |
| 6-21-77 | Unable to obtain test at 5413' with Baker fullbore.<br>1003' tested with 4000 psi for 60 minutes )<br>2108'     "     "     3500 psi     "     60     "     )     All tests O.K.<br>2482'     "     "     3300 psi     "     60     "     )<br>3037'     "     "     3100 psi     "     60     "     )<br>3527'-7188'     "     2900 psi     "     60     "     ) |

Shot holes at 3165' - leaking. Pulled out of well. Ran bridge plug and fullbore in well.

6-22-77

Tested casing, as follows:

|                |             |                 |                  |
|----------------|-------------|-----------------|------------------|
| 3200' to 3500' | at 2900 psi | for 60 minutes  | } All tests O.K. |
| 3500' "        | 4000' "     | 2700 psi " 60 " |                  |
| 4000' "        | 4300' "     | 2500 psi " 60 " |                  |
| 4300' "        | 4800' "     | 2300 psi " 60 " |                  |
| 4800' "        | 5400' "     | 2100 psi " 60 " |                  |

Pulled bridge plug and re-set at 3244'. Pulled out of well with fullbore. Ran in well open-ended to 3240'. Spotted 10 sacks of sand. Pulled out of well. Ran in well with fullbore to squeeze leak at 3165'.

6-23-77

Ran in well with Baker fullbore retrievable cementer. Located top of sand above bridge plug at 3220'. Pulled up and set fullbore packer at 3060'. Squeezed holes at 3165' with 200 sacks of Class "G" Neat cement. Final build-up pressure at 3500 psi. Cement in place at 8:30 A.M. Pulled out of well with fullbore packer. Ran in well to 2500<sup>±</sup> with bit and scraper.

6-24-77

Ran in well with 7 5/8" bit and scraper. Drilled out cement from 3155' to 3200'. Circulated hole clean. Tested cement job #1 - no good. Pulled out of well. Ran in with squeeze tool and set at 3060'. Breakdown at 2200 psi at 10 cu.ft./minute. Squeeze job #2 - cemented with 300 sacks of Class "G" cement, displaced with 150 cu.ft. water with no build up. Squeeze job #3 - cemented with 200 sacks of Class "G" cement, displaced with 135 cu.ft. water building up to 2200 psi. Pulled out of well.

6-25-77

Drilled out cement from 3155' to 3200'. Circulated hole clean. Tested holes at 3165' with 2000 psi - same leaked. Holes broke down under 2800 psi at 8 cu.ft./minute. Pulled out of well. Ran in hole and set squeeze tool at 3000'. Pumped 70 cu.ft. of Class "G" cement with 10% Cal Seal. Squeeze tool would not close. Unable to close B.O.P. Closed B.O.P. with N<sub>2</sub> - unable to backscuttle. Drilled out cement to 3200' with bit and scraper. Circulated hole clean.

6-26-77

Rig and crew idle.

6-27-77

Ran in with 7 5/8" bit. Located top of cement at 3184'. Ran in with open-ended tubing to 3151'. Equalized 50 sacks of Class "G" cement mixed with 10% Cal Seal. Pulled out to 2900' and reverse circulated with 100 cu.ft. of water. Displaced 14 cu.ft. of cement through leak at 3165' under 3500 psi final pressure. Bled back 12 cu.ft. Cement in place at 9:15 A.M. Drilled out soft cement from 3004' to 3064' (60').

- 6-28-77 Drilled out cement with 7 5/8" bit from 3075' to 3200' (125'). Circulated hole clean. Pressure tested 8 5/8" casing and leak at 3165' with 1500 psi final pressure from 3200' to surface for one hour - test O.K. Drilled out cement to 3244'. Circulated hole clean. Pulled out and picked up Baker retrieving tool. Ran in to top of bridge plug. Circulated hole clean. Released bridge plug and pulled out to 3000'.
- 6-29-77 Finished pulling out of well with bridge plug. Ran in well with Baker DR plug retriever. Changed over to polymer drilling fluid. Pulled DR plug. Pulled out of well - did not recover plug. Ran in well with new retrieving tool. Pulled DR plug.
- 6-30-77 Finished pulling DR plug. Installed lubricator and ran Neutron Log with collar Locator Log from 4000' to 2000'. Ran "GO-International" 40' casing patch with Johnston Collar Locator - did not work. Set patch from 3140' to 3180' over leak at 3165'. Pulled out of well. Ran in to 2000'.
- 7-1-77 Pulled out of well. Picked up safety system with production tube, four seals and latch-in locator. Running 2 7/8" J-55 8rd tubing, changing collars and cleaning pins.
- 7-2-77 Hydrotest tubing in well to 5000 psi for one minute. Changed collars, cleaned pins and applied Baker Seal. Landed tubing on Baker Model "D" packer at 7198' with 10,000# on packer. Pulled 25,000# over weight of tubing to check latch. Installed Christmas tree and tested to 5000 psi. Tubing hook load 46,000#.
- 7-3-77 Rig and crew idle.
- 7-4-77  
(Holiday) Rig and crew idle.
- 7-5-77 Circulated out polymer drilling fluid with lease salt water. Ran and set plug in NO-GO nipple at 7177'. Tested packer and seals under 1800 psi for 20 minutes. Pulled plug from NO-GO nipple. Released rig at 2:00 P.M.

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

Report on Operations

No. T 277-139

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

Santa Paula, Calif.  
July 11, 1977

DEAR SIR:

Operations at well No. IW 78, API No. 037-21360, Sec. 27, T. 3N, R. 16W,  
S.B., B & M. Aliso Canyon Field, in Los Angeles County, were witnessed  
on 6/17/77. Mr. P.R. Wygle, representative of the supervisor was  
present from 1300 to 1600. There were also present R. Dargatz, foreman

Present condition of well: No additions to the casing record since proposal dated 5/18/77.

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  
~~JOHN P. MATTHEWS, JR.~~  
Acting, State Oil and Gas Supervisor

By John L. [Signature] Deputy

P.W.

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

**REPORT ON PROPOSED OPERATIONS** No. P 277-180

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

Santa Paula, Calif.  
May 23, 1977

DEAR SIR:

(037-21360)

Your ..... proposal to rework gas storage ..... Well No. IW 78,  
Section 27, T. 3N., R. 16W., S.B.B. & M., Aliso Canyon Field, Los Angeles County,  
dated 5/18/77, received 5/23/77, has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. The drilling fluid used shall be of a quality and in sufficient quantity to control all subsurface conditions in order to prevent blowouts; and a reserve supply of 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, 3M rating, shall be installed and maintained in operating condition at all times.
3. THIS DIVISION SHALL BE NOTIFIED TO WITNESS A PRESSURE TEST OF THE BLOWOUT PREVENTION EQUIPMENT BEFORE COMMENCING DOWNHOLE OPERATIONS.

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

Blanket Bond  
MD:b

M. G. MEFFERD (acting)  
JOHN W. MATTHEWS, State Oil and Gas Supervisor  
By John W. Matthews, Deputy

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.

| 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. #78, API No. \_\_\_\_\_,

Sec. 27, 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. 7820'
- Complete casing record, including plugs and perforations:
  - 13 3/8" cemented 820'
  - 8 5/8" cemented 7345', WSO 7335', stage collar 3127', cp'd 3165'
  - 598' 6 5/8" landed 7820', gravel flow packed, slotted 7519'-7820', Lynes packer 7508'-7519' slotted 7352'-7222', top 7222'
- Present producing zone name Sesnon Zone in which well is to be recompleted -
- Present zone pressure 2700 psi New zone pressure \_\_\_\_\_
- Last produced Gas Storage Well  
(Date) (Oil, B/D) (Water, B/D) (Gas, Mcf/D)  
or
- Last injected \_\_\_\_\_  
(Date) (Water, B/D) (Gas, Mcf) (Surface pressure, psig.)

The proposed work is as follows:

- Move in and rig up. Kill well. Install B.O.P.E. and test.
- Pull tubing. Shoot four 1/2" holes at 7140' and squeeze with cement. Shoot four 1/2" holes at 7139' and test WSO.
- Pressure test casing. Perform any remedial work indicated by pressure testing. Run GO-International casing patch across stage collar at 3127'.
- Run tubing with down hole safety system. Return well to gas storage.

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.  
(Name) (Date) 5-18-77  
Type of Organization Corporation  
(Corporation, Partnership, Individual, etc.)

DIVISION OF OIL AND GAS

SEP 1 1976

History of Oil or Gas Well

SANTA PAULA, CALIFORNIA

OPERATOR SOUTHERN CALIFORNIA GAS COMPANY FIELD Aliso Canyon

Well No. I.W. #78, Sec. 27, T. 3, R. 16W, S.B. B. & M.

Date August 19, 19 76

Signed

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

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

Title Agent

(Address)

(213) 689-3561

(Telephone Number)

(President, Secretary or Agent)

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

- 7-22-76 Rigged up Halliburton to circulate 78# of mud to kill well.
- 7-23-76 Moved rig; stripped off head. Rigged up to circulate. Took 44 barrels to fill hole.
- 7-24-76 Pressure tested B.O.P.E. with water, blind rams under 4000 psi for 20 minutes - O.K. Pipe rams under 4000 psi for 20 minutes - O.K. Hydril under 3000 psi for 20 minutes - O.K. All tests witnessed by D.O.G. Rigged up NOWSCO. Re-tested B.O.P.E. to above pressures - held for 20 minutes on all tests. Made two chemical cuts - one at 7430' and one at 7157'. Circulated and conditioned mud - raised weight to 82#/cu. ft.
- 7-25-76 Idle.
- 7-26-76 Pulled out - laid down Macco sliding sleeve and Brown safety joint. Ran in well with overshot.
- 7-27-76 Ran overshot with extension and new grapple jarred packer fish free. When pulling packer, swabbed well. Circulated down annulus with Halliburton cement pump truck. Raised drilling fluid weight 82#/cu. ft. to 84#/cu. ft. Working tubing back in hole from 5200' to 7100'.
- 7-28-76 Circulated gas out with Halliburton cement pump truck. Tried to pull packer, but well was swabbing. Circulated down annulus with Halliburton to get gas out. Could not establish circulation with pressures up to 2500 psi. Stripping in hole with 2 7/8" tubing - one joint at a time, using safety valve to fill hole and attempting to establish circulation by packer.
- 7-29-76 Stripped 2 7/8" tubing in to 7200'. Worked packer until packer rubber failed. Pumped with Halliburton down tubing and circulated gas cut drilling fluid out of well. Tripped out with fish. Filled hole with Halliburton down 2 7/8" tubing. Laid down 8 5/8" Hydraulic packer; make up fishing tools tripping in to recover 6 5/8" packer.

- 7-30-76 Ran in well with fishing tools to recover 6 5/8" packer. Laid down 66 joints 2 7/8", J-55 tubing. Worked over fish and jarred free. Pulled out to 7100', circulated gas out. Finished pulling out of hole. Recovered all tubing and 6 5/8" packer. Found bottom 60' of tubing plugged with silt. Ran in well with 8 5/8" casing scraper and 7 5/8" bit.
- 7-31-76 Located top of liner with 8 5/8" casing scraper and 7 5/8" bit at 7220'. Ran in well with 6 5/8" casing scraper and 5 5/8" bit. Stopped on fill at 7612'.
- 8-1-76 Idle.
- 8-2-76 Drilled out fill from 7612' to 7616'. Circulated hole clean. Pulled out and picked up 5 5/8" tapered mill.
- 8-3-76 Milled out bad spot in casing with 5 5/8" tapered mill from 7612' to 7620'. Circulated hole clean. Pulled out and picked up 5 5/8" bit. Ran in to top of 6 5/8" liner at 7220'.
- 8-4-76 Cleaned out with 5 5/8" bit to 7820'. Circulated hole clean. Ran in hole with 8 5/8" squeeze tool and pressure tested 8 5/8" casing, as follows:
- 7200' to Surface at 1000 psi for 20 minutes
  - 4750' to Surface at 1300 psi for 20 minutes
  - 4250' to Surface at 1600 psi for 20 minutes
  - 3750' to Surface at 1900 psi for 20 minutes
  - 3250' to Surface at 2200 psi for 20 minutes
  - 2750' to Surface at 2500 psi for 20 minutes
- 8-5-76
- 2250' to Surface at 2800 psi for 20 minutes)
  - 1750' to Surface at 3100 psi for 20 minutes)
  - 1250' to Surface at 3400 psi for 20 minutes)
  - 750' to Surface at 3700 psi for 20 minutes)
- O.K.
- Ran Baker Retrieval "D" packer on wire line and set at 7210'. Ran in with 2 7/8" tubing. Removed collars' cleaning pins, applying Baker seal. Hydrotested tubing to 5000 psi for one minute test on each joint.
- 8-6-76 Ran 2 7/8" tubing. Removed collars. Cleaned pins and applied Baker seal. Hydrotested tubing to 5000 psi. Landed tubing on packer in compression of 10,000#. Pulled up 15,000# to check latch - O.K. Installed back pressure valve in doughnut. Removed B.O.P.E. and installed Christmas tree.

- 8-7-76 Tested Christmas tree with 5000 psi - two tests for 20 minutes each - O.K. Circulated polymer drilling fluid out of well with lease salt water. With Archer-Reed wire line unit, set Camco plug in No-Go nipple. Halliburton made test to 1600 psi and bled off to 1400 psi in 20 minutes. Pulled plug and attempted to re-run second plug, but was unable to latch into No-Go nipple.
- 8-8-76 Idle.
- 8-9-76 Ran Camco plug and set in Camco No-Go nipple at 7198'. Attempted to test seals and packer with 1600 psi. Bled down to 1400 psi in 20 minutes. Removed Camco plug and ran second plug - re-tested same. Bled down to 200 psi in 20 minutes. Rigged up and changed back to 83# polymer fluid. Removed Christmas tree and re-installed 5000 psi Class III B.O.P.E. Shut rig down at 10:00 p.m.
- 8-10-76 Rigged up H & H tester and tested B.O.P.E. with water:
- |            |                                |
|------------|--------------------------------|
| Blind rams | 4000 psi for 20 minutes - O.K. |
| Pipe rams  | 4000 psi for 20 minutes - O.K. |
| Hydril Bag | 3000 psi for 20 minutes - O.K. |
- Rigged up NOWSCO and tested pipe rams at 4000 psi - held for 20 minutes - O.K. NOWSCO valve started leaking on blind rams and test seal on Hydril leaked. Shut down to change valve and install new seals in Hydril. Re-tested at 3000 psi held for 20 minutes - O.K. Blind rams at 4000 psi - bled off to 500 psi in 10 minutes. Took hold of tubing and pulled to 30,000# over tubing weight. Tubing is latched in packer. Re-tested packer to 1600 psi - bled off to 400 psi in 22 minutes. Unable to release latch in packer.
- 8-11-76 Rigged up Camco wire line unit. Ran and attempted to set tubing plug above No-Go nipple - unable to set plug pulled. Ran in and recovered plug in No-Go nipple. Re-ran second plug and set in No-Go nipple. Pressure tested to 1700 psi with H & H pump. Bled down to 1500 psi in 9 minutes. Pulled plug from No-Go nipple, unlatched from Baker Retrieva "D" packer. Pulled up 20' and circulated and conditioned polymer workover fluid. Pulling out.
- 8-12-76 Made up Baker packer retrieving tool. Pulled packer at 7210'; Bottom rubber seal was damaged. Rigged up McCullough wire line - Ran new packer in hole and set packer at 7188', per collar locator. Testing tubing in hole at 5000 psi for 1 minute.

8-13-76

Finished running Camco production string hydrotesting at 5000 psi for one minute. Spaced out and landed 7181' with 12,000# on Baker Retrieva "D" packer at 7188'. Pulled 33,000# over weight of tubing string to check Latch-in. Removed B.O.P.E. and installed Christmas tree. Tested flange, doughnut and Christmas tree at 5000 psi each for 20 minutes - Rigged up and changed over from polymer fluid to lease salt water. Archer-Reed ran Camco plug and set in No-Go nipple at 7177'. Tested Baker Retrieva "D" packer and seals unit at 1400 psi for 30 minutes - O.K. Cleaned tanks - Rig released at 10:00 p.m.

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

Report on Operations

No. T 276-270

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

Santa Paula, Calif.  
Sept. 21, 1976

DEAR SIR:

Operations at well No. IV 78, API No. 037-21360, Sec. 27, T. 3N, R. 16W,  
S.B., B & M. Aliso Canyon Field, in Los Angeles County, were witnessed  
on 7/24/76. Mr. P. R. Wygle, representative of the supervisor was  
present from 1300 to 1500. There were also present C. B. Todd, contract foreman

Present condition of well: No additions to casing record since proposal dated 7/14/76.

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

By John L. Anderson Deputy

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

REPORT ON PROPOSED OPERATIONS No. P 276-252

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

Santa Paula, Calif.  
July 22, 1976

DEAR SIR:

Your proposal to rework gas storage Well No. (037-21360) IW 78,  
Section 27, T. 3N, R. 16W, S.B. B. & M., Aliso Canyon Field, Los Angeles County,  
dated 7/14/76, received 7/16/76, has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. A copy of this approval shall be posted at the well site prior to commencing operations.
2. The drilling hole 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.
3. Blowout prevention equipment, at least of the Division of Oil and Gas Class III 3M rating, shall be installed and maintained in operating condition at all times.
4. THIS DIVISION SHALL BE NOTIFIED TO WITNESS A PRESSURE TEST OF THE BLOWOUT PREVENTION EQUIPMENT BEFORE COMMENCING DOWNHOLE OPERATIONS.

Blanket Bond  
JH:b

HAROLD W. BERTHOLF

JOHN E. MATTHEWS, Jr., State Oil and Gas Supervisor

By *John E. Matthews, Jr.* Deputy

JUL 16 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 |     |
|                       | 114   | 121 |
| bb                    | ✓     | ✓   |

DIVISION OF OIL AND GAS

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to rework well No. I. W. #78, API No. \_\_\_\_\_, Sec. 27, T. 3, R. 16W, S.B. B. & M., Aliso Canyon Field, Los Angeles County.

The present condition of the well is as follows:

- Total depth. 7850'
- Complete casing record, including plugs and perforations:

13 3/8" cemented 820  
 8 5/8" cemented 7345', stage collar 3127', cp'd. 3165'  
 WSO 7335'  
 598' 6 5/8" landed 7820'  
 Slotted 7820'-7519' and 7508'-7229, Top liner 7222'  
 Lynes packer 7519'-7508', gravel flowpacked 6-9 gravel

- Present producing zone name Sesnon Zone in which well is to be recompleted -
- Present zone pressure 3200 psi New zone pressure -
- Last produced Gas Storage Well  
(Date) (Oil, B/D) (Water, B/D) (Gas, Mcf/D)  
 or
- Last injected \_\_\_\_\_  
(Date) (Water, B/D) (Gas, Mcf) (Surface pressure, psig.)

The proposed work is as follows:

- Move in and rig up. Kill well. Install B.O.P.E. and pressure test.
- Pull tubing and packers. Clean out to 7820'.
- Pressure test 8 5/8" casing. Perform any remedial work required.
- Run packer, tubing and safety valve.
- Return well to gas storage operations.

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. 7-14-76  
(Name) (Date)  
 Type of Organization Corporation  
(Corporation, Partnership, Individual, etc.)

**DIVISION OF OIL AND GAS**

**WELL SUMMARY REPORT**

SUBMIT IN DUPLICATE

Operator Pacific Lighting Service Company Well No. I.W. 78

Sec. 27, T. 3N, R. 16W, S.B. B. & M. Aliso Canyon Field Los Angeles County.

Location From Station 84, 1766.94 South and 1256.49' West  
(Give location from property or section corner, or street center lines)

Elevation of ground above sea level 2075 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 8, 1974

Signed P. S. Magruder Jr.  
P. S. Magruder  
Title 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 10, 1973</u> | <u>December 31, 1973</u> | <u>7850</u> | <u>None</u>   | <u>130' of fish consisting of bit, sub,</u>   | <u>Top Sesnon S-4</u> | <u>7346</u> |
|                          |                          |             |               | <u>3-6" d.c., stabalizer, bumper sub</u>      | <u>Top Frew</u>       | <u>7532</u> |
|                          |                          |             |               | <u>&amp; 27' of 4-1/2" d.p. side tracked.</u> |                       |             |

Geologic age at total depth: Eocene

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

|                          | Clean Oil<br>bbl. per day | Gravity<br>Clean Oil | Per Cent Water<br>including emulsion | Gas<br>Mcf. per day | Tubing<br>Pressure | Casing<br>Pressure |
|--------------------------|---------------------------|----------------------|--------------------------------------|---------------------|--------------------|--------------------|
| Initial production       | GAS STORAGE WELL          |                      |                                      |                     |                    |                    |
| Production after 30 days |                           |                      |                                      |                     |                    |                    |

**CASING RECORD (Present Hole)**

| Size of Casing<br>(A. P. I.) | Depth of Shoe | Top of Casing | Weight<br>of Casing  | New or<br>Second Hand | Seamless<br>or Lapweld | Grade<br>of Casing         | Size of Hole<br>Drilled                   | Number of Sacks<br>of Cement | Depth of Cement<br>if through perforation |
|------------------------------|---------------|---------------|----------------------|-----------------------|------------------------|----------------------------|---|------------------------------|---|
| <u>13-3/8"</u>               | <u>820</u>    | <u>sfc.</u>   | <u>48#</u>           | <u>N</u>              | <u>S</u>               | <u>H-40</u>                | <u>17 1/2"</u>                            | <u>267</u>                   |   |
| <u>8-5/8"</u>                | <u>7345</u>   | <u>sfc.</u>   | <u>36#</u>           | <u>N</u>              | <u>S</u>               | <u>K-55</u><br><u>N-80</u> | <u>11"</u>                                | <u>1740</u><br><u>400</u>    | <u>shoe</u><br><u>3165</u>                |
| <u>6-5/8"</u>                | <u>7820</u>   | <u>7222</u>   | <u>24# &amp; 28#</u> | <u>N</u>              | <u>S</u>               | <u>K-55</u>                | <u>14", 9 1/2" &amp;</u><br><u>7-5/8"</u> | <u>Gravel</u>                | <u>packed</u>                             |

**PERFORATED CASING**

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

8-5/8" - 4-1/2" jet holes at IEL depth 7335 for WSO; 4-1/2" jet holes @ 3165  
squeezed with cement.

6-5/8" - Perforated 7222-7820 (see history)

Was the well directionally drilled? yes Electrical Log Depths 7831 (Attach Copy of Log)

RESOURCES AGENCY OF CALIFORNIA  
DEPARTMENT OF CONSERVATION

## DIVISION OF OIL AND GAS

## History of Oil or Gas Well

OPERATOR Pacific Lighting Service Co. FIELD Aliso Canyon  
 Well No. I.W. 78, Sec. 27, T. 3N, R. 16W, S.B.B. & M.  
 Date April 8, 19 74 Signed P. S. Magruder Jr.  
P. O. Box 54790, Terminal Annex P. S. Magruder  
Los Angeles, Ca. 90051 (213) 689-3561 Title Agent  
 (Address) (Telephone Number) (President, Secretary or Agent)

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

| Date  |   |
|-------|---|
| 1973  |   |
| 11-10 | Peter Bawden Drilling Company, Inc., Contractor Rig #10 spudded 17-1/2" hole at 2:30 AM and drilled to 352'.<br>Mud: 69#, 33 sec.   |
| 11-11 | Drilled 17-1/2" hole to 821'.<br>Mud: 69#, 36 sec.  |
| 11-12 | <p><u>TO CEMENT 13-3/8" SURFACE CASING:</u> Ran 22 joints or 821.93' of 13-3/8", 48#, H-40 Buttress thread, R-3 new seamless blank casing and cemented same at 820' with 555 cu. ft. of 94#/cu. ft. slurry consisting of 267 sacks of Class "G" cement, 272 cu. ft. of 2% Lodense A, followed by 100 sacks of Class "G" cement mixed with 3% calcium chloride. Moved casing 10' and circulated 30 minutes prior to cementing. Preceded cement with 100 cu. ft. of water and displaced with 30 cu. ft. of water and 700 cu. ft. of mud. Did not bump top rubber plug as cement returns to surface at 3:55 AM under 200 psi final pressure. Full circulation throughout job. Twenty-five minutes mixing and 15 minutes displacing cement. Used Byron-Jackson bulk cement and power.</p> <p><u>CASING DETAIL:</u></p> <p>All 22 joints or 821.93' 13-3/8" fitted on bottom with Davis-Lynch float shoe and with centralizer at 800'.</p> <p>Cut and recovered 13-3/8" casing and welded on Shaffer 13"-5000# casinghead. Tested head with 3500 psi for 15 minutes.</p> |
| 11-13 | Installed BOP and tested same Ok with 1000 psi. Witnessed and approved by Division of Oil & Gas. Located top of cement at 790'. Drilled out cement and shoe and drilled 11" hole to 1309'.<br>Mud: 69#, 36 sec., 10.2 cc., 6% solids.   |

1973

- 11-14 Drilled 11" hole to 2074'.  
Mud: 69#, 39 sec., 6.8 cc., 6% solids.
- 11-15 Drilled 11" hole to 2323' and Dyna-Dril #1, 11" hole to 2537'.  
Mud: 68#, 33 sec., 10.0 cc., 4% solids.
- 11-16 Reamed 2323' to 2537' and directionally drilled 11" hole to 2668'.  
Down 13 hours repairing electric lines.  
Mud: 68#, 35 sec., 6.0 cc., 4% solids.
- 11-17 Directionally drilled 11" hole to 2939'.  
Mud: 69#, 35 sec. 6.8 cc., 6% solids.
- 11-18 Directionally drilled 11" hole to 3423'. Down 3 hours electrical  
repairs. Mud: 70#, 42 sec., 6.0 cc., 8% solids.
- 11-19 Directionally drilled 11" hole to 3739' and Dyna-Dril #2 11" hole  
to 3863'. Mud: 70#, 37 sec., 6.8 cc., 7% solids.
- 11-20 Dyna Dril #2, 11" hole to 3902'. Reamed Dyna Dril interval 3739'-  
3902' and directionally drilled 11" hole to 4177'.  
Mud: 70#, 35 sec., 5.0 cc., 6% solids.
- 11-21 Directionally drilled 11" hole to 4548'.  
Mud: 70-1/2#, 36 sec., 4.4 cc., 8% solids.
- 11-22 Directionally drilled 11" hole to 5274'.  
Mud: 71#, 36 sec., 4.4 cc., 8% solids.
- 11-23 Directionally drilled 11" hole to 5647'.  
Mud: 70#, 37 sec., 4.2 cc., 8% solids.
- 11-24 Directionally drilled 11" hole to 6033'. Reamed 5389'-5431'.  
Mud: 70-1/2#, 36 sec., 5.6 cc., 7% solids.
- 11-25 Directionally drilled 11" hole to 6402'.  
Mud: 71#, 35 sec., 5.6 cc., 8% solids.
- 11-26 Directionally drilled 11" hole to 6686'. Tight hole 5651'-5460'.  
Mud: 71#, 38 sec., 4.4 cc., 6% solids.
- 11-27 Directionally drilled 11" hole to 6886'. Reamed 6677'-6737'.  
Mud: 70#, 36 sec., 4.8 cc., 8% solids.
- 11-28 Directionally drilled 11" hole to 7179'. Reamed 7105'-7117'.  
Mud: 70#, 39 sec., 5.2 cc., 6% solids.
- 11-29 Directionally drilled 11" hole to 7501'. Measured out of hole.  
Mud: 68-1/2#, 36 sec., 4.8 cc., 6% solids.

1973

- 11-30 Directionally drilled 7-5/8" hole to 7558', using rerun button bit. Tight spot at 2535' when pulling.  
Mud: 70#, 37 sec., 5.2 cc., 7% solids.
- 12-1 Directionally drilled 7-5/8" hole to 7630', using new button bit.  
Mud: 70#, 36 sec., 5.6 cc., 6% solids.
- 12-2 Directionally drilled 7-5/8" hole to 7648'. Ran Welex Induction Electric log which stopped at 7430'. Ran drill assembly and circulated hole clean.  
Mud: 70#, 35-1/2 sec., 5.6 cc., 6% solids.
- 12-3 Ran Welex Induction Electric log, Sidewall Neutron log, Compensated Acoustic Velocity and Density logs and hole caliper. Ran drill assembly and reamed from 7345' to 7409' and circulated hole clean.
- 12-4 TO CEMENT 8-5/8" CASING: Ran 179 joints and 3 pups or 7349' of 8-5/8", 36#, N-80 & K-55, Buttress thread, R-3 new seamless blank casing and cemented same at 7345' with 3600 cu. ft. of 94#/cu. ft. slurry, consisting of 1740 sacks Class "G" and 3275# Lodense A-2, followed by 150 sacks Class "G" with 2% calcium chloride. Circulated with full circulation for 30 minutes prior to cementing. Moved pipe for 25 minutes when same froze. Preceded cement with 100 cu. ft. of water and followed with 736 cu. ft. of mud when pressure reached maximum allowable of 4500 psi. 500 psi to 1500 psi mixing pressure, then pressure gradually rose to 4500 psi. No circulation while displacing. Started mixing at 10:20 AM. Finished mixing at 12:50 PM and displaced until 1:15 PM when maximum pressure occurred. Malfunction of job may be result of hole caving, thus requiring higher displacement pressure which dehydrated cement causing a "flash" set. Used Byron-Jackson bulk cement and power.

CASING DETAIL:

Bottom 37 joints or 1547.08 (7345'-5798') is N-80 fitted on bottom with Davis-Lynch float shoe, one turbo centralizer 10' up from shoe, metal petal cement basket 15' up, 3 scratchers 18' up, 3 scratchers above & below 1st collar, on top of 2nd joint with Davis-Lynch float collar with 3 scratchers above & below float collar, on top of 3rd joint with turbo centralizer with 3 scratchers above & below, on top of 6th joint with turbo centralizer. Top of 19th & 20th joints with turbo centralizer with metal petal cement basket between.

1973

Top 139 jts. + 3 pups or 5802.24 (5798'-0') is K-55 fitted at 3165' with metal petal cement basket with centralizers above and below and with Halliburton DV collar at 3127'.

Total 176 joints + 3 pups or 7349.32'.

- 12-5 Set 8-5/8" slips, installed secondary packing and cut and recovered 8-5/8" casing. Installed Shaffer 10" - 5000# tubing head and tested same Ok with 3500 psi for 15 minutes. Reinstalled BOP and tested same Ok with 1000 psi. Ran 7-5/8" bit with casing scraper above and measured in hole. Located top of cement at 2056' and drilled same out to 2342'.
- 12-6 Drilled out cement to 5026'.
- 12-7 Drilled out cement to 6090'.
- 12-8 Drilled out cement to 7189'.
- 12-9 Drilled out cement to 7335'. Ran Welex Microseismogram log which showed top of cement at 5470'. Cement bond near 8-5/8" shoe appeared good. Ran Welex gun with collar locator through lubricator and shot four 1/2" jet holes at 7335', I.E.L. depth. Closed BOP, applies 1650 psi for 15 minutes and holes held Ok.

WATER SHUT-OFF TEST ON HOLES IN 8-5/8" AT 7335': Ran Johnston tester on 4-1/2" drill pipe. Set packer at 7283' with tail to 7302'. Opened tool at 4:40 for 1 hour 5 minute test. Puff blow, then dead balance of test. Recovered 10' of drilling fluid. Charts Ok. Water shut-off witnessed and approved by Engineer for Division of Oil and Gas. Ran Welex gun with collar locator through lubricator and shot four 1/2" jet holes at 3165'.

- 12-10 TO SQUEEZE HOLES IN 8-5/8" CASING AT 3165' WITH CEMENT: Ran Johnston Positrieve cementer on 549' of 4-1/2" heavy wall and 2417' of 4-1/2" 16.60# drill pipe. Set tool at 2972'. Holes took fluid at 1500 psi and took fluid at 14 cu. ft. per minute under 2200 psi. Preceded cement with 200 cu. ft. of water. Pumped in 200 sacks Class "G" cement mixed with 3% calcium chloride. 118#/cu. ft. slurry. Held 1000 psi on annulus. Displaced in stages with 252 cu. ft. of hole fluid to force estimated 165 sacks away under 2200 psi at 4:05 AM. Started mixing at 2:20 AM. Used Byron-Jackson bulk cement and power. After standing cemented 12 hours, ran 7-5/8" bit with scraper and located top of cement at 3015' and drilled out hard cement to 3166'. Cleaned out to 3450'.

1973

12-11 Ran Johnston retrievable bridge plug below Johnston Positrieve cement tool and plug failed to unlatch. Ran Johnston retrievable bridge plug on 4-1/2" drill pipe and set same at 3414'. Ran Johnston Positrieve cement tool and set same at 3230'. Plug held 2500 psi. Pumped in 4 sacks of sand on bridge plug.

TO RESQUEEZE HOLES IN 8-5/8" CASING AT 3165' WITH CEMENT: Set Johnston Positrieve cement tool at 2992' and holes took fluid at 24 cu. ft. per minute rate under 2200 psi. Preceded cement with 200 cu. ft. of water. Pumped in 500 sacks of Class "G" cement mixed with 3% calcium chloride and displaced in stages with 284 cu. ft. of drilling fluid to force estimated 480 sacks away under 3000 psi final pressure at 2:35 PM. Used Byron-Jackson power and bulk cement.

12-12 After standing cemented 16 hours, located top of cement at 3103'. Drilled out cement with 7-5/8" bit with casing scraper above and cleaned out to 3200'. Ran Johnston tester and same leaked.

12-13 TO TEST EFFECTIVENESS OF SQUEEZE CEMENTING HOLES AT 3165': Ran Halliburton RTTS tool on 4-1/2" drill pipe and set same at 3110'. Using Byron-Jackson power, tested holes at 3165' with 3000 psi for 20 minutes. HOLES EFFECTIVELY SEALED.

Ran Johnston retrieving tool and recovered bridge plug. Rig operations suspended 16 hours to accommodate wire line work at IW 56, 57, 81 and Porter 32.

12-14 Rig operations suspended for wireline work and to mix and pump mud down Porter 32.

12-15 Rig operations suspended 15 hours while circulating mud to kill Porter 32. Measured in hole and drilled out cement 7335' to 7377' with 7-5/8" bit. Reamed 7377' to 7648'. Circulated and conditioned mud for tight hole. Drilling fluid in hole same as fluid used to kill Porter 32. Mud: 65#, 36 sec., 9.8 cc.

12-16 Could not get to bottom, pulled and ran new bit. Reamed tight hole at 7630' and drilled 7-5/8" hole to 7665'. Last bit made 6' in 1-3/4 hours, previous bit 11' in 2-1/2 hours, both completely dull. Ran button type bit (rerun), reamed 7554' to 7665' and drilled 7-5/8" hole to 7725'. Mud: 66#, 36 sec., 9.8 cc.

12-17 Drilled 7-5/8" hole to 7737'. Ran Welex Induction electric log to 7590' where same stopped. Ran 7-5/8" bit and reamed 7580' to 7737'. Pulled to shoe. Reamed 88'. Pulled to shoe. Reamed 7649' to 7737'. Pulled to shoe. Ran to 7649' where drill pipe stuck making connection. Worked same loose. Conditioned mud increasing viscosity to 66 seconds.

1973

- 12-18 Circulated and conditioned mud to 68#, 66 sec., 7.6 cc. Reamed 7620' to 7737' in 4 hours. Ran Welex log to 7593' where same stopped. Ran Induction electric log and hole caliper from 7580' to 7335'. Ran Microseismogram opposite cement at 3165'. Ran Grant hole opener and opened 11" drilled hole to 14" from 7345' to 7364'.
- 12-19 Opened 11" hole to 14" from 7364'-7443', hole opener #1 and to 7490' with hole opener #2. Two hours suspended while pumping mud down Porter 32.  
Mud: 67#, 52 sec., 7.8 cc.
- 12-20 Opened hole to 14" to 7500'. Ran 7-5/8" bit and reamed 7527' to 7737', 3-1/2 hours. Single out due to tight hole. Pulled to 7300' and conditioned mud, adding defoam and potash.
- 12-21 Ran Grant hole opener #3 and opened 7-5/8" drilled hole to 9-1/2" from 7500' to 7660'. Ran 7-5/8" bit and reamed from 7640' to 7654' and worked through tight spot at 7647'.
- 12-22 Reamed to 7686' and worked pipe up through tight place at 7679' where same stuck. Could not rotate or circulate pipe. Rigged up Byron-Jackson power and applied 6000 psi to drill pipe but could not unplug same. Ran Welex jet gun to shoot holes in drill collars just above bit but same stopped at 7555'. Ran McCullough free point to 7540' where same stopped. Pipe free at that depth. Ran McCullough string shot and backed off in 9-1/2" hole at 7516'.
- 12-23 Ran Brown Oil Tool fishing assembly, consisting of screw in sub, safety joint, bumper sub, jars and accelerator on 4-1/2", 16.6# drill pipe and 457' of heavy wall 4-1/2" drill pipe and screwed into fish. Jarred on fish for 2 hours when acted as if pulled off fish or fish came loose. Pulled and found heavy wall drill pipe crimped and parted at 7543'. Recovered one bent joint and 3' broken piece which caused drag on casing. Left 130' of fish in hole, consisting of bit and sub, 3-6" drill collars, stabilizer, bumper sub and 27' of heavy wall drill pipe. Hole condition and position of fish make further fishing operations too hazardous.

TO BRIDGE HOLE WITH CEMENT: Ran 7545' of 4-1/2" drill pipe to 7543' and equalized 150 cu. ft. of Class "G" cement, mixed with 20% sand and 2% calcium chloride mixed to 124#/cu. ft. slurry. Preceded cement with 30 cu. ft. of water and displaced with 10 cu. ft. of water and 560 cu. ft. of mud. Good circulation throughout. Theoretical fill is 7380'. Cement in place at 7:00 PM. Used Byron-Jackson bulk cement and power.

1973

12-24 After standing 19 hours, found top of cement at 7528'.

TO BRIDGE HOLE WITH CEMENT: Ran 7520' of 4-1/2" drill pipe to 7515' and equalized 200 cu. ft. of Class "G" cement slurry mixed with 20% sand and 2% calcium chloride mixed to 124#/ cu. ft. Preceded cement with 30 cu. ft. of water and displaced with 10 cu. ft. of water and 564 cu. ft. of mud. Good circulation throughout. Theoretical fill is 7300'. Cement in place at 7:25 PM. Used Byron-Jackson bulk cement and power.

12-25 Standing cemented. Crew off for Christmas.

12-26 After standing cemented 32 hours, located top of cement at 7361'. Drilled out hard cement to 7371'. Ran Dyna-Dril assembly. Cleaned mud tanks for change over.

12-27 Change over to Poly Carb R completion fluid. Dyna-Dril 7-5/8" hole 7371' to 7472'. Sand line parted attempting to obtain survey. Down 4-1/4 hours repairing sand line.

12-28 One and one-half hours repairing sand line. Dyna-Dril 7-5/8" hole to 7503'. Surveys indicated well in original hole. Ran special bent Dyna-Dril assembly.  
Mud: 66#, 44 sec., 6.0 cc., trace solids.

12-29 Dyna-Dril 7-5/8" hole to 7569' and directionally redrilled 7-5/8" hole to 7612'. Surveys show well in new hole.  
Mud: 66#, 42 sec., 6.0 cc.

12-30 Directionally redrilled 7-5/8" hole to 7713'.  
Mud: 66#, 41 sec., 5.8 cc.

12-31 Directionally redrilled 7-5/8" hole to 7850', TOTAL DEPTH.  
Mud: 67#, 40 sec., 6.0 cc.

1974  
1-1 Made three trips from 8-5/8" shoe at 7345' to 7850' cleaning up hole to log. Ran Welex Induction Electric log, Compensated Neutron and Density logs with hole caliper and Acoustic Velocity log and recored from 7830' to shoe.

1-2 Opened 7-5/8" hole to 14" from 7345' to 7439'.

1-3 Opened hole to 14" to 7500'. Later hole caliper showed hole opened to 14" to 7517'.

1-4 Opened 7-5/8" hole to 9-1/2" from 7517' to 7544'. Ran bit with jets out and backscuttled hole clean at 7500'. Reamed from 7765' to 7850'. Pulled to shoulder and had to work pipe free at 7795'. Reamed to 7850' finding 10' of fill.

1974

1-5 TO TEST INTEGRITY OF 8-5/8" CASING: Ran Halliburton RTTS tool on 4-1/2" drill pipe and set tool at 7337' or 2' below water shut-off holes at 7335'. Closed rams and applied 2000 psi pressure to annulus which held Ok for 15 minutes. Test witnessed and casing integrity approved by Company test. Ran 7-5/8" bit and reamed from 7811' to 7850'.

1-6 TO HANG 6-5/8" PERFORATED LINER: Ran 15 joints or 597.85' of 6-5/8", 24# & 28#, K-55, Security flush joint and X-line, R-3 perforated liner and hung at 7820' where same froze and could not be worked lower. Set Burns lead seal liner hanger with hold down slips at 7222' and inflated Lynes external casing packer rubbers at 7516'. Tested lead seal Ok with 1000 psi and Lynes packer seal Ok with 500 psi.

LINER DETAIL:

|                    |         |             |   |
|--------------------|---------|-------------|---|
| Bottom 8 jts. or   | 300.87' | (7820-7519) | 6-5/8", 28#, K-55, Security flush joint R-3 casing perforated to 7529' with 28 rows, 2" x 30 mesh 6" centers. 8rd pin on top.   |
| Next               | 11.39'  | (7519-7508) | 6-5/8", 28#, Lynes external casing packer with pack-off at 7516'.   |
| Next 4 jts. or     | 156.47' | (7508-7352) | 6-5/8", 24#, K-55, X-Line, R-3 Layne & Bowler Gru-V-Kut wire weld 0.018" gauge stainless steel screen, 24 grooves, 72 1/4" slots per foot. 7.062" O.D. Wire wrap inlet area of 30.970 square inches per foot. Fitted on top with x-line pin to Security flush joint box & fitted on bottom with 8rd pin to x-line box crossovers. |
| Next 3 jts. or     | 123.22' | (7352-7229) | 6-5/8", 28#, K-55 Security flush joint, R-3 perforated to 7234' with 12 rows, 2" x 30 mesh, 6" centers.   |
| Next               | 5.90'   | (7229-7222) | Burns lead seal liner hanger with hold down slips and Burns port collar below. Ports @ 7227.  |
| Total 15 joints or | 597.85' | (7820-7222) |   |

Commenced gravel packing with Burns Tool Company equipment at 6:00 PM. 70 cu. ft. in 5 hours. Theoretical fill based on hole caliper is 148 cu. ft., except 10' below shoe, which hole size is indeterminate.

1974

- 1-7 Continued gravel packing additional 5 hours putting away 90 cu. ft. when pressure rose. Backscuttled 2 cu. ft., leaving a total of 158 cu. ft. of gravel away. Ran Burns wash tool and washed perforations from 7517' to 7350'.
- 1-8 Gravel packed additional 3 hours putting away 53 cu. ft. when pressure rose. Ran wash tool and checked Lynes packer Ok with 600 psi. Washed liner from 7508' to 7229'.
- 1-9 Gravel packed additional 1 hour putting away 5 cu. ft. when pressure rose. Backscuttled 1 cu. ft. TOTAL GRAVEL IN PLACE, 215 cu. ft. Pick up and measure tubing in hole.
- 1-10 Ran tubing to bottom and circulated out 10' of fill 7810'-7820'. Pulled tubing and commenced laying down drill pipe.
- 1-11 Ran 2-7/8" tubing with hardware, broaching every 1000' run with 2.340 O.D. broach. Pulled tubing to add joint below "X" nipple to facilitate running blanking plug.
- 1-12 Ran 243 joints of 2-7/8", 6.5#, new N-80 and used K-55 or N-80, R-3 seamless tubing and landed same on doughnut at 7551'. All tubing broached. Found one crimped joint and replaced same. Ran Archer Reed wireline tool to set Otis "X" blanking plug at 7519'. Left running prong for equalizing section for plug in hole. Can be recovered on same run to remove blanking plug, if so desired at later date. Attempted to pressure up tubing to set hydraulic packers and obtained circulation. Ran shifting tool and checked lower sliding sleeve closed, upper sliding sleeve open. Closed same. Pressured tubing to 4000 psi and set 6-5/8" and 8-5/8" packers.
- 1-13 Removed B.O.P. Installed Shaffer Xmas tree and tested seals Ok with 3450 psi for 15 minutes.  
RIG RELEASED 1:00 AM, 1-13-74.

1974

TUBING DETAIL

|                  | <u>LENGTH</u> | <u>DRIFT</u> | <u>I.D.</u> | <u>DEPTH</u> |  |
|------------------|---------------|--------------|-------------|--------------|--|
| Bottom 1 jt.     | 31.33         | 2.347        | 7551-7519   |              | 2-7/8", 6.5#, N-80, 8rd. upset, R-3, new seamless tubing |
| Next             | 1.20          |              | 7519-7518   |              | Otis "X" nipple (blanking plug set)                      |
| Next             | 5.47          | 2.347        | 7518-7513   |              | Brown Oil Tool 6-5/8", 28# H-1-RSP hydraulic packer      |
| Next 1 jt.       | 30.30         |              | 7513-7482   |              | 2-7/8" tubing as above                                   |
| Next             | 2.34          | 2.347        | 7482-7480   |              | Udell landing nipple                                     |
| Next 2 jts.      | 60.01         |              | 7480-7420   |              | 2-7/8" tubing as above                                   |
| Next             | 2.26          | 2.437        | 7420-7418   |              | Macco type "A" sliding sleeve                            |
| Next 1 jt.       | 31.29         |              | 7418-7387   |              | 2-7/8" tubing as above                                   |
| Next             | 1.38          | 2.347        | 7387-7385   |              | Brown Oil cc safety jt.-right hand release               |
| Next 7 jts.      | 213.08        |              | 7385-7172   |              | 2-7/8" tubing as above                                   |
| Next             | 7.09          | 2.347        | 7172-7165   |              | Brown Oil 8-5/8", 36#, H-1 RSP hydraulic packer          |
| Next 1 jt.       | 30.53         |              | 7165-7135   |              | 2-7/8" tubing as above                                   |
| Next             | 2.29          | 2.347        | 7135-7132   |              | Udell landing nipple                                     |
| Next 1 jt.       | 31.22         |              | 7132-7101   |              | 2-7/8" tubing as above                                   |
| Next             | 2.28          | 2.437        | 7101-7098   |              | Macco type "A" sliding sleeve                            |
| Next 2 jts.      | 61.20         |              | 7098-7038   |              | 2-7/8" tubing as above                                   |
| Next             | 2.21          | 2.347        | 7038-7035   |              | Brown Oil B-4 safety jt.-left hand "J" & pull release    |
| Next 227 jts.    | 7012.54       |              | 7035-23     |              | 2-7/8" tubing as above including 31 jts. used tubing.    |
| K.B. to doughnut | 22.90         |              | 23-K.B.     |              |  |

NOTE: Blanking plug set and sliding sleeves closed.  
Jar down to open sliding sleeves.

# SURVEY RECORD

1766.94-SOUTH & 1256.49-WEST OF STA. #84

JOB NO      TW-78      ONE      DATE      1-5-1974     

MAGN.....2075  
K.B.....17  
ELEV.....2092

| MEASURED DEPTH | DRIFT ANGLE | TRUE VERTICAL DEPTH | COURSE DEVIATION | DRIFT DIRECTION | RECTANGULAR COORDINATES |       |      |      | REMARKS |
|----------------|-------------|---------------------|------------------|-----------------|-------------------------|-------|------|------|---------|
|                |             |                     |                  |                 | NORTH                   | SOUTH | EAST | WEST |         |
| 1              | 0.15        | 156                 | 68               | S 40 W          |                         |       |      |      |         |
| 2              | 0.30        | 443                 | 51               | S 22 W          |                         |       |      |      | 44      |
| 3              | 0.30        | 626                 | 60               | S 03 E          |                         |       |      |      | 38      |
| 4              | 0.30        | 821                 | 70               | S 23 E          |                         |       |      |      | 1       |
| 5              | 0.45        | 1120                | 91               | S 01 W          |                         |       |      |      | 30      |
| 6              | 0.30        | 1443                | 74               | S 08 E          |                         |       |      |      | 64      |
| 7              | 0.45        | 1747                | 10               | S 11 E          |                         |       |      |      | 71      |
| 8              | 1.00        | 1946                | 47               | S 07 W          |                         |       |      |      |         |
| 9              | 0.45        | 2249                | 97               | S 06 E          |                         |       |      |      |         |
| 10             | 0.45        | 2323                | 86               | S 30 E          |                         |       |      |      |         |
| 11             | 1.15        | 2363                | 85               | N 73 W          |                         |       |      |      |         |
| 12             | 4.30        | 2425                | 95               | N 19 W          |                         |       |      |      |         |
| 13             | 6.30        | 2457                | 46               | N 08 W          |                         |       |      |      | 38      |
| 14             | 8.30        | 2490                | 10               | N 15 E          |                         |       |      |      | 8       |
| 15             | 11.15       | 2574                | 49               | N 18 E          |                         |       |      |      |         |
| 16             | 12.30       | 2668                | 20               | N 22 E          |                         |       |      |      |         |
| 17             | 15.00       | 2794                | 32               | N 26 E          |                         |       |      |      |         |
| 18             | 18.00       | 2952                | 48               | N 22 E          |                         |       |      |      |         |
| 19             | 21.45       | 3107                | 57               | N 29 E          |                         |       |      |      |         |
| 20             | 23.30       | 3423                | 26               | N 32 E          |                         |       |      |      |         |
| 21             | 23.30       | 3739                | 00               | N 32 E          |                         |       |      |      |         |
| 22             | 22.30       | 3809                | 46               | N 22 E          |                         |       |      |      |         |
| 23             | 23.00       | 3839                | 08               | N 18 E          |                         |       |      |      |         |
| 24             | 22.15       | 3958                | 22               | N 06 E          |                         |       |      |      |         |
| 25             | 22.00       | 4177                | 27               | N 06 E          |                         |       |      |      |         |
| 26             | 21.45       | 4431                | 19               | N 07 E          |                         |       |      |      |         |
| 27             | 22.30       | 4745                | 29               | N 08 E          |                         |       |      |      |         |
| 28             | 22.45       | 4983                | 77               | N 09 E          |                         |       |      |      |         |
| 29             | 22.45       | 5274                | 13               | N 09 E          |                         |       |      |      |         |
| 30             | 21.45       | 5399                | 41               | N 09 E          |                         |       |      |      |         |
| 31             | 21.00       | 5583                | 19               | N 09 E          |                         |       |      |      |         |
| 32             | 20.00       | 5672                | 82               | N 08 E          |                         |       |      |      |         |



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

Report on Operations

No. T 273-555

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

Santa Paula Calif.  
December 14, 1973

DEAR SIR:

Operations at well No. IW 78, API No. 037-21360, Sec. 27, T. 3N, R. 16W,  
S.B., B & M. Aliso Canyon Field, in Ventura County, were witnessed  
on Dec. 10, 1973. Mr. Larry Bright, engineer, representative of the supervisor was  
present from 0900 to 1000. There were also present Mr. Alverts, contract foreman

Present condition of well: 13 3/8" cem. 821'; 8 5/8" cem. 7345', perf. 7331', WSO. T.D  
7648'.

The operations were performed for the purpose of testing the 8 5/8" shut-off by means of a  
formation tester

DECISION:

**THE 8 5/8" SHUT-OFF AT 7331' IS APPROVED.**

a  
cc: Operator

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

By LOCP Riggins Deputy

RESOURCES AGENCY OF CALIFORNIA  
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Report on Operations

No. T 273-500

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

Santa Paula Calif.  
November 15, 1973

DEAR SIR:

Operations at well No. IW 78 (037-21360), Sec. 27, T. 3N, R. 16W, S.B. B & M.  
Aliso Canyon Field, in Los Angeles County, were witnessed  
on Nov. 13, 1973. Mr. P R Wygle, engineer, representative of the supervisor was  
present from 0600 to 0800. There were also present R. L. Vandigriff, driller

Present condition of well: 13 3/8" cem. 821'. T.D. 821'.

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

Mr. \_\_\_\_\_ reported:

THE BLOWOUT PREVENTION EQUIPMENT AND INSTALLATION ARE APPROVED.

a  
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

REPORT ON PROPOSED OPERATIONS No. P. 273-114

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

Santa Paula Calif.  
March 5, 1973

DEAR SIR:

(037-21360)

Your proposal to drill Well No. IW 78  
Section 27, T. 3N, R. 16W, S.B. B. & M., Aliso Canyon Field, Los Angeles County,  
dated 2/13/73, received 2/27/73, has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. Sufficient cement shall be pumped back of the 13 3/8" casing to fill from the shoe to the surface.
2. 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 CONTAMINATES OR TOXIC MATERIAL SHALL BE USED IN ANY DRILLING FLUID THAT IS TO BE PLACED IN AN UNLINED SUMP.
3. 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.
4. Fresh waters and oil or gas zones back of 8 5/8" casing shall be protected with cement.
5. A directional survey shall be filed with this Division, if one is made.
6. 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 Sesnon zone.

Blanket Bond

ALL:r

cc; Operator

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

By LOOP P. Jones, Deputy

Porter No. 32 site

037-21360

(037-21360)

RESOURCES AGENCY OF CALIFORNIA  
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Notice of Intention to Drill New Well

This notice and surety bond must be filed before drilling begins

DIVISION OF OIL AND GAS  
RECEIVED  
FEB 27 1973  
SANTA PAULA, CALIFORNIA

Los Angeles Calif. February 13, 1973

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. IW78, Sec. 27, 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: 1766.94 feet South (Direction) 1256.49 feet West (Direction) at right angles to said line from Station No. 84 (reference: Metrex Aerial Surveys Company drawing no. 11679-sheet 2 of 5)

Elevation of ground above sea level 2075 feet U.S.G.S. datum.

All depth measurements taken from top of kelly bushing which is 15 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           | 0'    | 750'   | 750'             |
| 8-5/8                        | 36#    | K-55 & N-80    | 0'    | 7000'  | 7000' & 3000'    |
| 6-5/8                        | 27.65# | K-55           | 6900' | 7350'  | 7350'            |

Intended zone(s) of completion: Sesnon (Name) 6800', 7350' (Depth, top and bottom) Estimated total depth 7350'

GAS STORAGE WELL

|     |        |   |     |     |     |
|-----|--------|---|-----|-----|-----|
| 150 | 3-3-73 | ✓ | BBB | 11A | 121 |
|-----|--------|---|-----|-----|-----|

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

Address P.O. Box 54790 T.A. Pacific Lighting Service Company (Name of Operator)  
Los Angeles, California 90051 By [Signature] Corporation  
(213) 689-3621 or Telephone Number (213) 689-3561 Type of Organization Corporation (Corporation, Partnership, Individual, etc.)