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

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

January 3, 2017

SENT VIA EMAIL

Mr. Rodger Schwecke
Vice President
Transmission and Storage
Southern California Gas Company
RSchwecke@semprautilities.com

FINDING THAT WELL PORTER 37-A (API NO. 03722046) HAS PASSED THE FIRST BATTERY OF TESTS AND WAS TAKEN OUT OF SERVICE AND ISOLATED FROM THE UNDERGROUND GAS STORAGE RESERVOIR

Dear Mr. Schwecke:

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

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

After receiving and evaluating all test results and other data concerning the well, I find for purposes of Order 1109 and SB 380, that well Porter 37-A (API No. 03722046) has completed the first battery of the Testing Regime and was taken out of service and, on December 5, 2016, the well was isolated from the underground gas storage reservoir as specified in Step 6b of the Testing Regime. Monitoring and testing of the well must continue as required by Order 1109 and any applicable law. If the well does not pass the second battery of tests within one year of being isolated from the reservoir, then the well must be plugged and abandoned in accordance with Public Resources Code section 3208.

Sincerely,

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

[1] Senate Bill 380 (Pavley, Chapter 14, Statutes of 2016) codified in part at Public Resources Code section 3217.

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

Rec'd 10-13-16 DOGGR Ventura.

HISTORY OF OIL OR GAS WELL

Operator Southern California Gas Company Field Aliso Canyon County Los Angeles

Well Porter 37A Sec. 27, T3N, R16W, S.B.B & M

A.P.I. No. 03722046 Name Tom McMahon (Person submitting report) Title SIMP Project Manager (President, Secretary, or Agent)

Date 9/27/2016 (Month, day, year) Signature Thomas D McMahon

Address PO Box 2300, SC9365, Chatsworth, CA, 91313-2300 Telephone Number 714-398-5020

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

Daily Operation Period: 8/29/2016 - 8/30/2016

Operations this Report Period (DOGGR)

MIRU Slickline. RIH with 2.5" gauge ring to No-Go Seating Nipple at 7301'
RIH and set plug body in No-Go Seating Nipple at 7301'
RIH and set prong in plug body at 7301'
RIH with shifting and open sliding sleeve at 7270'
Secured well. RDMO

Daily Operation Period: 9/2/2016 - 9/2/2016

Operations this Report Period (DOGGR)

MIRU pump truck, separator, vac truck and carbon canisters
Pressure tested lines and surface equipment.
Circulated well full of 3% KCl. Surface fluid at 385 bbl pumped. Circulated additional 47 bbl.

Applied preliminary pressure test of 1000 psi for 20 minutes. Good Test

Called for DOGGR to witness official test. Pressured up to 1100 psi and digitally recorded with pump truck for 1 hr. Test approved.

Bled down well. RDMO equipment

Rec'd 11-16-16 DOGGR Ventura.

FOR DIVISION USE ONLY		
	Forms	
Bond	~~OGD114~~ → OGD121	
	CALV WIMS	115V

P216-0286

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

SUPPLEMENTARY NOTICE

Detailed instructions can be found at: www.conservation.ca.gov/dog/

A notice to the Division of Oil, Gas, and Geothermal Resources, dated 9/6/2016, stating the intention to

Rework (Drill, Rework, Abandon) well Porter 37A, API No. 037-22046-00,

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

should be amended because of changed conditions.

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

The total depth is: 7850 feet. The effective depth is: 7839 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.

We now propose: (A complete program is preferred and may be attached.)
Because log indicates corrosion on 8-5/8" production casing, isolate well with 5-1/2" RBP and kill string; RDMO.

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		City/State	Zip Code
P.O. Box 2300		Chatsworth	91313-2300
Name of Person Filing Notice	Telephone Number:	Signature	Date
Jovy Kroh	937-239-0279	Jovy Kroh	11/11/2016
Individual to contact for technical questions:	Telephone Number:	E-Mail Address:	
Jovy Kroh	937-239-0279	jkroh@semprautilities.com	

This notice must be filed, and approval given, before the operations begin. If operations have not commenced within one year of the Division's receipt of this supplementary notice, this notice will be considered cancelled.

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

No. T **216-0578**

REPORT ON OPERATIONS

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

Roberto (Bob) Dentici
Southern California Gas Company (S4700)
555 West 5th Street, ML 17G4
Los Angeles, CA 90013

Ventura, California
December 13, 2016

Your operations at well **"Porter" 37-A**, A.P.I. No. **037-22046**, Sec. **27**, T. **03N**, R. **16W**, **SB** B.&M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **11/16/2016**, by **Randall Morlan**, a representative of the supervisor.

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

DECISION:

DEFERRED PENDING REVIEW BY THE DIVISIONS SAFETY TEAM.

RM/TKC

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By _____
Patricia A. Abel, *District Deputy*

KG1128.

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

No. T 216-0578
#16, 3

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

Operator: Southern California Gas Co.					Well: "Porter" 37-A
Sec. 27	T. 03N	R. 16W	B.&M. SB	API No.: 037-22046	Field: Aliso Canyon
County: Los Angeles					Witnessed/Reviewed on: 11/16/2016

Randall Morlan , representative of the supervisor, was present from 1130 to 1245

Also present were: Jason Fike

Casing record of the well:

The Internal MIT was performed for the purpose of pressure testing the 8-5/8" casing above 7373'.

☐ The Internal MIT is approved since it indicates that the 8-5/8" casing has mechanical integrity above 7373 ' at this time.

☐ The Internal MIT is not approved due to the following reasons: (specify)

INDICATE WHERE PACKER WAS SET AND HOW LONG PRESSURE WAS HELD ALONG WITH ANY BLEEDOFF DATA.

Isolation pressure test
BP: 7373'
start time: 11:31
start pressure: 1066 psi
end time: 12:31
end pressure: 1056 psi

DOGGR Dist2@DOC

From: Kroh, Jovy E <JKroh@semprautilities.com>
Sent: Monday, November 21, 2016 12:52 PM
To: Ortiz, David@DOC; DOGGR Dist2@DOC
Cc: Beenham, Ewan@DOC; Iguaz, Jose; Fike, Jason E (Krummrich); McMahon, Thomas D.
Subject: RE: Porter 37-A
Attachments: 03722046_Supplementary_11-21-2016.pdf

Hello all,
Please see attached revised Supplementary Notice for P37A with attachments.
Thanks,
Jovy

From: Ortiz, David@DOC [mailto:David.Ortiz@conservation.ca.gov]
Sent: Friday, November 18, 2016 3:51 PM
To: Kroh, Jovy E
Cc: Beenham, Ewan@DOC; Iguaz, Jose
Subject: [EXTERNAL] Porter 37-A

Hello Jovy,
Please send us a complete NOI for the planned work on "Porter" 37-A. I have attached what we have received from your office and I'm not sure if more was sent, but didn't make it in the submission.
As you know we need a complete NOI with well diagrams.
Thanks again for all the hard work you folks do.
Dave

David Ortiz P.G., C.E.G.
Associate Oil and Gas Engineer, Operations Engineer
California Division of Oil, Gas, and Geothermal Resources, District 2
1000 South Hill Road, Suite 116
Ventura, CA 93003-4458
(805) 654-4761

SAVE WATER!!

www.conservation.ca.gov

Every Californian should conserve water. Find out how at:

SaveOurWater.com · Drought.CA.gov

Ortiz, David@DOC

From: Kroh, Jovy E <JKroh@semprautilities.com>
Sent: Tuesday, November 29, 2016 10:43 AM
To: Ortiz, David@DOC
Subject: Porter 37A Supplementary 11-21-2016

Hello Dave,
For the Porter 37A Supplementary NOI dated 11-21-2016, please omit steps 18-23 on the program, as we do not plan to do steps 18-23 at this time.
Thanks,
Jovy

Jovy Kroh
Southern California Gas Company
Sr. Gas Storage Field Engineer
Direct: 818-725-1119
Cell: 937-239-0279

Ortiz, David@DOC

From: Kroh, Jovy E <JKroh@semprautilities.com>
Sent: Tuesday, November 29, 2016 10:51 AM
To: Ortiz, David@DOC
Subject: RE: Porter 37A Supplementary 11-21-2016

Yes that is correct, sorry for the confusion

From: Ortiz, David@DOC [mailto:David.Ortiz@conservation.ca.gov]
Sent: Tuesday, November 29, 2016 10:50 AM
To: Kroh, Jovy E
Subject: [EXTERNAL] RE: Porter 37A Supplementary 11-21-2016

Hello Jovy,
Because of a numbering issue the steps to be omitted are 18-27 and the additional 21-23 right?
Dave

From: Kroh, Jovy E [mailto:JKroh@semprautilities.com]
Sent: Tuesday, November 29, 2016 10:43 AM
To: Ortiz, David@DOC <David.Ortiz@conservation.ca.gov>
Subject: Porter 37A Supplementary 11-21-2016

Hello Dave,
For the Porter 37A Supplementary NOI dated 11-21-2016, please omit steps 18-23 on the program, as we do not plan to do steps 18-23 at this time.
Thanks,
Jovy

Jovy Kroh
Southern California Gas Company
Sr. Gas Storage Field Engineer
Direct: 818-725-1119
Cell: 937-239-0279

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CHECK LIST-RECORDS RECEIVED AND WELL STATUS

Operator: **Southern California Gas Company** WELL DESIGNATION **"Porter" 37-A**

API No. **03722046** SE **27** T: **3N** R.: **16W** , **SB** B. and M.

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

Type of Notice: **Supplementary** **Date** **11/21/2016** **Report Number:** **P216-0294**

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: _____

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: _____
(Date)

RECORDS APPROVED: _____
(Date and Engineer)

Modfied OGD2

AOR Datbase _____

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

No. P 216-0294

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

PERMIT TO CONDUCT WELL OPERATIONS

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

Ventura, California
November 28, 2016

Roberto (Bob) Dentici, Agent
Southern California Gas Company (S4700)
555 West 5th Street, ML 17G4
Los Angeles, CA 90013

Your **Supplementary** proposal to **REWORK** well **"Porter" 37-A**, A.P.I. No. **037-22046**, Section **27**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, **Any** area, **Sesnon-Frew** pool, **Los Angeles** County, dated **11/21/2016**, received **11/22/2016** has been examined in conjunction with records filed in this office. (Lat: **34.309468** Long: **-118.550800** Datum: **83**)

THE PROPOSAL, COVERING WORK ALREADY COMPLETED, IS APPROVED.

NOTE:

1. 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.
2. Pressure testing witnessed and approved on 9/02/2016, 11/03/2016 and 11/16/2016. This permit approves the plugging and suspension of the well until11/16/2017.
3. 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.**
4. **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

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 _____
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)

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.

Rec'd 11-22-16 DOGGR Ventura.

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

FOR DIVISION USE ONLY		
	Forms	
Bond	~~OGD114~~	OGD121
	CALV WIMS	115V

P216-0294

SUPPLEMENTARY NOTICE

Detailed instructions can be found at: www.conservation.ca.gov/dog/

A notice to the Division of Oil, Gas, and Geothermal Resources, dated 9/6/2016, stating the intention to

Rework (Drill, Rework, Abandon) well Porter 37A, API No. 037-22046-00,

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

should be amended because of changed conditions.

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

The total depth is: 7850 feet. The effective depth is: 7839 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.

We now propose: (A complete program is preferred and may be attached.)
On SIMP program, steps 1 through 17 have been completed.
Because log indicates corrosion on 8-5/8" production casing, well has been isolated with 5-1/2" RBP and kill string.
A different rig will be used to address 8-5/8" casing corrosion and run completion.

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: Jovy Kroh	Telephone Number: 818-725-1119	Signature: Jovy Kroh	Date: 11/21/2016
Individual to contact for technical questions: Jovy Kroh	Telephone Number: 818-725-1119	E-Mail Address: jkroh@semprautilities.com	

This notice must be filed, and approval given, before the operations begin. If operations have not commenced within one year of the Division's receipt of this supplementary notice, this notice will be considered cancelled.

Rec'd 11-22-16 DOGGR Ventura.

Well
Porter 37-A

API #: 04-037-22046-00
Sec 27, T3N, R16W

OLD (not existing)

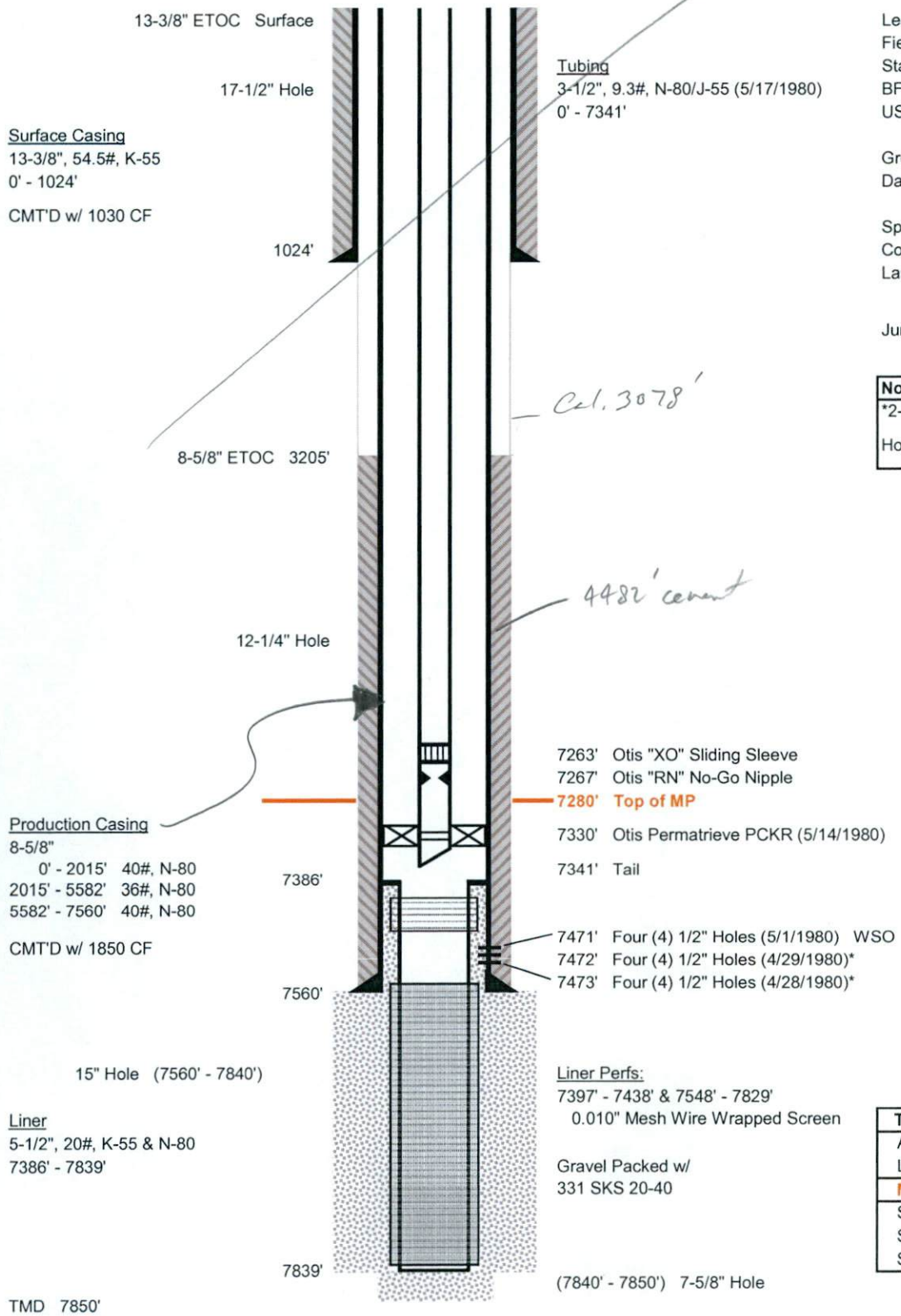
Operator: So. California Gas Co.

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

Ground Elevation: 1898' asl
Datum to Ground: 21' KB

Spud Date: 3/28/1980
Completion Date: 5/17/1980
Last Rework Date: 5/17/1980

Junk: None



Notes
*2-3 CF SQZ'D Away, 4/29/1980
Hole Sizes based on drill bit O.D.

Top of Zone Markers	md	(tvd)
A1	4007'	(4006')
LDA	6877'	(6819')
MP	7280'	(7196')
S1	7482'	(7385')
S4	7565'	(7463')
S8	7670'	(7561')

TMD 7850'
TVD (7730')
Directionally Drilled: Yes (TD is 678' E, 126' N of Surf)

Prepared by: MAM (5/31/2016)
Updated by: LD (9/3/2016)

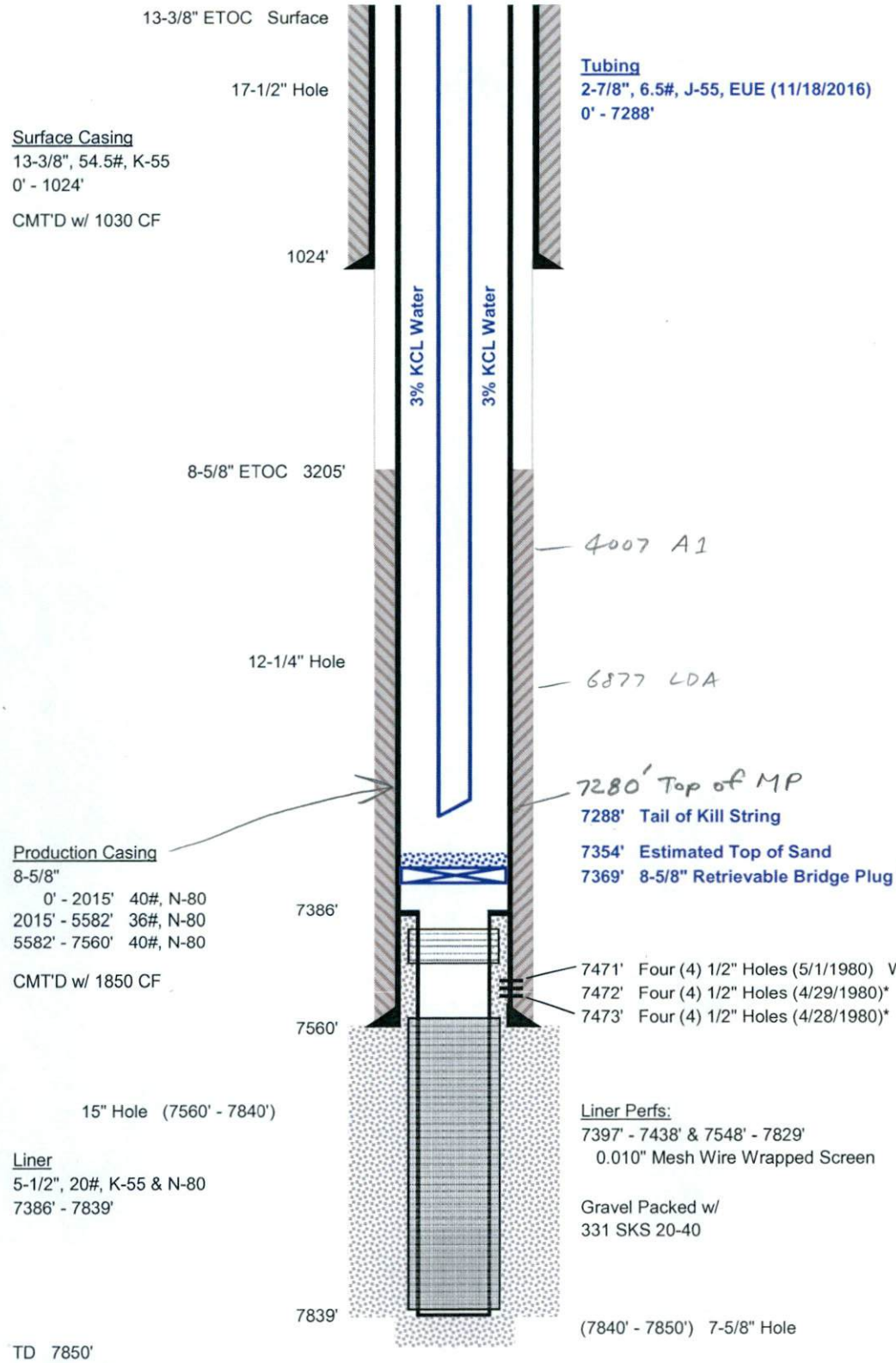
InterAct

Rec'd 11-22-16 DOGGR Ventura.

Well
Porter 37-A

API #: 04-037-22046-00
Sec 27, T3N, R16W

~~Isolation~~ Current



Tubing
2-7/8", 6.5#, J-55, EUE (11/18/2016)
0' - 7288'

Surface Casing
13-3/8", 54.5#, K-55
0' - 1024'

CMT'D w/ 1030 CF

Production Casing
8-5/8"
0' - 2015' 40#, N-80
2015' - 5582' 36#, N-80
5582' - 7560' 40#, N-80

CMT'D w/ 1850 CF

Liner
5-1/2", 20#, K-55 & N-80
7386' - 7839'

7288' Tail of Kill String

7354' Estimated Top of Sand

7369' 8-5/8" Retrievable Bridge Plug (COE @ 7373', 11/16/2016)

7471' Four (4) 1/2" Holes (5/1/1980) WSO
7472' Four (4) 1/2" Holes (4/29/1980)*
7473' Four (4) 1/2" Holes (4/28/1980)*

Liner Perfs:
7397' - 7438' & 7548' - 7829'
0.010" Mesh Wire Wrapped Screen

Gravel Packed w/
331 SKS 20-40

TD 7850'
TVD (7730')
Directionally Drilled: Yes (TD is 678' E, 126' N of Surf)

Operator: So. California Gas Co.

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

Ground Elevation: 1898' asl
Datum to Ground: 21' KB

Spud Date: 3/28/1980
Completion Date: 5/17/1980
Last Rework Date: 11/18/2016

Junk: None

Notes
*2-3 CF SQZ'D Away, 4/29/1980

Top of Zone Markers	md (tvd)
A1	4007' (4006')
LDA	6877' (6819')
MP	7280' (7196')
S1	7482' (7385')
S4	7565' (7463')
S8	7670' (7561')

Prepared by: MAM (5/31/2016)
Updated by: LD (11/21/2016)

InterAct

SoCal Gas Company

Well Operations Procedure

Porter 37A

Aliso Canyon

Storage Integrity Management Program

7/12/2016

Version 1

Primary Engineer:	Ella Lein	818 700-3676 (ofc)/661 340-4250 (mobile)
Alternate Engineer:	Brian Vlasko	818 700-3897 (ofc)/714 655-9506 (mobile)
Engineering Supervisor:	Jose Iguaz	818 700-3889 (ofc)/661 384-5337 (mobile)
Well Site Supervisor:	Jeff Mosier	661 706-0672 (mobile)
Well Work Superintendent:	Mike Volkmar	562 685-3810 (mobile)

Objective:

The intent of this program is to inspect the well integrity and remediate identified conditions as part of the Storage Integrity Management Program (SIMP). This project will include pulling 3-1/2" completion string, running casing inspection logs, pressure testing casing and well laterals, installing a new completion string, converting well to tubing flow, and installing pressure monitors. Baseline assessment data will be gathered on vertical casing pipe and other well components.

Well Data:

API #:	04-037-22046-00		
Datum:	1898'		
KB to GL:	21'		
MD:	7,850'		
TVD:	7730'		
PBMD:	7,839'	**Nature of Plug Back:**	Bottom of Liner

Geologic Markers:

Top of Zone Markers	md (tvd)
A1	4007' (4006')
LDA	6877' (6819')
MP	7280' (7196')
S1	7482' (7385')
S4	7565' (7463')
S8	7670' (7561')

Casing Data:

Surface Casing: 13-3/8", 54.5#, K-55 Cem @ 1,024'

Intermediate Casing: 8-5/8",

- 0' - 2015' 40#, N-80
- 2015' - 5582' 36#, N-80
- 5582' - 7560' 40#, N-80

SoCal Gas Company

Well Operations Procedure

Liner: 5-1/2", 20#, K-55 & N-80, 7386' - 7839'
0.010" Mesh Wire Wrapped Screen

Tubing Data:
3-1/2", 9.3#, N-80/J-55
0' - 7341'

Wellhead: 5 M

Perforations: 7397' - 7438' & 7548' - 7829'
0.010" Mesh Wire Wrapped Screen

Current Status: Idle for inspection

Permit Status: Pending

SoCal Gas Company

Well Operations Procedure

PROJECT NOTES

1. BOPE requirements in Gas Company Standard 224.05 shall be fully implemented at all times.
2. The storage reservoir pressures shall be monitored during the workover with a minimum of 300 psig overbalance for well control fluids.
3. Prepare the location by removing all relevant landscaping/lighting fixtures as well as surface piping and electrical components as needed. Locate rig anchors, reinstall if necessary.
4. DOGGR permit must be posted on site. Notify the DOGGR as required for BOPE testing prior to commencing downhole operations as stated on permit. DOGGR Ventura District office (805)-654-4761. If a permit has not been issued contact DOGGR 24 hours prior to rigging up on the well for verbal approval to rig up.

PRE-RIG WORK

1. De-energize and remove all laterals. Install companion flanges for circulating the well.
2. Complete slickline work as required to set-up well for circulation. – needs to be detailed depending on downhole configuration.
3. Ensure correlation log on file or plan for CCL.

WELLWORK PROGRAM

1. Move in production rig and rig pump with tank, shaker, and mixer.
2. Spot 500 bbl Baker tanks and load with 8.5 ppg KCl brine.
   - Connect pump to the tubing and vent the casing through the choke manifold to the SoCalGas withdrawal system.
   - Treat all brine with Biocide, 5 gals/100 bbls
3. Verify the well is dead. If needed, circulate well with 8.5 ppg KCL brine.
   i. The tubing volume is ~ 64 bbls and
   ii. The tubing/casing annulus is ~ 355 bbls.
   iii. *Use HEC polymer as required to minimize lost circulation.*
4. Install BPV in tubing hanger. ND tree.

   NOTE: Send-in wellhead and tree components for inspection.

5. +++Install Class III 5M BOPE per Gas Company Standard 224.05 and in accordance with the DOGGR permit. All connections and valves must be flanged and at least 5000 psig rated. (*Confirm BOPE rating*)

- All tests are to be charted and witnessed by a DOGGR representative.
- Perform a 300 psig low pressure test on the annular preventer, blind rams and pipe rams for 20 minutes. Test all lines and connections to 300 psig.
- Pressure test the Class III 5M annular preventer to 3500 psig for 20 minutes. Test blind rams and the pipe rams to 5000 psig for 20 minutes. Test all lines and connections to 5000 psig.
- Remove BPV.

6. POOH with production equipment. Lay down packer and production tubing.

   a.) Attempt to release packer. If not successful plan for a cut @ 7300'.
   b.) If planning to mill or fish, consider laying down production string and PU 2-7/8" P110 to be used as work string.

7. Pick up workstring and RIH with 8 5/8", 40# positive ID casing scraper to top of liner @ 7,386'. Circulate well clean. POOH.

8. RIH with stinger to PBMD @ 7,839' and clean out if necessary. POOH. If tagged fill, communicate the depth of fill to engineer.

9. MIRU WL unit to Run Gyro from PBMD to surface. Contact engineer for QC before RDMO WL. Send a copy of the survey file to elein@semprautilities.com.

10. Rig-up wireline unit(s) and run:

    a.) Magnetic flux leakage from top of production liner to surface
    b.) Multi-arm caliper log from top of production liner to surface

    Notify engineer prior to logging. Do not RDMO WL without engineer's approval.

11. RIH with RBP above liner top and set COE ~ @ 7376', pressure test to 500 psi for 10 minutes and sand off.

12. Nipple down BOPE, crossover spool, and primary pack-off.

    a.) Send DSA and tubing spool to Vendor for refurbishment.
    b.) Install auxiliary spacer spool and NU BOPE

13. Rig-up wireline unit, install lubricator and run:

    c.) Ultrasonic from 7,376' to surface
    d.) CBL from 7,376' to surface

    Notify engineer prior to logging. Do not RDMO WL without engineer's approval.

14. Ensure equipment integrity (tree, spool, tubing hanger, master valve, wing valves) has been verified before proceeding to the next step.

15. ND BOPE, install tubing spool, reinstall BOPE and test.
    NOTE: VERIFY csg head rating before pressure test (5000 psi or 3000 psi; ensure we are not testing 3000 psi csg head to 5000 psi).

16. RIH with test packer(s) on work string and set @ 4000'. Conduct a Pressure Integrity Test ("Block"). Follow test schedule attached to this program starting from the top (Test 1). POOH with test packer and lay down.

Test	Packer Depth	BP Depth	Test Pressure
1	4000'	7376'	3,625 PSI (Tubing /Casing Annulus above Packer)
2	4000'	7376'	2,230 PSI (Tubing and Casing below Packer)

a.) Pressure test to 115% of the wells maximum allowable operating pressure (3625 psi) as per attached Pressure Test Schedule.

Well: P-37A

		External Casing Backup Pressure			Pressure Test Net Burst Pressure		Tubing Leak Net Burst Pressure @		
Depth (TVD)	85% of Burst Strength	Fluid / Formation Pressure Gradient	External Casing Backup Pressure	Internal Water Hydrostatic	1	2	Gas-Filled Annulus	Test Pressuree > 85% of Burst	Test Pressure < Tubing Leak - Net Burst (Gas-filled annulus)
				Surface Test Pressure	3625	2230	3625		
				Test Packer Depth	4000				
				Test Down Casing or Tubing	Casing	Tubing			
				Bridge Plug Depth		7376			
0	6205	0.00	0	0	3625	2230	3625		
500	6205	0.00	0	221	3846	2451	3670		
1000	6205	0.00	0	442	4067	2672	3716		
1500	6205	0.00	0	663	4288	2893	3761		
2015	6205	0.00	0	891	4516	3121	3808		
2500	5517	0.00	0	1105	4730	3335	3852		
3000	5517	0.00	0	1326	4951	3556	3897		
3500	5517	0.00	0	1547	5172	3777	3942		
4000	5517	0.00	0	1768	5393	3998	3988		
4500	5517	0.00	0	1989	-	4219	4033		
5000	5517	0.00	0	2210	-	4440	4078		
5582	5517	0.00	0	2467	-	4697	4131		
6000	6205	0.00	0	2652	-	4882	4169		
6500	6205	0.00	0	2873	-	5108	4214		
7376	6205	0.00	0	3260	-	5490	4293		
				0.442 psi/ft int. grad.			0.091 psi/ft int. grad.		

b.) Engineering team to analyze log and pressure test results and recommend any additional remediation.

SoCal Gas Company

Well Operations Procedure

17. RIH with retrieving tool on work string circulating while engaging RBP retrieval neck. Open bypass and allow RBP to equalize for 30 mins. Release RBP and allow elastomers to relax for 1 hr. Circulate as required to control well. POOH slowly to minimize swabbing and lay down work string.

OMIT

~~18.~~ RIH with new tubing as follows:

RIH with packer assembly (items 1 - 9). RIH with XN plug, set and bundle test packer BHA to 4000psi for 5 mins. Pull XN plug. Continue running 3-1/2" tubing hydro-testing each connection to 4000psi.

1. *4-1/2" Wireline re-entry guide*
2. *+/- 2ft - 4-1/2" 12.6# L-80 TCPC XN (3.81" w/3.725" no-go) nipple*
3. *+/- 10ft - Pup joint 4-1/2" 12.6# L-80 TCPC*
4. *+/- 8ft - 4-1/2" 12.6# L-80 x 8 5/8"" 36# TCPC production packer* ***set at 7,300***
5. *+/- 10ft - Pup joint 4-1/2" 12.6# L-80 TCPC*
6. *+/- 31ft - Full joint 4-1/2" 12.6# L-80 TCPC tubing*
7. *+/- 2ft - Pup 4-1/2" 12.6# L-80 TCPC*
8. *+/- 2ft - 4-1/2" 12.6# L-80 TCPC (3.81" Open Down) sliding sleeve*
9. *+/- 4ft - Pup 4-1/2" 12.6# L-80 TCPC*
10. *+/- 31ft - Full joint 4-1/2" 12.6# L-80 TCPC tubing*
11. ***+/- 7161** ft - 4-1/2" 12.6# L-80 TCPC tubing to surface*
12. *Pup joints 4-1/2" 12.6# L-80 TCPC for space-out*
13. *+/- 10ft - Pup 4-1/2" 12.6# L-80 TCPC*
14. *+/- 4ft - 4-1/2" 12.6# L-80 TCPC fatigue nipple (pin x pin)*
15. *Tubing hanger with 4-1/2" EUE top box / 4" BPV / 4-1/2" 12.6# L-80 TCPC bottom box*

Notes : Prior to sending completion equipment to well site

- Make up items 1) through 5) under the supervision of Quality Tubulars. Pressure test assembly to 4000 psi for 1hr, chart test. Test caps to be installed and removed by Quality Tubulars.
- Make up items 7) through 9) under the supervision of Quality Tubulars. Pressure test assembly to 4000 psi for 1hr, chart test. Test caps to be installed and removed by Quality Tubulars.
- Shift sliding sleeve and drift with XN plug prior to shipping tools to location.
- Seal lube top sub on ASX-1 packer, to be witnessed by Quality Tubulars.
- Packer vendor to provide Force Analysis / Tube Move Calculations prior to sending equipment to well site.

OMIT

~~19.~~ Land tubing as per vendor specifications.

Note: Amount of compression to set on packer will be determined by Force Analysis / Tube Move Calculations.

OMIT

~~20.~~ Rig-up slickline unit and lubricator. Set a plug in the 3.81" XN profile.

SoCal Gas Company

Well Operations Procedure

omit
21. Notifiy DOGGR to witness tubing tests to 3700 psi, hold for 1 hour. Perform annular test to 1000 psi, hold for 1 hour. Record tests digitally.

Take a note of tubing pressure in case of annular pressure doesn't hold.

omit
22. RIH with WL and shift the sliding sleeve open. RDMO WL.

omit
23. Install BPV in tubing hanger. Nipple down BOPE, install production tree and test to 5,000 psig. Remove BPV.

omit
24. RDMO.

UNLOAD WELL

omit
25. Rig-up nitrogen unit. Recover workover fluid by pumping down annulus taking returns up tubing.

omit
26. MIRU WL unit. RIH with slickline and shift sliding sleeve closed. POOH and rig down slickline unit.

WELL LATERAL HYDROTESTING

omit
27. Per Gas Company Standard 182.0170, pressure test the tubing and casing kill laterals from the wellhead to the remote tie in to 3625 psig. Pressure test the tubing and casing withdrawal/injection laterals from wellhead to operating valves to 3625 psig.

omit
28 21. Reinstall the hydro-tested laterals.

omit
29 22. Install the well safety systems and instrumentation. Install pressure transmitters on tubing, casing, and surface casing.

omit
30 23. Release well to operations.

EXTERNAL CORROSION PROTECTION

Per Gas Company Standard 167.30, remove any lead based paint and recoat wellhead, production tree, and laterals.

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

No. T **216-0545**

REPORT ON OPERATIONS

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

Roberto (Bob) Dentici
Southern California Gas Company (S4700)
555 West 5th Street, ML 17G4
Los Angeles, CA 90013

Ventura, California
November 15, 2016

Your operations at well **"Porter" 37-A**, A.P.I. No. **037-22046**, Sec. **27**, T. **03N**, R. **16W**, **SB** B.&M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **11/9/2016**, by **Mark Davis**, a representative of the supervisor.

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

DECISION:

APPROVED

MD/TKC

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By _____
Patricia A. Abel, *District Deputy*

API No. 037-22046 DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES T 216-0545

BLOWOUT PREVENTION EQUIPME MEMO 12, 1

Operator SO. CAL. GAS. CO. Well PORTER 37A Sec. 27 T. 3N R. 16W

Field ALISO CANYON County LOS ANGELES Spud Date

VISITS:	Date	Engineer	Time	Operator's Rep.	Title
1st	11-9-16	M. DAVIS	(0800 to 0830)		
2nd			(to)		

Contractor RIVAL Rig # 6 Contractor's Rep. & Title JIM OOBBS

Casing record of well:

OPERATION: Testing (inspecting) the blowout prevention equipment and installation. Critical well? Y ☐ N ☑

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

Proposed Well Opns: REWORK . MACP: psi

Hole size: " fr. ' to ', " to ' & " to '

REQUIRED BOPE CLASS: III 5M

CASING RECORD OF BOPE ANCHOR STRING					Cement Details	Top of Cement	
Size	Weight(s)	Grade(s)	Shoe at	CP at		Casing	Annulus

BOP STACK

API Symb.	Ram Size (in.)	Manufacturer	Model or Type	Vert. Bore Size (in.)	Press. Rtg.	Date Last Overhaul
A	—	HYDRIL		11"	5M	
Rd	2⅞"	SHAFFER		11"	5M	
Rd	CSO	"		11"	5M	

TEST DATA

Gal. to Close	Recov. Time (Min.)	Calc. GPM Output	psi Drop to Close	Secs. to Close	Test Date	Test Press.
9.8						
2.8						
2.8						

ACTUATING SYSTEM

Accumulator Unit(s) Working Pressure 2800 psi

Total Rated Pump Output gpm Fluid Level

Distance from Well Bore 50 ft. OK

	Accum. Manufacturer	Capacity	Precharge
1	KOOMEY	gal.	1700 psi
2		gal.	psi

CONTROL STATIONS	Elec.	Hyd.	Pneu.
X Manifold at accumulator unit		X	
X Remote at Driller's station			X
Other:			

EMERG. BACKUP SYSTEM			Press.	Wkg.Fluid
X N_2 Cylinders	1	L= "	2500	gal.
Other:	2	L= "	2550	gal.
	3	L= "	2575	gal.
	4	L= "	2575	gal.
	5	L= "	2575	gal.
	6	L= "	2560	gal.
		TOTAL:		gal.

HOLE FLUID MONITORING EQUIPMENT	Alarm Type Audible	Alarm Type Visual	Class
Calibrated Mud Pit			A
Pit Level Indicator			
Pump Stroke Counter			B
Pit Level Recorder			
Flow Sensor			C
Mud Totalizer			
Calibrated Trip Tank			
Other:			

TOTAL:

AUXILIARY EQUIPMENT

		No.	Size (in.)	Rated Press	Connections Weld	Connections Flange	Connections Thread	Test Press.
	Fill-up Line							
X	Kill Line		2"	5M			X	
	Control Valve(s)							
	Check Valve(s)							
	Aux. Pump Cnnct.							
X	Choke Line		3"	5M			X	
X	Control Valve(s)	6	3"	5M			X	
X	Pressure Gauge							
X	Adjstble Choke(s)	2	2"	5M		X	X	
	Bleed Line							
	Upper Kelly Cock							
	Lower Kelly Cock							
	Standpipe Valve							
	Stndpipe Pres. Gau.							
X	Pipe Safety Valve		2⅞	5M				
	Internal Preventer							

Hole Fluid Type	Weight	Storage Pits (Type & Size)
9% KCL		721 BBL

REMARKS AND DEFICIENCIES:

OGD9 (9/06)

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

No. T **216-0535**

REPORT ON OPERATIONS

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

Roberto (Bob) Dentici
Southern California Gas Company (S4700)
555 West 5th Street, ML 17G4
Los Angeles, CA 90013

Ventura, California
November 07, 2016

Your operations at well **"Porter" 37-A**, A.P.I. No. **037-22046**, Sec. **27**, T. **03N**, R. **16W**, **SB** B.&M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **11/3/2016**, by **Ernest Blevins**, a representative of the supervisor.

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

DECISION:

DEFFERED PENDING APPROVAL BY THE DIVISION'S SAFETY TEAM.

EB/TKC

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By _____
Patricia A. Abel, *District Deputy*

No. T 216-0535 #16, 3

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

PRESSURE BLOCK TEST

Operator So CA Gas Well Designation "Porter" 37-A

Sec. 27, T. 3N, R. 16W B.& M. API No. 037-27046 Field Aliso Canyon

County Los Angeles Witnessed on 11-3-16. Ernie Blevins, representative

Supervisor, was present from 0650 to 10:00, & 10:30-11:00, 11:30-12:00

Also present were Jason Fike - Rival Rig #6 Consultant

Casing record of the well 8 5/8" casing

The operation were performed for the purpose of Re-work Gas well integrity test

Pressure Test Casing

Test Packer at 4000 8 5/8" packer Well Type Gas Well

Casing Pressured With 3% Kcl Volume ~400 bbls

Casing Pressure Start (psi) 3716 psi Time ~~End~~ Start 0700

Casing Pressure End (psi) 3713 ~~Start~~ End Time 0800

Pressure Held 60 minutes. Total change in pressure -3 psi psi .08 %
=.0008

Test results ✓ Good _____ No Good _____ Inconclusive

Pressure Test Tubbing

Test Packer
Plug-Back to 7376' - 0 Well Type Gas Prod - Inj.

Tubbing Pressured With 3% KCl Volume _____

Tubbing Pressure Start (psi) 2342 Start Time 10:50

Tubbg Pressure End (psi) 2321 End Time 11:50

Pressure Held 60 minutes. Total drop in pressure -21 psi .8 %
=.008

Test results ✓ Good _____ No Good _____ Inconclusive

Remarks _____

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

No. T **216-0531**

REPORT ON OPERATIONS

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

Roberto (Bob) Dentici
Southern California Gas Company (S4700)
555 West 5th Street, ML 17G4
Los Angeles, CA 90013

Ventura, California
November 07, 2016

Your operations at well **"Porter" 37-A**, A.P.I. No. **037-22046**, Sec. **27**, T. **03N**, R. **16W**, **SB** B.&M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **10/13/2016**, by **Jack Truschel**, a representative of the supervisor.

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

DECISION:

APPROVED

JPT/TKC

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By _____
Patricia A. Abel, *District Deputy*

OG109 (Rev. 10/2011)

API No. 037-22046 D ON OF OIL, GAS, AND GEOTHERMAL RES CES T 216-0532
KGIII. # 12, 1

BLOWOUT PREVENTION EQUIPMENT MEMO

Operator So. California Gas Co. Well "Porter" 37A Sec. 27 T. 3N R. 6W
Field Aliso Canyon County Los Angeles Spud Date --

VISITS:	Date	Engineer	Time	Operator's Rep.	Title
1st	10/13/2016	J. Truschel	(0800 to 0830)	Jason Fike	WSM
2nd			(to)		

Contractor Rival Rig # 6 Contractor's Rep. & Title Oswaldo Garcia
Casing record of well: 13-3/8" cem. 1024'; 8-5/8" cem. 7560'; 5-1/2" ld. 7386'-7839', screened 7397'-7438' and 7548'-7829'. TD 7850'.

OPERATION: **Inspecting** the blowout prevention equipment and installation. Critical well? Y ☐ N ☒
DECISION: The blowout prevention equipment and its installation on the 8-5/8 " casing are approved.

Proposed Well Opns: Rework . MACP: psi
Hole size: " fr. ' to ', " to ' & " to '

REQUIRED BOPE CLASS: III 5M

CASING RECORD OF BOPE ANCHOR STRING					Cement Details	Top of Cement	
Size	Weight(s)	Grade(s)	Shoe at	CP at		Casing	Annulus
8-5/8"	40#, 36#	N-80	7560'		Cem. w/ 1850 cf cem., ETOC @ 3205'	--	3205 ET

BOP STACK

API Symb.	Ram Size (in.)	Manufacturer	Model or Type	Vert. Bore Size (in.)	Press. Rtg.	Date Last Overhaul
A	--	Hydril	GK-10	11	5M	
Rd	3-1/2	Shaffer	LWS		5M	
Rd	CSO	Shaffer	LWS		5M	

TEST DATA

Gal. to Close	Recov. Time (Min.)	Calc. GPM Output	psi Drop to Close	Secs. to Close	Test Date	Test Press.
8.34						
2.8						
2.8						

ACTUATING SYSTEM

Accumulator Unit(s) Working Pressure 2900 psi
Total Rated Pump Output 5.0 gpm Fluid Level
Distance from Well Bore 50 ft. OK

	Accum. Manufacturer	Capacity	Precharge
1	Weatherford	80 gal.	1000 psi
2		gal.	psi

CONTROL STATIONS	Elec.	Hyd.	Pneu.
☒ Manifold at accumulator unit	☐	☒	☐
☒ Remote at Driller's station	☐	☐	☒
☐ Other:	☐	☐	☐

EMERG. BACKUP SYSTEM			Press.	Wkg. Fluid
☒ N_2 Cylinders	1	L= 55 "	2500	9.0 gal.
☐ Other:	2	L= 55 "	2400	8.2 gal.
	3	L= 55 "	2500	9.0 gal.
	4	L= 55 "	2500	9.0 gal.
	5	L= 55 "	2450	8.7 gal.
	6	L= 55 "	2450	8.7 gal.
		TOTAL		52.6 gal.

HOLE FLUID MONITORING EQUIPMENT	Alarm Type: Audible	Visual	Class
☐ Calibrated Mud Pit	☐	☐	A
☐ Pit Level Indicator	☐	☐	
☐ Pump Stroke Counter	☐	☐	B
☐ Pit Level Recorder	☐	☐	
☐ Flow Sensor	☐	☐	C
☐ Mud Totalizer	☐	☐	
☐ Calibrated Trip Tank	☐	☐	
☐ Other:	☐	☐	
☐	☐	☐	
☐	☐	☐	

TOTAL: 13.94 OK

AUXILIARY EQUIPMENT

	No.	Size (in.)	Rated Press.	Connections: Weld	Flange	Thread	Test Press.
☐ Fill-up Line							
☒ Kill Line		2	5M	☐	☒	☐	
☒ Control Valve(s)	3		5M	☐	☒	☐	
☒ Check Valve(s)	1		5M	☐	☒	☐	
☒ Aux. Pump Connect.			5M	☐	☒	☐	
☒ Choke Line		3	5M	☐	☒	☐	
☒ Control Valve(s)	7		5M	☐	☒	☐	
☒ Pressure Gauge				☐	☒	☐	
☒ Adjustable Choke(s)	2		5M	☐	☒	☐	
☒ Bleed Line				☐	☐	☒	
☐ Upper Kelly Cock							
☐ Lower Kelly Cock							
☐ Standpipe Valve							
☐ Standpipe Press. Gau.							
☒ Pipe Safety Valve		3 1/2	5M				
☒ Internal Preventer		3 1/2	5M				

Hole Fluid Type	Weight	Storage Pits (Type & Size)
KCL	8.5	450 BBLS

REMARKS AND DEFICIENCIES:
NONE

OGD9 (1/03)

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

No. T **216-0445**

REPORT ON OPERATIONS

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

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

Ventura, California
October 19, 2016

Your operations at well **"Porter" 37-A**, A.P.I. No. **037-22046**, Sec. **27**, T. **03N**, R. **16W**, **SB** B.&M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **9/2/2016**, by **Nigatu Workneh**, a representative of the supervisor.

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

DECISION:

APPROVED

NW/TKC

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By
Patricia A. Abel, *District Deputy*

KG98.

T216-0445
16,1

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

CASING PRESSURE TEST/PFO

Operator SoCal Gas Well Designation Porter 37-A

Sec. 27, T. 03N, R. 16, W B.& M. API No. 037-22046 Field Aliso Canyon

County Los Angeles. Witnessed on 09/02/16. Nigatu Klocknek, representative

Supervisor, was present from 14:55 to 16:10.

Also present were _____.

Casing record of the well 9 5/8" 0-2015' 40# N-80 3 1/2 tubing 9.3#
2015'-5582' 36# N-80
5582'-7560' 40# N-80

The operations were performed for the purpose of _____

Pressure Test Casing

Packer/Bridge Plug at 7263' Well Type gas

Casing Pressured With Kcl Volume 385 bbl

Casing Pressure Start PSI 1113 Start Time 15:05

Casing Pressure End PSI 1211 End Time 16:05

Pressure Held 60 minutes. Total drop in pressure +98 psi 8.8 %

Test results ✓ Good _____ No Good

Remarks _____

Pressure Fall-Off

Casing or tubing pressure _____

Initial pressure drop _____ psi. after _____ seconds/minutes

Final pressure _____ psi.

PFO Timeframe Date _____ Time _____ To Date _____ Time _____

Total Time: _____

Remarks _____

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CHECK LIST-RECORDS RECEIVED AND WELL STATUS

Operator: **Southern California Gas Company** WELL DESIGNATION **"Porter" 37-A**

API No. **03722046** SE **27** T: **3N** R.: **16W** , **SB** B. and M.

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

Type of Notice: **Rework** **Date** **9/6/2016** **Report Number:** **P216-0226**

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: _____

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 _____

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

No. P 216-0226

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
September 09, 2016

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

Your proposal to **Rework** well **"Porter" 37-A**, A.P.I. No. **037-22046**, Section **27**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, **Any** area, **Sesnon-Frew** pool, **Los Angeles** County, dated **9/6/2016**, received **9/6/2016** has been examined in conjunction with records filed in this office. (Lat: **34.309468** Long: **-118.550800** 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 **III 5M** on the **8 5/8"** casing.
2. Hole fluid of a quality and in sufficient quantity to control all subsurface conditions in order to prevent blowouts shall be used.
3. Blowout prevention practice drills are conducted at least weekly and recorded on the tour sheet. A practice drill may be required at the time of the test/inspection.
4. **A Casing Wall Thickness Inspection, Cement Bond Log, Ultrasonic Imaging Log, and a Multi-Arm Caliper Inspection** shall be performed to demonstrate that the **8 5/8"**casing has integrity.
5. Pressure test (block test) is conducted to demonstrate the mechanical integrity of the **8 5/8" casing.**
6. Prior to commencing injection, a pressure test is conducted to demonstrate the mechanical integrity of the **8 5/8"** casing, the injection packer, and the injection tubing.
7. Injection shall be through tubing and packer only. Injection or withdrawal through the casing is not permitted.
8. In all other respects, the provisions of Division Order #1109 and its amendments shall remain in effect.
9. This office shall be contacted by phone prior to making any program changes and no changes are made without Division approval.
10. **THIS DIVISION SHALL BE NOTIFIED TO:**
    a. Inspect the installed blowout prevention equipment prior to commencing **downhole** operations.
    b. Witness a pressure test (block testing) of the **8 5/8"** casing.
    c. Witness a pressure test of the **8 5/8"** casing and injection tubing prior to commencing injection.

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

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

Engineer Kris Gustafson
Office (805) 654-4761

By pp. [signature]
Patricia A. Abel, *District Deputy*

KG/kg

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**

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.

Rec'd 09-06-16 DOGGR Ventura.

FOR DIVISION USE ONLY		
	Forms	
Bond	~~OGD114~~	OGD121 ✓
	CALV WIMS	115V

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

P216-0226

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 P 37A, API No. 04-037-22046-00,

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

P37A

The total depth is: 7850 feet. The effective depth is: 7839 feet.

Present completion zone(s): S1,S4, S8 (Name). Anticipated completion zone(s): S1,S4, S8 (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.)

See attached program for Idlement Procedure

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 Ella Lein	Telephone Number: 661.340.4250	Signature E.L.	Date 9/6/2016
Individual to contact for technical questions: Ella Lein	Telephone Number: 661.340.4250	E-Mail Address: elein@semprautilities.com	

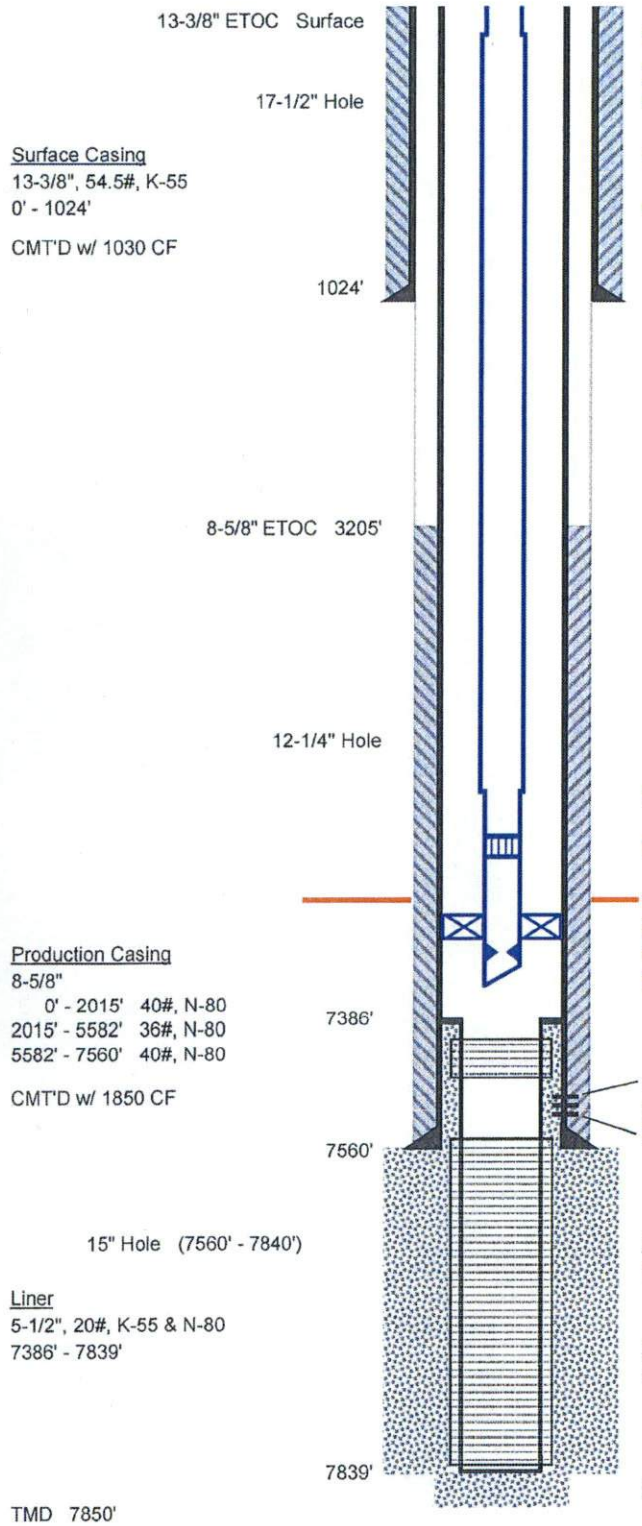
This notice and an indemnity or cash bond must be filed, and approval given, before the workover begins. (See the reverse side for bonding information.) If operations have not commenced within one year of the Division's receipt of the notice, this notice will be considered cancelled.

Rec'd 09-06-16 DOGGR Ventura.

Well
Porter 37-A

API #: 04-037-22046-00
Sec 27, T3N, R16W

Proposed



Surface Casing
13-3/8", 54.5#, K-55
0' - 1024'

CMT'D w/ 1030 CF

Production Casing
8-5/8"
0' - 2015' 40#, N-80
2015' - 5582' 36#, N-80
5582' - 7560' 40#, N-80

CMT'D w/ 1850 CF

Liner
5-1/2", 20#, K-55 & N-80
7386' - 7839'

36' 4-1/2" x 5-1/2" X-Over

Tubing
4-1/2", 12.6#, L-80, TCPC
0' - 36'
5-1/2", 20#, L-80, TCPC
36' - 7216'
4-1/2", 12.6#, L-80, TCPC
7216' - 7321'

7216' 5-1/2" x 4-1/2" X-Over

7255' Sliding Sleeve (3.81" Open Down)

7280' Top of MP
7300' 4-1/2" x 8-5/8" Production PCKR
7318' "XN" No-Go Nipple (3.81" w/ 3.725" No-Go)
7321' Wire-line Re-entry Guide

7471' Four (4) 1/2" Holes (5/1/1980) WSO
7472' Four (4) 1/2" Holes (4/29/1980)*
7473' Four (4) 1/2" Holes (4/28/1980)*

Liner Perfs:
7397' - 7438' & 7548' - 7829'
0.010" Mesh Wire Wrapped Screen

Gravel Packed w/
331 SKS 20-40

(7840' - 7850') 7-5/8" Hole

TMD 7850'
TVD (7730')
Directionally Drilled: Yes (TD is 678' E, 126' N of Surf)

Operator: So. California Gas Co.

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

Ground Elevation: 1898' asl
Datum to Ground: 21' KB

Spud Date: 3/28/1980
Completion Date: 5/17/1980
Last Rework Date: 5/17/1980

Junk: None

Notes
*2-3 CF SQZ'D Away, 4/29/1980
Hole Sizes based on drill bit O.D.

Top of Zone Markers	md (tvd)
A1	4007' (4006')
LDA	6877' (6819')
MP	7280' (7196')
S1	7482' (7385')
S4	7565' (7463')
S8	7670' (7561')

Prepared by: MAM (5/31/2016)
Updated by: LD (9/3/2016)

InterAct

Rec'd 09-06-16 DOGGR Ventura.

Well
Porter 37-A

API #: 04-037-22046-00
Sec 27, T3N, R16W

Operator: So. California Gas Co.

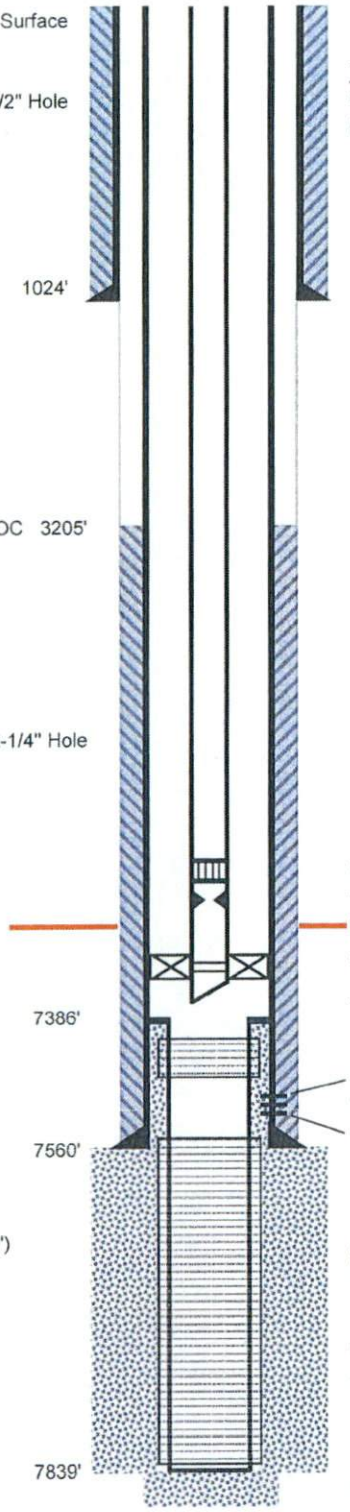
Lease: Porter
Field: Aliso Canyon
Status: Active Gas Storage
BFW:
USDW:

Ground Elevation: 1898' asl
Datum to Ground: 21' KB

Spud Date: 3/28/1980
Completion Date: 5/17/1980
Last Rework Date: 5/17/1980

Junk: None

Notes
*2-3 CF SQZ'D Away, 4/29/1980
Hole Sizes based on drill bit O.D.



13-3/8" ETOC Surface

17-1/2" Hole

Surface Casing
13-3/8", 54.5#, K-55
0' - 1024'

CMT'D w/ 1030 CF

1024'

Tubing
3-1/2", 9.3#, N-80/J-55 (5/17/1980)
0' - 7341'

8-5/8" ETOC 3205'

12-1/4" Hole

7263' Otis "XO" Sliding Sleeve
7267' Otis "RN" No-Go Nipple
7280' Top of MP
7330' Otis Permatrieve PCKR (5/14/1980)
7341' Tail

Production Casing
8-5/8"
0' - 2015' 40#, N-80
2015' - 5582' 36#, N-80
5582' - 7560' 40#, N-80

CMT'D w/ 1850 CF

7386'

7471' Four (4) 1/2" Holes (5/1/1980) WSO
7472' Four (4) 1/2" Holes (4/29/1980)*
7473' Four (4) 1/2" Holes (4/28/1980)*

7560'

15" Hole (7560' - 7840')

Liner Perfs:
7397' - 7438' & 7548' - 7829'
0.010" Mesh Wire Wrapped Screen

Liner
5-1/2", 20#, K-55 & N-80
7386' - 7839'

Gravel Packed w/
331 SKS 20-40

7839'

(7840' - 7850') 7-5/8" Hole

Top of Zone Markers	md (tvd)
A1	4007' (4006')
LDA	6877' (6819')
MP	7280' (7196')
S1	7482' (7385')
S4	7565' (7463')
S8	7670' (7561')

TMD 7850'
TVD (7730')
Directionally Drilled: Yes (TD is 678' E, 126' N of Surf)

Prepared by: MAM (5/31/2016)
Updated by: LD (9/3/2016)

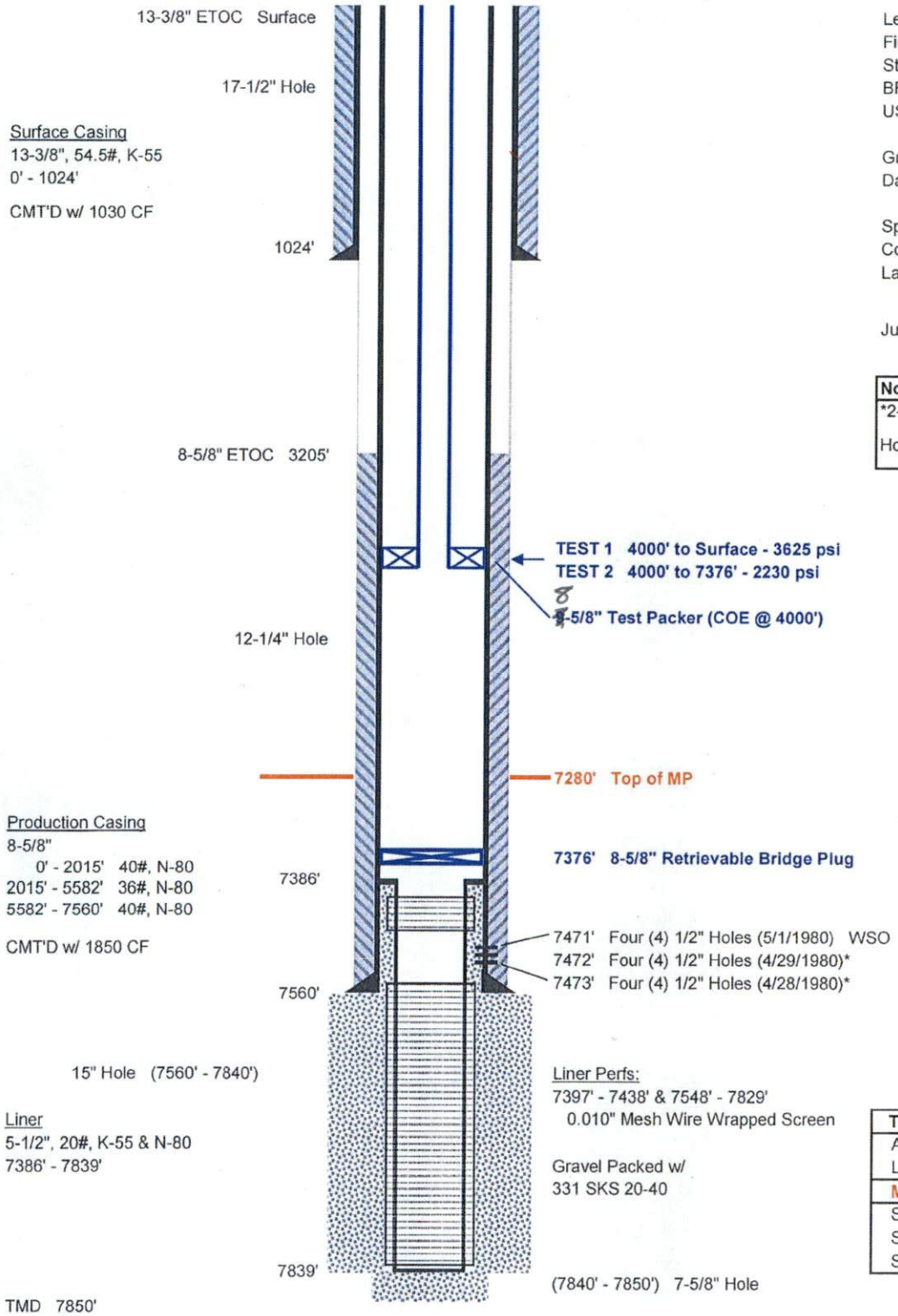
InterAct

Rec'd 09-06-16 DOGGR Ventura.

Well
Porter 37-A

API #: 04-037-22046-00
Sec 27, T3N, R16W

Production Casing Pressure Test - Program



TMD 7850'
TVD (7730')
Directionally Drilled: Yes (TD is 678' E, 126' N of Surf)

Operator: So. California Gas Co.

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

Ground Elevation: 1898' asl
Datum to Ground: 21' KB

Spud Date: 3/28/1980
Completion Date: 5/17/1980
Last Rework Date: 5/17/1980

Junk: None

Notes
*2-3 CF SQZ'D Away, 4/29/1980
Hole Sizes based on drill bit O.D.

Top of Zone Markers	md (tvd)
A1	4007' (4006')
LDA	6877' (6819')
MP	7280' (7196')
S1	7482' (7385')
S4	7565' (7463')
S8	7670' (7561')

Prepared by: MAM (5/31/2016)
Updated by: LD (9/3/2016)

InterAct

SoCal Gas Company

SoCalGas
A Sempra Energy utility

Well Operations Procedure

Porter 37A
Aliso Canyon
Storage Integrity Management Program
7/12/2016
Version 1

Primary Engineer:	Ella Lein	818 700-3676 (ofc)/661 340-4250 (mobile)
Alternate Engineer:	Brian Vlasko	818 700-3897 (ofc)/714 655-9506 (mobile)
Engineering Supervisor:	Jose Iguaz	818 700-3889 (ofc)/661 384-5337 (mobile)
Well Site Supervisor:	Jeff Mosier	661 706-0672 (mobile)
Well Work Superintendent:	Mike Volkmar	562 685-3810 (mobile)

Objective:

The intent of this program is to inspect the well integrity and remediate identified conditions as part of the Storage Integrity Management Program (SIMP). This project will include pulling 3-1/2" completion string, running casing inspection logs, pressure testing casing and well laterals, installing a new completion string, converting well to tubing flow, and installing pressure monitors. Baseline assessment data will be gathered on vertical casing pipe and other well components.

Well Data:

API #:	04-037-22046-00		
Datum:	1898'		
KB to GL:	21'		
MD:	7,850'		
TVD:	7730'		
PBMD:	7,839'	**Nature of Plug Back:**	Bottom of Liner

Geologic Markers:

Top of Zone Markers	md (tvd)
A1	4007' (4006')
LDA	6877' (6819')
MP	7280' (7196')
S1	7482' (7385')
S4	7565' (7463')
S8	7670' (7561')

Casing Data:

Surface Casing: 13-3/8", 54.5#, K-55 Cem @ 1,024'
Intermediate Casing: 8-5/8",

- 0' - 2015' 40#, N-80
- 2015' - 5582' 36#, N-80
- 5582' - 7560' 40#, N-80

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Well Operations Procedure

Liner: 5-1/2", 20#, K-55 & N-80, 7386' - 7839'
0.010" Mesh Wire Wrapped Screen

Tubing Data:
3-1/2", 9.3#, N-80/J-55
0' - 7341'

Wellhead: 5 M

Perforations: 7397' - 7438' & 7548' - 7829'
0.010" Mesh Wire Wrapped Screen

Current Status: Idle for inspection

Permit Status: Pending

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Well Operations Procedure

PROJECT NOTES

1. BOPE requirements in Gas Company Standard 224.05 shall be fully implemented at all times.
2. The storage reservoir pressures shall be monitored during the workover with a minimum of 300 psig overbalance for well control fluids.
3. Prepare the location by removing all relevant landscaping/lighting fixtures as well as surface piping and electrical components as needed. Locate rig anchors, reinstall if necessary.
4. DOGGR permit must be posted on site. Notify the DOGGR as required for BOPE testing prior to commencing downhole operations as stated on permit. DOGGR Ventura District office (805)-654-4761. If a permit has not been issued contact DOGGR 24 hours prior to rigging up on the well for verbal approval to rig up.

PRE-RIG WORK

1. De-energize and remove all laterals. Install companion flanges for circulating the well.
2. Complete slickline work as required to set-up well for circulation. – needs to be detailed depending on downhole configuration.
3. Ensure correlation log on file or plan for CCL.

WELLWORK PROGRAM

1. Move in production rig and rig pump with tank, shaker, and mixer.
2. Spot 500 bbl Baker tanks and load with 8.5 ppg KCl brine.
   - Connect pump to the tubing and vent the casing through the choke manifold to the SoCalGas withdrawal system.
   - Treat all brine with Biocide, 5 gals/100 bbls
3. Verify the well is dead. If needed, circulate well with 8.5 ppg KCL brine.
   i. The tubing volume is ~ 64 bbls and
   ii. The tubing/casing annulus is ~ 355 bbls.
   iii. *Use HEC polymer as required to minimize lost circulation.*
4. Install BPV in tubing hanger. ND tree.

   NOTE: Send-in wellhead and tree components for inspection.

5. +++Install Class III 5M BOPE per Gas Company Standard 224.05 and in accordance with the DOGGR permit. All connections and valves must be flanged and at least 5000 psig rated. (*Confirm BOPE rating*)

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Well Operations Procedure

- All tests are to be charted and witnessed by a DOGGR representative.
- Perform a 300 psig low pressure test on the annular preventer, blind rams and pipe rams for 20 minutes. Test all lines and connections to 300 psig.
- Pressure test the Class III 5M annular preventer to 3500 psig for 20 minutes. Test blind rams and the pipe rams to 5000 psig for 20 minutes. Test all lines and connections to 5000 psig.
- Remove BPV.

6. POOH with production equipment. Lay down packer and production tubing.

   a.) Attempt to release packer. If not successful plan for a cut @ 7300'.
   b.) If planning to mill or fish, consider laying down production string and PU 2-7/8" P110 to be used as work string.

7. Pick up workstring and RIH with 8 5/8", 40# positive ID casing scraper to top of liner @ 7,386'. Circulate well clean. POOH.

8. RIH with stinger to PBMD @ 7,839' and clean out if necessary. POOH. If tagged fill, communicate the depth of fill to engineer.

9. MIRU WL unit to Run Gyro from PBMD to surface. Contact engineer for QC before RDMO WL. Send a copy of the survey file to elein@semprautilities.com.

10. Rig-up wireline unit(s) and run:

    a.) Magnetic flux leakage from top of production liner to surface
    b.) Multi-arm caliper log from top of production liner to surface

    Notify engineer prior to logging. Do not RDMO WL without engineer's approval.

11. RIH with RBP above liner top and set COE ~ @ 7376', pressure test to 500 psi for 10 minutes and sand off.

12. Nipple down BOPE, crossover spool, and primary pack-off.

    a.) Send DSA and tubing spool to Vendor for refurbishment.
    b.) Install auxiliary spacer spool and NU BOPE

13. Rig-up wireline unit, install lubricator and run:

    c.) Ultrasonic from 7,376' to surface
    d.) CBL from 7,376' to surface

    Notify engineer prior to logging. Do not RDMO WL without engineer's approval.

14. Ensure equipment integrity (tree, spool, tubing hanger, master valve, wing valves) has been verified before proceeding to the next step.

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Well Operations Procedure

15. ND BOPE, install tubing spool, reinstall BOPE and test.
    NOTE: VERIFY csg head rating before pressure test (5000 psi or 3000 psi; ensure we are not testing 3000 psi csg head to 5000 psi).

16. RIH with test packer(s) on work string and set @ 4000'. Conduct a Pressure Integrity Test ("Block"). Follow test schedule attached to this program starting from the top (Test 1). POOH with test packer and lay down.

Test	Packer Depth	BP Depth	Test Pressure
1	4000'	7376'	3,625 PSI (Tubing /Casing Annulus above Packer)
2	4000'	7376'	2,230 PSI (Tubing and Casing below Packer)

a.) Pressure test to 115% of the wells maximum allowable operating pressure (3625 psi) as per attached Pressure Test Schedule.

Well: P-37A

		External Casing Backup Pressure			Pressure Test Net Burst Pressure		Tubing Leak Net Burst Pressure @		
Depth (TVD)	85% of Burst Strength	Fluid / Formation Pressure Gradient	External Casing Backup Pressure	Internal Water Hydrostatic	1	2	Gas-Filled Annulus	Test Pressuree > 85% of Burst	Test Pressure < Tubing Leak - Net Burst (Gas-filled annulus)
				Surface Test Pressure	3625	2230	3625		
				Test Packer Depth	4000				
				Test Down Casing or Tubing	Casing	Tubing			
				Bridge Plug Depth		7376			
0	6205	0.00	0	0	3625	2230	3625		
500	6205	0.00	0	221	3846	2451	3670		
1000	6205	0.00	0	442	4067	2672	3716		
1500	6205	0.00	0	663	4288	2893	3761		
2015	6205	0.00	0	891	4516	3121	3808		
2500	5517	0.00	0	1105	4730	3335	3852		
3000	5517	0.00	0	1326	4951	3556	3897		
3500	5517	0.00	0	1547	5172	3777	3942		
4000	5517	0.00	0	1768	5393	3998	3988		
4500	5517	0.00	0	1989	-	4219	4033		
5000	5517	0.00	0	2210	-	4440	4078		
5582	5517	0.00	0	2467	-	4697	4131		
6000	6205	0.00	0	2652	-	4882	4169		
6500	6205	0.00	0	2873	-	5103	4214		
7376	6205	0.00	0	3260	-	5490	4293		
				0.442 psi/ft int. grad.			0.091 psi/ft int. grad.		

b.) Engineering team to analyze log and pressure test results and recommend any additional remediation.

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Well Operations Procedure

17. RIH with retrieving tool on work string circulating while engaging RBP retrieval neck. Open bypass and allow RBP to equalize for 30 mins. Release RBP and allow elastomers to relax for 1 hr. Circulate as required to control well. POOH slowly to minimize swabbing and lay down work string.

18. RIH with new tubing as follows:

    RIH with packer assembly (items 1 - 9). RIH with XN plug, set and bundle test packer BHA to 4000psi for 5 mins. Pull XN plug. Continue running 3-1/2" tubing hydro-testing each connection to 4000psi.

    1. *4-1/2" Wireline re-entry guide* ***~7324'***
    2. *+/- 2ft - 4-1/2" 12.6# L-80 TCPC XN (3.81" w/3.725" no-go) nipple*
    3. *+/- 10ft - Pup joint 4-1/2" 12.6# L-80 TCPC*
    4. *+/- 8ft - 4-1/2" 12.6# L-80 x 8-5/8" 36# TCPC production packer* ***~7,300'***
    5. *+/- 10ft - Pup joint 4-1/2" 12.6# L-80 TCPC*
    6. *+/- 31ft - Full joint 4-1/2" 12.6# L-80 TCPC tubing*
    7. *+/- 2ft - Pup 4-1/2" 12.6# L-80 TCPC*
    8. *+/- 2ft - 4-1/2" 12.6# L-80 TCPC (3.81" Open Down) sliding sleeve*
    9. *+/- 4ft - Pup 4-1/2" 12.6# L-80 TCPC*
    10. *+/- 31ft - Full joint 4-1/2" 12.6# L-80 TCPC tubing*
    11. *+/- 4ft - 4-1/2" 12.6# TCPC Pin x 5-1/2" 20# TCPC Box crossover sub*
    12. *+/- 7,161, ft - 5-1/2" 20# L-80 TCPC tubing to surface (231 joints)*
    13. *Pup joints 5-1/2" 20# TCPC L-80 TCPC for space-out*
    14. *+/- 3ft - 5-1/2" 20# TCPC Pin x 4-1/2" 12.6# TCPC Box crossover sub*
    15. *+/- 10ft - Pup 4-1/2" 12.6# L-80 TCPC*
    16. *+/- 4ft - 4-1/2" 12.6# L-80 TCPC fatigue nipple (pin x pin)*
    17. *1 ft - Tubing hanger with 4-1/2" EUE top box / 4" BPV / 4-1/2" TCPC bottom box*

    Notes : Prior to sending completion equipment to well site

    - Make up items 1) through 5) under the supervision of Quality Tubulars. Pressure test assembly to 4000 psi for 1hr, chart test. Test caps to be installed and removed by Quality Tubulars.
    - Make up items 7) through 9) under the supervision of Quality Tubulars. Pressure test assembly to 4000 psi for 1hr, chart test. Test caps to be installed and removed by Quality Tubulars.
    - Shift sliding sleeve and drift with XN plug prior to shipping tools to location.
    - Seal lube top sub on ASX-1 packer, to be witnessed by Quality Tubulars.
    - Packer vendor to provide Force Analysis / Tube Move Calculations prior to sending equipment to well site.

19. Land tubing as per vendor specifications.

    Note: Amount of compression to set on packer will be determined by Force Analysis / Tube Move Calculations.

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Well Operations Procedure

20. Rig-up slickline unit and lubricator. Set a plug in the 3.81" XN profile.

21. Notifiy DOGGR to witness tubing tests to 3700 psi, hold for 1 hour. Perform annular test to 1000 psi, hold for 1 hour. Record tests digitally.

    Take a note of tubing pressure in case of annular pressure doesn't hold.

22. RIH with WL and shift the sliding sleeve open. RDMO WL.

23. Install BPV in tubing hanger. Nipple down BOPE, install production tree and test to 5,000 psig. Remove BPV.

24. RDMO.

UNLOAD WELL

25. Rig-up nitrogen unit. Recover workover fluid by pumping down annulus taking returns up tubing.

26. MIRU WL unit. RIH with slickline and shift sliding sleeve closed. POOH and rig down slickline unit.

WELL LATERAL HYDROTESTING

27. Per Gas Company Standard 182.0170, pressure test the tubing and casing kill laterals from the wellhead to the remote tie in to 3625 psig. Pressure test the tubing and casing withdrawal/injection laterals from wellhead to operating valves to 3625 psig.

21. Reinstall the hydro-tested laterals.

22. Install the well safety systems and instrumentation. Install pressure transmitters on tubing, casing, and surface casing.

23. Release well to operations.

EXTERNAL CORROSION PROTECTION

Per Gas Company Standard 167.30, remove any lead based paint and recoat wellhead, production tree, and laterals.

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CHECK LIST-RECORDS RECEIVED AND WELL STATUS

Operator: **Southern California Gas Company** WELL DESIGNATION **"Porter" 37-A**

API No. **03722046** SE **27** T: **3N** R.: **16W** , **SB** B. and M.

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

Type of Notice: **Rework** **Date** **7/29/2016** **Report Number:** **P216-0173**

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: _____

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 _____

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

No. P 216-0173

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
August 10, 2016

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

Your proposal to **Rework** well **"Porter" 37-A**, A.P.I. No. **037-22046**, Section **27**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, **Any** area, **Sesnon-Frew** pool, **Los Angeles** County, dated **7/29/2016**, received **8/3/2016** has been examined in conjunction with records filed in this office. (Lat: **34.309468** Long: **-118.550800** 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 Clifford R. Knight
Office (805) 654-4761

CRK/do

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By _____ 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.

NOTE:

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

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

ATTACHMENT 1
TO DOGGR ORDER 1109

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

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

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

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

REQUIRED TESTS FOR EACH WELL IN THE FACILITY

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

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

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

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

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

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

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

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

REQUIRED TESTS IF A WELL IS INTENDED TO RESUME OPERATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

REQUIREMENTS FOR WELLS RESUMING OPERATIONS IN ALISO CANYON

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

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

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

P216-0173

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 Porter 37A, API No. 037-22046,

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

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

The total depth is: 7850 feet. The effective depth is: 7839 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 RN profile at 7267' and open SSD at 7263'.
6b - Circulate well with 8.5 ppg KCL brine down tbg. through SSD at 7263' and back to surface to completely fill well.
7b - With casing valve closed, pressure-up on tubing to 1000 psi. for 1 hour (will test csg., packer and tubing plug all at same time).

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: 7/29/16
Individual to contact for technical questions: Mike Giuliani	Telephone Number: (805) 290-2074	E-Mail Address: mike.giuliani@interactprojects.com	

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

OG107 (1/09)

Rec'd 08-03-16 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 37-A

API #: 04-037-22046-00
Sec 27, T3N, R16W

Operator: So. California Gas Co.

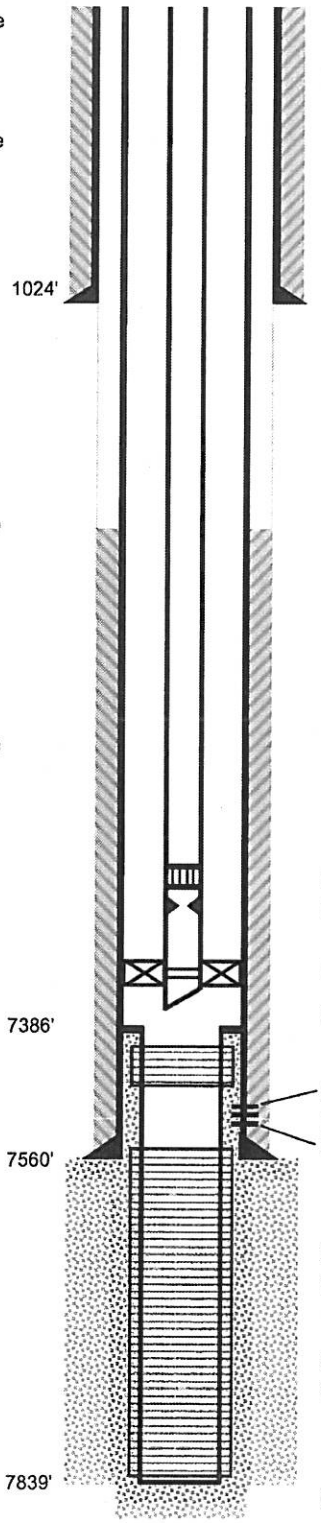
Lease: Porter
Field: Aliso Canyon
Status: Active Gas Storage
BFW:
USDW:

Ground Elevation: 1898' asl
Datum to Ground: 21' KB

Spud Date: 3/28/1980
Completion Date: 5/17/1980

Junk: None

Notes
*2-3 CF SQZ'D Away, 4/29/1980



Tubing
3-1/2", 9.3#, N-80/J-55
0' - 7341'

Surface Casing
13-3/8", 54.5#, K-55
0' - 1024'
CMT'D w/ 1030 CF

Production Casing
8-5/8"
0' - 2015' 40#, N-80
2015' - 5582' 36#, N-80
5582' - 7560' 40#, N-80
CMT'D w/ 1850 CF

Liner
5-1/2", 20#, K-55 & N-80
7386' - 7839'

7263' Otis "XO" Sliding Sleeve
7267' Otis "RN" No-Go Nipple

7330' Otis Permatrieve PCKR

7341' Tail

7471' Four (4) 1/2" Holes (5/1/1980) WSO
7472' Four (4) 1/2" Holes (4/29/1980)*
7473' Four (4) 1/2" Holes (4/28/1980)*

Liner Perfs:
7397' - 7438' & 7548' - 7829'
0.010" Mesh Wire Wrapped Screen

Gravel Packed w/
331 SKS 20-40

(7840' - 7850') 7-5/8" Hole

Top of Zone Markers	md (tvd)
A1	4007' (4006')
LDA	6877' (6819')
MP	7280' (7196')
S1	7482' (7385')
S4	7565' (7463')
S8	7670' (7561')

TD 7850'
TVD (7730')
Directionally Drilled: Yes (TD is 678' E, 126' N of Surf)

Prepared by: MAM (5/31/2016)

InterAct

Rec'd 08-03-16 DOGGR Ventura.

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
Fernando Fee 34A	7483'/7411'	7", 26#, N-80	7483	7240	6154	4307	Yes
Porter 37A	7330'/7246'	8-5/8", 40#, N-80	2015	7300	6205	1891	Yes
		8-5/8", 36#, N-80	5582	6490	5517	3467	Yes
		8-5/8", 40#, N-80	7330	7300	6205	4240	Yes
Porter 32D	7293'/7195'	8-5/8", 36#, K-55	5749	4460	3791	3541	Yes
		8-5/8", 36#, N-80	7293	6490	5517	4224	Yes
Sesnon Fee 4	8930'/8930'	7", 29#, N-80	52	8160	6936	1023	Yes
		7", 23#, N-80	6103	6340	5389	3698	Yes
		7", 26#, N-80	8146	7240	6154	4601	Yes
		7", 29#, N-80	8930	8160	6936	4947	Yes
Sesnon Fee 8	8953'/8953'	7", 29#, N-80	151	8160	6936	1067	Yes
		7", 23#, N-80	6541	6340	5389	3891	Yes
		7", 26#, N-80	8598	7240	6154	4800	Yes
		7", 29#, N-80	8953	8160	6936	4957	Yes
Porter 69E	7155'/7005'	9-5/8", 47#, N-80	7155	6870	5840	4163	Yes

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

No. **T200-123**

Report on Operations

James D. Mansdorfer, Agent
SOUTHERN CALIFORNIA GAS COMPANY
9400 Oakdale Ave.
Chatsworth, CA. 91313

Ventura, California
August 15, 2000

Your operations at well **"Porter" 37-A,** API No. **037-22046,** Sec. **27**, T. **3N**, R.**16W**, S.B.B.&M. **Aliso Canyon** Field, in **Los Angeles** County, were witnessed on **07-21-2000**. **Steve Mulqueen,** representative of the supervisor, was present from **1100** to **1300**. There were also present **Art Thomas.**

Present condition of well: **13 3/8" cem 1024'; 8 5/8" cem 7560', perf 7471' wso, cp 7472'; 5 ½" ld 7386'-7839', perfs 7397'-7438' & 7548'-7829'. TD 7850'.**

The MIT was performed for the purpose of witnessing an initial temperature survey prior to start-up of a water-disposal project.

DECISION:

The MIT is approved.

CBT

William F. Guerard, Jr.
State Oil and Gas Supervisor

By _____
Patrick J. Kinnear
Deputy Supervisor

DEPARTMENT OF CONSERVATION
1000 S. Hill Road, Suite 116
Ventura, CA 93003-4458

(805) 654-4761
FAX (805) 654-4765

July 22, 1998

James D. Mansdorfer
Southern California Gas Co.
22245 Placerita Canyon Road ML9181
Newhall, CA 91322-1124

Dear Mr. Mansdorfer:

Water-Disposal Project
Aliso Canyon Field
"Fernando Fee" 30

In the process of conducting an evaluation into your "Notice to Rework" and "Supplementary Notice" for "Fernando Fee" 30, this Division determine that several wells in the vicinity of the well did not have the required cement behind the production string to protect the fresh waters from injection zone. However, this Division was able to approve the injection into this wells provided that a monitoring program was devised. As a result, the Division will require that static temperature surveys be conducted on the following wells within 60 days after injection has commenced and once a year thereafter.

Wells
"Fernando" Fee 35D
"Fernando Fee" 33
"Porter" 37-A

This Division shall be notified every year to witness the surveys and copies submitted within 60 days after the surveys are conducted.

If you have any questions on this matter, please contact us (805) 654-4761.

Steven A. Fields
Operations Engineer
Division of Oil, Gas, and
Geothermal Resources

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

REPORT ON PROPOSED CHANGE OF WELL DESIGNATION

Ventura, California

October 30, 1991

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

Your request, dated July 24, 1991, proposing to change the designation of well(s) in Sec. 27, T. 3N, R. 16W, S.B. B. & M., Aliso Canyon field, Los Angeles County, District No. 2, has been received.

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

FROM	TO
"SFZU" P-12 (037-00701)	"Porter" 12 (037-00701)
"SFZU" P -14 (037-00703)	"Porter" 14 (037-00703)
"SFZU" P-30 (037-00717)	"Porter" 30 (037-00717)
"SFZU" P-31 (037-00718)	"Porter" 31 (037-00718)
"SFZU" P-32 (037-00719)	"Porter" 32 (037-00719)
"SFZU" P-36 (037-00723)	"Porter" 36 (037-00723)
"SFZU" P-37 (037-00724)	"Porter" 37 (037-00724)
"SFZU" P-45 (037-00732)	"Porter" 45 (037-00732)
"SFZU" FF-32 (037-00686)	"Fernando Fee" 32 (037-00686)
"SFZU" P-50A (037-22737)	"Porter 50A (037-22737)
"SFZU" P-68A (037-22742)	"Porter" 68A (037-22742)
"SFZU" P-37-A (037-22046)	"Porter" 37-A (037-22046)
"SFZU" FF-32-A (037-21872)	"Fernando Fee" 32-A (037-21872)

M. G. MEFFERD, State Oil and Gas Supervisor

By Patrick J. Kinnear
Deputy Supervisor
PATRICK J. KINNEAR

OGD157 (10/85/DWRR/1M)

OPERATOR So. Cal. Gas
LSE & NO SFZU P-37A
MAP 254

	(1)	( )	( )	( )	( )	( )
INTENTION	Drill U.S.					
NOTICE DATED	8-24-79					
P-REPORT NUMBER	279-272					
CHECKED BY/DATE						
MAP LETTER DATED	9-15-79					
SYMBOL	★ Prod 4/10/80					

	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED
NOTICE	9-6-79											
HISTORY	6-4-80											
SUMMARY	6-4-80											
IES/ELECTRIC LOG (IEL)	7-15-80											
DIRECTIONAL SURV	6-4-80											
CORE/SWS DESCRIP												
OTHER (WSO, MS/LCM, Caliper log, Photon Neutron EDL)	5-1-80 5-28-80 5-30-80 6-20-80											
RECORDS COMPLETE (OK)	7-15-80											

ENGINEERING CHECK

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

CLERICAL CHECK

POSTED TO 121 _____ 170 MAILED _____ FINAL LETTER MAILED _____

RELEASED BOND _____

REMARKS: _____

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

WELL SUMMARY REPORT

SUBMIT IN DUPLICATE

Operator So. Calif. Gas Co., Well No. Porter 37-A, API No. 037-22046,

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

Location 2860' south and 1353' west from Station #84
(Give surface location from property or section corner, or street center line and/or lambert coordinates)

Elevation of ground above sea level 1898 feet.

All depth measurements taken from top of Kelly Bushing which is 21 feet above ground.
(Derrick Floor, Rotary Table or Kelly Bushing)

In compliance with Sec. 3215, Division 3 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 May 22, 1980

Signed P. S. Magruder, Jr.

D. S. Smiley
(Engineer or Geologist)

Title Agent

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

Commenced drilling March 28, 1980

Completed drilling May 17, 1980

Total depth (1st hole) 7850' (2nd) - (3rd) -

Present effective depth 7850'

Junk None

GEOLOGICAL MARKERS DEPTH

Formation and age at total depth Miocene

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

Name of producing zone Sesnon (S-4 & S-8)

	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	Grade and Type of Casing	New or Second Hand	Size of Hole Drilled	Numbers of Sacks or Cubic Feet of Cement	Depth of Cementing if through perforations
13-3/8"	1024'	Surf.	54.5	K-55 Butt.	New	17-1/2"	1030 CF	-
8-5/8"	7560'	Surf.	36&40	N-80 Butt.	New	12-1/4"	1850 CF	-
5-1/2"	7839'	7386'	20	K-55 LT&C	New	7-5/8" Openedto	Gravel	-
				Screen Liner		15"	Packed	

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

8-5/8" - Jet perforated four 1/2" HPF 7472'-74' cp'd; 7471' WSO

5-1/2" - .010" wire wrapped screen 7397'-7438', 7548'-7829'

Was the well directionally drilled? Yes If yes, show coordinates at total depth 123'north and 675' east

Electrical log depths 7600' and 7850' Other surveys Comp Neutron-Density, Cement Bond Log

OG 100

ATTACH ONE COPY OF EACH LOG AND SURVEY

27907-705 10-74 6M ② OSP

SUBMIT IN DUPLICATE

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

History of Oil or Gas Well

Operator Southern California Gas Co. Field or County Aliso Canyon
Well Porter #37-A, Sec. 27, T3N, R16W, S.BB. & M.
A.P.I. No. 037-22046 Name P. S. Magruder, Jr. Title Agent
Date May 19, 1980 (Person submitting report) (President, Secretary or Agent)

Signature P. S. Magruder

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

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

Date	
1980	GWO # 98593 KZ was issued to drill and complete Porter #37-A as a new gas storage well in the Sesnon zone.
3.22.-3.27.	Moved Kenai Drilling Company Rig #2 onto well site and rigged up.
3.28.	Completed rigging up. Suspended operations for rig repairs. Spudded at 8:00 pm. Drilled 17 1/2" hole to 70' with bit #RRI.
3.29.	Drilled from 147' to 338' with 17 1/2" bit #RRI and to 414' with 17 1/2" bit #2.
3.30.	Drilled from 414' to 1,021' with 17 1/2" bit #2.
3.31.	Circulated hole clean. Pulled out of hole. Rigged up and ran 27 joints of 13 3/8" 54.5# casing. Total on hook 1,026'. Cemented casing with 800 cu.ft. of class "G" cement premixed with 8% gel and 3% calcium chloride followed with 200 sacks class "G" neat cement, with 3% calcium chloride. Casing fitted with Baker float shoe at 1,024', Baker baffle collar at 998'. Bottom two joints fitted with two centralizers and three scratchers. Bumped plug with 100 psi. Cement in place at 4:15 pm. Landed 13 3/8" casing. Welded on 13 5/8" 5,000 psi casing head.
4.01.	Welded on 13 5/8" 5,000 psi casing head. Pressure tested weld to 1,500 psi. X-rayed weld. Installed 12" 5,000 psi BOPE, kill line and choke manifold.

4.02. Tested blind rams to 2,700 psi with water for 20 minutes. Ran drill pipe in well to 941'. Tested 4 1/2" pipe rams to 2,700 psi for 20 minutes. Tested Hydril bag and choke manifold to 2,700 psi with water for 20 minutes. Tested 4 1/2" pipe rams, blind rams, Hydril bag, choke manifold and lines to 2,700 psi with nitrogen for 20 minutes. Drilled out cement from 982' to 1,024'. Drilled 12 1/4" hole from 1,024' to 1,202' with bit #3.

4.03. Drilled 12 1/4" hole from 1,202' to 1,782' with bit #3.

4.04. Drilled 12 1/4" hole from 1,782' to 2,396' with bit #4 and to 2,532' with bit #5.

4.05. Drilled 12 1/4" hole from 2,532' to 2,835' with bit #5 and to 3,118' with bit #6.

4.06. Drilled 12 1/4" hole from 3,118' to 3,601' with bit #7 and to 3,638' with bit #8.

4.07. Drilled 12 1/4" hole from 3,638' to 4,157' with bit #8 and to 4,205' with bit #9.

4.08. Drilled 12 1/4" hole from 4,205' to 4,438' with bit #9 and to 4,467' with bit #10. Lost 300 psi. Pulled out of well. Left three drill collars in hole. Ran in hole with Midway 7 7/8" x 10 1/8" overshot.

4.09. Ran in hole with Midway 7 7/8" x 10 1/2" overshot and worked over top of fish at 4,337'. Pulled out of hole with entire fish. Laid down fishing tools. Ran in hole with drilling set up and reamed from 4,455' to 4,467'. Drilled 12 1/4" hole from 4,467' to 4,522'. Twisted box off on drill collar and pulled out of well.

4.10. Picked up four 7 1/4" drill collars and Midway 7 7/8" x 10 1/8" overshot. Ran in hole and worked over top of fish at 4,360'. Pulled out of hole and recovered entire fish. Laid down fishing tool and five 7 3/4" drill collars. Picked up six 8" drill collars and made up drilling assembly. Ran in hole. Reamed from 4,443' to 4,534'.

4.11. Drilled 12 1/4" hole from 4,534' to 4,695' with bit #12 and to 4,950' with bit #13.

4.12. Drilled 12 1/4" hole from 4,950' to 5,280' with bit #13. Dynadrilled 12 1/4" hole from 5,280' to 5,417' with bit #14.

4.13. Dynadrilled 12 1/4" hole from 5,417' to 5,503' with bit #14 and to 5,575' with bit #15.

4.14. Dynadrilled 12 1/4" hole from 5,575' to 5,696' with bit #16 and to 5,767' with bit #17.

4.15. Dynadrilled 12 1/4" hole from 5,767' to 5,847' with bit #18 and to 5,922' with bit #19.

4.16. Dynadrilled 12 1/4" hole from 5,922' to 5,936' with bit #19. Pulled out of well. Made up drilling set up. Ran in well. Reamed from 5,250' to 5,936'. Directionally drilled 12 1/4" hole to 6,024' with bit #20.

4.17. Directionally drilled 12 1/4" hole from 6,024' to 6,138' with bit #20 and to 6,277' with bit #21.

4.18. Directionally drilled 12 1/4" hole from 6,277' to 6,490' with bit #21 and to 6,644' with bit #22.

4.19. Directionally drilled 12 1/4" hole from 6,644' to 6,755' with bit #22 and to 6,869' with bit #23.

4.20. Directionally drilled 12 1/4" hole from 6,869' to 6,960' with bit #23 and to 7,235' with bit #24.

4.21. Directionally drilled 12 1/4" hole from 7,235' to 7,454' with bit #25. Raised mud weight from 71 to 75#/cu.ft.

4.22. Directionally drilled 12 1/4" hole from 7,454' to 7,560' with bit #25 and to 7,600' with bit #26.

4.23. Ran Welex induction and caliper logs and recorded from 7,585' to 1,018'. Laid down monel and six 7 3/4" drill collars. Ran 12 1/4" bit #26RR to 7,600' and circulated well clean. Pulled out of well and laid down reamining 7 3/4" drill collars. Changed to 8 5/8" pipe rams and strung 10 lines. Rigged up to run 8 5/8" casing.

4.24. Ran 189 joints of 8 5/8" buttress thread N-80 casing including 49 joints or 2,014.86' of 40# and 134 joints or 5,581.79' of 36#. Bottom 25 joints of 40# casing were grit blasted. One joint of the 40# casing total was used as a landing joint. One centralizer was placed at mid shoe joint and centralizers were placed over every casing coupling up to 5,000' and on every other coupling from 5,000' to 1,000'. No scratchers were used. Bottom four joints were treated with thread locking compound. Casing was made up using Baker Torque Turn equipment. There was a float shoe installed at 7,560' and float collar at 7,438'. Circulated and reciprocated casing and added corrosion inhibitor. Casing was cemented with 500 cu.ft. of CW-7 wash ahead of 1,200 cu.ft. of 1-1 class "G" cement "Lite-Poz3" premixed with 1% "D-65" and 0.5% "D-60" and followed with 400 cu.ft. of class "G" cement with 0.75% "D-65" and 0.5% "D-60" followed with 250 cu.ft. of self-stress cement with 0.5% "D-65" and 0.2% "D-108". One top plug was displaced with 2,503 cu.ft. mud reciprocating casing throughout. Plug was not bumped. Cement in place at 10:15 pm.

4.25. Lifted BOPE and landed 8 5/8" casing with 210,000# on slips. Cut and recovered 8 5/8" casing stub. Installed seal flange, and tubing head and tested installation to 5,000 psi. Installed BOPE and tested blind rams, pipe rams and kill manifold to 4,000 psi with water. Tested Hydril GK to 3,000 psi with water.

4.26. Tested kill manifold, blind and pipe rams to 4,000 psi and Hydril to 3,000 psi with nitrogen. Laid down 4 1/2" drill pipe and kelly. Picked up 3 1/2" kelly and drilling assembly. Picked up 3 1/2" drill pipe and installed casing protector rubbers.

4.27. Continued picking up 3 1/2" drill pipe. Found top of cement at 7,398'. Cleaned pits and displaced clay mud from well with lease salt water. Drilled out cement to 7,551'. Circulated hole clean and started pulling drill pipe.

4.28. Continued out of well. Ran Welex cement bond and neutron logs and recorded from 7,534' to 3,600'. Closed blind rams and pressure tested 8 5/8" casing to 2,500 psi for 20 minutes. Welex shot four 1/2" jet holes at 7,473'. (Induction log 7,470'). Closed blind rams and applied 2,000 psi for 20 minutes, lost 50 psi. Repeated test with same results. Ran Baker model "K" drillable cement retainer to 7,481'. Dowell pumped 10 cu.ft. fresh water ahead of 20 cu.ft. 12-3 acid followed by 10 cu.ft. fresh water and 297 cu.ft. hole fluid. Pulled retainer above acid to 7,290', closed pipe rams and braden head squeezed away 20 cu.ft. acid at 2,500 psi at 5 cu.ft. per hour. No breakdown.

4.29. Spotted an additional 30 cu.ft. of 12-3 acid through tools hung at 7,481'. Pulled out of hole. Welex shot four 1/2" holes at 7,472'. Closed blind rams and applied 2,500 psi to 8 5/8" casing but were unable to squeeze acid through holes at 7,473' - 7,472'. Ran open end 3 1/2" drill pipe to 7,481' and equalized 57 cu.ft. of latex cement. Pulled to 7,306' and reversed 3 cu.ft. cement to surface. Braden head squeezed with 2,500 psi 2-3 cu.ft. away. Held pressure for 20 minutes. Released pressure and pulled out of hole.

4.30. Ran 7 5/8" bit and casing scraper. Located top of cement at 7,320'. Drilled cement to 7,474'. Cleaned out to 7,545' and circulated well clean. Pulled out, closed blind rams and pressure tested casing to 2,000 psi for 20 minutes. Rigged up Welex.

5.01. Welex shot four 1/2" jet holes at 7,471'. Closed blind rams and pressure tested holes with 2,000 psi for 20 minutes. Ran Lynes test tools on dry 3 1/2" drill pipe. Set packer at 7,442' with tail to 7,461'. Opened tool at 7:05 am. Witnessed very faint blow in bubble bucket for one minute then dead for remainder of one hour test. Test witnessed and approved by DOG. Pressures recorded.

	Top inside @ 7,452'	Bottom recorder @ 7,457'
IH	3,229.5	3,228.9
FH	3,229.5	3,228.9
IF	5.0	6.5
FF	5.0	6.5

Installed casing bowl protector in tubing head. Ran 7 5/8" bit #28 on drilling assembly to 7,545'. Cleaned mud pits and displaced lease water from well with HEC Brine-polymer completion fluid.

5.02. Drilled out cement and 8 5/8" casing shoe at 7,560'. Cleaned out to 7,580' and drilled to 7,745' with bit #28 and to 7,811' with bit #29. Ran 7 5/8" bit #30.

5.03. Reamed from 7,776' to 7,811'. Drilled 7 5/8" hole from 7,811' to 7,850' with bit #30. Circulated hole clean and pulled out. Ran Welex Induction, Compensated Density and Neutron logs and recorded from 7,844' to 7,560'. Ran OMT 7 5/8" x 15" hole opener #1 and opened 7 5/8" hole to 15" from 7,560' to 7,584'.

5.04. Opened 7 5/8" hole to 15" from 7,584' to 7,609' with hole opener #1, to 7,667' with hole opener #2 and to 7,680' with hole opener #3.

5.05. Opened 7 5/8" hole to 15" from 7,680' to 7,704' with hole opener #3, to 7,752' with hole opener #4 and to 7,763' with hole opener #5.

5.06. Opened 7 5/8" hole to 15" from 7,763' to 7,790' with hole opener #5 and to 7,840' with hole opener #6. Ran 7 5/8" x 15" hole opener #7 and gauge reamed from 7,561' to 7,840'.

5.07. Circulated well clean and pulled out. Ran Dresser Atlas Caliper Log with borehole volume integrator and recorded from 7,840' to 7,558'. Ran 7 5/8" bit to 7,840', cleaned suction pit and displaced fluid from well with new filtered 76# HEC Brine-polymer completion fluid. Pulled out of well and assembled 5 1/2" liner. Cleaned remaining mud pits.

5.08. Ran 10 joints of 5 1/2" 20# K-55 LT&C liner including seven joints of 10 mesh wire wrapped screen with closed shoe on bottom, followed by two joints of blank liner with welded centralizer lugs for 8 5/8" casing, followed by one joint of 10 mesh wire wrapped screen tattletale, a Burns port collar with 5' blank extension and a Burns lead seal liner hanger with hold down slips. Total overall measurement of liner 417.79'. Liner hanger slips failed to activate. Hold down slips did engage casing and were tested with 30,000# pull. Test of lead seal failed. Liner shoe is at 7,843' and top of liner hanger is at 7,425'. Pulled out of well and waited on Burns secondary lead seal.

5.09. Ran and set Burns secondary lead seal at 7,428'. Pressure test of secondary seal failed. Pulled out and made up fishing tools. Ran full circle spear, jars and bumper sub and engaged secondary seal at 7,428'. Jarred for two hours with no movement of fish. Pulled out and ran modified spear.

5.10. Engaged secondary lead seal at 7,428'. Jarred tool loose and pulled out of hole recovering secondary seal. Ran open end casing scraper and scraped 8 5/8" casing from 7,390' to 7,428'. Circulated clean and pulled out. Ran Burns secondary seal #2 which was set at 7,428'. Lead seal did not test. Ran modified spear and recovered secondary lead seal.

5.11. Ran spear and recovered entire liner in good condition. Ran OMT 7 5/8" x 15" hole opener and reamed from 7,560' to 7,711'.

5.12. Continued reaming 15" hole from 7,711' to 7,840'. Circulated hole clean and pulled out. Ran 12 joints of 5 1/2" 20# K-55 and N-80 LT&C liner including bull plug shoe with welded spade on bottom, 10.07' blank pup joint, seven joints or 280.74' of stainless steel wire wrapped 0.010" mesh screen, two joints or 84.97 of blank liner with welded lugs from 8 5/8" casing, one joint or 24.65' of N-80 casing, one joint or 40.80' of wire wrapped screen tattletale, Burns port collar 6.15' and a Burns lead seal liner hanger with hold down slips of 4.55'. Top of liner hanger at 7,386', shoe at 7,839'. Total overall measurement of liner 453.14'. B&W 5 1/2" x 15" centralizers were placed over each coupling in open hole, total seven centralizers. Set and tested lead seal to 500 psi. Pulled out of well. Ran Baker sand control gravel pack tools with 13 joints of 2 3/8" tubing tail. Tested port collar to 500 psi

5.13. Opened port collar at 7,391' and gravel packed liner with 330 sacks of 20-40 gravel. Reversed approximately 1 sack of gravel to surface leaving 329 sacks in place. Closed port collar and pulled out of hole. Ran Baker sand control liner washer.

5.14. Washed 5 1/2" liner from 7,828' to 7,547' and from 7,437' to 7,397' and pulled out of hole. Ran Baker sand control gravel pack tools. Opened port collar and packed liner with three sacks of 20-40 gravel with resultant pack-off. Reversed out one sack of gravel leaving a total of 331 sacks 20-40 gravel behind liner or 10% above theoretical estimate. Ran Dresser Atlas photon log and recorded from 7,839' to 7,250'. Ran Otis 8 5/8" permatrieve packer on Dresser Atlas wire line.

5.15. Set packer at 7,330'. Laid down all 3 1/2" drill pipe, Kelly and drill collars. Began picking up 3 1/2" tubing.

5.16. Continued picking up 3 1/2" tubing. Latched into Otis packer at 7,330'. Pulled 20,000# to check latch. Set 20,000# on packer, closed 3 1/2" pipe rams and pressure tested packer and seals to 1,500 psi for 15 minutes. Unlatched from packer and pulled out of hole. Ran Otis guide, production tube, six seals, locator, 2.562" No-Go nipple and sliding sleeve on 33 joints of 3 1/2" N-80 and 200 joints of J-55 tubing. Spaced out and landed tubing with 18,000# on packer. Hydrotested all tubing connections to 5,000 psi holding each test for one minute. Installed back pressure valve in tubing hanger.

5.17. Removed BOPE and installed xmas tree. Pressure tested tree to 5,000 psi. Displaced polymer completion fluid from well with waste salt water. Tightened all wellhead bolts and checked all wellhead valves closed. Released rig at 8:00 pm. 5.17.80.

Eastman Whipstock
A PETROLANE COMPANY

REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY

SOUTHERN CALIF. GAS CO.
COMPANY

PORTER 37A
WELL NAME

ALISO CANYON
LOCATION

JOB NUMBER	TYPE OF SURVEY	DATE
P-0380-D0596	SINGLE SHOT	15 APR 80

SURVEY BY KEN WALKER

LONG BEACH OFFICE

SOUTHERN CALIF. GAS CO.
WELL NO: PORTER NO:37-A FILE: B1-132
ALISO CANYON
DATE: 15-APR-80
JOB NO: f0380-D0596
ELEV:
DECL: 16E
TYPE: SINGLE-SHOT
SEC. BEARING: N82 43E
VENDOR: EASTMAN WHIPSTOCK
SURVEYOR: WALKER

VERTICAL SECTION CALCULATED IN PLANE OF PROPOSAL
DIRECTION: N 82 DEG. 43 MIN. E

RECORD OF SURVEY

RADIUS OF CURVATURE METHOD

SOUTHERN CALIF. GAS CO.
WELL NO: PORTER NO:37-A FILE: B1-132
ALISO CANYON

COMPUTATION
TIME 00:05:45
DATE 00--00
PAGE NO.

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH FEET	TRUE VERTICAL DEPTH FEET	VERTICAL SECTION FEET	RECTANGULAR COORDINATES FEET	CLOSURE DISTANCE FEET	CLOSURE DIRECTION D M	DOGLE SEVERI DG/100
0.	0 0	0 0	0.	0.00	0.00	0.00 0.00	0.00	0 0	0.00
201.	0 30	S 24 0 E	201.	201.00	0.25	0.80 S 0.36 E	0.88	S 24 0 E	0.25
414.	1 0	S 41 0 W	213.	413.98	-0.47	3.41 S 0.03 W	3.41	S 0 34 W	0.43
627.	1 0	S 11 0 W	213.	626.95	-2.48	6.72 S 1.64 W	6.92	S 13 45 W	0.24
846.	1 0	S 45 0 E	219.	845.91	-1.86	10.23 S 0.57 W	10.24	S 3 12 W	0.43
1024.	2 0	S 82 0 E	178.	1023.85	1.94	12.27 S 3.53 E	12.77	S 16 2 E	0.75
1202.	2 45	S 79 0 E	178.	1201.70	9.00	13.49 S 10.80 E	17.28	S 38 41 E	0.43
1405.	4 0	N 88 0 E	203.	1404.34	20.68	14.42 S 22.69 E	26.89	S 57 33 E	0.72
1616.	2 45	N 82 0 E	211.	1614.97	33.08	13.34 S 35.06 E	37.51	S 69 10 E	0.61
1782.	1 15	S 90 0 E	166.	1780.86	38.86	12.94 S 40.83 E	42.83	S 72 25 E	0.92
1991.	1 0	S 70 0 E	209.	1989.82	42.76	13.65 S 44.85 E	46.88	S 73 5 E	0.2
2198.	0 45	S 89 0 E	207.	2196.80	45.76	14.22 S 47.95 E	50.01	S 73 29 E	0.18
2396.	0 45	S 40 0 E	198.	2394.78	47.87	15.30 S 50.21 E	52.49	S 73 3 E	0.31
2600.	0 15	S 1 0 W	204.	2598.77	48.24	16.95 S 50.80 E	53.55	S 71 33 E	0.29
3013.	1 0	N 49 0 W	413.	3011.75	44.79	18.41 S 47.51 E	50.95	S 68 49 E	0.28
3136.	1 0	N 66 0 W	123.	3134.73	43.15	17.26 S 45.70 E	48.86	S 69 18 E	0.24
3340.	1 15	N 74 0 W	204.	3338.69	39.59	15.89 S 41.94 E	44.85	S 69 15 E	0.14
3540.	1 15	N 60 0 W	200.	3538.64	35.83	14.19 S 37.93 E	40.50	S 69 29 E	0.13
3753.	1 0	S 78 0 W	213.	3751.60	31.90	13.55 S 33.89 E	36.50	S 68 12 E	0.39
3960.	1 0	N 51 0 W	207.	3958.57	28.63	12.74 S 30.50 E	33.05	S 67 20 E	0.42
4157.	1 0	N 47 0 W	197.	4155.54	26.35	10.48 S 27.90 E	29.81	S 69 24 E	0.04
4366.	1 15	S 36 0 W	209.	4364.50	22.72	10.83 S 24.29 E	26.59	S 65 58 E	0.81
4608.	2 30	S 21 0 W	242.	4606.36	18.10	17.77 S 20.52 E	27.14	S 49 6 E	0.53
4845.	2 30	S 21 0 W	237.	4843.14	13.20	27.42 S 16.81 E	32.17	S 31 31 E	0.00
5051.	2 0	S 23 0 W	206.	5048.98	9.25	34.92 S 13.78 E	37.54	S 21 33 E	0.25
5280.	2 0	S 20 0 W	229.	5277.84	5.40	42.35 S 10.86 E	43.72	S 14 23 E	0.05
5395.	1 30	N 15 0 W	115.	5392.78	2.79	42.24 S 8.21 E	43.03	S 11 0 E	2.91
5457.	3 30	N 15 0 W	62.	5454.72	2.43	39.63 S 7.51 E	40.33	S 10 44 E	3.23
5517.	5 15	N 30 0 E	60.	5514.54	3.57	35.20 S 8.09 E	36.12	S 12 57 E	6.19
5548.	5 30	N 0 0 E	31.	5545.41	4.65	32.43 S 8.84 E	33.61	S 15 14 E	9.00

SOUTHERN CALIF. GAS CO.
WELL NO: PORTER NO:37-A FILE: B1-132
ALISO CANYON

COMPUTATION TIME 00:05:45 DATE 00--00 PAGE NO.

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH FEET	TRUE VERTICAL DEPTH FEET	VERTICAL SECTION FEET	RECTANGULAR COORDINATES FEET	CLOSURE DISTANCE FEET	CLOSURE DIRECTION D M	DOGLE SEVERI DG/100
5579.	7 0	N 5 0 W	31.	5576.22	4.93	29.06 S 8.69 E	30.33	S 16 39 E	5.14
5610.	8 0	N 5 0 E	31.	5606.96	5.45	25.02 S 8.69 E	26.49	S 19 9 E	5.29
5641.	9 0	N 10 0 E	31.	5637.62	6.62	20.48 S 9.29 E	22.49	S 24 24 E	4.01
5673.	10 0	N 15 0 E	32.	5669.18	8.40	15.32 S 10.43 E	18.54	S 34 14 E	4.05
5704.	10 30	N 22 0 E	31.	5699.68	10.80	10.10 S 12.18 E	15.82	S 50 21 E	3
5735.	10 15	N 29 0 E	31.	5730.18	13.82	5.06 S 14.58 E	15.43	S 70 52 E	4.14
5766.	9 30	N 37 0 E	31.	5760.72	17.26	0.60 S 17.47 E	17.49	S 88 1 E	5.94
5797.	9 45	N 44 0 E	31.	5791.28	21.09	3.33 N 20.84 E	21.10	N 80 55 E	3.86
5828.	9 30	N 51 0 E	31.	5821.84	25.33	6.83 N 24.66 E	25.59	N 74 31 E	3.86
5858.	11 0	N 56 0 E	30.	5851.36	29.98	10.01 N 28.95 E	30.63	N 70 56 E	5.81
5888.	12 0	N 60 0 E	30.	5880.76	35.41	13.18 N 34.02 E	36.48	N 68 50 E	4.26
5990.	14 0	N 72 0 E	102.	5980.14	57.35	22.49 N 54.94 E	59.37	N 67 44 E	3.28
6085.	16 30	N 74 0 E	95.	6071.79	81.98	29.80 N 78.83 E	84.28	N 69 18 E	2.69
6252.	18 0	N 78 0 E	167.	6231.27	131.15	41.77 N 126.87 E	133.57	N 71 47 E	1.14
6465.	18 30	N 78 0 E	213.	6433.56	197.62	55.64 N 192.12 E	200.02	N 73 51 E	0.23
6580.	20 0	N 80 0 E	115.	6542.13	235.46	62.88 N 229.34 E	237.80	N 74 40 E	1.42
6703.	21 30	N 82 0 E	123.	6657.14	279.01	69.69 N 272.37 E	281.15	N 75 39 E	1.35
6935.	21 0	N 83 0 E	232.	6873.37	363.10	80.67 N 355.74 E	364.77	N 77 13 E	27
7155.	21 15	N 83 0 E	220.	7078.58	442.39	90.33 N 434.44 E	443.74	N 78 15 E	0.11
7264.	20 30	N 83 0 E	109.	7180.43	481.23	95.07 N 473.00 E	482.45	N 78 38 E	0.69
7525.	20 15	N 82 0 E	261.	7425.10	572.10	106.93 N 563.08 E	573.15	N 79 15 E	0.16
7850.	20 15	N 82 0 E	325.	7730.01	684.57	122.58 N 674.48 E	685.53	N 79 42 E	0.00

URVEY AT STATION 7850 IS A PROJECTED STATION

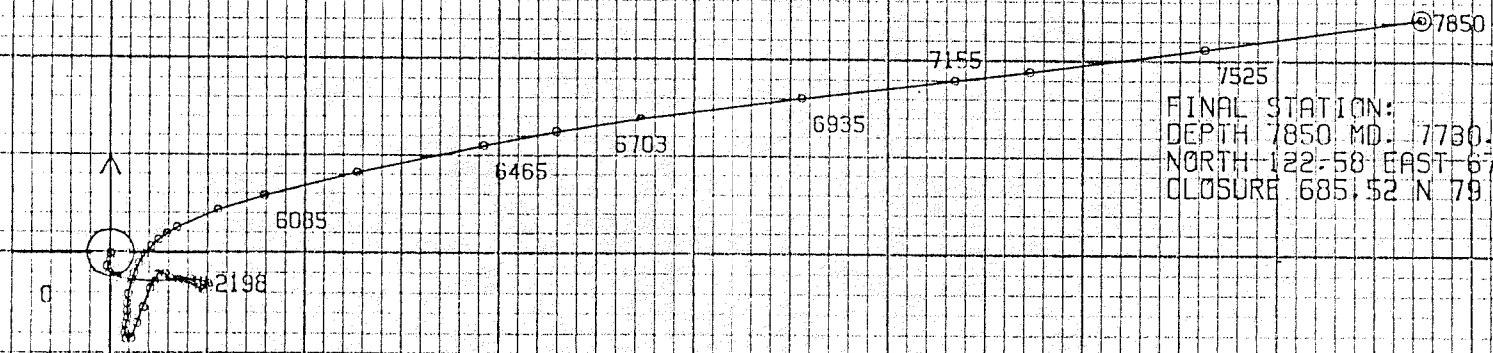
FINAL CLOSURE - DIRECTION: N 79 DEGS 41 MINS 58 SECS E
DISTANCE: 685.53 FEET

SOUTHERN CALIF. GAS CO.
WELL NO: PORTER NO:37-A FILE: B1-132
ALISO CANYON

EASTMAN WHIPSTOCK, INC.

HORIZONTAL PROJECTION

SCALE 1 IN. = 100 FEET
DEPTH INDICATOR: MD



FINAL STATION:
DEPTH 7850 MD. 7730.00 TVD
NORTH 122.58 EAST 674.47
CLOSURE 685.52 N 79 41 55 E

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

No. T 280-116

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.
May 13, 1980

Your operations at well "SFZU" P-37-A, API No. 037-22046, Sec. 27, T. 3N R. 16W S.B., B.& M. Aliso Canyon Field, in Los Angeles County, were witnessed on 5/1/80. Ed Hickey, representative of the supervisor, was present from 0930 to 1300. There were also present Mr. Arch Awalt, So. Cal Gas foreman

Present condition of well: 13 3/8" cem 1024', 8 5/8" cem 7560', T.D. 7570'.

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

DECISION:

THE 8 5/8" SHUT-OFF AT 7471' IS APPROVED.

b

M. G. Mefferd
State Oil and Gas Supervisor

By
Deputy Supervisor

John L. Hardoin

OG109 (10-78-GSR1-15M)

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

No. P 279-272

REPORT ON PROPOSED OPERATIONS

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

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

Santa Paula, California
Sept. 12, 1979

Your proposal to drill gas storage well "SFZU" P-37-A,
A.P.I. No. 037-22046, Section 27, T. 3N, R. 16W, S.B. B. & M.,
Los Aliso Canyon field, Main area, Sesnon-Frew pool,
Los Angeles County, dated 8/24/79, received 9/6/79 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 to the surface.
2. Hole fluid of sufficient quality and quantity shall be maintained in the hole to contr any subsurface condition, and a reserve supply shall be on hand for emergencies.
3. Unlined sumps, if they contain harmful waters, shall not be located over fresh water bearing aquifers.
4. Any sump used during these operations shall be thoroughly cleaned and filled with earth as soon as operations are completed.
5. Blowout prevention equipment of at least DOG Class III 1M B shall be installed on the 13 3/8" casing and Class III 3M B on the 8 5/8" casing and maintained in operating condition at all times.
6. This office shall be consulted before placing any plugs.
7. The spacing provisions of Section 3606 shall be followed.
8. A subsurface directional survey shall be made.
9. THIS DIVISION SHALL BE NOTIFIED TO WITHESS:
   a. A pressure test of the blowout prevention equipment before drilling below 1000'.
   b. A test of the 8 5/8" shut-off above the zone to be produced.

Blanket Bond
MD:b

EH/Arch Awalt
So. Cal Gas Company
5/2/80

Bope was tested on 4/2/80. Apparently the test was waived by a field engineer, who didnt make a notation of it anywhere. Test charts are file for inspection in drilling trailer at Aliso Canyon

Bope was waived by Fred Taylor at 0400 on 4/2/80. No gasoline available.

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 (1-79-GSRI-5M)

DIVISION OF OIL AND GAS
Notice of Intention to Drill New Well

C.E.Q.A. INFORMATION			
EXEMPT ☐ CLASS____	NEG. DEC. ☐ S.C.H. NO.____	E.I.R. ☐ S.C.H. NO.____	DOCUMENT NOT REQUIRED BY LOCAL JURISDICTION ☒
See Reverse Side			

FOR DIVISION USE ONLY					
MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
254	9-6-79 ER	✓	BB	✓	✓

In compliance with Section 3203, Division 3 Public Resources Code, notice is hereby given that it is our intention to commence drilling well ~~Porter 37-A~~ "SFZU" P-37-A, API No.____ (Assigned by Division),

Sec. 27, 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)

DIVISION OF OIL AND GAS
RECEIVED
SEP 6 1979
SANTA PAULA, CALIFORNIA

Previously Submitted

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____ feet____ (Direction) along section / property line and ____ feet____ (Direction)

at right angles to said line from the____ corner of section / property ____ (Cross out one) or

2881' south and 1353' west from station 84

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

If well is to be directionally drilled, show proposed coordinates (from surface location) at total depth:
690 feet east (Direction) and 88 feet north (Direction)

Elevation of ground above sea level 1898 feet.

All depth measurements taken from top of Kelly Bushing that is 22 feet above ground.
(Derrick Floor, Rotary Table, or Kelly Bushing)

PROPOSED CASING PROGRAM

SIZE OF CASING INCHES API	WEIGHT	GRADE AND TYPE	TOP	BOTTOM	CEMENTING DEPTHS	CALCULATED FILL BEHIND CASING
13-3/8"	54.5	K-55 Butt.	Surf.	1000'	1000'	To Surface
8-5/8"	36 & 40	N-80 Butt.	Surf.	7590'	7590'	To 4000'
5-1/2"	20	K-55 LT&C	7700'	7840'	Gravel Pack Screen Liner	-

(A complete drilling program is preferred and may be submitted in lieu of the above program.)

Intended zone(s) of completion Sesnon (S-4 and S-8), 3200 psi (Name, depth, and expected pressure) Estimated total depth 7850'

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

Name of Operator	Type of Organization (Corporation, Partnership, Individual, etc.)	
So. California Gas Company	Corporation	
Address	**City**	**Zip Code**
P.O. Box 3249 Terminal Annex	Los Angeles, CA	90051
Telephone Number	**Name of Person Filing Notice**	**Signature** / **Date**
213-689-3561	P. S. Magruder, Jr.	

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

OG105 (7-78-GSRI-5M)