WORK ORDER #: **6142155** PMNUM:

PARENT WO #:

DESCRIPTION: VALVE TESTING SS-25B (SEE COMMENTS BELOW) API 037-21323

TARGET START DATE: ROUTE NUMBER: sec 28 3N 16W

TARGET COMP DATE: 5/12/2016 STATUS: INPRG

SCHEDULE START: REQUESTED BY: DMAINE

SCHEDULE FINISH: REPORT DATE: 5/11/2016

PM ACTIVITY CLASS:

ASSET #: 24850

ASSET DESCRIPTION: GROUP 6 WELLS

LOCATION ID: AC-GROUP 6 WELLS

LOC. DESCRIPTION: SS-4 SITE, 25 SITE, 29, 44 SITE, SS-1 SITE

PHYSICAL LOCATION:

RESPONSIBLE SUPERVISOR / OWNER	WORK TYPE	PRIORITY	ACCOUNT INFO
FIELD MAINT /	CM	2	26357.003

REMARKS: Greased, sealed and operated all valves on tree. Greased SSV on TBG production. B. Dougherty

Date Completed 5-11-16

Completed By

SAFETY CHECKLIST COMPLETED? ☑

Estimated Labor Hours	Labor Code/Craft	Quantity	Planned Hours	Actual Hours
0				1.50

COMMENTS:

GREASE AND OPERATE THE FOLLOWING VALVES. THE MASTER VALVE, CASING PRODUCTION WING VALVE, THE TUBING KILL WING VALVE AND CASING KILL WING VALVE. NO TUBING PRODUCTION WING VALVE ON TREE.

LOCATION METERS:

LOG:

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CHECK LIST-RECORDS RECEIVED AND WELL STATUS

Operator: **Southern California Gas Company** WELL DESIGNATION **"Standard Sesnon" 25B**

API No. **03721323** SE **28** T: **3N** R.: **16W** , **SB** B. and M.

County: **Los Angeles** FIELD: **Aliso Canyon**

Type of Notice: **Rework** **Date** **7/26/2016** **Report Number:** **P216-0152**

RECORDS RECEIVED (ATTACH PAGES IF REQUIRED)

	Date	OK	NEED	Remarks
Well Summary (OG100)				
History (OG103)				
E-Log				
Mud Log				
Dipmeter				
Directional				
Core and/or SWS				
Press Test	7/28/16	✓	✓	Need data from SCG

NEW STATUS

DATE: _____

NOTICE OF RECORDS DUE

DATE: _____

DATE: _____

DATE: _____

DATE: _____

WELL STATUS INQUIRY

DATE: _____

DATE: _____

Well Stat

Change Required: _____

Change Done: _____

ABANDONMENTS/REABANDONMENTS/DRILLS/REDRILLS

CalWims Abandonment Form: _____ SURFACE INSPECTION NEEDED _____ COMPLETED _____
Date and Inspector

FINAL LETTER NEEDED _____ COMPLETED _____ Calwims DRILL/REDRILL Form _____
(Date)

ENGINEER'S CHECK LIST

T-REPORT(S) _____ OPERATOR'S NAME _____ WELL DESIGNATION _____ SIGNATURE _____

Calwims Location _____ Calwims ELEVATION: _____ CONFIDENTIAL RELEASE DATE: _____ PERMIT REQUIREMENTS MET _____

CLERICAL CHECK LIST

LOCATION CHANGE (OG165) _____ ELEVATION CHANGE (OG165) _____ RELEASE OF BOND (OG150) _____

REMARKS

RECORDS SCANNED: _____ RECORDS APPROVED: _____
(Date) (Date and Engineer)

Modfied OGD2

AOR Datbase _____

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

No. P 216-0152

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

PERMIT TO CONDUCT WELL OPERATIONS

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

Ventura, California
July 28, 2016

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

Your proposal to **Rework** well **"Standard Sesnon" 25B**, A.P.I. No. **037-21323**, Section **28**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, **Any** area, **Sesnon-Frew** pool, **Los Angeles** County, dated **7/26/2016**, received **7/26/2016** has been examined in conjunction with records filed in this office. (Lat: **34.315000** Long: **-118.564152** 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.
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.

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

Rec'd 07-26-16 DOGGR Ventura.

FOR DIVISION USE ONLY		
	Forms	
Bond	~~OGD114~~	OGD121
	CALWIMS	1151

P216-0152

NOTICE OF INTENTION TO REWORK / REDRILL WELL

Detailed instructions can be found at: 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 ☐ (Check one) well Standard Sesnon 25B, API No. 037-21323,

Sec. 28, T. 3N, R. 16W, SB 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: 9030 feet. The effective depth is: 9019 feet.

Present completion zone(s): Sesnon (Name). Anticipated completion zone(s): Same (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.)
7b - MIRU pump, with casing valve closed, pressure-up on tubing to 500 psi for 1 hour (will test csg., packer and tubing plug all at same time). Note: Test pressure reduced to 500 psi due to casing patch installed across stage collar at 2918' and inner-liner installed across damage at 7462' in 8-5/8" casing.

If well is to be redrilled or deepened, show proposed coordinates (from surface location) and true vertical depth at total depth: _____ feet _____ (Direction) and _____ feet _____ (Direction) Estimated true vertical depth: _____

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			
Southern California Gas Company			
Address: P.O. Box 2300		City/State: Chatsworth, CA	Zip Code: 91313-2300
Name of Person Filing Notice: A.J. Alshammasi	Telephone Number: (818) 700-3887	Signature	Date: 07/26/2016
Individual to contact for technical questions: Jacob Zachry	Telephone Number: (805) 256-5401	E-Mail Address: jzachry@semprautilties.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 07-26-16 DOGGR Ventura.

INFORMATION FOR COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT OF 1970 (CEQA)

If an environmental document has been prepared by the lead agency, submit a copy of the ***Notice of Determination*** or ***Notice of Exemption*** with this notice. Please note that a CEQA determination by a local jurisdiction, if required, must be complete, or the Division may not issue a permit.

CRITICAL WELL DEFINITION

As defined in the California Code of Regulations, Title 14, Section 1720 (a), "Critical well" means a well within:

(1) 300 feet of the following:
  (A) Any building intended for human occupancy that is not necessary to the operation of the well; or
  (B) Any airport runway.
(2) 100 feet of the following:
  (A) Any dedicated public street, highway or the nearest rail of an operating railway that is in general use;
  (B) Any navigable body of water or watercourse perennially covered by water;
  (C) Any public recreational facility such as a golf course, amusement park, picnic ground, campground or any other area of periodic high-density population; or
  (D) Any officially recognized wildlife preserve.

WELL OPERATIONS REQUIRING BONDING

1. Drilling, redrilling, or deepening any well.
2. Milling out or removing a casing or liner.
3. Running and cementing casing or tubing.
4. Running and cementing liners and inner liners.
5. Perforating casing in a previously unperforated interval for production, injection, testing, observation, or cementing purposes.
6. Drilling out any type of permanent plug.
7. Reentering an abandoned well having no bond.

This form may be printed from the DOGGR website at www.conservation.ca.gov/dog/

Completed Work Summary -Standard Sesnon 25B		
Step	**Work Completed**	**Date**
4b	Cement returns to 6-5/8" liner top at 7523' (Top MP at 8250'). History shows no CBL was run	2/26/1973
5b	6-5/8" Seal-bore packer set at 8405'	11/9/1976
5b	Tubing plug set in No-Go Nipple	11/22/2015
6b	Circulated well full of 3% KCl through sliding sleeve at 8339'	5/25/2016

Rec'd 07-26-16 DOGGR Ventura.

Well
Standard Sesnon 25B

API #: 04-037-21323-02
Sec 28, T3N, R16W

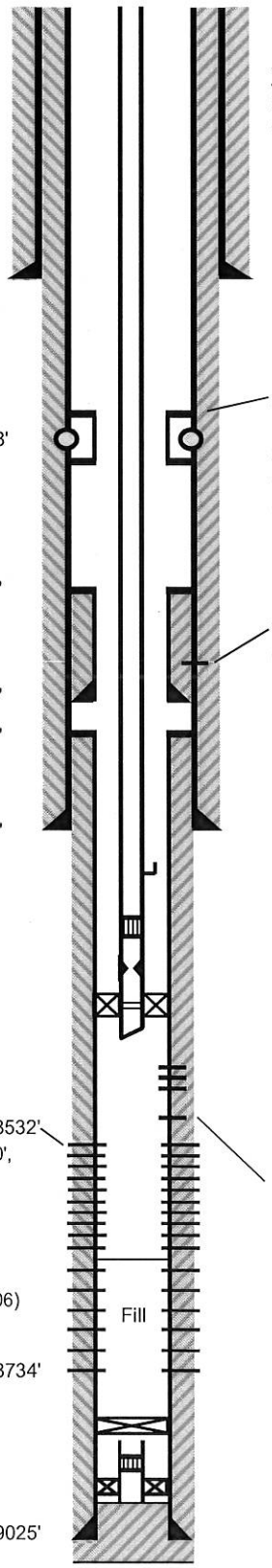
Operator: So. California Gas Co.

Lease: Standard Sesnon
Field: Aliso Canyon
Status: Active Gas Storage
BFW:
USDW:

Ground Elevation: 2927' asl
Datum to Ground: 15' KB

Spud Date: 1/13/1973
2nd Sidetrack Kick-off Date: 2/13/197
Completion Date: 3/16/1973

Junk: 5 JNTs 2-7/8" TBG, Sliding Sleeve, 6-5/8" Baker PCKR, Top of Junk @ 8853'



13-3/8" TOC Surface
8-5/8" ETOC (2nd Stg.) Surf. (‡Calc'd)

17-1/2" Hole

Surface Casing
13-3/8", 48#, K-55
0' - 900'

CMT'D w/ 700 CF* + Top Job in 3 stages (171 CF thru 1" pipe @ 75' + 100 SKS (Class "G", 3% CaCl2) + 189 CF of ready mix pea gravel, 2% CaCl2), CMT to Surface

900'

9-5/8" ETOC (1st Stg.) 2918'

11" Hole (to 7650')

Inner Liner (CSG Patch)
6-5/8", 24# (10/12/1976)
7347' - 7519'

7347'

CMT'D w/ 75 SKS, Good Returns at TOL

7519'

7523'

Production Casing
8-5/8"
0' - 5542' 36#, K-55
5542' - 7642' 36#, N-80

7642'

CMT'D w/ 1955 CF (1st Stage) + 1500 CF thru Stage Collar @ 2996'*** (2nd Stage), Full circulation throughout job, No CMT Returns to Surface‡

7-5/8" Hole (7650' - 9030')

6-5/8" Perfs: 8532'
8532' - 8536'**, 8558' - 8600'**, 8624' - 8640',
8658' - 8664', 8670' - 8674',
8684' - 8688', 8700' - 8734'**
Four (4) 0.4" HPF (3/1973, **See Notes)
8532' - 8540', 8558' -8608', 8660' - 8682'
Four (4) ~0.28" HPF (2/9/2006)
8624' - 8640' Two (2) ~0.28" HPF (2/9/2006)

Liner
6-5/8", 27.65#, K-55
7523' - 9025'

8734'

CMT'D w/ 500 CF, Good Returns at TOL

PBTD 9019'

9025'

TD 9030'
TVD (8784')
Directionally Drilled: Yes (TD is 1129' E, 165' N of Surf)

Tubing
2-7/8", 6.5#, N-80
0' - 8412'

2907' - 2929' Pengo CSG Patch (12/3/1986)

2918' 8-5/8" Stage Collar (Located by wireline 12/3/86, See Notes***)

7347' Co. WSO on Splice

7462' Hole/Leak in 8-5/8" CSG (10/8/76) (CMT SQZ'D 2X, 51 CF + 90 CF Away)

7519' Co. WSO on Splice

6-5/8" x 8-5/8" Lap WSO

7585' KOP (from ST) into this wellbore (See History)

8293' MMA w/ BST P.O.P. @ 2500 psi diff.

8339' Sliding Sleeve

8372' XN Nipple

8405' Baker PCKR (w/ 2 seals)
8412' Tail

8432' - 8433' (4) 1/2" HPF (144 CF CMT SQZ'D Away, 6/5/80)
8434' (4) 1/2" Holes (157 CF CMT SQZ'D Away, 5/17/80)
8434' Reshot (4) 1/2" Holes (72 CF CMT SQZ'D Away, 5/28/80)
8435' (4) 1/2" Holes WSO
8515' (4) 1/2" Holes WSO

Fill

8684' Tagged (2/9/2006)

6-5/8" Model "N" BP @ 8845'
8853' Top of Junk (see desc. above)

Wellbore History

Orig. Hole (OH) TD @ 7984'
(See Standard Sesnon 25B OH)
1st Sidetrack KOP @ 7811'
TD @ 7956'
(See Standard Sesnon 25B ST)
2nd Sidetrack KOP @ 7585'
TD @ 9030'

Notes

*No circulation throughout job

**Perfs @ 8532' - 8600' treated w/ 60 CF 3% HCl, 276 BBL "Clay Lok".
Perfs @ 8700' - 8734' treated w/ 45 CF 3% HCL, 200 BBL "Clay Lok".

***Orig. drilling history reports 8-5/8" Stage Collar at 2996'

Top of Zone Markers	md (tvd)
A36	5547' (5545')
UDA1	6674' (6621')
MDA	7512' (7356')
LDA	7733' (7561')
MP	8250' (8046')
S1	8448' (8232')
S4	8534' (8313')
S8	8624' (8398')
FREW	8798' (8563')

Prepared by: LD (6/2/2016)

InterAct

Casing Pressure Test Safety Check (500 psi)

Well	Packer Depth MD/TVD	Casing Size/Grade/Weight	Depth MD	Burst PSI	85% of Burst PSI	Pressure at Depth w/500 psi Surface Pressure	Press < 85% of Burst
Standard Sesnon 25B	8405	8-5/8", 36#, K-55	5542	4460	3791	2950	Yes
		8-5/8", 36#, N-80	7523	6490	5517	3825	Yes
		6-5/8", 28#, K-55	9025	6060	5151	4489	Yes

WORK ORDER #: **6142155** PMNUM:

PARENT WO #:

DESCRIPTION: VALVE TESTING SS-25B (SEE COMMENTS BELOW) API 037-21323

TARGET START DATE: ROUTE NUMBER: sec 28 3N 16W

TARGET COMP DATE: 5/12/2016 STATUS: INPRG

SCHEDULE START: REQUESTED BY: DMAINE

SCHEDULE FINISH: REPORT DATE: 5/11/2016

PM ACTIVITY CLASS:

ASSET #: 24850

ASSET DESCRIPTION: GROUP 6 WELLS

LOCATION ID: AC-GROUP 6 WELLS

LOC. DESCRIPTION: SS-4 SITE, 25 SITE, 29, 44 SITE, SS-1 SITE

PHYSICAL LOCATION:

RESPONSIBLE SUPERVISOR / OWNER	WORK TYPE	PRIORITY	ACCOUNT INFO
FIELD MAINT /	CM	2	26357.003

REMARKS: Greased, sealed and operated all valves on tree. Greased SSV on TBG production. B. Dougherty

Date Completed 5-11-16

Completed By

SAFETY CHECKLIST COMPLETED? ☑

Estimated Labor Hours	Labor Code/Craft	Quantity	Planned Hours	Actual Hours
0				1.50

COMMENTS:

GREASE AND OPERATE THE FOLLOWING VALVES. THE MASTER VALVE, CASING PRODUCTION WING VALVE, THE TUBING KILL WING VALVE AND CASING KILL WING VALVE. NO TUBING PRODUCTION WING VALVE ON TREE.

LOCATION METERS:

LOG:

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CHECK LIST-RECORDS RECEIVED AND WELL STATUS

Operator: **Southern California Gas Company** WELL DESIGNATION **"Standard Sesnon" 25B**

API No. **03721323** SE **28** T: **3N** R.: **16W** , **SB** B. and M.

County: **Los Angeles** FIELD: **Aliso Canyon**

Type of Notice: **Rework** **Date** **7/26/2016** **Report Number:** **P216-0152**

RECORDS RECEIVED (ATTACH PAGES IF REQUIRED)

	Date	OK	NEED	Remarks
Well Summary (OG100)				
History (OG103)				
E-Log				
Mud Log				
Dipmeter				
Directional				
Core and/or SWS				
Press Test	7/28/16	✓	✓	Need data from SCG

NEW STATUS

DATE: _____

NOTICE OF RECORDS DUE

DATE: _____

DATE: _____

DATE: _____

DATE: _____

WELL STATUS INQUIRY

DATE: _____

DATE: _____

Well Stat

Change Required: _____

Change Done: _____

ABANDONMENTS/REABANDONMENTS/DRILLS/REDRILLS

CalWims Abandonment Form: _____ SURFACE INSPECTION NEEDED _____ COMPLETED _____
Date and Inspector

FINAL LETTER NEEDED _____ COMPLETED _____ Calwims DRILL/REDRILL Form _____
(Date)

ENGINEER'S CHECK LIST

T-REPORT(S) _____ OPERATOR'S NAME _____ WELL DESIGNATION _____ SIGNATURE _____

Calwims Location _____ Calwims ELEVATION: _____ CONFIDENTIAL RELEASE DATE: _____ PERMIT REQUIREMENTS MET _____

CLERICAL CHECK LIST

LOCATION CHANGE (OG165) _____ ELEVATION CHANGE (OG165) _____ RELEASE OF BOND (OG150) _____

REMARKS

RECORDS SCANNED: _____ RECORDS APPROVED: _____
(Date) (Date and Engineer)

Modfied OGD2

AOR Datbase _____

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

No. P 216-0152

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

PERMIT TO CONDUCT WELL OPERATIONS

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

Ventura, California
July 28, 2016

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

Your proposal to **Rework** well **"Standard Sesnon" 25B**, A.P.I. No. **037-21323**, Section **28**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, **Any** area, **Sesnon-Frew** pool, **Los Angeles** County, dated **7/26/2016**, received **7/26/2016** has been examined in conjunction with records filed in this office. (Lat: **34.315000** Long: **-118.564152** 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.
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.

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

Rec'd 07-26-16 DOGGR Ventura.

FOR DIVISION USE ONLY		
	Forms	
Bond	~~OGD114~~	OGD121
	CALWIMS	1151

P216-0152

NOTICE OF INTENTION TO REWORK / REDRILL WELL

Detailed instructions can be found at: 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 ☐ (Check one) well Standard Sesnon 25B, API No. 037-21323,

Sec. 28, T. 3N, R. 16W, SB 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: 9030 feet. The effective depth is: 9019 feet.

Present completion zone(s): Sesnon (Name). Anticipated completion zone(s): Same (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.)
7b - MIRU pump, with casing valve closed, pressure-up on tubing to 500 psi for 1 hour (will test csg., packer and tubing plug all at same time). Note: Test pressure reduced to 500 psi due to casing patch installed across stage collar at 2918' and inner-liner installed across damage at 7462' in 8-5/8" casing.

If well is to be redrilled or deepened, show proposed coordinates (from surface location) and true vertical depth at total depth: _____ feet _____ (Direction) and _____ feet _____ (Direction) Estimated true vertical depth: _____

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			
Southern California Gas Company			
Address: P.O. Box 2300		City/State: Chatsworth, CA	Zip Code: 91313-2300
Name of Person Filing Notice: A.J. Alshammasi	Telephone Number: (818) 700-3887	Signature	Date: 07/26/2016
Individual to contact for technical questions: Jacob Zachry	Telephone Number: (805) 256-5401	E-Mail Address: jzachry@semprautilties.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 07-26-16 DOGGR Ventura.

INFORMATION FOR COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT OF 1970 (CEQA)

If an environmental document has been prepared by the lead agency, submit a copy of the ***Notice of Determination*** or ***Notice of Exemption*** with this notice. Please note that a CEQA determination by a local jurisdiction, if required, must be complete, or the Division may not issue a permit.

CRITICAL WELL DEFINITION

As defined in the California Code of Regulations, Title 14, Section 1720 (a), "Critical well" means a well within:

(1) 300 feet of the following:
  (A) Any building intended for human occupancy that is not necessary to the operation of the well; or
  (B) Any airport runway.
(2) 100 feet of the following:
  (A) Any dedicated public street, highway or the nearest rail of an operating railway that is in general use;
  (B) Any navigable body of water or watercourse perennially covered by water;
  (C) Any public recreational facility such as a golf course, amusement park, picnic ground, campground or any other area of periodic high-density population; or
  (D) Any officially recognized wildlife preserve.

WELL OPERATIONS REQUIRING BONDING

1. Drilling, redrilling, or deepening any well.
2. Milling out or removing a casing or liner.
3. Running and cementing casing or tubing.
4. Running and cementing liners and inner liners.
5. Perforating casing in a previously unperforated interval for production, injection, testing, observation, or cementing purposes.
6. Drilling out any type of permanent plug.
7. Reentering an abandoned well having no bond.

This form may be printed from the DOGGR website at www.conservation.ca.gov/dog/

Completed Work Summary -Standard Sesnon 25B		
Step	**Work Completed**	**Date**
4b	Cement returns to 6-5/8" liner top at 7523' (Top MP at 8250'). History shows no CBL was run	2/26/1973
5b	6-5/8" Seal-bore packer set at 8405'	11/9/1976
5b	Tubing plug set in No-Go Nipple	11/22/2015
6b	Circulated well full of 3% KCl through sliding sleeve at 8339'	5/25/2016

Rec'd 07-26-16 DOGGR Ventura.

Well
Standard Sesnon 25B

API #: 04-037-21323-02
Sec 28, T3N, R16W

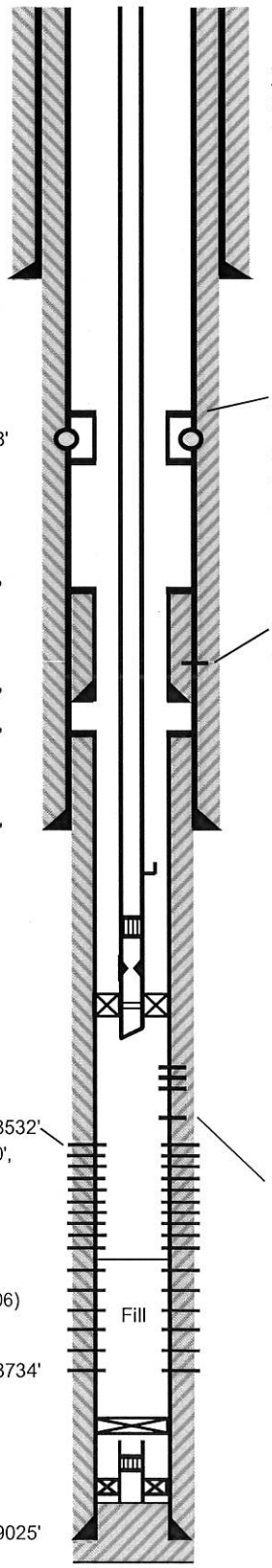
Operator: So. California Gas Co.

Lease: Standard Sesnon
Field: Aliso Canyon
Status: Active Gas Storage
BFW:
USDW:

Ground Elevation: 2927' asl
Datum to Ground: 15' KB

Spud Date: 1/13/1973
2nd Sidetrack Kick-off Date: 2/13/197
Completion Date: 3/16/1973

Junk: 5 JNTs 2-7/8" TBG, Sliding Sleeve, 6-5/8" Baker PCKR, Top of Junk @ 8853'



13-3/8" TOC Surface
8-5/8" ETOC (2nd Stg.) Surf. (‡Calc'd)

17-1/2" Hole

Surface Casing
13-3/8", 48#, K-55
0' - 900'

CMT'D w/ 700 CF* + Top Job in 3 stages (171 CF thru 1" pipe @ 75' + 100 SKS (Class "G", 3% CaCl2) + 189 CF of ready mix pea gravel, 2% CaCl2), CMT to Surface

900'

9-5/8" ETOC (1st Stg.) 2918'

11" Hole (to 7650')

Inner Liner (CSG Patch)
6-5/8", 24# (10/12/1976)
7347' - 7519'

7347'

CMT'D w/ 75 SKS, Good Returns at TOL

7519'

7523'

Production Casing
8-5/8"
0' - 5542' 36#, K-55
5542' - 7642' 36#, N-80

7642'

CMT'D w/ 1955 CF (1st Stage) + 1500 CF thru Stage Collar @ 2996'*** (2nd Stage), Full circulation throughout job, No CMT Returns to Surface‡

7-5/8" Hole (7650' - 9030')

6-5/8" Perfs: 8532'
8532' - 8536'**, 8558' - 8600'**, 8624' - 8640',
8658' - 8664', 8670' - 8674',
8684' - 8688', 8700' - 8734'**
Four (4) 0.4" HPF (3/1973, **See Notes)
8532' - 8540', 8558' -8608', 8660' - 8682'
Four (4) ~0.28" HPF (2/9/2006)
8624' - 8640' Two (2) ~0.28" HPF (2/9/2006)

Liner
6-5/8", 27.65#, K-55
7523' - 9025'

8734'

CMT'D w/ 500 CF, Good Returns at TOL

PBTD 9019'

9025'

TD 9030'
TVD (8784')
Directionally Drilled: Yes (TD is 1129' E, 165' N of Surf)

Tubing
2-7/8", 6.5#, N-80
0' - 8412'

2907' - 2929' Pengo CSG Patch (12/3/1986)

2918' 8-5/8" Stage Collar (Located by wireline 12/3/86, See Notes***)

7347' Co. WSO on Splice

7462' Hole/Leak in 8-5/8" CSG (10/8/76) (CMT SQZ'D 2X, 51 CF + 90 CF Away)

7519' Co. WSO on Splice

6-5/8" x 8-5/8" Lap WSO

7585' KOP (from ST) into this wellbore (See History)

8293' MMA w/ BST P.O.P. @ 2500 psi diff.

8339' Sliding Sleeve

8372' XN Nipple

8405' Baker PCKR (w/ 2 seals)
8412' Tail

8432' - 8433' (4) 1/2" HPF (144 CF CMT SQZ'D Away, 6/5/80)
8434' (4) 1/2" Holes (157 CF CMT SQZ'D Away, 5/17/80)
8434' Reshot (4) 1/2" Holes (72 CF CMT SQZ'D Away, 5/28/80)
8435' (4) 1/2" Holes WSO
8515' (4) 1/2" Holes WSO

Fill

8684' Tagged (2/9/2006)

6-5/8" Model "N" BP @ 8845'
8853' Top of Junk (see desc. above)

Wellbore History

Orig. Hole (OH) TD @ 7984'
(See Standard Sesnon 25B OH)
1st Sidetrack KOP @ 7811'
TD @ 7956'
(See Standard Sesnon 25B ST)
2nd Sidetrack KOP @ 7585'
TD @ 9030'

Notes

*No circulation throughout job

**Perfs @ 8532' - 8600' treated w/ 60 CF 3% HCl, 276 BBL "Clay Lok".
Perfs @ 8700' - 8734' treated w/ 45 CF 3% HCL, 200 BBL "Clay Lok".

***Orig. drilling history reports 8-5/8" Stage Collar at 2996'

Top of Zone Markers	md (tvd)
A36	5547' (5545')
UDA1	6674' (6621')
MDA	7512' (7356')
LDA	7733' (7561')
MP	8250' (8046')
S1	8448' (8232')
S4	8534' (8313')
S8	8624' (8398')
FREW	8798' (8563')

Prepared by: LD (6/2/2016)

InterAct

Casing Pressure Test Safety Check (500 psi)

Well	Packer Depth MD/TVD	Casing Size/Grade/Weight	Depth MD	Burst PSI	85% of Burst PSI	Pressure at Depth w/500 psi Surface Pressure	Press < 85% of Burst
Standard Sesnon 25B	8405	8-5/8", 36#, K-55	5542	4460	3791	2950	Yes
		8-5/8", 36#, N-80	7523	6490	5517	3825	Yes
		6-5/8", 28#, K-55	9025	6060	5151	4489	Yes

OPERATOR
WELL NO.
MAP

A.P.I. 37-21323
SECTION 28, T. 3 N, R. 16 W

INTENTION	RE PERFORATE					
NOTICE DATED	02/07/2006					
P-REPORT NUMBER	P206-52					
CHECKED BY/DATE						
MAP LETTER DATED						
SYMBOL	D					

	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED
NOTICE	02/10/06											
HISTORY	3/6/06											
SUMMARY												
E-LOG												
MUD LOG												
DIPMETER												
DIRECTIONAL												
CORE/SWS												
CBL												
LOR	3/13/06											

ENGINEERING CHECK

T-REPORTS						
OPERATOR'S NAME						
WELL NO.						
LOC & ELEV						
SIGNATURE						
SURFACE INSP.						
DRILL CARD						

RECORD'S COMPLETE

FINAL LETTER OK
MAILED
RELEASED BOND

INJECTION BOOK
IDLE WELL LIST
SURFACE INSP. CARD

REMARKS:

OK TO RELEASE FROM CONFIDENTIAL
ABANDONED-REMOVED FROM E.D.P.

SOUTHERN CALIF GAS

OPERATOR _____
LSE & NO _____
MAP NO. _____

INTENTION	1	2	3	4	5
NOTICE DATED	10-28-72	2-20-73	7-1-76	6-2-86	10-9-86
P-REPORT NUMBER		273-88	296-240	360-191	286-343
CHECKED BY/DATE					
MAP LETTER DATED	11-7-72	DLC	NLC	VLC	NC
SYMBOL					

NOTICE	10-30-72 REC'D	NEED	2-27-73 REC'D	NEED	7-1-76 REC'D	NEED	6-4-86 REC'D	NEED	10-14-86 REC'D	NEED
HISTORY	10-30-72		→		12-8-76		7-23-86		3/9/87	
SUMMARY	10-30-72		→		12-8-76					
IES/ELECTRIC LOG	10-30-72		→							
DIRECTIONAL SURV.	10-30-72		→							
CORE/SWS DESCRIP.										
DIPMETER RESULTS										
OTHER										
RECORDS COMPLETE	10-30-72				②		VR		jmc	

ENGINEERING CHECK

T-REPORTS	✓
OPERATOR'S NAME	✓
WELL DESIGNATION	✓
LOC. & ELEV.	✓
SIGNATURE	✓
SURFACE INSPECTION	
LINAL LETTER OK	

CLERICAL CHECK

POSTED TO 121 _____ 170 MAILED _____ FINAL LETTER MAILED _____

RELEASE BOND _____

REMARKS: _____

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

HISTORY OF OIL OR GAS WELL

Operator: Southern California Gas Company
Well: Standard Sesnon 25 B
A.P.I. No. 037-21323

Field: Aliso Canyon County: Los Angeles
Surface Location: Sec 28 3N 16W S.B.B.M.
Mark Kuncir Title: Storage Field Engineer
(President, Secretary, or Agent)

Date: 03/03/2006

Signature: MK
(Person Submitting Report)

Address: PO Box 2300, SC9365, Chatsworth, CA, 91313-2300 Telephone Number: 818-700-3810

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.

Start Date	Ops. DOGGR Rpt
01/18/2006	RU Spicer W/L. RIH w/ 1-3/4" x 30' drift tool to check tbg for obstructions. Tagged @ 8723' w/ tbg tail @ 8412'. RD W/L.
02/09/2006	RU Schlumberger W/L. RIH w/ PDC GR-NL tool. Tagged @ 8684'. PU 1-11/16" strip gun and RIH and perforated the 6-5/8" liner w/ 4 SPF (Enjet-DP 1.69", EJ3, RDX, ~0.28" holes) from 8682-8660' and 8608-8588' and w/ 2 SPF from 8640-8624' (Runs 1 - 3, 58'). Closed well in overnight.
02/10/2006	RIH w/ 1-11/16" strip gun and perforated 6-5/8" liner w/ 4 SPF from 8588-8568', 8568-8558' and 8540-8532' (Runs 4 - 6, 38'). RD W/L.

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

No. P206-52

PERMIT TO CONDUCT WELL OPERATIONS

010 (field code)
00 (area code)
30 (new pool code)
30 (old pool code)

Gas Storage

James D. Mansdorfer, Agent
Southern California Gas Company
9400 Oakdale Ave
Chatsworth CA 91313

Ventura, California
February 15, 2006

Your proposal to reperforate well "Standard-Sesnon" 25B,
A.P.I. No. 037-21323 Sec. 28, T. 3N, R. 16W, SB B.&M.,
Aliso Canyon field, ---------- area, Sesnon-Frew pool
Los Angeles County, dated 02/9/2006 received 2/10/2006 has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. Wire line operations are conducted through at least a 5M lubricator.
2. This office shall be consulted before initiating any changes or additions to this proposed operation or if operations are to be suspended.

The Division recommends, as a minimum, that carbon monoxide monitoring equipment and a vent line be installed and maintained operational during all extensive perforating operations.

SAF:sf

Engineer Steven A. Fields

Phone (805) 654-4761

Hal Bopp, State Oil and Gas Supervisor

By _____
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.

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

NOTICE OF INTENTION TO REWORK / REDRILL WELL

R06-52

C.E.Q.A. INFORMATION (when redrilling or deepening only)			
Exempt ☐	Neg. Dec. ☐	E.I.R. ☐	Document not required by local jurisdiction ☐
Class _____	S.C.H. No.	S.C.H. No.	
See Reverse Side			

FOR DIVISION USE ONLY			
	Forms		EDP Well File
Bond	OGD114 ✓	OGD121 ✓	
1000 000	111 ✓	115 ✓	

This notice and an indemnity or cash bond must be filed, and approval given, before the rework/redrill begins. *(See the reverse side for bonding information.)* If operations have not commenced within one year of receipt of the notice, this notice will be considered canceled.

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to rework/redrill (Circle one) well Standard-Sesnon 25B (Well designation) API No. 03721323

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

Los Angeles County.

GS

1. The complete casing record of the well (present hole), including plugs and perforations, is as follows:
0-900' 13-3/8" 48# H40 surface csg;
0-7642' 8-5/8" 36# K55 & N80 prod. csg;
7523-9025' 6-5/8" 27.65# K55 liner;
Pengo patch from 2907-2929'; 6-5/8" 24# csg patch from 7347-7519'
2-7/8" 6.5# N80 EUE 8rd tbg landed on 6-5/8" pkr @ 7405';
6-5/8" liner perforated w/ four 0.4" HPF from 8532-8536', 8558-8600', 8624-8640', 8658-8664', 8670-8674', 8684-8688' and 8700-8734';
Cmt plugs inside 6-5/8" liner from 9019-9025' and Model 'N' BP @ 8845'.

2. The total depth is: 9030 feet. The effective depth is: 9025 feet.

3. Present completion zone (s): Sesnon (Name) Anticipated completion zone (s): Sesnon (Name)

4. Present zone pressure: 2740 psi. Anticipated/existing new zone pressure: 2740 psi.

5. Last produced: 11/2004 (Date) 19 (Oil, B/D) 1 (Water, B/D) 20,803 (Gas, Mcf/D)

(or)
Last injected: - (Date) - (Water, B/D) - (Gas, Mcf/D) - (Surface pressure, psig)

6. Is this a critical well according to the definition on the reverse side of this form? Yes ☐ No ☒

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

Re-perforate storage-zone (Sesnon) w/ 2 SPF (1-11/16" strip gun loaded w/ Enjet-DP 1.69", RDX, −0.28" hole) from 8624-8640', 8684-8688' and 8700-8717'. Perforate new pay w/ 4 SPF from 8532-8540', 8558-8608' and 8660-8682' (117' total).

RECEIVED
FEB 10 2006
By DOGGR DIST 2

For redrilling or deepening: NA (Proposed bottom-hole coordinates) NA (Estimated true vertical depth)

The division must be notified if changes to this plan become necessary.

Name of Operator	Telephone Number	
Southern California Gas Company	818.700.3810	
Address	City	Zip Code
12801 Tampa Avenue	Northridge	91326
Name of Person Filing Notice	Signature	Date
Mark T. Kuncir		2/9/06

File In Duplicate

OG197 (7/97/GSR/5M)

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) Sec. 28	"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. Kinneat
Patrick J. Kinneat, Deputy Supervisor

OGD157

SUBMIT IN DUPLICATE

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
MAR 9 1987
VENTURA, CALIFORNIA

History of Oil or Gas Well

Operator Southern California Gas Co. Field Aliso Canyon County Los Angeles
Well IW #77, Sec. 28, T 3N, R 16W S.B.B. & M.
A.P.I. No. 037-21323 Name R. M. Morrow (Person submitting report) Title Agent (President, Secretary or Agent)
Date March 6, 19 87

Signature N.W. Buss for R.M.Morrow

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.: 99722: was issued to remove two casing patches and set new casing patch
1986	
11-21	Loaded out rig to move from Montebello MGS #15-28 to IW #77 at Aliso Canyon.
11-24	Set in rig on IW #77 and rigged up. Removed xmas tree and installed BOPE. Tested blind rams, pipe rams, choke manifold to 3000 psi; and Hydril bag to 2300 psi. Test witnessed by Bill Winkler of the D.O.G.
11-25	Installed pitcher nipple. Released from packer. Laid down tubing hanger. Circulated bottoms up. Pulled out and laid down production equipment. Ran spear on 4-3/4" drill collars in well. Located patch at 2878'; jarred on top swage and secured well.
11-26	Pulled out of well; did not recover top swage. Ran in and jarred swage loose. Pulled out and recovered swage. Made up fishing tools. Ran in well and jarred casing patch loose. Pulled out of hole and laid down patch. Made up millshoe, ran in and located seal.
11-27	Holiday
11-28	Milled swage loose. Ran in with spear to 2918'. Jarred swage loose. Recovered bottom swage from no. 1 patch and top swage from no. 2 patch. Ran in to 2918' and jarred patch no. 2 loose. Pulled out of hole and laid down patch. Ran in with millshoe to 2900'.

1986

11-29 Milled swage loose at 2923'. Circulated clean and pulled out of well. Laid down all fishing tools. Ran in well with 7-5/8" bit and casing scraper to 7347'. Pulled out and made up 5-5/8" bit and 6-5/8" 27# casing scraper. Ran in well to 8405'. Backscuttled clean.

12-1 Rig shut down due to high winds.

12-2 Pulled out of well with bit and scraper. Ran in well with bull plug, 2 seals, locator, ported sub and 8-5/8" 36# RTTS tool on 2-7/8" tubing. Ran in well to 8405'. Unable to set RTTS tool with seals in production packer. Tested annulus to 1500 psi. Leaked 100 psi in 2 minutes. Released packer.

12-3 Using wireline, ran casing collar log from 3100'-2100'. Located stage collar at 2918'. Made up Pengo casing patch on wireline. Set top of patch at 2907', bottom at 2929'. Ran 2-7/8" 6.5# N-80 EUE tubing string consisting of bull plugged Baker 2 seals, one joint 2-7/8" tubing, Otis 2.205" No-Go nipple, one joint 2-7/8" tubing, Otis 2-7/8" sliding sleeve (closed), one joint 2-7/8" tubing, BST gas lift mandrel with pump-out plug set at 2500 psi and 2-7/8" tubing to surface. Drifted and hydrotested to 5000 psi. Spaced out and landed with 10,000# on packer. Pulled 20,000# to check latch. Tested seals, packer and annulus to 1500 psi. Secured well.

12-4 Using wireline, opened sliding sleeve. Changed over from 63#/cu.ft. polymer completion fluid to 3% KCl water. Set back pressure valve in doughnut. Removed BOPE and installed xmas tree. Tested xmas tree to 5000 psi with oil for 20 minutes. Removed back pressure valve. Released rig at 3:00 p.m.

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

No. T 286-239

DIVISION OF OIL AND GAS

Report on Operations

R. M. Morrow, Agent
SOUTHERN CALIF. GAS CO.
810 S. Flower St.
Los Angeles, CA 90051

Ventura Calif.
Dec. 1, 1986

Your operations at well IW 77, **API No.** 037-21323, **Sec.** 28, **T.** 3N **R.** 16W, **S.B. B.& M.** Aliso Canyon **Field, in** Ventura **County, were witnessed on** 11/24/86. Bill Winkler, **representative of the supervisor, was present from** 1630 **to** 2000. **There were also present** Drilling Engineer

Present condition of well: 13 3/8" cem 900' 8 5/8" cem 7650', pc 2995', csg. patch 2878'-2910' & 2918'-2960'; 6 5/8" cem 7523' to 9025', perf 8515' & 8515' WSO, perf at intervals 8532' to 8734'.

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.

Note: Deficiency-Failed & Corrected, Choke Value Failed.

mep

M. G. MEFFERD

Michael Stettner

Murray W. Dosch

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

No. P 286-343

680 010
(field code)
00
(area code)
30
(new pool code)
30
(old pool code)

PERMIT TO CONDUCT WELL OPERATIONS

J. W. Gourley, Agent
Southern Calif. Gas Co.
P.O. Box 3249 Terminal Annex
Los Angeles, C A90051

Ventura, California
October 15, 1986

Your _____ proposal to rework well IW 77,
A.P.I. No. 037-21323, Section 28, T. 3N, R. 16W, S.B. B. & M.,
Aliso Canyon field, any area, Sesnon-Frew pool,
Los Angeles County, dated 10/9/86, received 10/14/86 has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVE PROVIDED THAT:

1. Hole fluid of sufficient quality and quantity shall be maintained int he hole to control any subsurface condition, and a reserve supply shall be on hand for emergencies.
2. Blowout prevention equipment of at least DOG Class III 2MA with a hydraulic actuating system shall be installed and maintained in operating condition at all times.
3. This office shal be consulted before initiating any changes or additions to this proposed operation, or if operations are to be suspended.
4. THIS DIVISION SHALL BE NOTIFIED:
   a. TO WITNESS a pressure test of the blowout prevention equipment before commencing downhole operations.

...

Blanket Bond
BW:ljg

Engineer Bill Winkler

Phone (805) 654-4761

M. G. MEFFERD, State Oil and Gas Supervisor

By _____
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.

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Notice of Intention to Rework Well

OCT 14 1986

VENTURA, 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	
	OGD 114	OGD 121
✓	✓	✓

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 IW #77 (Well designation), API No. 037-21323

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

The present condition of the well is as follows:

1. Total depth 9030'

2. Complete casing record, including plugs and perforations (present hole)

13-3/8" cemented 900'
8-5/8" cemented 7642', casing patches 2878' - 2910', 2918' - 2960', stage collar 2942', 172' 6-5/8" cemented 7519', top 7347', hole 7462'
1502' 6-5/8" cemented 9025', top 7523', wso on lap, bridge plug 8845' wso 8435' and 8515', perforated at intervals 8734' -8532'

3. Present producing zone name sesnon ; Zone in which well is to be recompleted _____

4. Present zone pressure 2800 psi ; New zone pressure _____

5. Last produced Gas Storage Well (Date) _____ (Oil, B/D) _____ (Water, B/D) _____ (Gas, Mcf/D)

(or)

Last injected _____ (Date) _____ (Water, B/D) _____ (Gas, Mcf/D) _____ (Surface pressure, psig)

6. Is this a critical well according to the definition on the reverse side of this form? ☐ (Yes) ☒ (No)

The proposed work is as follows:

1. Move in and rig up. Kill well. Install BOPE and pressure test.
2. Pull tubing. Recover casing patches. Set new casing patch over stage collar. Run tubing and complete.
3. Return well to gas storage service.

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

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

Address 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 J. W. Gourley (Name) JWG (Date) 10/9/86
Type of Organization Corporation (Corporation, Partnership, Individual, etc.)

OG107 (5/85/DWRR/5M)

SUBMIT IN DUPLICATE

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
JUL 23 1980
SANTA PAULA, CALIFORNIA

History of Oil or Gas Well

Operator Southern California Gas Co. Field or County Aliso Canyon
Well IW #77, Sec. 28, T 3N, R 16W, S.B B. & M.
A.P.I. No. 037-21323 Name P. S. Magruder, Jr. (Person submitting report) Title Agent (President, Secretary or Agent)
Date July 3, 1980

Signature P S Magruder Jr

PO Box 3249 Terminal Annex, Los Angeles, Cal 90051 (Address) (213) 689-3561 (Telephone Number)

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

Date	
1980	MWO # 99620 was issued to seal off gas leak in this well in the caprock.
5.05.	0 Day. Moved California Production Service Rig on location.
5.06.	1st Day. Circulated 63#/cu.ft. polymer completion fluid from well with 72#/cu.ft. polymer completion fluid. Unable to test BOPE because doughnut leaked. Unlanded doughnut. Unable to release from packer.
5.07.	2nd Day. Worked tubing but were unable to release packer. Made three attempts to run freepoint but tools failed.
5.08.	3rd Day. Chemical cut 2 7/8" tubing at 7,480'. Tested BOPE as follows - blind rams, choke manifold and pipe rams to 4,000 psi; hydril to 2,500 psi with nitrogen. Pulling out of well slowly with collars dragging on casing patches.
5.09.	4th Day. Finished pulling out of well. Ran in with overshot, bumper sub, jars, four drill collars and accumulator. Jarred and worked pipe. Unable to release from packer. Released from fish at 7,480' and pulled out to 2,000' slowly with collar dragging on casing patch.
5.10.	5th Day. Continued pulling out of well with overshot. Changed to N-80 bevelled collars. Ran in with overshot and bumper sub on 2 7/8" tubing. Worked over fish at 7,480'. Ran freepoint and chemical cut 2 7/8" tubing at 8,340'.
5.11.	Rig and crew idle.
5.12.	6th Day. Continued pulling out of well with 860' of tubing fish. Ran in with 70' of 5 1/2" wash pipe, four drill collars, jars and bumper sub and accelerator on 2 7/8" tubing. Worked wash pipe over fish and milled four hours. Pulling out of well.

5.13. 7th Day. Continued pulling out of well with wash pipe. Recovered safety system, two blast joints and latch-in locator stuck in washpipe shoe. Ran in with packer retrieving tool and recovered packer from 8,400'. Ran in to 2,000' with 6 5/8" bridge plug.

5.14. 8th Day. Ran bridge plug on wire line. Set top of plug at 8,528' using reference collars. Ran in well open ended to 8,500'.

5.15. 9th Day. Equalized four sacks of sand at 8,528', backscuttled sand to 8,520'. Pulled out and ran in with 312' of 2 7/8" tubing tail and fullbore retainer. Set retainer at 8,203'. Pressured up to 3,000 psi. Lost 600 psi in 20 minutes. Pulled up to 7,100' in 8 5/8" casing.

5.16. 10th Day. Equalized 50 cu.ft. of 12% HCL and 3% HF acid at 8,515'. Squeezed away 50 cu.ft. at rate of 10 cu.ft./minute with 2,500 psi. Pulled out of hole. Shot four 1/2" holes at 8,434'. Ran in well open ended to 8,520'. Equalized seven sacks sand. Pulled out and ran in to 6,020' with 6 5/8" fullbore packer.

5.17. 11th Day. Located sand at 8,478'. Pulled up to 8,466' and pressured up to 3,000 psi - held for 10 minutes. Pulled up to 8,439' and equalized 50 cu.ft. of 12% HCL and 3% HF acid. Squeezed away 40 cu.ft. at rate of 24 cu.ft./minute with 2,500 psi. Ran in to 8,373', set fullbore and opened bypass and mixed 20 cu.ft. of 12-3 acid, 115 cu.ft. latex class "G" cement 108# cu.ft. Closed tool on acid and squeezed away 107 cu.ft. Pressure locked up at 3,000 psi but bled back to 2,100 psi in 20 minutes. Built up to 2,600 psi and held. Released pressure, had 2 cu.ft. return. Pulled out of well and ran in 5 5/8" bit and casing scraper to top of liner.

5.18. Rig and crew idle.

5.19. 12th Day. Ran in with 5 5/8" bit and 6 5/8" casing scraper. Located top of cement at 8,375'. Drilled out firm cement to 8,478' and circulated well clean. Pulled out of well. Ran in with retainer and set at 8,124' with tubing tail at 8,424'. Pressure tested holes to 2,500 psi which bled off 200 psi in 5 minutes. Pulled to 7,320'.

5.20. 13th Day. Ran in and spotted 50 cu.ft. 12% HCL and 3% HF acid at 8,430'. Pulled to 8,100' and set retainer. Squeezed 40 cu.ft. out holes at 8,434'. Pulled out of well. Set retainer at 8,400'. Ran stab-in tool to 8,350'.

5.21. 14th Day. Pumped 20 cu.ft. acid followed with 50 cu.ft. cement mixed with 12% latex. Squeezed away 10 cu.ft. through holes at 8,434'. Removed rotary table and BOPE. Removed tubing head which was found to be worn out of round. Ran in with fullbore.

5.22. 15th Day. Ran in well and set fullbore at 1,000'. Tested pipe rams to 2,000 psi for 20 minutes. Tested hydril bag to 2,000 psi for 20 minutes. Pulled out and ran in with 5 5/8" junk mill, two junk subs and four 4 1/8" drill collars. Milled on retainer.

5.23. 16th Day. Milled to 8,400'. Pulled out of well. Ran in with new 5 5/8" junk mill. Milled up retainer and cement to 8,444'. Circulated well clean. Pulled out. Running in with retainer.

5.24. 17th Day. Ran in well. Set retainer at 8,113' with tail to 8,430'. Pressure tested holes at 8,434' to 2,000 psi for 20 minutes. Pulled out of well. Shot four 1/2" holes at 8,434'. Ran in with retainer and set at 8,113' with tail to 8,430'. Pressure tested holes to 2,000 psi for 20 minutes. Pulled 1,000'.

5.25. Rig and crew idle.

5.26. Rig and crew idle.

5.27. 18th Day. Continued pulling out of well with retrievable retainer. Ran in with tester, set packer at 8,413'. Opened test tool with medium blow for 5 minutes, increased to strong blow. Closed well in for 10 minutes and pressure built up to 100 psi. Opened test tool, flowed well for one hour. Backscuttled and pulled out. Ran in with 312' of 2 7/8" tail and retrievable cement retainer. Set retainer at 8,127' and pressured up to 3,000 psi which held. Equalized 50 cu.ft. of 12% HCL and 3% HF acid and obtained breakdown at rate of 17 cu.ft./minute with 2,500 psi.

5.28. 19th Day. Pulled out of well. Using wire line equipment, ran 6 5/8" retainer and set at 8,358'. Ran in well with stab-in tool. Preceeded with 20 cu.ft. of acid and followed by 140 cu.ft. of class "G" latex cement, squeezed away 72 cu.ft. out holes at 8,434' with final pressure of 3,000 psi. Held pressure for 20 minutes. Released from retainer and backscuttled.

5.29. 20th Day. Pulled out of well. Removed BOPE and reinstalled 8" 5,000 psi tubing head. Tested pipe rams to 4,000 psi for 20 minutes with water. Ran in to top of liner with 5 5/8" bit, 6 5/8" casing scraper, two junk subs and four 4 1/8" drill collars.

5.30. 21st Day. Continued running in well from 7,300' to top of cement retainer at 8,353'. Drilled on retainer to 8,358'. Pulled out and ran in well with 5 5/8" mill, two junk subs and four 4 1/8" drill collars. Milled from 8,358' to 8,360'.

5.31. 22nd Day. Continued running in well to 8,360' from 7,300'. Milled on junk to 8,361'. Pulled out and ran new junk mill, two junk subs and four 4 1/8" drill collars. Cleaned out junk and cement to 8,445'. Pulled out and ran in with 312' of 2 7/8" tail and retrievable retainer to 2,000'.

6.01. Rig and crew idle.

6.02. 23rd Day. Continued running in well from 1,488' with 312' of 2 7/8" tail and retrievable retainer. Set packer at 8,118' and pressure tested holes at 8,434' with 2,000 psi for 20 minutes. Pulled out and shot four 1/2" holes at 8,433'. Ran in well with 312' of 2 7/8" tail and retrievable retainer. Set packer at 8,122' and pressure tested holes at 8,433' with 2,000 psi for 20 minutes. Pulled up out of liner to 7,300'.

6.03. 24th Day. Pulled out of well from 7,300'. Ran in with tester. Set packer at 8,394'. Opened tool at 11:25 am, had weak blow for 4 minutes, medium blow for 5 minutes and strong blow for 51 minutes. Pulled out and ran in with cement retainer and 312' of 2 7/8" tail. Set retainer at 8,126'. Pressured up to 3,000 psi, held for 20 minutes.

6.04. 25th Day. Ran in well from 7,300' to 8,442'. Backscuttled 70 barrels of dirty salt water. Equalized 50 cu.ft. of 12% HCL and 3% HF acid across holes at 8,433' and squeezed away 30 cu.ft. of acid at rate of 16 cu.ft./minute with 3,000 psi. Pulled out and ran neutron correlation log with collar locator from 8,448' to 5,000'. Shot four 1/2" holes at 8,432'. Ran drillable cement retainer and set at 8,370' on wire line. Ran in well with retainer, stab-in tool to 992'.

6.05. 26th Day. Ran in well from 992' to 8,365'. Established breakdown at rate of 20 cu.ft./minute with 3,000 psi. Pumped 20 cu.ft. of 12% HCL and 3% HF acid followed by 154 cu.ft. of self-stress cement with 0.2% D108 and FIAC with 0.1% D13 retarder. Started squeeze job at 8:34 am, squeezed away 144 cu.ft. of cement out holes at 8,432', squeezed off at 9:08 am with 3,000 psi. Pulled out of well and ran in with 5 5/8" mill to 3,100'.

6.06. 27th Day. Ran in well from 3,100' to 8,370' with junk mill, two junk subs and four 4 1/8" drill collars. Milled to 8,371'. Pulled out and ran in with new mill to 8,371'. Milled to 8,372'.

6.07. 28th Day. Ran in well from 7,300' to 8,372'. Milled for three hours with no success. Pulled out and ran a 5 5/8" rock bit. Drilled at 8,372' for two and half hours. Pulled out and ran in with 5 5/8" mill to 4,000'.

6.08. Rig and crew idle.

6.09. 29th Day. Ran in well from 4,000' with 5 5/8" mill, two junk subs and four 4 1/8" drill collars. Milled and cleaned out from 8,372' to 8,449'. Pulled out and ran in with 312' of 2 7/8" tail and cement retainer. Unable to set retainer. Pulled out to 4,000'.

6.10. 30th Day. Finished pulling out of well with retainer that failed to pack off. Ran in well with same type of retainer and 312' of 2 7/8" tubing tail. Set retainer at 8,118'. Tested holes at 8,432' to 2,000 psi for 20 minutes. Pulled out and ran Audio Analyzer log from 8,445' to 7,200' which showed no gas movement. Ran in well to 7,300' with 5 5/8" mill, two junk subs and four 4 1/8" drill collars.

6.11. 31st Day. Ran in well from 7,300' to 8,449'. Circulated 450 barrels of 63# waste lease water from well with 72# polymer completion fluid. Cleaned out sand, junk and cement to 8,528'. Milled on bridge plug for two and quarter hours. Cleaned out to 8,702'. Pulled out of well and ran in with tester to 7,300'.

6.12. 32nd Day. Ran in well from 7,300' to 8,411' and set tester at 8,411'. Opened tool at 8:50 am. Unloaded well into Baker tank, started flowing well to Gas Company system at 1,550 psi. Flowed well for five hours. Ran Audio Analyzer log from 8,340' to 7,300' which showed no gas movement. Released packer, backscuttled and pulled up to 7,300'.

6.13. 33rd Day. Pulled out of well with tester. Ran in with 5 5/8" mill and 6 5/8" casing scraper. Cleaned out to 8,702'. Circulated well clean. Pulled out. Ran 6 5/8" gauge ring to 8,500'. Ran 6 5/8" packer and set at 8,405'. Ran in with test seals to 2,000'.

6.14. 34th Day. Ran in well from 2,000' with test seals. Stabbed in to packer at 8,405'. Tested packer to 1,500 psi and pulled 20,000# over weight of string to check latch. Pulled out and ran in with seal assembly, two blast joints, 2.205' No-Go nipple and sliding sleeve. Hydrotested to 5,000 psi. Landed tubing with 9,000# on packer.

6.15. Rig and crew idle.

6.16. 35th Day. Landed tubing with 9,000# on packer. Removed BOPE and installed xmas tree. Tested seals and tree with 5,000 psi of oil for 20 minutes. Checked tree bolts. Changed over from polymer to lease water. Rigged down. Rig released at 10:00 pm.

DRAWN BY SKEETER
OTIS ENG.

OPERATOR Gas Company

WELL " IW #77

FIELD Aliso Canyon

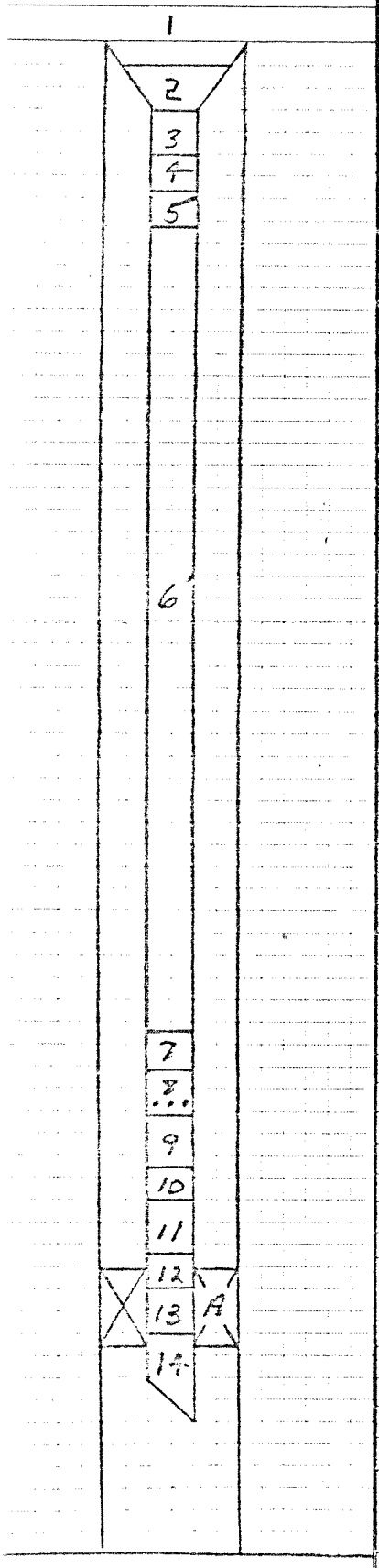
COUNTY Los Angeles

STATE California

DATE July 3, 1980

☐ NEW COMPLETION ☒ WORKOVER

	CASING	LINER	1	2	3
SIZE	6 5/8"		2 7/8"		
WEIGHT	24-28#				
GRADE					
THREAD			EUE 8rd		
DEPTH					



ITEM NO.	TUBING DETAILS	LENGTH	DEPTH
1.	K.B.	15.00	15.00
2.	Doughnut 2 7/8" x 2 7/8"	0.65	15.65
3.	Pup Jt 2 7/8" EUE 8rd N-80	5.60	21.25
4.	Pup Jt 2 7/8" EUE 8rd N-80	1.50	22.75
5.	Pup Jt 2 7/8" EUE 8rd N-80	6.00	28.75
6.	267 Jts 2 7/8" EUE 8rd N-80 tubing	8327.62	8356.37
7.	Pup Jt 2 7/8" EUE 8rd N-80	4.05	8360.42
8.	Otis 2.313 sliding side door	3.20	8363.62
9.	Otis blast joint 2.347 ID	20.10	8383.72
10.	Otis 2.205" No-Go nipple	1.27	8384.99
11.	Otis blast jt 2.347" ID	20.01	8405.00
12.	Baker latch-in locator	1.29	8406.29
13.	Baker seal assembly	4.00	8410.29
14.	Baker production tube/guide	5.27	8415.56
	A. 6 5/8" Baker retrieva "D" packer w/1 set at 8,405'		
	1. Tubing landed with 9,000# on packer, pulled 20,000# over. OK.		
	2. Tubing weight 48,000# on hook.		
	3. 2 7/8" sliding sleeve at 8,363' ran open for changeover.		
			8415.56

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

No. T 280-153

DIVISION OF OIL AND GAS

Report on Operations

Mr. J. W. Tenfelder, Agent
So. California Gas Co.
12801 Tampa Avenue
Northridge, CA 91324

Santa Paula, Calif.
June 18, 1980

Your operations at well IW 77, API No. 037-21323, Sec. 28, T. 3N, R. 16W S.B., B.& M. Aliso Canyon Field, in Los Angeles County, were witnessed on 5/9/80. F. Taylor, representative of the supervisor, was present from 1300 to 1530. There were also present Ed Lancaster, production foreman

Present condition of well: 13 3/8" cem 900'; 8 5/8" cem 7650', cp 2995', csg. patch 2878-2910', 2911-2953', 6 5/8" cem 7347-7519'; 7523-9025', perf. 8515' co WSO, perf 8435' WSO; perf at int. 8532-8734', T.D. 9030', plugged with cem 9019-9039', Bp 8845', plugged with sand 8460-8845'.

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

DECISION:

THE BLOWOUT PREVENTION EQUIPMENT AND INSTALLATION ARE APPROVED.

b

M. G. MEFFERD
State Oil and Gas Supervisor

By *Jonathan L. Hardoin*
Deputy Supervisor

John L. Hardoin

OG109 (10-78-GSRI-15M)

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

No. P 280-191

REPORT ON PROPOSED OPERATIONS

010 (field code)
03 (area code)
30 (pool code)

Mr. J. W. Tenfelder, Agent
Southern Calif. Gas Co.
12801 Tampa Avenue
Northridge, CA 91324

Santa Paula, California
June 9, 1980

Your proposal to alter casing in gas storage well IW 77,
A.P.I. No. 037-21323, Section 28, T. 3N, R. 16W, S.B. B. & M.,
Aliso Canyon field, Main area, Sesnon-Frew pool,
Los Angeles County, dated 6/2/80, received 6/4/80 has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. Hole fluid of sufficient quality and quantity shall be maintained in the hole to control any subsurface condition, and a reserve supply shall be on hand for emergencies.
2. Blowout prevention equipment of at least DOG Class III 3M B, 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.

Blanket Bond
MD:b

A copy of this report must be posted at the well site prior to commencing operations.

M. G. MEFFERD, State Oil and Gas Supervisor

By John L. Hardoin, *Deputy Supervisor*

OG111 (4-79-DWRR-5M)

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS RECEIVED JUN 4 1980 SANTA BARBARA, CALIFORNIA

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. #77, API No. _____,

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

The present condition of the well is as follows:

1. Total depth. 9,030'

2. Complete casing record, including plugs and perforations:

13 3/8" cemented 900'
8 5/8" cemented 7,642', casing patches 2,878' - 2,910' and 2,911' - 2,953'. 172' 6 5/8" cemented 7,519' top 7,347'. WSO 7,519' and 7,347'.
1507' 6 5/8" cemented 9,030', plug 9,019', bridge plug 8,845' WSO's 8,435' and 8,515'
Perf'd 8,734' - 8,760', 8,664' - 8,658', 8,640' - 8,624', 8,600' - 8,558', 8,536' - 8,532'

3. Present producing zone name Sesnon Zone in which well is to be recompleted -

4. Present zone pressure 3,000 psi New zone pressure -

5. Last produced Gas Storage Well _____ _____ _____
(Date) (Oil, B/D) (Water, B/D) (Gas, Mcf/D)

or

6. Last injected _____ _____ _____ _____
(Date) (Water, B/D) (Gas, Mcf) (Surface pressure, psig.)

The proposed work is as follows:

1. Move in and rig up. Kill well. Install BOPE and pressure test.
2. Recover packer and set bridge plug. Pressure test casing. Squeeze WSO holes at 8,515' and 8,435' with cement. Pressure test holes. Shoot four 1/2" holes at 8,434', pressure test and test WSO. Run Audio Analyzer Log. Clean out to 8,845', make production test and run Audio Analuzer Log.
3. Set production packer. Run casing patches if required.
4. Run tubing with down hole safetv system and return well to gas storage service.

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 (City) Calif (State) 90051 (Zip)
Telephone Number (213) 689-3561

Southern California Gas Company (Name of Operator)
By P.S. Magruder, Jr. (Name) 6/2/80 (Date)
Type of Organization Corporation (Corporation, Partnership, Individual, etc.)

(1-78-GSRI-15M)

SUBMIT IN DUPLICATE

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
DEC 8 1976
SANTA PAULA, CALIFORNIA

History of Oil or Gas Well

OPERATOR SOUTHERN CALIFORNIA GAS COMPANY FIELD Aliso Canyon

Well No. I.W. #77, Sec. 28, T. 3N, R. 16W, S.B. B. & M.

Date November 22, 1976

Signed P. S. Magruder, Jr.

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

(213) 689-3561
(Telephone Number)

Title AGENT
(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	
7-23-76	Moved California Production Services Rig #D-1 from I.W. #69 and rigged up on I.W. #77.
7-24-76	Circulated gas-cut drilling fluid out of well (18 barrels to fill hole). Set plug in doughnut. Removed Christmas tree. Installed 8", 5000 psi B.O.P.E. and tested rams under 4000 psi and Hydril bag under 3000 psi with water and nitrogen.
7-25-76	Rig and crew idle.
7-26-76	Bled gas from casing. Circulated and conditioned drilling fluid. Attempted to pull tubing and packer. Pulled 125,000# - unable to move packer. Rigged up McCullough Wireline and ran free point to 7436' - unable to get any deeper - tubing free at this point. Cut 2 7/8" tubing with chemical cutter at 7413'.
7-27-76	Continued pulling 2 7/8" tubing and 1" side string.
7-28-76	Pulled out of hole with 2 7/8" and 1 1/8" tubing - dropped 485' of 1 1/8" side string. Found 2 7/8" tubing cut above sliding sleeve and closed Otis ball-safety valve instead of below safety valve. Made up Brown fishing tools ran to top of fish at 6952' - worked over fish 60'. Picked up 5000# weight. Started out of hole with fish.
7-29-76	Pulled out of hole with remainder of 2 7/8" tubing - found to have 17 joints, 1 1/4" pipe - estimated 17 joints remaining. Made up fishing tool. Started back in hole, picking up 2 7/8" drill pipe.
7-30-76	Continued into hole to top of 1 1/8" tubing - fish at 6898' - worked over fish to 7226' - jarred loose with 102,000#. Pulled out of hole - recovered 505' of 1 1/8" tubing. Made up Brown socket with bowl extension and slips to catch 2 7/8" O.D. tubing with packers and closed safety valve.

7-31-76 Ran in to 7382' - estimated 30' above top of fish. Worked tools down to top of fish at 7413'- unable to get socket down over 2 7/8" tubing. Pulled out of well and made up 7 1/2" x 2 7/8" washover shoe with 5" x 38' washover pipe back to 2 7/8" drill pipe. Will attempt to clear fish so can engage with socket.

8- 1-76 Rig and crew idle.

8- 2-76 Milled over top of fish from 7400' to 7416' with 7 1/2" x 2 7/8" mill shoe plug, one joint 5" wash pipe, jars and four 4 3/4" drill collars - mill stopped at 7416'. Circulated for two hours. Pulled 21 stands. Draw-works motor broke down.

8- 3-76 Crew and rig idle due to repairs (changed draw-work engine and torque convertor).

8- 4-76 Pulled out 7 1/2" x 2 7/8" mill and wash pipe (showed a 5" pattern on bottom of mill). Ran in with Brown overshot with 7 1/2" shoe and 2 7/8" grapple. Re-measured drill pipe going in hole. Went over fish at 7397'. Pulled 15,000# over weight of string and came free. Pulled out and re-covered 8' of 2 7/8" tubing half-milled into at bottom. Ran in Brown 7 1/2" x 4" mill on two joints of wash pipe, four 4 3/4" drill collars, jars and bumper sub. Ran in 31 stands. Will mill over fish to ball safety valve to clear possible junk.

8- 5-76 Ran in with Brown 7 1/2" x 4" mill and milled over fish from 7406' to 7411' in 5-1/2 hours. Pulled out of hole and recovered 4 1/2' of 2 7/8" tubing and top of sliding sleeve. Made up new 7 1/2" x 4" mill on same set up. Ran in 45 stands. (Top of fish at 7411')

8- 6-76 Ran in hole with Brown 7 1/2" x 4" mill on wash pipe, four 4 3/4" drill collars, jars and bumper sub. Milled over Baker sliding sleeve at 7411'. Top of fish down to 7423'. Milled on 6" anchor on top of safety ball valve. Milled for ten hours.

8- 7-76 Pulled out 7 1/2" x 4" mill. Ran in new 7 1/2" x 4" mill on same set up. Went over fish at 7411'. Reamed over fish to 7423'. Milled on junk and anchor for 5-1/2 hours.

8- 8-76 Rig and crew idle.

8- 9-76 Ran two joints of 7" wash pipe with thin-wall mill shoe (6 1/8" I.D.) in to top of fish at 7425'. Milled for seven hours. Made 2' of hole to 7427'. Pulled out of hole.

8-10-76 Made up two joints of 7" washover pipe with 6 1/8" mill shoe. Ran in to top of fish at 7427'. Milled down to 7428.50'.

8-11-76 Continuing to mill on fish - milled to 7429' - mill wore out. Pulled out of hole. Made up socket 7 1/8" O.D. with 5 3/4" grapple. Prepared to attempt to get over fish. Unable to work down to milled anchor section - tools stopped on 2 7/8" tubing - will rerun grapple with wash pipe.

8-12-76 Finished pulling out of hole. Made up Brown 7 3/8" overshot, one joint 5 1/2" wash pipe, bumper sub and jars, four drill collars back to 2 7/8" drill pipe. Ran in to top of fish at 7413'.

8-13-76 Worked overshot trying to get over fish. Unable to do so. Could not get below 7417' - pulled out of hole. Made up Servco concave mill 7 5/8" - ran in to top of fish at 7413'. Milled stub off to 7417' - cut 4'.

8-14-76 Milled on fish down to 7428' - mill appears to be worn out. Pulled out of hole.

8-15-76 Rig and crew idle.

8-16-76 Changed mills. Ran in with 7 5/8" Servco concave mill with same set-up. Milled on fish from 7428' to 7429'.

8-17-76 Milled for 1/2 hour on fish at 7429'. Pulled out of hole. Ran Johnston 8 5/8" retrievable bridge plug and set at 300'. Changed rubber in Hydril bag.

Tested with water, as follows:

Blind rams	at 3500 psi	for 20	minutes	- O.K.
Pipe rams	" 3500 psi	" 20	"	- O.K.
Hydril bag	" 3500 psi	" 20	"	- O.K.

Tested with nitrogen, as follows:

Pipe rams	at 3500 psi	for 20	minutes	- O.K.
Hydril bag	" 3500 psi	" 20	"	- O.K.

Ran Johnston retrieving tool, latched on and recovered bridge plug at 300'. Made up and ran new 7 5/8" concave mill on same set up.

8-18-76 Milled on safety valve from 7429' to 7430'.

8-19-76 Continuing to mill on fish at 7430'.

8-20-76 Milled on fish at 7430' - unable to make any hole. Pulled out of hole. Made up new 7 5/8" O.D. mill shoe on 7" wash pipe. Ran in hole to top of fish.

8-21-76 Continued to mill on fish at 7430'. Milled down to 7431.50'. Mill shoe appeared to be worn out.

8-22-76 Rig and crew idle.

8-23-76 Pulled out and recovered upper portion of ball safety valve inner mandrel

and springs. Ran new carbon tungsten washover shoe and continued milling on fish from 7431.50' to 7434'. Lost 38 barrels of drilling fluid. Made a total of 3' in hole.

8-24-76 Continued milling on fish at 7434'. Pulled out of hole. Changed washover shoe. Ran in to top of fish. Mixed 5 sacks of sawdust. Reversed circulated well to clean out cuttings.

8-25-76 Continued to mill on fish at 7434'. Washed over fish at 7435'. Chased junk down to 7458'. Pulled out of hole. Changed wash shoe mill - ran in hole to 7425'.

8-26-76 Milled on junk from 7458' to 7463'. Pulled out of hole to change shoe. Left shoe and one joint of 7" wash pipe in hole. Made up 7" spear, jars and drill collars on 2 7/8" drill pipe. Ran in to top of fish.

8-27-76 Worked over fish at 7434' - pulled fish free. Recovered one joint of 7" wash pipe and mill shoe. Made up overshot jars, bumper sub and four drill collars on 2 7/8" drill pipe. Ran in to top of fish.

8-28-76 Worked over fish. Made several attempts to get ahold of fish. Pulled out of hole - no recovery. Made change in grapple slips from 5 3/4" to 4 3/4" - ran same fishing assembly. Ran in to top of fish.

8-29-76 Rig and crew idle.

8-30-76 Went down over fish at 7430' with Brown 7 5/8" overshot with 4 3/4" slips, jars, bumper sub and accelerator. Jarred fish loose and worked fish up to 6900' - swabbed hole. Worked fish down to 7373' and stuck. Circulated bottoms up while repairing hydraulic brake line. Worked pipe and attempted to unlatch from fish - worked free. (Top of fish at 7373').

8-31-76 Worked down hole to top of fish at 7506' - fish stuck. Jarred on fish for 2-1/2 hours - circulated around. Rigged up Dia-Log wireline unit. Ran string shot and shot in overshot on top of fish - attempted to release socket. Ran second string shot and shot between ball valve and 2 7/8" tubing at 7510' - worked pipe - unable to get free. Circulated well.

9- 1-76 Ran Dia-Log 1 3/4" core-barrel as feeler in 2 7/8" drill pipe to 4298'. Tools became stuck and wireline conductor cable pulled out of rope socket. Ran hydraulic wireline jars and overshot and recovered tools from 4298'. Ran Dia-Log 1 25/32" O.D. overshot as feeler ran to 4298' - tools could not run below this depth in 2 7/8" drill pipe. Ran Dia-Log collar locator in 2 7/8" drill pipe and fishing tools into top of fish to 7538'. Ran Dia-Log string shot and backed off ball valve from 2 7/8" tubing at 7492'. Pulled out 2 7/8" drill pipe and fishing tools and recovered approximately 3 1/2' of ball valve in overshot. (Top of fish at 7492' with 2 7/8" tubing collar looking up).

9- 2-76 Pulled out 30 stands of 2 7/8" drill pipe. Broke and laid down Brown fishing tools. Made up one joint of 7" wash pipe with 7 9/16" O.D. mill shoe 6 3/16" I.D. on jars, bumper sub. Ran in hole and over fish at 7492' - wireline measurement. Milled for five hours on junk above packer at 7499'.

9- 3-76 Pulled out 7 9/16" mill shoe. Changed mill shoe - recovered approximately 20# of junk in junk sub. Ran in measuring drill pipe. Went over fish at 7483'. Milled on junk above packer from 7408' to 7510'. Milled for seven hours - spotted dry pill and pulling out.

9- 4-76 Pulled out of hole. Changed 7 9/16" Brown mill shoe. Changed bumper sub. Recovered approximately 10# of iron in junk sub. Ran in hole and went over fish at 7483'. Milled on junk and Otis hydrostatic packer at 7510'.

9- 5-76 Rig and crew idle.

9- 6-76 Rig and crew idle. (Labor Day)

9- 7-76 Finished pulling out of hole. Ran new washover shoe, milled over fish to 7511'. Pulled out of hole. Cut off drilling line. Ran 30 doubles in hole.

9- 8-76 Ran in hole with overshot to 7479'. Slips would slip off with 10,000# pull. Pulled out of hole. Ran outside cutter for 2 7/8" tubing. Cutter would not go below 7445'.

9- 9-76 Finished pulling out of hole. Ran in hole with 7" wash pipe with 7 9/16" O.D. mill shoe. Stopped at 7442' - worked to 7448'. Pulled out of hole. Started in hole with 7 1/8" lead block on tubing.

9-10-76 Ran lead block to 7443'. Pulled out mark on block 3" long x 1/4". Ran 7 7/8" tapered mill. Milled from 7442' to 7448' - ran to top of tubing.

9-11-76 Pulled mill out of hole. Ran in with outside cutter. Cut tubing at 7448'. Pulled out of hole - recovered 2.38" of 2 7/8" tubing. Ran in hole with 7" wash pipe.

9-12-76 Rig and crew idle.

9-13-76 Ran into bad spot in casing at 7445'. Worked over fish at 7482'. Milled on junk at 7511'. Circulated hole clean. Pulled out of hole. Made up overshot on drilling assembly. Ran in to top of fish.

9-14-76 Worked over fish with socket at 7482'. Started jarring on fish at 120,000#. Increased to 165,000#. Failed to pull packer loose. Rigged up McCullough. Ran free-point indicator - found packer stuck only - 15% movement. Released socket. Pulled out of hole.

9-15-76 Ran washover pipe with mill shoe into top of fish at 7511'. Worked over fish - milled to 7512'. Circulated hole clean. Pulled out of hole.

9-16-76 Ran in hole with overshot and 2 7/8" grapples. Unable to get overshot below 7445'. Pulled out of hole. Made up 7 11/16" tapered mill on 2 7/8" drill pipe. Milled through bad spot from 7442' to 7446'. Ran mill to 7482' - did not pick up any weight.

9-17-76 Ran in hole with overshot and worked through bad pipe from 7442' to 7448' - worked over fish at 7482'. Started jarring at 130,000# - worked up to 150,000# - unable to jar fish loose.

9-18-76 Continued to jar on fish without any results. Rigged up Go-International ran 1 7/16" free point and feeler bar - indicator shows packer only has 16% movement. Shut down rig - waiting for Go-International to run expandable cutter.

9-19-76 Rig and crew idle.

9-20-76 Ran Go-International - attempted to cut tubing below packer - cutters failed to operate on two attempts. Rigged up string shot - shot in packer. Jarred to 150,000# - unable to jar free. Released socket.

9-21-76 Finished pulling out of hole. Broke off fishing tools. Made up Baker 7.70" packer mill on one joint of 5" "X"-line wash pipe.

9-22-76 Ran Baker 7.70" O.D. packer mill through bad spot at 7442' - worked over fish at 7482'. Started milling at 7512' without much results.

9-23-76 Milled on packer at 7412'. Rigged up, started out of hole, laid down drill pipe. Made up socket with 3 1/2" guide. Running in hole with 2 7/8" tubing.

9-24-76 Worked down over fish. Ran McCullough 2 1/8" chemical cutter - unable to get into top of tubing. Pulled out of hole. Made up 2" cutter - ran in without any trouble - cut tubing at 7540'. Pulled out of hole. Made up socket, jars, bumper sub and drill collars on 2 7/8" tubing. Ran in hole to 7399'.

9-25-76 Worked fishing socket over fish at 7491' - jarred loose with 100,000#. Pulled out of hole with Otis 8 5/8" packer. Changed Hydril bag. Made up fishing tool - ran in to 7397'. Circulated mud around.

9-26-76 Rig and crew idle.

9-26-76 Worked through bad spot in casing and over fish at 7616'. Jarred on fish with 130,000# - unable to move fish. Rigged up Kelly - circulated mud

around. Rigged up Dia-Log, ran free-point and backoff shot - unable to shoot back-off - no free movement of pipe - released fish. Pulled out of hole. Changed fishing socket to 2 3/8" I.D. - ran back in hole to 7244'.

9-28-76 Took ahold of fish at 7616'. Rigged up Dia-Log - ran in hole with feeler bar - went in to 8639'. Made run in with cutter - cut pipe at 8620'. Pulled out of hole. Recovered 927.90' of 2 7/8" tubing. Made up 203' of 5" "X"-line wash pipe with sawtooth shoe. Ran in hole to 7383'.

9-29-76 Worked 5" wash pipe through bad spot at 7442'. Cleaned out inside 6 5/8" liner with 5" wash pipe from 7585' to 8823', leaving fish in hole at 8853'. Circulated hole clean. Pulled out of hole with wash pipe.

9-30-76 Made up fishing socket and tools. Ran in to fish at 8853' - attempted to work over top of fish. Pulled out of hole. Did not recover fish. Made up 7.70" tapered mill on four 4 3/4" drill collars.

10-1-76 Ran into bad spot in casing at 7445'. Ran mill through several times - tagged liner top. Pulled out of hole. Left 80 stands in hole. Loaded out drill pipe.

10- 2-76 Finished pulling out of hole. Rigged up McCullough wireline truck - ran Casing Log from 7500' to surface. Rigged McCullough down. Made up Brown 5 1/4" fishing socket on bumper sub, jars, four drill collars and accelerator on 2 7/8" tubing. Ran in hole to 7411'.

10- 3-76 Rig and crew idle.

10- 4-76 Ran overshot to top of fish at 8853'. Worked over fish - jarred up to 130,000# for four hours - unable to recover fish. Left five joints of 2 7/8" tubing, one sliding sleeve and one 6 5/8" Baker packer. Rigged up McCullough - ran Baker Model "N" bridge plug on wireline - set plug at 8845' to abandon fish and well below this depth.

10- 5-76 Rigged up McCullough wireline - ran casing inspection log. Tore out McCullough. Picked up Baker 6 5/8", 28# bridge plug. Ran in to 8475' and set plug. Started out of well.

10-6-76 Ran Baker 6 5/8" fullbore - hung at 8441'. HOWCO spotted 5 sacks of sand. Pulled up and set fullbore at 7533'. Tested 6 5/8" casing from 8475' to 7533' with 1200 psi - held for 20 minutes, O.K. Pulled out of hole. Made up Baker 8 5/8" fullbore - ran in hole to 7245'.

10-7-76 Ran Baker fullbore - set at 7387'. Tested down tubing - no test. Tested down casing from 7387' to surface at 1200 psi - O.K. Located leak in 8 5/8" casing at 7462' - pumped 12 cu.ft. at 650 psi per minute. Tested

casing at 7442' and 7485' with 1200 psi - held for 20 minutes - O.K.
Pulled to: 5000' and tested to surface at 1500 psi for 20 minutes - O.K.
4500' " " " " " 1800 psi " 20 " - O.K.
4000' " " " " " 2100 psi " 20 " - O.K.
3500' " " " " " 2400 psi " 20 " - O.K.
3000' " " " " " 2600 psi " 20 " - O.K.
2500' " " " " " 2800 psi " 20 " - O.K.
2000' " " " " " 3100 psi " 20 " - O.K.
1500' " " " " " 3400 psi " 20 " - O.K.
1000' " " " " " 3700 psi " 20 " - O.K.
500' and tested to surface at 4000 psi for 20 minutes - O.K.
Pulled out of hole. Changed 8 5/8" fullbore. Ran in hole to 7308'.
(Leak pumped 12 cu.ft./min. at 650 psi at 7462')

10- 8-76 Ran in hole to 7308'. Rigged up HOWSCO with 8/5/8" fullbore at 7308'. #1 job: broke down hole at 22 cu.ft./minute at 950 psi with 50 cu.ft. H_2O ahead; 115 cu.ft. Class "G" Neat cement and 10 cu.ft. H_2O behind; 234 cu.ft. of mud to clear tool; 51 cu.ft. to holes - cleared holes with 20 cu.ft. High Pressure at 1400 psi. Final Pressure at 450 psi. #2 job: with Baker fullbore set at 7308', broke down holes at 20 cu.ft./minute at 1000 psi with 50 cu.ft. H_2O ahead; 115 cu.ft. Class "G" Neat cement and 10 cu.ft. H_2O behind; 232 cu.ft. of mud to clear tool - pumped 90 cu.ft. out of holes - left 24 cu.ft. in casing - estimated cement at 7392'. Pumping Pressure 1200 psi. Final Pressure 1500 psi. Pulled out of hole. Made up 7 5/8" bit on 8 5/8" casing scraper. Ran in hole to 7236'.

10- 9-76 Finished going in hole. Drilled out cement from 7345' to 7446'. Scraper ran rough from 7433' to 7446'. Pulled out of hole and removed casing scraper. Drilled out cement with 7 5/8" bit from 7446' to 7520'. Top of liner at 7525'. Tested casing with 1200 psi for 20 minutes - O.K.

10-10-76 Rig and crew idle.

10-11-76 Pulled out of hole. Ran 7.70" tapered mill. Cleaned out from 7455' to 7525'. Circulated hole clean.

10-12-76 Finished pulling out of hole. Picked up 4 joints K-55, 6 5/8", 24# liner - 42.66' - 43.00' - 41.41' - 41.37'; Burns hanger 2.00'; shoe 1.60'; total of 172.04'. A B.&W. centralizer on bottom of each joint. Ran in hole to top of liner at 7347' - bottom at 7519'. Cemented at 7519' with 75 sacks of Class "G" cement. Pulled out of hole. Ran in hole to 6650' - circulated.

10-13-76 Drilled out cement from 7275' to top of liner at 7347'. Pulled out of hole - laid down drill collars. Ran in hole with 5 5/8" bit and 6 5/8" casing scraper. Drilled out cement from 7347' to 7508'. Pulled into 8 5/8" casing.

10-14-76 Drilled out cement from 7508' to 7528'. Pulled out of hole. Picked up new bit and 28#, 6 5/8" casing scraper. Drilled out cement from 7528' to 7563'. Ran in to 8411' - pulled into 8 5/8" casing - had trouble with cuttings - hole not clean.

10-15-76 Pulled out of hole. Ran 6 5/8" Johnston tester and set packer at 7500'. Faint blow during one-hour test.

I.H.	3963 psi	
I.F.	50 psi	Temperature 150°
F.F.	60 psi	
F.H.	3953 psi	

Pulled out of hole. Made up 6 5/8" x 8 5/8" tester and started in hole. Had 75' of mud in 2 7/8" tubing. WSO by Company on splice at 7519'.

10-16-76 Finished going in hole. Set 6 5/8" packer at 7356' and 8 5/8" packer at 7321'. Opened tool at 7:00 A.M. Packer failed at 7:05 A.M. Pulled out of hole. Ran and set Johnston bridge plug at 7360'. Started in hole with 8 5/8" tester.
NOTE: Left slips off 6 5/8" packer and one pad in hole.

10-17-76 Rig and crew idle.

10-18-76 Ran Johnston tester - set packer at 7318' with tail at 7336'. Opened tool at 6:41 A.M. - had faint blow for four minutes - dead remainder of the one-hour test. Recovered 10' of fluid. WSO by Company on splice at 7347'.

I.H.	3963 psi
I.F.	36 psi
F.F.	36 psi
F.H.	3949 psi

Made up Gearheart-Owens 8 5/8" x 40# x 42' casing patch on 2 7/8" tubing. Ran in hole to 2925'. Ran Go-International wireline setting tool - set patch from 2925' to 2883'. Set weight on patch - unable to determine if patch was set. Rigged up Collar Locator log. Ran in to 7305' and tagged liner top at 42' high. Pulled out of hole with wireline.

10-19-76 Made up Midway 6.75" O.D. casing spear, bumper sub and jars on 2 7/8" tubing. Ran in hole to 2911' (pipe measurement) hit patch. Pulled spear out of hole. Rigged up Go-International, ran Collar Locator log - determined patch was set at 2918' (20' below desired depth). Made up Johnston retrieving tool on 2 7/8" tubing - picked up bridge plug at 7360'.

10-20-76 Laid down Johnston bridge plug. Rigged up Go-International, made up 8 5/8" x 36# x 32' casing patch. Ran same on wireline, set bottom of patch at 2910' with top at 2878'. Lost two steel prongs off setting head. Ran 5" magnet on wireline, recovered one prong from 7951' but unable to get any deeper. Made second run with magnet, but no recovery. Made up Midway junk basket on 2 7/8" tubing.

10-21-76 Continued in hole to 6300' - collars hitting on top of casing patch at 2878'. Pulled out of hole. Considering roll-topping patch. Made up Midway 5" junk basket on 2 7/8" tubing. Ran in very slowly to top of fill at 7951'. Cleaned out to 8386'. Backscuttled every 60' - had trouble cleaning hole - unable to circulate. Pulled up to top of liner.

10-22-76 Continued out of hole. Recovered four steel springs from 8386'. Made up junk basket, ran in to 8386' - cleaned out to 8424'. Backscuttled hole clean. Pulled to top of liner.

10-23-76 Pulled out of hole with basket - made no recovery. Made up new 5" Midway junk basket - ran in to top of fill at 8424'. Cleaned out to 8460'. Cleaned hole. Pulled to top of liner.

10-24-76 Rig and crew idle.

10-25-76 Pulled out of hole with junk basket - recovered two slips. Made up Cavins surge tool - ran in to 8460' - opened tool and was stuck at this point. Jarred on tubing at 80,000# over weight of string - unable to free tubing.

10-26-76 Rigged up McCullough wireline truck. Made up 2 1/8" chemical cutter - unable to get through Kelly. Rigged out McCullough, backed tubing off approximately 3460'. Attempted to come out of hole. Shut down on account of high winds.

10-27-76 Pulled out of hole. Made up Midway overshot - ran in and latched on to fish. Rigged up McCullough. Ran 2 1/8" chemical cutter - cut pipe at 6494'. Pulled out of hole. Made up Midway mechanical cutter with two joints of 5" wash pipe and attached to 2 7/8" tubing.

10-28-76 Ran in to top of fish at 6494' - worked over fish to 6528' - made cut. Pulled out of hole - recovered tubing and surge valve. Made up socket, ran in hole, latched on to fish. Rigged up McCullough, ran 2 1/8" chemical cutter to 8061' - made cut. Pulled out of hole.

10-29-76 Made up Midway socket, bumper sub, jars, four 4 1/8" drill collars on 2 7/8" tubing. Ran in to fish at 8061' - jarred at 80,000# over weight for two hours with no results. Released socket. Pulled out of hole. Made up mechanical cutter and one joint of 5" wash pipe - ran in hole.

10-30-76 Worked down over fish at 8061'. Pulled out and tripped mechanical cutters - cut tubing at 8073'. Pulled out of hole - recovered tubing and circulating valve. Made up Midway overshot, ran in and latched on. Rigged up McCullough, ran 2 1/8" chemical cutter in to 8103' - unable to get any deeper. Released overshot. Pulled out of hole.

10-31-76 Rig and crew idle.

11- 1-76 Broke down Midway tools. Made up Midway mechanical outside cutter with six joints of 5" wash pipe. Worked over fish. Made cut at 8251'. Pulled out of hole. Recovered 184.48' of tubing - 208' of fish remaining. Made up outside cutter. Ran 30 stands. Fast line sheve bearing making lots of noise.

11- 2-76 Ran in hole with mechanical outside cutter - tool stopped at 8384'. Pulled up and tried to cut at 8379'. Pulled out of hole - no recovery made. Changed cutters - ran in hole, made cut at 8345'. Pulled out of liner.

11- 3-76 Finished pulling out of hole. Laid down 153' of fish - estimated top at 8408'. Laid down 5" wash pipe. Made up 5" shoe and two joints of 5" wash pipe. Ran in, worked over fish at 8408'. Cleaned out to 8444'. Pulled out of hole. Made up Midway pack-off socket, bumper sub, jars and four drill collars. Ran in hole.

11- 4-76 Worked over fish at 8408'. Jarred loose with 90,000#. Pulled out of hole. Recovered 29.10' of tubing. Made up socket to catch 2 1/2 upset. Ran in to top of fish at 8437' - latched on - jarred at 110,000# for three hours. Fish came loose. Pulled out of liner.

11-5-76 Pulled out of hole. Recovered 23' of fish. Broke down surge tool. Made up Baker retrieving head, ran in to 8460' - worked over bridge plug - worked plug loose. Pulled out of hole - recovered bridge plug. Ran 30 stands in hole.

11- 6-76 Pulled out of hole. Made up 5 5/8" bit and scraper. Ran in to 8845'. Circulated hole clean. Pulled out of hole. Laid down bit and scraper. Ran 30 stands in hole.

11-7-76 Rig and crew idle.

11-8-76 Pulled tubing. Ran feeler ring 5.625" tool - stopped at 7512'. Started in hole with 5.65" tapered mill.

11- 9-76 Ran 5.65" tapered mill. Reamed from 7500' to 7550'. Ran to 8450'. McCullough ran Baker production packer and set it at 8400'. Going in hole with production equipment, hydrotesting with 5000 psi for one minute and changing all collars.

11-10-76 Continued hydrotesting tubing to 5000 psi for one minute and changing all collars. Ran 124 stands in hole.

11-11-76 Finished running tubing.....258 joints of 2 7/8", N-80, 8rd, EUE at 8311'; Camco MMG mandrel (empty) at 8320'; Camco SCI safety system at 8353'; 20' Camco blast joint at 8388'; 10' Camco blast joint at 8399'; Camco No-Go nipple 1.81" I.D. at 8389; Bakerlatch-in locator at 8400'; Baker Seals and production tube at 8409.90'.
Tested Christmas tree with 5000 psi for 20 minutes - O.K. (two tests).
Tested casing seals with 3000 psi for 20 minutes. Changed to lease water - Camco set plug in No-Go nipple.

11-12-76 Tested seals and packer with 1800 psi for 20 minutes. Pulled plugs from No-Go nipple. Rigged down. RIG RELEASED at 2:00 P.M.

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Report on Operations

No. T276-272

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. IW 77, API No. 037-21323, Sec. 28, 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 1100 to 1300. There were also present F. Green, contract foreman

Present condition of well: No additions to casing record since proposal dated 6/29/76.

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

By _____ Deputy

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS No. P 276-232

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

Santa Paula, Calif.
July 9, 1976

DEAR SIR:

Your proposal to rework gas storage Well No. IW 77 (037-21323), Section 28, T. 3N, R. 16W, S.B.B. & M., Aliso Canyon Field, Los Angeles County, dated 6/29/76, received 7/1/76, has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. The drilling fluid used shall be of a quality and in sufficient quantity to control all subsurface conditions in order to prevent blowouts; and a reserve supply of this material shall be kept on hand to meet any emergency.
2. Blowout prevention equipment, at least of the Division of Oil and Gas Class III 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

HAROLD W. BERTHOLF
JOHN F. MATTHEWS, JR., State Oil and Gas Supervisor

By _____, Deputy

25476-705 7-74 50M ①D OSP
OG 111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS RECEIVED
JUL 1 1976
SANTA PAULA, CALIFORNIA

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	FORMS	
	114	121
75 B	✓	✓

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. #77, API No. _____,

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

The present condition of the well is as follows:

1. Total depth. 9030'

2. Complete casing record, including plugs and perforations:

13 3/8" cemented 900'
8 5/8" cemented 7642', stage collar 2996'
1502' 6 5/8" cemented 9025', top of cement 9019'
WSO's lap 7523', 8435' and 8515'
Perforated at intervals 8532'-8734'

3. Present producing zone name SESNON Zone in which well is to be recompleted -

4. Present zone pressure 3150 psi New zone pressure -

5. Last produced Gas Storage Well _____ _____ _____
(Date) (Oil, B/D) (Water, B/D) (Gas, Mcf/D)

or

6. Last injected _____ _____ _____ _____
(Date) (Water, B/D) (Gas, Mcf) (Surface pressure, psig.)

The proposed work is as follows:

1. Move in rig, kill well, install B.O.P.E. and test.
2. Clean out to 9019'. Pressure test 6 5/8" and 8 5/8" casing.
3. Perform any remedial work indicated by pressure test.
4. Run packer, tubing and safety valve.
5. Return to gas storage service.

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 6/29/76
(Name P. S. Magruder, Jr.) (Date)
Type of Organization Corporation
(Corporation, Partnership, Individual, etc.)

FORM 100

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

WELL SUMMARY REPORT

SUBMIT IN DUPLICATE

Operator Pacific Lighting Service Company Well No. IW 77

Sec. 28, T. 3N, R. 16W, SB B. & M. Aliso Canyon Field Los Angeles County.

Location From Station 84, 833.86' South and 5376.94' West
(Give location from property or section corner, or street center lines)

Elevation of ground above sea level 2927 feet USGS.

All depth measurements taken from top of Kelly Bushing which is 15 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 October 29, 1973

Signed P. S. Magruder Jr.

E. A. Olson (Engineer or Geologist)

B. F. Jones (Superintendent)

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

Commenced drilling January 13, 1973

Completed drilling February 25, 1973

Total depth 9030 Plugged depth 9019 Cement

Junk Set of 6-5/8 slips at 9019'
128' of drilling assembly 7856-7984' - side tracked
138' of drilling assembly 7818-7956' - side tracked

GEOLOGICAL MARKERS	DEPTH
Top Sesnon Zone S4	8534
Top Frew Unconformity	8798

Geologic age at total depth: Eocene

Commenced producing (Date) Flowing/gas lift/pumping (Cross out unnecessary words)

Name of producing zone Sesnon

	Clean Oil bbl. per day	Gravity Clean Oil	Per Cent Water including emulsion	Gas Mcf. per day	Tubing Pressure	Casing Pressure
Initial production		Gas	Storage	Well		
Production after 30 days						

CASING RECORD (Present Hole)

Size of Casing (A. P. I.)	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cementing if through perforatio
13-3/8	900	sfc	48#	N	S	K-55	17-1/2"	342+ 189 cu.ft.	
8-5/8	7642	sfc	36#	N	S	K-55 N-80	11"	700 488	shoe 2996
6-5/8	9025	7523	28#	N	S	K-55	7-5/8"	276	

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

6-5/8 Four 1/2" jet holes per foot for WSO at 8515 & 8435'
Four .40" jet holes per foot for production 8532-36',8558-8600', 8624-40', 8658-64', 8670-74', 8684-88', 8700-8734'.

Was the well directionally drilled? Yes Electrical Log Depths 7630 & 9030 (Attach Copy of Log)

△ OSP

FORM 103 SUBMIT IN DUPLICATE △ OSP

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

History of Oil or Gas Well

OPERATOR Pacific Lighting Service Company FIELD Aliso Canyon

Well No. IW 77, Sec. 28, T. 3-N, R. 16W, S.B. B. & M.

Date October 29, 1973 Signed P. S. Magruder, Jr.

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

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

Date	
1973	
1-13	Well drilled by Camay Drilling Company, Contractor, rig #8. All measurements taken from top of kelly bushing which was 15' above mat. Spudded 17-1/2" hole at 5:00 PM and drilled with air to 100'. Pipe stuck at 100'. Worked and pulled 150,000# and pipe came free at 37'.
1-14	Tear out air drilling equipment and install pitcher nipple and drilled 17-1/2" hole to 330 with mud. Lost circulation at 330'. Wait on mud.
1-15	Drilled 17-1/2" hole to 660 with no circulation.
1-16	Drilled and surveyed 17-1/2" hole to 900'. No circulation.
1-17	TO CEMENT 13-3/8" SURFACE CASING: Ran 23 joints or 901.91 feet of 13-3/8", 48#, K-55, 8rd., ST&C, R-3, new seamless blank casing and cemented same at 900' with 700 cu. ft. of 94#/cu. ft. slurry consisting of 194 sacks of Class "G" cement, 290 cu. ft. of Pozmix "D", 10 sacks of gel, 1940# of Gilsonite and 3% calcium chloride. Moved casing 5 feet and circulated 10 minutes prior to cementing and for 10 minutes while mixing and displacing cement. Preceded cement with 500 cu. ft. of water and displaced with 800 cu. ft. water to bump plug to place at 11:45 PM under 100# final pressure. No circulation throughout job. No cement to surface. 75 minutes mixing and displacing cement. Used Howco bulk cement & power. Top cement job. Ran 1" pipe to 75' and pumped in 171 cu. ft. of 94#/cu. ft. slurry consisting of 48 sacks of Class "G" cement, 74 cu. ft. of Pozmix "D", 7 sacks of gel, 480# of Gilsonite and 3% calcium chloride in two stages. Cement in place 5:15 AM. Used Howco bulk cement and power. Pumped in 12 sacks gel pill. Wait 2 hours and pumped in 100 sacks Class "G" with 3% calcium chloride. Cement in place at 10:20 AM. No cement to surface. After standing 1-1/2 hours pumped in 189 cu. ft. of ready mix pea gravel with 2% calcium chloride. 40 min. pumping to place at 12:45 AM. Cement to surface. Used Active Concrete Pumping Service Power equipment. CASING DETAIL: All 23 joints or 901.91 feet, 13-3/8" fitted on bottom with Baker Stab-in float shoe and with centralizers at 883'. Cement basket at 160'. Cut and recovered 13-3/8" casing, installed Shaffer 13", 5000# casing head and tested same OK with 1700# pressure for 15 minutes.

1973

1-18 Installed BOP and found leak. Install new ring and pipe rams and Install GK Hydrill and double Shaffer hydraulic BOP and tested same with 1500# for 10 minutes. Witnessed and approved by ENGINEER FOR DIVISION OF OIL & GAS.

1-19 Drilled out to shoe and checked BOP and pipe OK under 1500# OK.
Drilled and surveyed 11" hole to 1536'.
Mud: 70#, 46 sec., 7.4 cc.

1-20 Drilled and surveyed 11" hole to 2033'.
Mud: 77#, 75 sec., 7.4 cc.

1-21 Drilled and surveyed 11" hole to 2894'.
Mud: 72#, 44 sec., 7.2 cc.

1-22 Drilled and surveyed 11" hole to 3447'.
Mud: 70#, 39 sec., 8.6 cc.

1-23 Drilled and surveyed 11" hole to 4057'. Reamed 4035'-4057'.
Mud: 70#, 39 sec., 8.2 cc., 6% solids.

1-24 Drilled and surveyed 11" hole to 4906'.
Mud: 70#, 41 sec., 9.4 cc., 6% solids.

1-25 Drilled and surveyed 11" hole to 5128'.
Mud: 68#, 41 sec., 7.0 cc., 4% solids.

1-26 Lay down washed out drill collar. Reamed 5100-5128 and drilled and surveyed 11" hole to 5449'. Lost circulation, treated mud with shells and cottonseed hulls. Obtained full circulation after treating for 7 hours. Lost 830 bbls. of mud.
Mud: 68#, 39 sec., 7.0 cc., 4% solids.

1-27 Drilled and surveyed 11" hole to 5628'.
Dyna Dril #1 11" hole 5628'-5782'.
Mud: 68#, 42 sec., 7.8 cc., 4% solids.

1-28 Dyna Drill 11" hole to 5844. Ream 5794'-5844' and directionally drill 11" hole to 6380'.
Mud: 69-1/2#, 61 sec., 7.4 cc., 5% solids.

1-29 Directionally drilled 11" hole to 6510' and Dyna Dril #2 6510'-6651'.
Mud: 69#, 43 sec., 7.2 cc., 4-1/2% solids.

1-30 Spud and ream stiff drilling assembly from 3400'-5915' where pipe stuck. Spotted 50 bbls. lease crude treated with 55 gals. IMC "Free Pipe" around fish. Let soak 2 hrs. and displaced all oil around shoe. Worked pipe but same would not come free.
Mud: 71#, 47 sec., 7.5 cc., 7% solids.

1973

1-31 Ran DiaLog survey and determined pipe stuck in Dyna Drilled interval at top of bottom stabalizers. Ran DiaLog string shot and backed off at 5598'.
Ran Tripple AAA jar and bumper sub on 5" drill pipe and screwed into fish.
Jarred down for 1-1/2 hours and fish came loose.
Ran 11" bit and reamed from 5890'-6522'.
Mud: 68#, 49 sec., 6.8 cc.

2-1 Reamed 11" hole 6522'-6651' and directionally drilled 11" hole to 6961'.
Mud: 70#, 53 sec., 7.0 cc, 5% solids.

2-2 Directionally drilled 11" hole to 7260'.
Mud: 70#, 51 sec., 6.5 cc., 6% solids.

2-3 Directionally drilled 11" hole to 7408' and Dyna Dril #3 to 7465'.
Mud: 68#, 37 sec., 7.2 cc., 4% solids.

2-4 Dyna Dril #3 to 7510' and directionally drilled 11" hole to 7758'.
Mud: 68#, 39 sec., 7.4 cc., 4% solids.

2-5 Directionally drilled 11" hole to 7790' and Dyna Dril #4 to 7858'.
Reamed 7790'-7858' and directionally drilled 11" hole to 7888'.
Mud: 68#, 47 sec., 7.6 cc., 4% solids.

2-6 Directionally drilled 11" hole to 7984'. Left 128' of bit, monel and drill collars in hole. Jumped pin in collar. Top of fish at 7856'.
Mud; 68#, 43 sec., 7.6 cc., 4% solids.

2-7 Ran overshot, jars and safety joint on 5" drill pipe, took hold of fish at 7856' and jarred on fish 1 hour when jars failed.
Reran overshot and new jars and jarred on fish for 5 hours. Fish would not come loose. Ran DiaLog free point and attempted to back off part of fish. Would not back off. Released from fish.
Mud: 70#, 47 sec., 7.8 cc., 6% solids.

2-8 TO BRIDGE HOLE WITH CEMENT: Ran 5" 19.5# open end drill pipe to 7856' and lost circulation. Pulled in stages to 6235' adding LCM. Lost 350 barrels of mud and 5 hours regaining circulation. With drill pipe hanging at 7841', equalized 63 sacks Class "G" cement mixed with 13 sacks of sand and 2% calcium chloride. Cement in place at 9:00 AM. Good circulation. Used Howco bulk cement and power equipment.
Located top of soft cement at 7817' after standing 7 hours.
Mud: 68#, 49 sec., 7.8 cc.

2-9 Relocate top of hard cement at 7811'.
Ran Dyna Dril #5 with Eye tool and drill 11" hole to 7811'-7888'.
Mud: 70#, 59 sec., 10.0 cc.

2-10 Dyna Dril #5 with Eye tool to 7899'.
Reamed 11" hole 7790'-7899' and directionally drilled 11" hole to 7905' where circulation was lost. Lost approximately 300 bbls. of mud.
Drilled 11" hole with 90% returns to 7956' where drill string twisted off in bumper sub. Top of fish 7818'.
Mud: 68#, 65 sec., 7.6 cc.

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2-11 Ran Midway overshot, jars and bumper sub and took hold of fish. Jarred on fish 4 hours when jars failed.
Ran DiaLog free point indicator but could not get into fish.
Attempted to back off fish without success.
Shot Dialog string shot at top of overshot to release from fish. Fish consists of 11" bit, stab₉lizer,monel, crossover, 2 steel drill collars, stabalizer, steel drill collar, stabalizer and bumper sub, total of 138'. Top at 7818', bottom at 7956'.
Mud: 69#, 45 sec., 7.4 cc.

2-12 TO BRIDGE HOLE WITH CEMENT: Ran 5" 19.5# open end drill pipe to 7650' and equalized 100 sacks Class "G" cement mixed with 20% sand and 2% calcium chloride. Good circulation during job. Cement in place at 4:05 AM. Used Dowell bulk cement and power. After 14 hours located soft cement at 7550'. After 16 hours drilled out to hard cement at 7585'.
Mud: 69#, 42 sec., 7.8 cc.

2-13 Dyna Dril #6 from 7585'-7647'.
Ran Dresser Atlas Induction Electrolog and recorded from 907' to 7630'.
Mud: 68#, 47 sec., 8.4 cc.

2-14 Measure in and check bottom at 7650'. Conditioned hole for casing. Start running 8-5/8" casing.
Mud: 68#, 47 sec., 8.2 cc.

2-15 TO CEMENT 8-5/8" CASING: Ran 186 joints or 7655.76 feet of 8-5/8", 36#, K-55 and N-80, Buttress thread, R-3, new seamless blank casing and cemented same at 7642' with 1955 cu. ft. of 95#/cu.ft. slurry consisting of 600 sacks Class "G" cement, 900 cu. ft. of Lite Poz, 10 sacks of gel, followed by 100 sacks Class "G" with 2% calcium chloride mixed to 118#/cu.ft. slurry. Casing frozen. Preceded cement with 100 cu. ft. water and displaced with 50 cu. ft. water and 2500 cu. ft. of mud to bump plug to place at 3:14 AM under 3500# final pressure. Held 3500# pressure for 15 minutes. Bled back 22 cu. ft. for total displacement of 2478 cu. ft. Full circulation throughout job. 2 hours mixing and displacing cement. Dropped plug and opened stage collar at 2996' under 1000# pressure. Preceded cement with 50 cu. ft. water. Pumped in 1500 cu. ft. of 95#/cu.ft. slurry consisting of 488 sacks Class "G" cement, 732 cu. ft. lite poz, 10 sacks of gel and displaced with 50 cu. ft. water and 1007 cu. ft. of mud to bump plug and close collar under 1500# pressure at 6:18 AM. Bled back 10 cu. ft. for total displacement of 997 cu. ft. 1 hour 15 minutes mixing and displacing cement. Full circulation throughout job. No cement returns to surface. Used Dowell bulk cement and power.

CASING DETAIL:

Bottom 51 joints or 2108.20'	(7650-5542) N-80 fitted on bottom with Davis Lynch fill-up float shoe and at 7560' with Davis Lynch fill-up float collar. TIW turbo centralizers at 7605', 7562', 7520', 7487' and 7443'.
Next 135 joints or 5541.56'	(5542-sfc.) K-55 fitted with metal petal basket at 5000' and 2088' with centralizers one joint above and below each basket. Stage collar at 2996' with one centralizer on joint above.
Total 186 jts. or 7655.76'	

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2-15 Remove BOP, cut and recover 8-5/8" casing, set slips and land 8-5/8" casing. Reinstall BOP and drill out stage collar at 2996', float collar at 7560' and cement to 7630'. Pressure test casing to 1500# OK. Drill out cement and drill 7-5/8" hole to 7655'.

2-16 Change over drilling fluid system to low weight, low solids QTROL drilling fluid.
Mud: 64#, 35 sec., 6.0 cc., 2% solids.

2-17 Dyna Dril #7 with Eye tool from 7655'-7757', 7-5/8" hole.
Reamed from 7655'-7757' and directionally drilled 7-5/8" hole to 7888'.
Mud: 64#, 34-1/2 sec., 6.4 cc., 2% solids.

2-18 Directionally drilled 7-5/8" hole to 8121'.
Mud: 64#, 33 sec., 6.4 cc., 2% solids.

2-19 Directionally drilled 7-5/8" hole to 8262'.
Mud: 64#, 33 sec., 6.4 cc., 2% solids.

2-20 Directionally drilled 7-5/8" hole to 8475'.
Mud: 64#, 34 sec., 6.6 cc., 2% solids.

2-21 Directionally drilled 7-5/8" hole to 8680'.
Mud: 64#, 32 sec., 6.6 cc., 2% solids.

2-22 Directionally drilled 7-5/8" hole to 8717' with conventional bit and to 8767' with Williams type WP6 diamond bit.
Mud: 64#, 34 sec., 6.4 cc., 2% solids.

2-23 Diamond drilled 7-5/8" hole to 8802'. Lost pump pressure. Pulled and found wash out in drill pipe at 3000'. When bit pulled, found second wash out at 3250'. Diamond bit in poor condition. Unsatisfactory run possibly due to lack of fluid around bit due to wash out in pipe.
Mud: 65#, 33 sec., 6.6 cc., 2% solids.

2-24 Directionally drilled 7-5/8" hole to 8891'. Outside bearings on bit left in hole.
Reamed 8850' to 8891' and directionally drilled 7-5/8" hole to 8979'.
Mud: 64-1/2#, 33 sec., 6.6 cc., 2% solids.

2-25 Directionally drilled 7-5/8" hole to 9030 TOTAL DEPTH. Recovered several bearings in junk sub.
Ran Dresser Atlas Induction Electrolog, Sidewall Neutron and Densilog.
Mud: 64#, 34 sec., 6.8 cc., 2% solids.

2-26 Measure in hole and check measurements OK. Reamed 9010'-9030' and conditioned hole for liner.

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2-26 TO CEMENT 6-5/8" BLANK LINER: Ran 35 joints or 1502.50' of 6-5/8", 27.65#, K-55, R-3, Security flush joint, new seamless blank casing on 5" 19.5# drill pipe and liner cementing tool and landed liner at 7523'. Cemented same at 9025' with 500 cu. ft. of 90#/cu. ft. slurry consisting of 276 sacks of Class "G" cement, 276 cu. ft. of Perf-A-Lite, 5 sacks of gel. Reciprocated casing 15 for 3 minutes when liner froze 5' off bottom. Preceded cement with 100 cu. ft. of water and displaced with 755 cu. ft. of mud to shear liner wiping plug and followed with an additional 277 cu. ft. of mud to bump plug under 2200# final pressure. Bled back 19 cu. ft. Good circulation throughout job. 40 minutes mixing and displacing cement to place at 4:00 PM. Used Halliburton cementing equipment and bulk cement.

LINER DETAIL:

All 35 joints or 1502.50' (9025'-7523') 6-5/8" casing fitted on bottom at 9025' with Davis-Lynch fill-up float shoe with landing collar above, on top at 7523' with Texas Iron Works plain off bottom setting collar. Centralizers at top of 2nd, 5th, 7th, 9th, 10th, 13th, 14th, & 33rd joints. Scratcher clusters above and below collar at top of 4th, 7th, 10th, 11th & 14th joints.

Drilled out cement with 7-5/8" bit from 6845'-7016'.
Mud: 65#, 36 sec., 7.2 cc., 2% solids.

2-27 Drilled out cement with 7-5/8" bit from 7016' to 7523'.
Ran 5-5/8" bit with scraper above and drilled out cement from 7523'-7528' and clean out to 9019'.
Closed rams and 6-5/8" x 8-5/8" lap at 7523', held 1500# OK for 15 minutes.
Ran Welex Microseismogram and Neutron logs with collar locator.

2-28 TO TEST WATER SHUT-OFF ON HOLES IN 6-5/8" CASING AT 8515': Ran Johnston combination gun and tester on 3-1/2" & 5" drill pipe and shot four 1/2" jet holes at 8515'. Set packer at 8454' with tail to 8480'. Opened tool at 8:01 AM for one hour test. Light steady blow throughout test. No gas to surface. Recovered 360' rise of drilling fluid in 3-1/2" drill pipe. Rat hole volume equivalent to 297' rise, thus net entry of 63' or 17 gallons of fluid. Charts showed tool functioned properly. Water shut-off witnessed and determined inconclusive by Company test.
Ran Johnston positrieve cement tool on 3-1/2" and 5" drill pipe and attempted to set packer at 8332'. Packer would not set. Pulled and found 4 slips had been knocked off, probably when working packer into top of 6-5/8" liner.

3-1 TO SQUEEZE HOLES IN 6-5/8" CASING AT 8515' WITH CEMENT: Ran Johnston retrievable cement tool on 3-1/2" and 5" drill pipe and set same at 8322'. Applied 2000# surface pressure and holes would not take fluid. Held 2000# for 45 minutes with no bleed off. Used B-J power. Determined water shut-off EFFECTIVE on holes at 8515'.

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3-1 TO TEST WATER SHUT-OFF ON HOLES IN 6-5/8" CASING AT 8435' and 8515': Ran Johnston combination gun and tester on 3-1/2" & 5" drill pipe and shot four 1/2" jet holes at 8435'. (Holes at 8515' previously shot.) Set packer at 8370' with tail to 8395'. Opened tool at 7:50 AM for one hour test. Faint blow 3 minutes and packer failed. Recovered 2455' rise of drilling fluid in 3-1/2" drill pipe. NO TEST.

TO RETEST WATER SHUT-OFF ON HOLES IN 6-5/8" CASING AT 8435' & 8515': Ran Johnston tester on 3-1/2" & 5" drill pipe. Set packer at 8399' with tail to 8415'. Opened tool at 2:22 PM for one hour test. Faint blow during test. No gas to surface. Recovered 1160' rise in 3-1/2" drill pipe of drilling fluid. Charts showed no fluid entry during test and that tool opened while coming out of hole. Water shut-off witnessed and approved by ENGINEER FOR DIVISION OF OIL & GAS.

TO TEST WATER SHUT-OFF ON 6-5/8" 8-5/8" LAP AT 7523': Ran Johnston tester on 5" drill pipe. Set packer at 7469' with tail to 7486'. Opened tool at 10:01 PM for one hour test. Light blow 3 minutes when packer failed or drill pipe leaked. No gas to surface. Recovered 3455' rise in 3-1/2" drill pipe of drilling fluid. NO TEST.

3-2 TO RETEST WATER SHUT-OFF ON 6-5/8" 8-5/8" LAP AT 7523': Ran Johnston tester on 5" drill pipe. Set packer at 7455' with tail to 7472'. Opened tool at 9:30 AM for two hour 45 minutes test. Puff blow then dead throughout test. Shot fluid level after tool open 2-1/2 hours which showed 503' of fluid. No gas to surface. Recovered 495' rise of drilling fluid in 5" drill pipe. Charts showed no fluid entry during test. Probable drill pipe leak. Water shut-off witnessed and approved by ENGINEER FOR DIVISION OF OIL & GAS.

Ran 3-1/2" & 5" drill pipe to 9019' and displaced drilling fluid in hole with lease salt water treated with 3#/bbl. DMS.

3-3 Ran Go-International 4" OD carrier with 19 gram DMLXVIII jet charges and shot four 0.40" OD holes per foot from 8684'-8688'.
PRODUCTION TEST ON HOLES AT 8684'-8688': Ran Johnston tester and packer would not hold. Found 850' of fluid in drill pipe. Also found wash out in drill pipe.

3-4 To check drill pipe for leaks, ran 3-1/2" and 5" drill pipe in 1000' stages to 8970' and pressured same to 1500#. Found one small washout. Dropped bar, sheared disc and circulated hole clean.
PRODUCTION TEST ON PERFORATED INTERVAL 8684'-8688': Ran Johnston tester on 3-1/2" and 5" drill pipe with 1000' of water cushion. Set packer at 8614' with tail to 8630'. Checked fluid level with Depthograph at 1000'. Opened tool at 5:06 PM. Puff blow, then dead. Depthograph check fluid level after 30 minutes, which showed 45' rise. Recycled tool. Pull loose at 6:10 PM. Recovered 45' net rise of drilling fluid. No gas to surface. Charts OK.

3-5 Ran Go-International 4" OD carrier with 19 gram DMLXVIII jet charges and shot four 0.40" OD holes from 8670'-8674'.

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3-5 (cont'd) PRODUCTION TEST ON HOLES IN 6-5/8" CASING 8670'-8674' & 8684'-8688': Ran Johnston tester on 3-1/2" & 5" drill pipe with 500' water cushion. Set packer at 8613' with tail to 8630'. Opened tool on 1/2" bean and 1" surface bean at 7:05 AM. Light blow for one minute, dead balance of test. Recovered 90' net rise of drilling fluid. No gas to surface. Tool open one hour. Charts OK.
Ran Go International 4" O.D. carrier with 19 gram DMLXVIII jet charges and shot four 0.40" O.D. holes per foot from 8715'-8720'.
Ran Johnston tester to test holes from 8715'-8720'. Packer failed. No test. Left packer & tail in hole.

3-6 Ran 4-3/8" O.D. 70 series Bowen Overshot on 3-1/2" & 5" drill pipe and screwed into fish. Recovered fish, leaving four packer slips in hole. Hole took 320 barrels of salt water.

PRODUCTION TEST ON PERFORATIONS IN THE INTERVAL 8715-20', 8670-74' & 8684-88': Ran Johnston tester with MFE tool on 3-1/2" & 5" drill pipe with 500' of fresh water cushion. Set packer at 8622' with tail to 8638'. Opened tester at 7:44 AM on 1" surface bean and 1" tool bean. Medium blow gradually decreasing to weak blow at end of one hour test. Gas to surface in 22 minutes. Rate not measurable. Shut-in at tool 8:48 AM for 30 minute shut-in. Charts showed tool functioned properly throughout test. While pulling tester with drill pipe hanging at 4860', drill pipe unloaded live black gassy oil and slugs of gas. Dropped bar to shear disc and open backscuttle valve, but could not open same. Continued filling hole and pulling tester. Drill pipe unload in four stages. Recovered estimated 3800' rise of fluid in 3-1/2" & 5" drill pipe consisting of water cushion, gassy black oil and gas. Sample chamber contained live black oil.

PRESSURE RECORDER DATA PSIG

	OUTSIDE (8631')
INITIAL HYDRO	3670
INITIAL FLOW	662
INITIAL SHUT-IN	None
SECOND FLOW	None
FINAL FLOW	1326
FINAL SHUT-IN	1492
FINAL HYDRO	3607

3-7 Measured in hole with Johnston retrievable bridge plug on 3-1/2" & 5" drill pipe and set in 6-5/8" liner at 8700'. Circulate out gassy, oily salt water. Left bridge plug setting tool in hole.
Ran fishing tool on 3-1/2" & 5" drill pipe to 8690' and treated salt water with Bex additive to control loss of fluid. Took hold of setting tool and recovered same.

3-8 Ran Go International 4" O.D. carrier with 19 gram DMLXVIII jet charges and shot four 0.40" O.D. holes per foot from 8624'-8640' and 8658'-8664'.

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3-8 (con't) PRODUCTION TEST ON PERFORATIONS IN THE INTERVAL 8624-8640', 8658-8664', 8670-8674' & 8684-8688': Retrievable bridge plug set at 8700'. Ran Johnston tester with MFE tool on 3-1/2" & 5" drill pipe with 500' of fresh water cushion. Set packer at 8581' with tail to 8597'. Opened tester at 7:20 AM on 1" surface bean and 1/2" bean in tool. Weak blow throughout one hour test. Recycled tool after one hour. No change in blow. No gas to surface. Charts showed tool functioned properly throughout test. Recovered 680' rise of fluid in 3-1/2" & 5" drillpipe consisting of water cushion and 180' of salt water hole fluid. Sample chamber contained salt water drilling fluid.

PRESSURE RECORDER DATA PSIG

	INSIDE (8953')	OUTSIDE (8949')
INITIAL HYDRO	Clock stopped	3679
INITIAL FLOW		237
INITIAL SHUT-IN		None
SECOND FLOW		None
FINAL FLOW		272
FINAL SHUT-IN		None
FINAL HYDRO		3551

Ran Go International 4" O.D. carrier with 19 gram DMLXVIII jet charges and shot four 0.40" O.D. holes per foot from 8532'-8536' and 8558'-8600'. Delay running tester for daylight test.

3-9 PRODUCTION TEST ON PERFORATIONS IN THE INTERVAL 8532-36', 8558-8600', 8624-40', 8658-64', 8670-74' and 8684-88': Ran Johnston tester with MFE tool on 3-1/2" & 5" drill pipe with 500' of fresh water cushion. Set packer at 8492' with tail to 8510'. Opened tester at 7:20 AM on various surface beans and 1/2" bottom hole bean. Immediate increasing strong blow. Hooked up to Standard Sesnon 25 flow line. Total flow period of 2 hours 47 minutes. Gas to surface. Shut-in at tool or surface at 10:07 AM for 1 hour 33 minute shut-in. Charts showed tool functioned properly throughout test. Recovered 940' of fluid in 3-1/2" & 5" drill pipe consisting of water cushion, hole fluid & condensate. Sample chamber contained 1.9 cu. ft. of gas at 300 psig.

HRS. OPEN	SFC BEAN	FLOW PRESSURE PSIG SURFACE	FLOW PRESSURE PSIG AT TOOL	RATE MCF/D
40 min.	24/64	875	1387	3209
1 hr. 40 min.	32/64	800	1399	2921
2 hr. 40 min.	40/64	525	1399	3529

AUTOMATIC TEST UNIT

TOTAL FLUID	4.3 bbls.
Less Wtr. Cush.	2.1 bbls.
Gross Fluid	2.2 bbls.
Net Oil	2.2 bbls.
Water	0 bbls.
Cut	0 %

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3-9 (con't)

PRESSURE RECORDER DATA PSIG

	INSIDE (8501)
INITIAL HYDRO	3631
INITIAL FLOW	257
INITIAL SHUT-IN	None
FINAL FLOW	1381
FINAL SHUT-IN	1451
FINAL HYDRO	3624

Ran retrieving tool on 3-1/2" & 5" drill pipe and conditioned water with Bex at top of plug at 8700'. Latched on to plug and pulled same loose. Hole started taking fluid. Conditioned water with Pol-E-Heal. Lost approximately 100 bbls. of fluid before loss stopped.

3-10 Ran Go International 4" O.D. carrier with 19 gram DMLXVIII jet charges and shot four 0.40" O.D. holes per foot from 8700'-8716' and 8720'-8734'.
Ran 5-5/8" bit with scraper above and circulated out fill from 8960'-9010' and circulated hole clean.
Ran Halliburton RTTS tool and RBP on 3-1/2" & 5" drill pipe and set retreivable bridge plug at 8740'. Set RTTS tool above plug and tested same OK with 2000 psig.

3-11 SAND STABALIZATION TREATMENT WITH "CLAY LOK"

FIRST STAGE ON PERFS IN INTERVAL 8700'-8734': Pumped in 280 cu. ft. of 2% KCl water, followed by 45 cu. ft. of 3% HCl acid, followed by 482 cu. ft. of 2% Kcl water, followed by 200 barrels of "Clay Lok". Closed tool and set RTTS tool at 8695'. Holes took KCl fluid at 20 cu. ft. per minute rate. Squeezed "Clay Lok" into perfs at 20 to 23 cu. ft. per minute rate under 2500 to 2650 psig with 200 barrels of 2% KCl water followed by 788 cu. ft. of hole fluid to leave KCl water opposite perforations.
Unseated RTTS, latched onto RBP and reset same at 8615'. Tested RBP with 2000 psig OK.
SECOND STAGE ON PERFS IN INTERVAL 8532'-8600': Pumped in 280 cu. ft. of 2% KCl water, 60 cu. ft. of 3% HCl acid followed by 450 cu. ft. of 2% KCl water, followed by 276 barrels of "Clay Lok". Closed tool and set RTTS tool at 8525'. Holes took KCl fluid at 26-28 cu. ft. per minute rate at 2500-2600 psig. Squeezed "Clay Lok" into perfs at 26-28 cu. ft. per minute rate under 2100 to 1750 final psig with 276 barrels of 2% KCl water followed by 770 cu. ft. of hole fluid to leave KCl water opposite perforations.

Latched onto RBP and pulled up to 8330' and conditioned hole. Pulled out of hole. Removed B.O.P. Cut off 8-5/8" stub to accomodate tubing head. Installed Shaffer 8-5/8" secondary packing and Shaffer 10", 5000# tubing head. Test same to 3450 psig for 15 minutes OK. Reinstalled B.O.P.

3-12 Run 3-1/2" & 5" drill pipe to 7450'. Pull out laying down drill pipe. Lay down drill collars and load out tools.

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3-13 Run 2-7/8" & 1" side string simultaneously using B & W dual slips & elevators. Slips & elevators incorrect size for 1". 1" run with clamp and catline. Pressure test 1" Otis valve and sliding sleeves with 4000 psig nitrogen.
1" side string collapsed when 1600' run. Pulled out. Recovered all 1" tubing. Replaced 3 bent joints, one parted joint and 1-1/4" control line reservoir pup. Ran 2-7/8" & 1" tubing. All 2-7/8" tubing broached with 2.40" O.D. broach.

3-14 Running 2-7/8" & 1" tubing. 2-7/8" tubing filled with salt water in stages.

3-15 Landed tubing in doughnut and applied pressure with nitrogen and found leak in 1" line. Pulled 1000' of 1", found loose joint.
Relanded tubing in doughnut with tail at 8636'. Pressure tested 1" line with 4000 psi nitrogen. Held OK for 15 minutes.

TUBING DETAIL

Bottom	1 Joint	(8636.75-8606.02)	30.73	2-7/8", 6.5#, N-80, 8rd, EUE, R2 new seamless w/45° collar on bottom
Next		(8606.02-8605.07)	.95	Baker Model "F" seating nipple
Next		(8605.07-8598.57)	6.50	Baker Model "FH" hydrostatic single packer.
Next	4 Joints	(8598.57-8474.69)	123.88	2-7/8"
Next		(8474.69-8471.94)	2.75	Baker Model "L" Sliding Sleeve
Next	33 Joints	(8471.94-7450.40)	1021.54	2-7/8"
Next		(7450.40-7445.53)	4.87	Otis Type "RH" hydrostatic single packer.
Next	1 Joint	(7445.53-7415.22)	30.31	2-7/8"
Next		(7415.22-7407.92)	7.30	Otis Safety Valve
Next		(7407.92-7397.92)	10.00	2-7/8" pup w/1" anchor collar on top. Atlas Bradford GST 1" O.D. 1.70#, J-55 new seamless tubing as control line to 2' below 2-7/8" doughnut. Anchors for 1" at 7497', 6494', 5345', 4326', 3284', 2254', 1002', 20'. 1/4" control line from top anchor to doughnut.
Next		(7397.92-7395.17)	2.75	Baker Model "L" sliding sleeve
Next	232 Joints	(7395.17-15)	7380.17	2-7/8" including 14 2-7/8" N-80 & J-55 mixed pups.
		(15 - 0)	15	K.B. to tubing head

NOTE: Tubing run with Baker sliding sleeves closed.

3-16 Removed B.O.P. Installed Shaffer Christmas Tree. Tested tree with 5000 psig OK.
Ran Baker retrievable bridge plug on Otis wireline and set at 8605'.
Pump down 2-7/8" tubing to set packers and obtained circulation. Determined Baker sleeve had opened. Ran tool on Otis wireline and closed sleeve.
Pressured 2-7/8" tubing to 2000# and set Baker packer at 8605' and Otis packer at 7450'.
RIG RELEASED AT 1:00 PM, 3-16-73.

DEC'L CORRECTION 16°

SURVEY RECORD

Ground level 2927
+ K.B. 15
Elevation 2942

JOB NO _____ IW 77 DATE 3/4/73

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES				REMARKS
						NORTH	SOUTH	EAST	WEST	
1	166	.15	166		S 34 E		61	41		
2	283	.15	283		N 36 E		20	71		
3	471	1.15	470 96		N 77 E	72		4 71		
4	663	1.15	662 92		N 56 E	3 07		8 19		
5	900	.45	899 90		N 89 E	3 12		11 29		
6	1080	.15	1079 90		WEST	3 12		10 50		
7	1356	.45	1355 87		N 20 W	6 51		9 26		
8	1670	1.45	1669 71		N 17 W	15 67		6 46		
9	1732	1.15	1731 70		N 17 W	16 96		6 07		
10	2033	2.45	2032 34		N 58 W	24 62			6 18	
11	2336	2. 0	2335 16		N 76 W	27 18			16 43	
12	2584	1.45	2583 04		S 88 W	26 92			24 00	
13	2894	1.30	2892 95		S 80 W	25 51			32 00	
14	3032	2.15	3030 84		S 78 W	24 38			37 30	
15	3326	1.15	3324 78		S 79 W	23 16			43 59	
16	3452	1. 0	3450 76		S 61 W	22 09			45 51	
17	3760	1. 0	3758 70		N 23 W	27 05			47 61	
18	4057	.15	4055 70		N 10 W	28 33			47 83	
19	4353	.30	4351 70		S 79 W	27 84			50 36	
20	4700	.15	4698 70		S 79 W	27 55			51 86	
21	4930	1. 0	4928 66		S 38 E	24 38			49 39	
22	5128	1. 0	5126 63		S 44 E	21 89			46 99	
23	5270	2. 0	5268 54		S 28 E	17 51			44 66	
24	5390	4.30	5388 17		S 28 E	9 19			40 23	
25	5485	6.45	5482 51		S 27 E		76		35 16	
26	5580	9. 0	5576 34		S 25 E		14 23		28 88	
27	5623	10.45	5618 59		S 27 E		21 38		25 24	
28	5654	11. 0	5649 02		S 31 E		26 46		22 19	
29	5715	10.45	5708 95		S 47 E		34 22		13 87	
30	5777	11.15	5769 76		S 62 E		39 90		3 18	
31	5920	13.30	5908 81		S 78 E		46 84	29 47		
32	6014	15. 0	5999 61		S 79 E		51 48	53 35		

SURVEY RECORD

JOB NO _____ IW 77 DATE 3/4/73

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
33	6109	16.45	6090 58		S 80 E		56 24	80 31		
34	6232	19. 0	6206 88		S 79 E		63 88	119 63		
35	6420	22.15	6380 88		S 78 E		78 68	189 26		
36	6510	24. 0	6463 10		S 77 E		86 92	224 93		
37	6586	22.15	6533 44		S 85 E		89 43	253 60		
38	6617	20.30	6562 48		EAST		89 43	264 46		
39	6735	21.45	6672 08		N 85 E		85 62	308 03		
40	6828	25.45	6755 84		N 86 E		82 80	348 33		
41	6892	28. 0	6812 35		N 86 E		80 71	378 31		
42	7017	31.30	6918 93		N 87 E		77 29	443 53		
43	7170	31.45	7049 04		N 85 E		70 28	523 74		
44	7260	31.30	7125 78		N 85 E		66 18	570 58		
45	7357	30. 0	7209 78		N 89 E		65 33	619 07		
46	7430	28. 0	7274 24		N 84 E		61 75	653 15		
47	7461	26. 0	7302 10		N 82 E		59 86	666 60		
48	7570	23.15	7402 25		N 78 E		50 92	708 68		
49	7612	21.45	7441 26		N 76 E		47 15	723 77		
50	7650	21. 0	7476 74		N 76 E		43 86	736 98		
51	7727	20.30	7548 86		N 66 E		32 89	761 62		
52	7863	20.30	7676 25		N 61 E		9 79	803 28		
53	8020	20.15	7823 55		N 65 E	13 17		852 53		
54	8184	20.30	7977 17		N 66 E	36 52		904 99		
55	8386	19.45	8167 29		N 63 E	67 51		965 81		
56	8569	19. 0	8340 32		N 61 E	96 39		1017 92		
57	8753	18.15	8515 06		N 59 E	126 07		1067 32		
58	9030	17.45	8778 87		N 61 E	167 01		1141 18		
			HORIZONTAL DEPARTURE 1153.36 FT.			N81.40 E				

FORM 109

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Report on Operations

No. T 273-143

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

Santa Paula Calif.
March 6, 1973

DEAR SIR:

Operations at well No. IW 77 (037-21323), Sec. 28, T. 3N, R. 16W, S.B. B & M.
Aliso Canyon Field, in Los Angeles County, were witnessed on March 2, 1973. Mr. P R Wygle, engineer, representative of the supervisor was present from 0300 to 0600. There were also present C. Coats, contract drilling foreman.

Present condition of well: 13 3/8" cem. 900'; 8 5/8" cem. 7640', c.p. 2995'; 6 5/8" cem. 7523-9025', perf. 8515' Co. 680, perf. 8435' WSO. T.D. 9030'.

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

Mr. _____ reported:

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

a
cc: Operator

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

By _____ Deputy

50471-705 1-73-20M © OSP

FORM 109

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Report on Operations

No. T 273-142

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

Santa Paula Calif.
March 6, 1973

DEAR SIR:

Operations at well No. (037-21323) IW 77, Sec. 28, T. 3N, R. 16W, S.B. B & M. Aliso Canyon Field, in Los Angeles County, were witnessed on March 1, 1973. Mr. P R Wygle, engineer, representative of the supervisor was present from 1900 to 2000. There were also present E Olson, engineer

Present condition of well: 13 3/8" cem 900'; 8 5/8" cem 7640', c.p. 2995; 6 5/8" cem. 7523-9025', perf. 8515' Co WSO, perf. 8435' WSO. T.D. 9030'

The operations were performed for the purpose of testing the 6 5/8" shut-off by means of a formation tester.

Mr. reported:

THE 6 5/8" SHUT-OFF AT 8435' IS APPROVED.

a
cc: Operator

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

By L O Pitzius Deputy

FORM 111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS No. P 273-88

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

Santa Paula Calif.
March 1, 1973

DEAR SIR:

Your supplementary proposal to drill (037-21323) Well No. IW 77, Section 28, T. 3N, R. 16W, S.B. B. & M., Aliso Canyon Field, Los Angeles County, dated 2/20/73, received 2/22/73, has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. In all other respects, the well shall be drilled in accordance with the provisions set forth in our report No. P172-1222, dated November 2, 1972.
2. THIS DIVISION SHALL BE NOTIFIED TO WITNESS:
   a. A test, after cleaning out below the top of the liner to demonstrate that no fluid has access to the well from between the 8 5/8" and the 6 5/8" casings.
   b. A test of the 6 5/8" water shut-off above the Sesnon zone.

Blanket Bond
DER:r

cc: Operator

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

By [signature], Deputy

57625-705 11-71 35M ⓢ OSP

FORM 123

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

SUPPLEMENTARY NOTICE

Northridge, Calif. February 20, 1973

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GA
RECEIVED
FEB 22 1973
SANTA PAULA, CALIFORNIA

Santa Paula, Calif.

A notice to you dated October 28, 1972, stating the intention to

drill (Drill, deepen, redrill, abandon) well No. IW 77

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

Los Angeles County, should be amended because of changed conditions.

The present condition of the well is as follows:

Total depth Not reached. Present redrilled depth 7650'.

Complete casing record including plugs.

13-3/8" 48# cemented at 898'.
Drilled 11" hole to 7984', left fish #1 in hole 7856'-7984'.
Cement bridge 7811'-7841'.
Redrilled 11" hole to 7956'. Lost circulation, left fish #2 in hole 7818'-7956'.

As fish #2 could not be jarred free & hole was taking fluid & acting loggy,

We now propose: (Confirming telephone discussion Ritzius - Olson)

(1) To cement 8-5/8" 36# K-55 & N-80 at 7650.

(2) Drill to T.D. near 9100'.

(3) Cement 6-5/8" liner and obtain water Shut-Off's above S4 & 5, Sesnon Zone markers and on 6-5/8" x 8-5/8" lap.

(4) Perforate as indicated for Gas Storage Well.

MAP | FORMS 114 | 121

BB ✓ ✓

720 West 8th St. Los Angeles, Cal.
(Address)

(213) 360-2389
(Telephone No.)

Pacific Lighting Service Company
(Name of Operator)

By W. E. Magruder Jr.

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

59809-705 1-72 3M ② OSP

FORM 109

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Report on Operations

No. T 273-92

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

Santa Paula Calif.
February 6, 1973

DEAR SIR:

Operations at well No. (037-21323) IW 77 Sec. 28, T. 3N, R. 16W, S.B. B & M.
Aliso Canyon Field, in Los Angeles County, were witnessed
on Jan. 18, 1973. Mr. P R Wygle, engineer, representative of the supervisor was
present from 1900 to 2200. There were also present

Present condition of well: 13 3/8" cem. 900'. T.D. 900'.

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.

2/28/73
Olson/
Tried WSO (seq. test) on
To: 5-4, Blew gas
1. Squeeze
2. Came up to top Season
make WSO - DOG witness
3. Test 4 5/8 lap - ✓

a
cc: Operator

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

By [signature] Deputy

59471-705 1-72 20M (2) OSP

FORM 111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS No. P 172-1222

Mr. P. S. Magruder, Jr., Agent
PACIFIC LIGHTING SERVICE CO.
P.O. Box 54790, Terminal Annex
Los Angeles, CA 90054

Inglewood, Calif.
November 2, 1972

DEAR SIR:

Your proposal to drill Well No. IW 77 (037-21323),
Section 28, T. 3N, R. 16W, S.B. B. & M., Aliso Canyon Field, Los Angeles County,
dated 10/28/72, received 10/30/72, has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED:

1. A COPY OF THIS REPORT SHALL BE POSTED AT THE WELL SITE PRIOR TO COMMENCING OPERATIONS.

2. Sufficient cement shall be pumped back of the 13-3/8" casing to reach to the surface.

3. Drilling fluid of a quality and in sufficient quantity to control all subsurface conditions in order to prevent blowouts shall be used.

4. The surface casing shall be cemented in competent beds and blowout prevention equipment conforming to this Division's Class III requirements, shall be installed and maintained in operating condition at all times.

5. Sufficient cement shall be used to fill all the space back of the 8-5/8" casing to above the top of any oil, gas or salt water-bearing formations, or the casing shall be cemented also through ports at a point below the base of the fresh water-bearing formations with sufficient cement to fill above such base.

6. THIS DIVISION SHALL BE NOTIFIED TO WITNESS:

   a. A test of the effectiveness of the blowout prevention equipment prior to drilling out cement in the shoe of the 13-3/8" casing.
   b. A test of the effectiveness of the 8-5/8" shut-off above the Sesnon zone.

ADS:dr

cc Company

Blanket Bond

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

By W. E. Ingram, Deputy

87628-705 11-71 35M ③ OSP

FORM 105

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

OCT 30 1972 Gas Storage
INGLEWOOD, CALIFORNIA

037-21323

Los Angeles Calif. 10-28 19 72

DIVISION OF OIL AND GAS

In compliance with Section 3203, Division III, Article 4, Public Resources Code, notice is hereby given that it is our intention to commence drilling well No. IW 77 (037-21323), Sec. 28, T. 3N, R. 16W, S.B. B. & M., Aliso Canyon Field, Los Angeles County.

Legal description of mineral-right lease, consisting of ____ acres, is as follows: ____ (Attach map or plat to scale)

plat has been 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: 852 feet South (Direction) ~~along section line~~ property and 5380 feet West (Direction)

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

Elevation of ground above sea level 2923 feet S.L. datum.

All depth measurements taken from top of K.B. (Derrick Floor, Rotary Table or Kelly Bushing) which is 12 feet above ground.

PROPOSED CASING PROGRAM

SIZE OF CASING INCHES A.P.I.	WEIGHT	GRADE AND TYPE	TOP	BOTTOM	CEMENTING DEPTHS
13 3/8"	48#	Smls. H-40	0'	700'	700'
8 5/8"	36#	K&M	0'	7200'	7200'
5 5/8"	27.65#	J	7150'	7400'	7400'

ded zone(s) pletion: Sesnon (Name) 7200'-7400' (Depth, top and bottom) Estimated total depth 7400

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
7M6	7M6	~~ARG~~ ARG	B	~~ARG~~	~~ARG~~

erstood that if changes in this plan become necessary we are to notify you immediately.

Pacific Lighting Service
(Name of Operator)

By P.S. Magruder, Jr.

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

△ os

· E. 4th St.
· Calif. 90017
360-2389