DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CHECK LIST-RECORDS RECEIVED AND WELL STATUS

Operator: **Southern California Gas Company** WELL DESIGNATION **"Porter" 32F**

API No. **03721354** SE **27** T: **3N** R.: **16W** , **SB** B. and M.

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

Type of Notice: **Rework** **Date** **8/5/2016** **Report Number:** **P216-0187**

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				

NEW STATUS

DATE: _____

NOTICE OF RECORDS DUE

DATE: _____

DATE: _____

DATE: _____

DATE: _____

WELL STATUS INQUIRY

DATE: _____

DATE: _____

Well Stat

Change Required: NO

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

No work completed as of 8-22-16

RECORDS SCANNED: _____
(Date)

RECORDS APPROVED: _____
(Date and Engineer)

Modflied OGD2

AOR Datbase _____

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

No. P 216-0187

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

PERMIT TO CONDUCT WELL OPERATIONS

Gas Storage
"Sesnon-Frew" - Modelo (Miocene-Eocene) Formation

Ventura, California
August 9, 2016

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

Your proposal to **Rework** well **"Porter" 32F**, A.P.I. No. **037-21354**, Section **27**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, **Any** area, **Sesnon-Frew** pool, **Los Angeles** County, dated **8/5/2016**, received **8/5/2016** has been examined in conjunction with records filed in this office. (Lat: **34.312379** Long: **-118.550367** 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 on the **8 5/8"** casing and tubing plug.

Continued on Next Page

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

Engineer David Ortiz
Office (805) 654-4761

DO/do

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By David Ortiz for
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.

OG111 (revised 6/2011)

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**

cc:

ATTACHMENT 1
TO DOGGR ORDER 1109

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

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

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

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

REQUIRED TESTS FOR EACH WELL IN THE FACILITY

Step 1: The Operator shall perform an initial casing assessment on the well consisting of temperature and noise logs.

a. Temperature Log:
   A temperature survey shall be run from the surface to the packer to measure the temperature within the wellbore. A temperature survey that demonstrates no unexplained anomalous temperature changes in the well is one indication of casing integrity.

b. Noise Log:
   An acoustic sensor survey capable of detecting the sound of fluid flow will be conducted the length of the well above the packer to the surface. The survey will include stops at least every 250 feet and at the midpoint of any anomaly detected by the temperature survey. The absence of anomalous sound above the packer is an indication of well integrity

Step 2: The results of the Temperature Logs and Noise Logs will be independently reviewed by Division engineers. Any unexplained abnormal findings in this set of tests shall be addressed by the Operator in one of the following ways:

a. Conduct further investigation and demonstrate to the Division's satisfaction that the abnormal finding is not an indicator of a lack mechanical integrity;
b. Remediate the well to the Division's satisfaction; or
c. With Division review and approval, remove the well from operation and isolate the well from the underground gas storage reservoir in accordance with Steps 4b through 7b below.

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

Step 3: After these tests are completed on the well, and all required action has been completed, the operator shall either:

a. Conduct the additional tests and evaluations on the well, outlined in Steps 4a through 7a below, in order to gain approval for injecting gas through that well; or
b. Remove the well from operation and isolate the well from the underground gas storage reservoir in accordance with Steps 4b through 7b below.

REQUIRED TESTS IF A WELL IS INTENDED TO RESUME OPERATIONS

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

Step 4a: The Operator shall conduct a **Casing Inspection log.**
The Operator shall conduct a Casing Inspection log of the well that measures the thickness of the production casing, from the surface to the bottom of the gas storage reservoir cap rock. If the inspection reveals a reduction in wall thickness, the current minimum strength of the casing will be calculated. If the current minimum strength of the casing has diminished to the point that it cannot withstand authorized operating pressures for the well plus a built-in additional safety factor of pressure, the well has failed this test. *A passing test for a casing inspection log would show no thinning of the casing that diminishes the casing's ability to contain at least 115% of the well's maximum allowable operating pressure as authorized in the current Project Approval Letter.*

Step 5a: The Operator shall conduct a **Cement Bond Log** for the well.
The Operator shall conduct a Cement Bond Log (CBL) that measures the bonding between cement and the production casing of the well, and also the bonding between the annular cement and the formation. Cement should be solidly bonded to both the well's production casing and the geologic formation to ensure a seal that prevents fluids from migrating up or down the outside of the well. *A passing test for a cement bond log shows definitive bond, as demonstrated by sonic waveform,*

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

Step 6a: The Operator shall conduct a **Multi-Arm Caliper Inspection** of the well.
The operator shall conduct an inspection that measures any internal degradation or significant changes to the well's geometry from the surface to the top of the gas storage reservoir, using a minimum 32-arm caliper tool. If the inspection reveals a thinning or deformity of the casing, the current strength of the casing will be calculated. If the current strength of the casing has diminished, such that it cannot withstand authorized operating pressures plus a built-in safety factor of additional pressure, the well fails this inspection. *A passing test for a Multi-Arm Caliper Inspection would show no deformation or thinning of the casing that diminishes the casing from being able to properly contain at least 115% of each well's maximum operating pressure.*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

REQUIREMENTS FOR WELLS RESUMING OPERATIONS IN ALISO CANYON

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

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

FOR DIVISION USE ONLY			
Bond	Forms		
	~~OGD114~~	OGD121	
	CAL WIMS	115	

P216-0187

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 ☐ well (Check one) Porter 32F, API No. 037-21354,

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

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

See attached wellbore schematic and completed work summary.

The total depth is: 7550 feet. The effective depth is: 7361 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.)

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

5b - Set plug set in No-Go nipple at 6969' and pull valve from GLM at 6889'.

6b - Circulate well with 8.5 ppg KCL brine down tbg. through GLM at 6889' and back to surface to completely fill well.

7b - 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: well has a stage collar at 3021'.

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	Zip Code: 91313-2300
Name of Person Filing Notice: A.J. Alshammasi	Telephone Number: (818) 700-3887	Signature:	Date: 8/5/16
Individual to contact for technical questions: Mike Giuliani	Telephone Number: (805) 290-2074	E-Mail Address: mike.giuiliani@interactprojects.com	

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

Rec'd 08-05-16 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/

Well

Porter 32F

API #: 04-037-21354-00
Sec 27, T3N, R16W

Operator: So. California Gas Co.

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

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

Spud Date: 7/15/1973
Completion Date: 8/24/1973

Junk: Unknown junk below 7365'

13-3/8" TOC Surface
8-5/8" ETOC Surface (*Calc'd)

17-1/2" Hole

Surface Casing
13-3/8", 48#, H-40
0' - 799'

CMT'D w/ 500 CF + 150 SKS,
Good CMT Returns to Surface

799'

Tubing
2-7/8", 6.5#, J-55
0' - 6990'

8-5/8" ETOC (1st Stage) 3021'

3021' Stage Collar

11" Hole
(to 7192')

6773 MP

6889' MMG GLM

6929' Camco PC-4 2-1/2" Safety Valve

6969' Camco No-Go Nipple

6980' Baker Model "D" PCKR
6990' Tail

Production Casing
8-5/8"
0' - 5678' 36#, K-55
5678' - 7190' 36#, N-80
CMT'D w/ 1100 CF + 100 SKS
(1st Stage)
+ 1000 CF thru Stage Collar @ 3021'
(2nd Stage), No CMT Returns
to Surface* (2nd Stage)

7009'

7180' Four (4) 1/2" Holes (65 SKS CMT SQZ'D Away, 8/10/1973)
7184' Four (4) 1/2" Holes (8/11/1973) WSO

7190'

14" Hole (7192' - 7430')

Liner
6-5/8", 27.65#, K-55
7009' - 7402'

Liner Perfs:
7025' - 7145'
2" x 30M, 12R, 6"C SMC Slots
7145' - 7317' & 7322' - 7402'
2" x 30M, 28R, 6"C SMC Slots

Gravel Packed w/ 165 CF 6-9

Fill & Junk

7361' C/O Fill (7/6/1976)
7365' Unable to work past fill & junk
(7/2/1976)

7402'

11" Hole (7430' - 7443')

CMT Plug @ 7430-7550'
(60 SKS, C/O f/ 7398')
(7443' - 7550') 7-5/8" Hole

TD 7550'
TVD (7410')
Directionally Drilled: Yes (TD is 361' E, 1013' N of Surf)

Top of Zone Markers	md (tvd)
A1	3911' (3896')
UP	5059' (5015')
LP	5467' (5413')
UDA1	5804' (5739')
LDA	6433' (6338')
MP	6773' (6664')
S1	7096' (6973')
S4	7193' (7066')
S8	7271' (7141')
FREW	7383' (7249')
K1	7430' (7294')

Prepared by: MAM (5/27/2016)

InterAct

Rec'd 08-05-16 DOGGR Ventura.

Completed Work Summary - Porter 32F		
Step	Work Completed	Date
4b	Good bond from 4100'-7180' across MP, packer and S-1	8/9/1973
5b	Packer set at 6980'	7/9/1976

Casing Pressure Test Safety Check (500 psi)

Well		Casing Size/Grade/Weight	Depth MD	Burst PSI	85% of Burst PSI	Pressure at Depth w/500 psi Surface Pressure	Press < 85% of Burst
Porter 32F	6980' / 6857'	8-5/8", 36#, K-55	5678	4460	3791	3010	Yes
		8-5/8", 36#, N-80	6980	6490	5517	3585	Yes

Revised and submitted by SCG. This table supports the 1000 psi Casing Pressure Test safety check table. originally submitted w/ the NOI.

D. ORTIZ

Casing Pressure Test Safety Check (1000 psi)

Well	Packer Depth MD/TVD	Casing Size/Grade/Weight	Depth MD	Burst PSI	85% of Burst PSI	Pressure at Depth w/1000 psi Surface Pressure	Press < 85% of Burst
Porter 32F	6980' / 6857'	8-5/8", 36#, K-55	5678	4460	3791	3510	Yes
		8-5/8", 36#, N-80	6980	6490	5517	4085	Yes

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

REPORT ON PROPOSED CHANGE OF WELL DESIGNATION

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

Ventura, California
February 23, 1990

Your request, dated February 13, 1990, proposing to change the designation of wells in Sec. 27, T. 3N, R. 16W, SB B.&M., Aliso Canyon field Los Angeles County, District No. 2, has been received.

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

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

bb

M.G. MEFFERD, State Oil and Gas Supervisor

By Patrick J. Kinnear
Patrick J. Kinnear, Deputy Supervisor

OGD157

OPERATOR SOUTHERN CALIF GAS
LSE & NO
MAP NO.

INTENTION	1	2	3	4	5
NOTICE DATED	2-13-73				
P-REPORT NUMBER	223-108	296-173			
CHECKED BY/DATE					
MAP LETTER DATED	3-3-73 LOC	N/C			
SYMBOL	G				

	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED
NOTICE	2-27-73		5-29-76							
HISTORY			8-5-76							
SUMMARY										
IES/ELECTRIC LOG										
DIRECTIONAL SURV.	10-1-73									
CORE/SWS DESCRIP.										
DIPMETER RESULTS										
OTHER										
RECORDS COMPLETE										

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:

FORM 103

SUBMIT IN DUPLICATE

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

△ OSP

History of Oil or Gas Well

OPERATOR SOUTHERN CALIFORNIA GAS COMPANY FIELD Aliso Canyon

Well No. I.W. #56, Sec. 27, T. 3N, R. 16W, S. B. B. & M.

Date July 29, 1976 Signed P. S. Magruder Jr.

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

(213) 689-3561
(Telephone Number)

P. S. MAGRUDER, Jr.
Title Agent
(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	
6-18-76	Rigged up Halliburton pump truck to circulate 78# mud to kill well.
6-22-76	Surface mud stored on location.
6-28-76	Moving on location, rigging up.
6-29-76	Finished rigging up. Installed Class III 5000 psi B.O.P.E. Found small leak in 10" x 8" spool. Replaced spool. Tested blind rams and pipe rams to 4000 psi with water. Tested Hydril bag with 3000 psi and rubber element leaked. Replaced rubber element.
6-30-76	Changed Hydril bag and tested Hydril to 3000 psi for 20 minutes with Halliburton equipment - O.K. Rigged up NOWSCO equipment and tested B.O.P.E. and Hydril to 3000 psi for 20 minutes - O.K. Tested blind rams to 4000 psi for 20 minutes - O.K. Pulled packer loose. Rigged up to circulate hole. Circulated bottom hole gas to surface. Pulled out, laid down Brown packer. Made up Baker fullbore, running in hole.
7-1-76	Rigged up Halliburton equipment to test casing. Tested at 7000' with 2000 psi for 20 minutes - O.K., pulled to 3500'; " " 3500' " 2500 psi " " " - O.K., " " 2500'; " " 2500' " 3000 psi " " " - O.K., " " 1500'; " " 1500' " 3500 psi " " " - O.K., " " 750'; " " 750' " 4000 psi " " " - O.K., " " Rigged down Halliburton. Pulled out and laid down fullbore. Installed X-over spool to Guiberson stripped. Picked up 5 5/8" bit and scraper. Ran in hole to 7350', hit fill at 7350' - Circulated down to 7365'. Pulled 10 stands.
7-2-76	Ran in to 7365'. Made up swivel on tubing. Attempted to drill out fill and junk. Could not make any hole. Circulated bottoms up. Measured out of hole and pipe tallied O.K. Scraper pulled 60-80,000# through liner. Made up Burns wash tool. Ran in hole, washed liner from 7361' to 7025'. Made four passes with 600 psi - pressure remained steady. Circulated bottoms up, pulled to liner.

7-3-76

Ran in hole to fill. Rigged up Halliburton to wash liner. Washed liner from 7354' to 7005' - made two runs - circulated bottoms up from top of liner. Could not get back in liner with wash tool. Pulled out, rubbers torn up on wash tool. Ran back in with 5 5/8" bit and scraper to top of liner. Shut down for Holiday.

7-4-76 & 7-5-76

Holiday - Idle.

7-6-76

Ran in hole to 7347' with bit and scraper. Cleaned out fill to 7361'. Circulated hole clean. Pulled out and laid down bit and scraper. Made up and ran in with Burns washing tool. Washed liner from 7361' to 7000'. Made two passes over perforations. Circulated hole clean and pulled 96 stands.

7-7-76

Pulled out and ran back in with Burns gravel-packing tool. Attempted to and was unable to open port collar. Pulled out and serviced tools. Installed Kelly stop. Ran back in to top of liner with gravel-packing tool and circulated bottoms up.

7-8-76

Continued running in hole with Burns gravel-packing tool - Unable to open port collar. Pulled out of hole. Ran in with 5 5/8" bit and casing scraper on bottom at 7361'. Circulated 1-1/2 hours - Laid down 17 singles.

NOTE: Decided to forego additional attempts to displace additional gravel since well did not indicate sand by tests.

7-9-76

Pulled out bit and casing scraper. Rigged up McCullough lubricator. Ran Baker junk catcher and feeler to 7006'. Ran Baker Model "D" production packer on McCullough wire line and set at 6980'. Ten feet below collar - rigged up hydrotest - made up Baker seals and locator sub on Camco annular flow safety valve and M.M.G. mandrel on 2 7/8" 6.5# K-55 tubing. Changed collars and hydrotested to 5000 psi - 55 1/2" stands in.

7-10-76

Continued testing tubing in hole, spaced out doughnut. Rigged out Hydrotest. Pulled 20,000# above weight on packer. Landed tubing with 8,000# on packer. Removed B.O.P.E. Installed Christmas tree. Tested to 5000 psi. Tore out working platform and equipment.

7-11-76

Idle.

7-12-76

Changed over from 80# calcium chloride water to lease salt water. Rigged up Camco. Set blanking plug in nipple at 6969'. Rigged up Halliburton - tested packer to 2500 psi - held for 20 minutes - O.K. Tore out equipment. Released rig at 7:00 a.m. (7-13-76)

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Report on Operations

No. T 276-193

Mr. D. B. Magruder, Jr., Agent
Southern California Gas Co.
P.O. Box 54700 Terminal Annex
Los Angeles, Calif. 90054

Santa Paula, Calif.
July 23, 1976

DEAR SIR:

Operations at well No. IW 56, API No. 037-21354, Sec. 27, T. 3N, R. 16W, S.B., B & M. Aliso Canyon Field, in Los Angeles County, were witnessed on 6/30/76. Mr. R.R. Ayala, representative of the supervisor was present from 0700 to 1000. There were also present C.B. Todd, contract foreman

Present condition of well: No additions to casing record since proposal dated 5/24/76.

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

DECISION:

THE BLOWOUT PREVENTION EQUIPMENT AND INSTALLATION ARE APPROVED.

h

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

By [signature] Deputy

OG109 (2-75-OSP-20M)

30986-705 2-75 20M ① ◊ OSP

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS No. P 276-173

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

Santa Paula, Calif.
May 28, 1976

DEAR SIR:

Your proposal to rework gas storage Well No. IW 56 (037-21354), Section 27, T. 3N, R. 16W, S.B.B. & M., Aliso Canyon Field, Los Angeles County, dated ---, received 5/24/76, has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

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

25476-705 7-74 50M ⓓD OSP
OG 111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

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
	✓	✓

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. #56, API No. _____,

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

The present condition of the well is as follows:

1. Total depth. 7550' - plugged with cement 7550'-7430'

2. Complete casing record, including plugs and perforations:

13 3/8" cemented 799'
8 5/8" cemented 7190', WSO 7184', squeezed 7180'
393' 6 5/8" landed 7402', plugged with cement 7550'-7430'
(liner pulled up hole by error)
slotted 7402'-7145', 28 rows, 2" X 30-mesh
slotted 7145'-7025', 12 rows, 2" X 30-mesh
blank 7025'-7015', Burns port collar and lead seal liner hanger 7015'-7009'
Port collar 7312', gravel packed 165 cu.ft. 6-9 gravel

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

4. Present zone pressure 2600 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 and mud pump. Kill well, install B.O.P.E. and pressure test.
2. Pull tubing and packer. Pressure test 8 5/8" casing. Perform any indicated remedial work.
3. Wash perforations and regravel pack with 6-9 gravel.
4. Set packer, run 2 7/8" tubing with safety valve.
5. Return well to gas storage.

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

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

SOUTHERN CALIFORNIA GAS COMPANY
(Name of Operator)
By Guy C. Abrahamson for P.S. Magruder
(Name) P.S. Magruder, Jr. (Date)
Type of Organization Corporation
(Corporation, Partnership, Individual, etc.)

OG107 (12-73-GSR1-15M)

NAME CHANGE: FROM: PACIFIC LIGHTING SERVICE CO.

TO: SOUTHERN CALIFORNIA GAS COMPANY 4/1/75

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 56

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

Location From Station 84, 1802.69' South and 1229.16' West
(Give location from property or section corner, or street center lines)

Elevation of ground above sea level 2075 feet USGS.

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

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

Date October 24, 1973

Signed P. S. Magruder, Jr.

E. A. Olson (Engineer or Geologist) B. F. Jones (Superintendent) Title Agent (President, Secretary or Agent)

Commenced drilling July 15, 1973

Completed drilling August 12, 1973

Total depth 7550' Plugged depth 7550-7430

Junk

GEOLOGICAL MARKERS	DEPTH
Top of Sesnon Zone S-4	7194'
S-8	7270'
H-Z	7350'
Top of Frew Unconf.	7396'

Geologic age at total depth: Eocene

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

Name of producing zone Sesnon & Frew

	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 perforations
13-3/8"	799	sfc.	48#	N	S	H	17-1/2"	400	
8-5/8"	7190	sfc.	36#	N	S	K & N	11"	650 500	shoe 3021
6-5/8"	7402	7009	28#	N	S	K	7-5/8"	landed	liner

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

8-5/8" - four 1/2" jet holes at 7180', squeezed with cement; 4 HPF @ 7184' WSO
6-5/8" - perforated gravel packed liner 7402-7009

Was the well directionally drilled? yes Electrical Log Depths 7550' (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 Co. FIELD Aliso Canyon

Well No. IW-56, Sec. 27, T. 3N, R. 16W, S.B. B. & M.

Date October 24, 1973 Signed P. S. Magruder Jr.
P. S. Magruder, Jr.

P. O. Box 54790, Terminal Annex
Los Angeles, Ca. 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

7-15 Peter Bawden Drilling Company, Inc., contractor, spudded 17-1/2" hole at 5:30 PM and drilled to 109'. All measurements taken from kelly bushing which was 17' above the ground. Bawden Rig #10.

7-16 Drilled 17-1/2" hole to 496'.

7-17 Drilled 17-1/2" hole to 798'. While waiting to replace 13-3/8" 8rd. casing at site with 13-3/8" buttress thread, drilled 11" hole to 833'. Conditioned hole and commenced running 13-3/8" casing.

7-18 TO CEMENT 13-3/8" SURFACE CASING: Ran 21 joints or 814.30' of 13-3/8", 48#, H-40, Buttress thread, R-3 new seamless blank casing and cemented same at 799' with 500 cu. ft. of 94#/cu. ft. slurry consisting of 250 sacks of Class "G" cement, 250 cu. ft. of Pozmix, 2% gel, followed by 150 sacks of Class "G" cement mixed with 2% calcium chloride mixed to 118#/cu. ft. slurry. Circulated 30 minutes prior to cementing. Preceded cement with 50 cu. ft. of water and displaced with 670 cu. ft. of mud. Did not bump plug. Cement in place at 5:25 AM under 200 psi final pressure. Full circulation throughout job. Cement to surface. Sixty minutes mixing and displacing cement to surface. Used Dowell bulk cement and power.

CASING DETAIL:

All 21 joints or 814.30' 13-3/8" fitted on bottom with Baker flexiflow float shoe and with one TIW centraizer at 789'.

Cut and recovered 13-3/8" casing. Welded on Shaffer 13", 5000# casing head and tested Ok with 1500 psi. Installed hydraulic GK Hydrill and double Shaffer B.O.P.

7-19 B.O.P. tested with 1000 psi. Witnessed and approved by Engineer with Division of Oil & Gas. Drilled 11" hole to 1268'.
Mud: 72#, 32 sec., 24 cc.

1973

7-20 Drilled 11" hole to 1707'. Tight hole at 1600 on connection.
Mud: 73#, 50 sec., 13 cc., 10% solids.

7-21 Drilled 11" hole to 2231'.
Mud: 70#, 40 sec., 12.8 cc., 10% solids.

7-22 Drilled 11" hole to 2825'.
Mud: 70#, 50 sec., 14 cc., 10% solids.

7-23 Drilled 11" hole to 2946'. Down 17-1/4 hours for generator repairs.
Mud: 69#, 45 sec., 12 cc., 10% solids.

7-24 Dyna-Dril #1 & 1-A, 11" hole 2946'-3206'.
Mud: 68#, 40 sec., 12 cc., 7% solids.

7-25 Dyna-Dril #1-A, 11" hole to 3247'. Ream 3100' to 3247' and directionally drilled 11" hole to 3614'.
Mud: 68-1/2#, 35 sec., 10 cc., 7% solids.

7-26 Directionally drilled 11" hole to 4120'. Down 1-1/2 hours light plant repair. Mud: 70#, 35 sec., 6.6 cc., 7% solids.

7-27 Directionally drilled 11" hole to 4597'.
Mud: 72#, 36 sec., 6.4 cc., 8% solids.

7-28 Directionally drilled 11" hole to 5301'.
Mud: 72#, 38 sec., 7.0 cc., 8% solids.

7-29 Directionally drilled 11" hole to 5705'.
Mud: 73#, 36 sec., 7.2 cc., 8% solids.

7-30 Directionally drilled 11" hole to 5834'. Dyna-Dril #2, 11" hole with Scientific Eye Tool. Lost Eye tool in hole. Pull pipe and recovered same. Reran Dyna-Dril #2.
Mud: 71#, 33 sec., 8 cc., 8% solids.

7-31 Dyna-Dril #2 with Eye tool, 11" hole to 5941'. Reamed 5834' to 5941'.
Mud: 70#, 34 sec., 10 cc., 7% solids.

8-1 Directionally drilled 11" hole to 6441'.
Mud: 72#, 37 sec., 6.2 cc., 8% solids.

8-2 Directionally drilled 11" hole to 6715'. Down 1-1/2 hours pump repair. Mud: 74#, 43 sec., 7.8 cc., 8% solids.

8-3 Directionally drilled 11" hole to 6972'.
Mud: 74#, 42 sec., 7.4 cc., 9% solids.

8-4 Directionally drilled 11" hole to 7368'. Reamed 7274' to 7337'. Measured in hole - 11' correction.
Mud: 71-1/2#, 36 sec., 7.0 cc., 8% solids.

1973

8-5 Directionally drilled 11" hole to 7441'. Reamed 7365'-7405'.
Mud: 72#, 34 sec., 7.6 cc., 8% solids.

8-6 Directionally drilled 11" hole to 7443'. Ran Dresser-Atlas Induction Electrolog with caliper, Acoustilog and Neutron-Densilog.
Mud: 70#, 34 sec., 7.4 cc., 8% solids.

8-7 TO CEMENT 8-5/8" CASING: Ran 172 joints or 7192.54' of 8-5/8", 36#, K-55 and N-80, Buttress thread, R-3, new seamless blank casing and cemented same at 7190' with 1100 cu. ft. of 94#/cu. ft. slurry consisting of 550 sacks Class "G" cement, 550 cu. ft. of Pozmix, 2% gel, followed by 100 sacks Class "G" with 2% calcium chloride mixed to 118#/cu. ft. slurry. Moved casing 8' and circulated 10 minutes prior to cementing. Preceded cement with 100 cu. ft. water and 500 gallons CW7. Displaced with 100 cu. ft. water and 2272 cu. ft. of mud to bump plug to place at 11:20 AM under 3500 psi final pressure. Held 3500 psi for 15 minutes. Bled back 26 cu. ft. for total displacement of 2346 cu. ft. Full circulation throughout job. One hour 30 minutes mixing and displacing cement. Dropped plug and opened stage collar at 3021' under 1000 psi. Preceded cement with 50 cu.ft. water. Pumped in 1000 cu. ft. of 94#/cu. ft. slurry consisting of 500 sacks Class "G" cement, 500 cu. ft. Pozmix, and displaced with 50 cu. ft. water and 962 cu. ft. of mud to bump plug and close collar under 2000 psi at 2:05 PM. One hour & 5 minutes mixing and displacing cement. Good circulation throughout job. No cement returns to surface. Used Dowell bulk cement and power.

CASING DETAIL:

Bottom 36 joints or 1512.20'	(7190'-5678') 8-5/8", 36#, N-80, Buttress with Davis-Lynch fill-up float shoe and at 7145' with Davis-Lynch fill-up float collar. TIW turbo centralizers at 7180', 7155' & 7135'. Metal petal cement basket at 7060'.
Next 136 joints or 5680.34'	(5678'-surface) 8-5/8", 36#, K-55, Buttress fitted with stage collar at 3002'.

Total 172 joints or 7192.54'.

Land 8-5/8" casing with slips. Cut and recovered 8-5/8" casing and installed pack-off.

8-8 Reinstalled B.O.P. and drilled out stage collar. Tested collar and blind rams with 1500 psi for 15 minutes. Locate cement at 7081'.

8-9 Drilled out cement with 7-5/8" bit with casing scraper above to 7183'. Ran Welex cement bond log with collar locator. Ran Welex 4" O.D. carrier and shot four 1/2" holes at 7180'. Closed rams, applied 1500 psi to casing and holes at 7180', took fluid at 1100 psi. Possibility of cracking cement while drilling out to allow pressure to bleed off below 8-5/8" casing shoe. Ran Johnston bridge plug on Welex wireline and set same at wireline measurement of 7186'. Closed rams, applied 1500 psi which bled off to 600 psi in 30 minutes.

1973

8-10 TO SQUEEZE HOLES IN 8-5/8" CASING AT 7180' WITH CEMENT: Ran Johnston retrievable cement tool on 4-1/2", 16.6# drill pipe and set same at 6986'. Holes tool fluid at 22 cu. ft. per minute rate under 1500 psi. Preceded cement with 20 cu. ft. of water. Pumped in 75 sacks Class "G" cement treated with 2% calcium chloride mixed to an average 118#/cu. ft. slurry. Displaced with 10 cu. ft. water and 400 cu. ft. of mud, then closed tool and displaced an additional 210 cu. ft. of mud in stages to squeeze estimated 65 sacks away under 3100 psi final pressure and held same for 3 hours. Held 1500 psi on annulus. Five minutes mixing and 55 minutes displacing cement to place at 4:30 AM. Used Dowell bulk cement and power.

8-11 After standing cemented 20 hours, drilled out medium hard cement 7149'-7176' and located bridge plug at 7186'.
TO TEST WATER SHUT-OFF ON HOLES IN 8-5/8" CASING AT 7184': Ran Johnston combination gun and tester on 4-1/2" drill pipe and shot four 1/2" jet holes at 7184'. Checked bridge plug at 7186'. Set packer at 7112' with tail to 7137'. Opened tool at 9:35 AM for one hour test. Puff blow then dead balance of test. Recovered 10' rise of drilling fluid. Charts showed tool functioned properly. Water shut-off witnessed and approved by Engineer for Division of Oil & Gas. Drilled out bridge plug at 7186', 8-5/8" shoe at 7190' and cleaned out to 7443'. Directionally drilled 7-5/8" to 7501'.
Mud: 70-1/2#, 36 sec., 6.8 cc., 8% solids.

8-12 Directionally drilled 7-5/8" hole to 7550', TOTAL DEPTH. Ran Dresser-Atlas Acoustilog, Neutron-Densilog and Induction Electrolog with hole caliper.
TO PLUG HOLE WITH CEMENT: Ran 4-1/2", 16.6# including 609' of 4-1/2" 42# open end drill pipe to 7550'. Pumped in 60 sacks Class "G" cement, mixed with 2% calcium chloride. Preceded cement with 50 cu. ft. of water and displaced to equalization with 550 cu. ft. of mud and 10 cu. ft. of water. Cement in place at 7:45 PM. Used Dowell power and bulk cement.

8-13 After standing cemented 11 hours, located top of cement at 7398' and drilled same out to 7430', PLUGGED DEPTH. Changed over mud system to Poly Carb R completion fluid.

8-14 Ran Grant rock type hole opener and opened 11" hole to 14" from 7192' to 7235'. Had difficulty with collapsing arms and pulled hole opener. Lost one cone and arm.
Mud: 67#, 37 sec., 6 cc., 2½% solids, 1640 GPG.

8-15 Ran Grant rock type hole opener #2 & #3 and opened 11" hole to 14" from 7235' to 7310'.
Mud: 66#, 38 sec., 6.4 cc., 2% solids, 2740 GPG.

1973

8-16 Grant hole opener #3 opened 11" hole to 14" from 7310' to 7430'. Pulled to shoe and checked fill at 7357'. Ran 7-5/8" bit to 7420' and circulated hole clean. Ran to 7430' and backscuttled hole clean.

8-17 Ran Grant blade type hole opener #4 and reamed hole from 7330' to 7430'. Ran open end drill pipe and backscuttled in stages from 7190' to 7430'.

8-18 thru 8-21 Ran Dresser-Atlas hole caliper. Ran 6-5/8", 27.65#, K-55, Security flush joint perforated liner on 4-1/2" drill pipe and Burns liner setting tools and landed same at 7425'. Set Burns lead seal liner hanger and tested same Ok with 1000 psi. Displaced 110 cu. ft. of 6-9 gravel through lower port collar at 7335'. Backscuttled 10 cu. ft. and closed and tested lower port collar with 1000 psi. Ran Burns tools and lead seal on packing tool failed. Reran tools, opened port collar at 7035' and pumped in 70 cu. ft. of 6-9 gravel. Backscuttled 5 cu. ft. of gravel. Closed and tested upper port collar with 1000 psi. Ran Burns type A circulating washer and washed liner from 7308' to 7278'. Found fill at 7371'. Ran tubing stinger on 4-1/2" drill pipe and backscuttled hole clean to 7402'. Liner inadvertently pulled up hole leaving shoe at 7402' and top of liner hanger at 7009', lower port collar at 7312', upper port collar at 7012'. Attempted to displace additional gravel through upper port collar but pressure build up indicated complete pack-off. Liner gravel packed with total of 165 cu. ft. of 6-9 gravel. Used Burns gravel packing equipment.

LINER DETAIL:

Bottom 6 joints or	256.65'	(7402'-7145.35) perforated 28 rows, 2" x 30 mesh slots, 6" centers, SMC slots, fitted on bottom with bull nosed shoe, with blank section from 7322'-7317' with Burns port collar above at 7312'.
Next 3 joints or	130.25'	(7145.35'-7015.10') perforated 12 rows, 2" x 30 mesh slots, 6" centers, SMC slots, with top 10' blank.
Next	5.90'	(7015.10'-7009.20') Burns lead seal liner hanger with Burns port collar below at 7012'.
Total 9 joints or	392.80'	

8-22 Ran 2-7/8" tubing stinger on 4-1/2" drill pipe and found top of fill at 7392'. Backscuttled hole clean to 7402', EFFECTIVE DEPTH. Picked up 2-7/8" tubing and stand same back in derrick. Layed down drill pipe.

1973

8-23 Finished laying down drill pipe. Ran Johnston retrievable bridge plug on tubing and set same at 40'. Removed B.O.P. Installed Shaffer 10", 5000# tubing head and tested same Ok with 3500 psi for 15 minutes. Reinstalled B.O.P. and retrieved packer.

8-24 Ran 2-7/8", 6.5#, N-80, 8rd. EUE, new seamless tubing and landed same in doughnut with 10,000# on packer set at 6992'.

TUBING DETAIL:

	LENGTH	DEPTH
K. B. to doughnut	21.00	21.00
219 joints of 2-7/8" tubing	6895.03	6916.03
Udell ported nipple	3.84	6919.87
1 joint of 2-7/8" tubing	31.72	6951.59
Udell landing nipple	2.30	6953.89
1 joint of 2-7/8" tubing	31.65	6985.54
Brown Oil Tool Husky M-1 packer with crossover on top and bell collar on bottom	6.94	6992.48

Removed B.O.P. and installed Shaffer Xmas tree and tested seals Ok with 3500 psi for 15 minutes. RIG RELEASED AT 3:00 PM, 8/24/73.

SURVEY RECORD

1803-S & 1229-W FROM STATION NO. 84

MATT..... 2075
K.B..... 17
ELEV..... 2092

JOB NO IW-56 DATE 8-15-1973

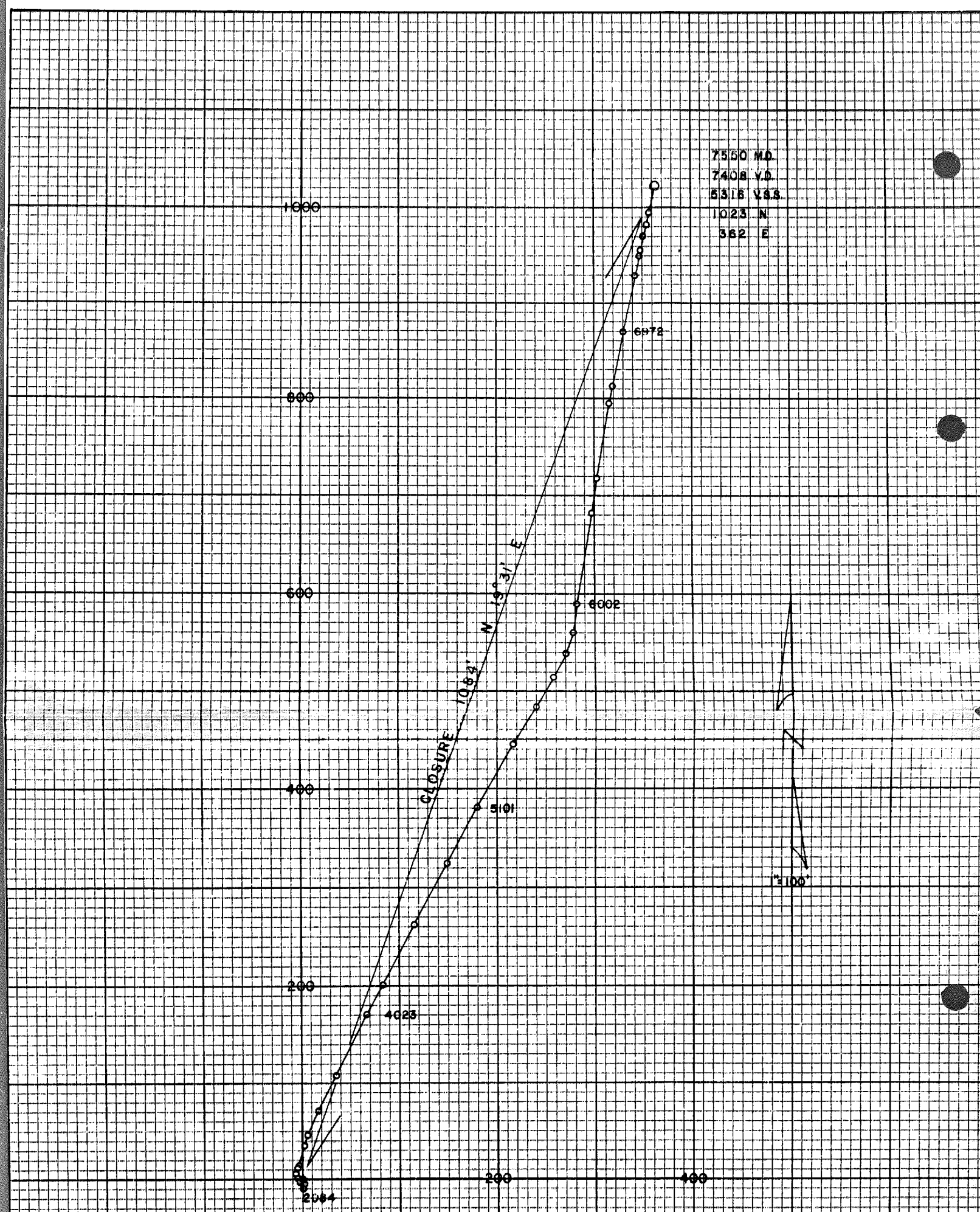
	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
1	231	0.30	230 99	2 02	S 58 W		1 07		1 71	
2	320	0.30	319 99	78	S 75 W		1 27		2 46	
3	406	0.45	405 98	1 13	S 65 W		1 74		3 49	
4	500	0.30	499 98	82	S 18 W		2 52		3 74	
5	591	0.30	590 98	79	S 14 E		3 29		3 55	
6	682	1.00	681 97	1 59	S 29 E		4 68		2 78	
7	798	0.45	797 96	1 52	S 10 E		6 18		2 52	
8	967	0.30	966 95	1 47	S 29 E		7 47		1 81	
9	1089	0.30	1088 95	1 07	S 20 W		8 48		2 18	
10	1340	0.30	1339 94	2 19	N 82 E		8 18		01	
11	1652	0.15	1651 94	1 36	S 44 W		9 16		95	
12	1968	0.15	1967 94	1 38	S 49 E		10 07	09		
13	2084	0.30	2083 94	1 01	S 51 E		10 71	88		
14	2303	0.45	2302 92	2 87	N 34 E		8 33	2 48		
15	2519	0.30	2618 91	2 76	N 09 W		5 60	2 05		
16	2955	1.00	2954 86	5 86	N 50 W		1 83		2 44	
17	3041	2.45	3040 76	4 13	N 42 W	1 24			5 20	
18	3103	5.00	3102 52	5 40	N 15 W	6 46			6 60	
19	3166	5.30	3165 23	6 04	N 11 E	12 39			5 45	
20	3196	6.00	3195 07	3 14	N 26 E	15 22			4 07	
21	3324	9.15	3321 41	20 57	N 16 E	34 99		1 60		
22	3388	10.30	3384 34	11 66	N 19 E	46 01		5 40		
23	3514	12.30	3507 35	27 27	N 25 E	70 73		16 92		
24	3703	12.45	3691 69	41 71	N 26 E	108 22		35 20		
25	4023	12.30	4004 11	69 26	N 27 E	169 93		66 64		
26	4182	12.45	4159 19	35 09	N 27 E	201 20		82 57		
27	4490	13.00	4459 30	69 29	N 28 E	262 38		115 10		
28	4805	13.00	4766 23	70 86	N 29 E	324 35		149 46		
29	5101	12.30	5055 22	64 07	N 28 E	380 92		179 54		
30	5435	12.45	5380 98	73 71	N 30 E	444 75		216 40		
31	5622	14.00	5562 43	45 24	N 31 E	483 53		239 70		
32	5748	16.30	5683 24	35 79	N 29 E	514 83		257 05		

SURVEY RECORD

JOB NO IW-56 TWO DATE 8-15-1973

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
33	5834	18.30	5764 80	27 29	N 29 E	538 69		270 28		
34	5911	17.30	5838 24	23 15	N 17 E	560 83		277 04		
35	6002	18.00	5924 79	28 12	N 10 E	588 52		281 92		
36	6316	17.30	6224 26	94 42	N 09 E	681 78		296 69		
37	6441	17.15	6343 64	37 07	N 08 E	718 49		301 85		
38	6715	16.30	6606 36	77 82	N 10 E	795 13		315 36		
MP 39	6776	17.00	6664 69	17 83	N 11 E	812 63		318 76		
40	6972	17.00	6852 13	57 31	N 11 E	868 89		329 70		
S4 41	7194	16.00	7065 54	61 18	N 12 E	928 74		342 42		
S8 42	7270	16.00	7138 60	20 95	N 12 E	949 23		346 78		
43	7292	16.00	7159 75	6 06	N 12 E	955 16		348 04		
HZ 44	7350	15.30	7215 64	15 50	N 12 E	970 32		351 26		
FREW 45	7396	15.30	7259 97	12 29	N 12 E	982 34		353 82		
46	7443	15.30	7305 26	12 56	N 12 E	994 63		356 43		
47	7550	15.30	7408 37	28 59	N 12 E	1022 60		362 37		

HORIZONTAL DEPARTURE 1084' N 19.31 E

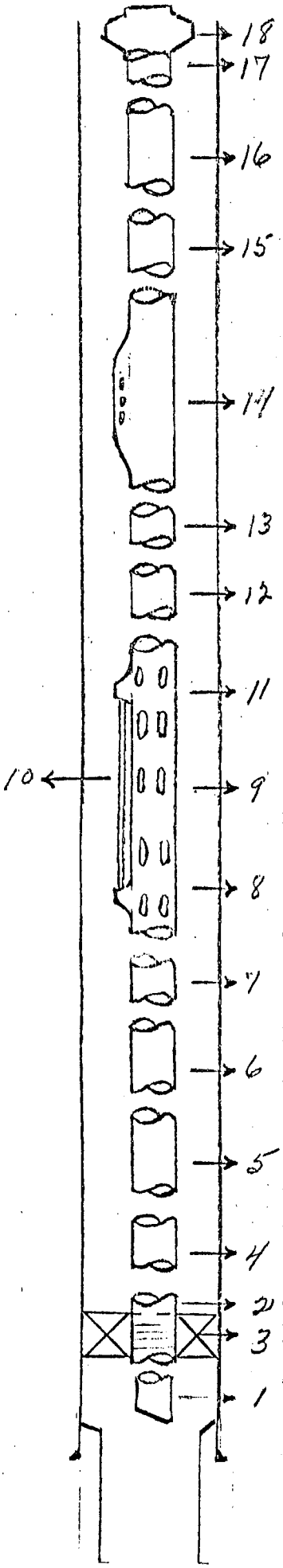


PACIFIC LIGHTING SERVICE

ALISO CANYON

WELL NO. IW-56

WELL PROFILE



OPERATOR: SOUTHERN CALIFORNIA GAS COMPANY

WELL #: #56

FIELD: Aliso Canyon

COUNTY: Los Angeles

STATE: California

DATE:

☐ NEW COMPLETION ☒ WORKOVER

	CASING	LINER	TUBING 1	TUBING 2	TUBING 3
SIZE			2 7/8"		
WEIGHT			6.5#		
GRADE			K-55		
THREAD			8 Rd		
DEPTH					

ITEM NO.	TUBING DETAIL	LENGTH	DETAIL
	K.B. to doughnut		17.00'
18	Doughnut	.65'	17.65'
17	5, 2 7/8" 6.5# K-55 8rd Pups	32.10'	49.75'
16	217 Joints, 2 7/8" 6.5# K-55 8rd EUE	6835.01'	6884.76'
15	2 7/8" 6.5# K-55 8rd Pup	4.46'	6889.22'
14	MMG Mandrel	8.46'	6897.68'
13	2 7/8" 6.5# 8rd Pup	.65'	6898.33'
12	1 Joint, 2 7/8" 6.5# K-55 8rd EUE	30.41'	6928.74'
11	D.S. nipple I.D. 2.312		
10	1/2" Hyd. Control Line	15.31'	6944.05'
9	SC-1 Safety Valve System		
8	PC-4 Safety Valve Nipple, I.D. 2.312		
7	2 7/8" 6.5# K-55 8rd Pup	4.10'	6948.15'
6	Camco 20' Blast Joint	20.06'	6968.21'
5	Camco No-Go Nipple - I.D. 1.81	.88'	6969.09'
4	Camco 10' Blast Joint	10.06'	6979.15'
3	Baker 4 Seal Ass'y. & Locator Sub	5.58'	6984.73'
2	Baker Prod. Tube	5.30'	6990.03'
8 5/8"	7190'		
	Baker "Retrieva-D" packer at 6980'		
6 5/8"	Liner 7009' to 7402'		

COMMENTS:

NOTE: SC-1 and MMG mandrel run in hole empty. Camco Blanken Plug left in nipple at 6969'.

8000# weight on packer

Total weight = 40,000#

FORM 109

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Report on Operations

No. T 273-361

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

Santa Paula Calif.
August 16, 1973

DEAR SIR:

Operations at well No. IW 56, API No. 037-21354, Sec. 27, T. 3N, R. 16W, S.B., B & M. Aliso Canyon Field, in Los Angeles County, were witnessed on Aug. 11, 1973, Mr. P. R. Wygle, engineer, representative of the supervisor was present from 1130 to 1430. There were also present E. Olsen, engineer

Present condition of well: 13 3/8" cem. 799'; 8 5/8" cem. 7190', c.p. 3021' & 7180', perf. 7184' WSO. T.D. 7443', Bridge plug 7186'.

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

DECISION:

THE 8 5/8" SHUT-OFF AT 7184' IS APPROVED.

a
cc: Operator

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

By D. G. Rifines Deputy

FORM 109 (REV. 1-73)

10942-705 1-73 22M ② OSP

FORMATION TESTER WSO MEMO T 361

Co. Pac Ltg Svc Co Well IW 56 Field Aliso Co County LA

VISITS:	Date	Engineer	Time	Operator's Rep	Title
1.	Aug 10, 1973	P.R. Wygle	0200-0400	E. Olsen	engineer
2.					
3.					

PRESENT MECHANICAL CONDITION 13 3/8" cem 700'; 8 5/8" cem 7100', cp 3021' & 7180', perf 7184' TD 7443'. Bridge plug 7186'.

OPERATION: Testing the 8 5/8" shut-off by means of a formation tester.

DECISION: The 8 5/8" shut-off at 7184' is (~~not~~) approved.

SHUT-OFF DATA: 8 5/8" 36 lb csg was re cem thru shot holes at 7180' on Aug 9, 1973, in a 11" hole with 100 sx/~~cf~~ of cem mixed with 2% CaCl2 calc to fill the annulus to — ' below the surf.

~~Cem~~ bridge plug ~~to~~/at 7186'. Cleaned out to 7186' for this test.

A Johnston tester was run into the hole on 4 1/2" dp/~~tbg~~ with — of — cushion. Packer(~~s~~) set at 7112'. Tailpiece to 7137'. Tester valve, with 1/2 bean, was open for 1 hr. During this interval there was a 10 min faint blow

THE OPERATOR'S REP REPORTED:

1. Drilled 11" hole 800-7443'
2. On Aug 7 cem 8 5/8" 36# csg @ 7100 w/ 1100 cf 1:1 poz 2% gel followed by 100 sx 2% gel.
3. Recem thru DV collar @ 3021 w/ 1000 cf 1:1 poz 2% gel.
4. Set ret BP 7186
5. Perf 4 1/2" holes @ 7180
6. Set ret 6986 & recem as noted above.
7. CO cem 7149-7176 & cen to BP @ 7186

8. The 8 5/8" csg was perf'd with 4, 1/2" holes at 7184'.
9. The tester was run as noted above.

THE ENGINEER NOTED:

	HOLE FLUID WT.			
	CHART PRESSURES			
	TOP	BTM	OUTSIDE	(CALC)
IH				
IF				
FF				
FH				

1. When the pipe was removed, a net rise of 10' of drilling fluid was found above the tester.
2. The pressure recorder charts indicated that the tester had functioned properly.

BOPE MEMO

T 1 9 3

Co. So Calif Gas Co Well IW 56 Field Aliso Cr County L.A

VISITS:	Date	Engineer	Time	Operator's Rep.	Title
1st	6-30-76	PR Wygle	0700-1000	C.B. Todd	contract foreman
2nd					

PRESENT MECHANICAL CONDITION: C 1 () 3 (5-24-76)

OPERATION: Inspecting (and testing) the blowout prevention equipment and installation.
DECISION: The blowout prevention equipment and installation are approved.

PROPOSED OPNS: Wash perfs

LAND USE:

MPSP: PSI

REQUIRED BOPE CLASS:

HOLE SIZES:

CASING RECORD (BOPE ANCHOR STRING ONLY)

Size	Weight(s)	Grade(s)	Shoe at	CP at	Cement Details	Cement Tops Inside	Cement Tops Annulus
8 5/8	36	K-55 & N-80	7190	3021	Cem shoe w/ 1100 G 1:1 poz, 2% gel + 100 sx, 2% CaCl & CP 3021 w/ 1000 G 1:1 poz	—	—

BOP STACK / TEST DATA

API Symb	Ram Sz.	Mfr.	Model or Type	Size In.	Oper PSI	Date Last Overhaul	a Gal to Close	b Rec Time Min.	a/b Calc GPM Output	PSI Drop to Close	Secs to Close	Test Date	Test Press
A	—	Hydril	GK	8	5M	—	4.5	2±	2.5		6	6-30	4000
Rd	2 7/8	Shaffer	LWS	✓	✓	—	2.6	1±	✓	—	4	✓	✓
	CSO	—	✓	✓	✓	—	✓	✓	✓	—	4	✓	✓
S													

ACTUATING SYSTEM

ACCUM UNIT(~~S~~) Wkg Press 3000 PSI
Total Rated Pump Output 3± GPM
Distance From Well Bore 65 Ft.

	Mfr.	Accum Cap.	Precharge
1	Koomey	60 gal	1000 PSI
2		gal	PSI

CONTROL STATIONS	~~Elec~~	Hyd
X Manif. at accum unit		X
X Remote at Drlr's stn.	Pneu	
Other:		

EMERG BACKUP SYST.	Press.	Wkg Fl.
X N2 Cyl No: 3 Tpe: 6	1 2200	6.3 gal
Other:	2 2206	6.3 gal
	3 2000	5.7 gal
	4	gal
	5	gal
	6	gal

AUXILIARY EQUIPMENT

		No.	Sz. (in)	Rated Press	Connections Weld	Connections Flan	Connections Thrd	
—	Fill-Up Line							
X	Kill Line			5M			✓	✓
X	Control Valve(~~s~~)	1		✓			✓	✓
—	Check Valve(s)	—						
X	Auxil Pump Connec.			✓			✓	✓
X	Choke Line		2	✓			✓	✓
X	Control Valve(~~s~~)	1		✓			✓	✓
X	Pressure Gauge							
X	Adjustable Choke(s)	1	2	✓				
X	Bleed Line		2					
	Upper Kelly Cock							
	Lower Kelly Cock							
	Standpipe Valve							
X	Standpipe Pressure Ga.							
X	Pipe Safety Valve							
	Internal Preventer							

HOLE FLUID MONITORING EQUIPMENT

		Alarm Aud	Alarm Vis	Class
	Calibrated Mud Pit			A
	Pit Level Indicator			B
	Pump Stroke Counter			B
	Pit Level Recorder			C
	Flow Sensor			C
	Mud Totalizer			C
	Calibrated Trip Tank			C
	Other:			

REMARKS:

Form 36 Revised 8/75

FORM 111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS No. P 273-108

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

Santa Paula Calif.
March 5, 1973

DEAR SIR:

Your proposal to drill Well No. IW 56 (037-21354),
Section 27, T. 3N, R. 16W, S.B. B. & M., Aliso Canyon Field, Los Angeles County,
dated 2/13/73, received 2/27/73, has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. Sufficient cement shall be pumped back of the 13 3/8" casing to fill from the shoe to the surface.
2. Drilling fluid of proper weight and consistency shall be used to keep the well under control at all times; and a reserve supply of this material shall be kept on hand to meet any emergency. NO CONTAMINATES OR TOXIC MATERIAL SHALL BE USED IN ANY DRILLING FLUID THAT IS TO BE PLACED IN AN UNLINED SUMP.
3. Blowout prevention equipment, at least of the Division of Oil and Gas Class III rating, shall be installed and maintained in operating condition at all times.
4. Fresh waters and oil or gas zones back of the 8 5/8" casing shall be protected with cement.
5. A directional survey shall be filed with this Division, if one is made.
6. THIS DIVISION SHALL BE NOTIFIED TO WITNESS:
   a. A pressure test of the blowout prevention equipment before drilling out of the shoe of the 13 3/8" casing.
   b. A test of the 8 5/8" water shut-off above the Sesnon zone.

Blanket Bond
ALL:r

cc: Operator

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

By D. C. Pitzius, Deputy

57625-705 11-71 35M ⓑ OSP

(037- 21354)

12

FORM 105

Porter No. 32 site

037-21354

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

Los Angeles Calif. February 13, 1973

DIVISION OF OIL AND GAS

In compliance with Section 3203, Division III, Article 4, Public Resources Code, notice is hereby given that it is our intention to commence drilling well No. IW56, Sec. 27, T. 3N, R. 16W, S.B. B. & M., Aliso Canyon Field, Los Angeles County.

Legal description of mineral-right lease, consisting of 431.5 acres, is as follows: (Attach map or plat to scale)

(as per plat previously filed)

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

Location of Well: 1802.69 feet South (Direction) ~~along section line and~~ property 1229.16 feet West (Direction)

at right angles to said line from ~~the~~ Station No. 84 ~~center of section~~ property

(reference: Metrex Aerial Serveys Co. drawing no. 11679 - sheet 2 of 5)

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

All depth measurements taken from top of Kelly bushing (Derrick Floor, Rotary Table or Kelly Bushing) which is 15 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#	H-40 smls.	0'	750'	750'
8-5/8	36#	K-55 & N-80 smls.	0'	7090'	7090' & 3000'
6-5/8	27.65#	K-55 smls.	6990'	7500'	7500'

Intended zone(s) of completion: Sesnon (Name) 6890', 7500' (Depth, top and bottom) Estimated total depth 7500'

GAS STORAGE WELL 150

MAP	MAP BOOK	CARD	INDEX	FORMS 114	FORMS 121
		✓	BB	✓	✓

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

Address P.O. Box 54790 T.A.
Los Angeles, California 90054
Telephone Number (213) 689-3621 or (213) 689-3561

Pacific Lighting Service Company (Name of Operator)

By R. S. Magruder Jr.

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

△ OSP