

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
REPORT ON OPERATIONS

No. T216-0145

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

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

Ventura, California
May 05, 2016

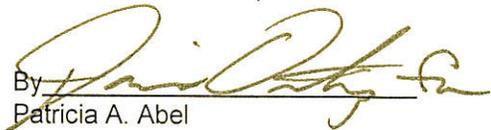
Your operations at well "**Porter**" 68A, A.P.I. No. 037-22742, Sec. 27, T. 03N, R. 16W, SB B. & M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on 4/27/2016, by **Ernest Blevins**, a representative of the supervisor.

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

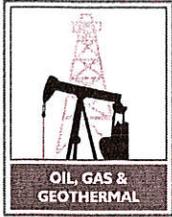
DECISION:

APPROVED

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By 
Patricia A. Abel
District Deputy

EB/tkc
OG109



URAL 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 216-0054**

PERMIT TO CONDUCT WELL OPERATIONS

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

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

Ventura, California
 April 28, 2016

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

Your proposal to **Rework** well "**Porter**" 68A, A.P.I. No. **037-22742**, Section **27**, T. **03N**, R. **16W**, **SB B. & M.**, **Aliso Canyon** field, **Any** area, **Sesnon-Frew** pool, **Los Angeles** County, dated **4/25/2016**, received **4/25/2016** has been examined in conjunction with records filed in this office. (Lat: **34.315972** Long: **-118.550910** 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 **9 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 **Temperature and Noise log** are run on the well from the packer to the surface.
5. A **Casing Wall Thickness, Cement Bond Log, and a Multi-Arm Caliper Inspection** shall be performed to demonstrate the mechanical integrity of the **9 5/8"** casing.
6. Prior to commencing injection, a pressure test is conducted to demonstrate the mechanical integrity of the **9 5/8"** casing and production tubing.
7. Injection shall be through the tubing and packer only. Injection withdrawal through the casing is not permitted.
8. This office shall be contacted by phone prior to making any program changes and no changes are made without Division approval.
9. **THIS DIVISION SHALL BE NOTIFIED TO:**
 - a. Witness a test of the installed blowout prevention equipment prior to commencing **downhole** operations.
 - b. Witness a pressure test of the **9 5/8"** casing and production tubing prior to commencing injection.

Continued on Next Page

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

Engineer Clifford R. Knight
 Office (805) 654-4761

CRK/crk

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.

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Well #: "Porter" 68A

API #: 037-22742

Permit : P 216-0054

Date: --

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 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 be submitted to the Division within 60 days after the well is drilled, reworked, plugged and abandoned, or if the work is suspended. Any additional well work will require an additional notice to be submitted to this office prior to resuming well operations.

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

cc:

**ATTACHMENT 1
TO DOGGR ORDER 1109**

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

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

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

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

REQUIRED TESTS FOR EACH WELL IN THE FACILITY

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

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

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

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

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

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

REQUIRED TESTS IF A WELL IS INTENDED TO RESUME OPERATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

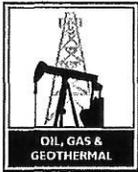
- a. Conduct daily gas monitoring at the surface of the non-operational well, including monitoring the area around the well perimeter and in the annular space between the plugged casing string and the outmost casing;
- b. Conduct noise log, temperature log and positive pressure test every six months;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

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

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

REQUIREMENTS FOR WELLS RESUMING OPERATIONS IN ALISO CANYON

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



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

FOR DIVISION USE ONLY		
Bond	Forms	
		000114
	CGU WIMS	115V

NOTICE OF INTENTION TO REWORK / REDRILL WELL

Detailed instructions can be found at: www.conservation.ca.gov/dog/ **P216-0054**

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to rework / redrill well Porter 68A, API No. 037-22742
 (Check one)

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

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

See attached wellbore schematic

The total depth is: 7315 feet. The effective depth is: 7304 feet.
 Present completion zone(s): Sesson Anticipated completion zone(s): Same
 (Name) (Name)
 Present zone pressure: storage psi. Anticipated/existing new zone pressure: storage psi.

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

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

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

See attached program

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

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

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

Name of Operator Southern California Gas Company		
Address P. O. Box 2300	City/State Chatsworth	Zip Code 91313-2300
Name of Person Filing Notice Brian Vlasko	Telephone Number: 714-655-9506	Signature
Individual to contact for technical questions: Brian Vlasko	Telephone Number: 714-655-9506	Date 04/25/16
	E-Mail Address: bvlasco@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.

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, re-drilling, 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/

WORKOVER PROJECT

Porter 68A – Well Inspection

DATE: April 25, 2016
OPERATOR: SOUTHERN CALIFORNIA GAS COMPANY
FIELD: ALISO CANYON
WELL: Porter 68A
API NUMBER: 037-22742
ELEVATION: All depths based on original KB, 18' above GL
SURFACE LOCATION: SEC 27, T3N, R16W, S.B. B&M

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 2-7/8" 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 RECORD

Current Status:	Active
TD:	7315', PBD at 7304'
Special Conditions:	Last tagged at 7304', temp survey 03/10/2016
Casing Record:	13-3/8", 54.5#, K-55 casing cemented at 1015' with 1038 ft3 9-5/8", 43.5#, 47#, 53.5#, N-80 casing cemented at 7044' with 1850 ft3 5-1/2", 17#, K-55 liner from 6933'-7304'; 10 Mesh WWS from 6944'-6985', 7025'-7303'; liner GP'd inside 15" hole with 357 ft3 20-40 sand
Tubing Record:	See attached mechanical for tubing info. as ran 07/3/1983

GEOLOGIC MARKERS

UDA1	5478'md	-3377'vss	S4	7054'md	-4940'vss
UDA2	5620'md	-3519'vss	S6	7100'md	-4985'vss
LDA	6189'md	-4088'vss	S8	7127'md	-5011'vss
MP	6682'md	-4574'vss	S12	7216'md	-5099'vss
S1	6953'md	-4840'vss	S14	7244'md	-5126'vss
S2	6999'md	-5886'vss	Frew	7272'md	-5154'vss

Estimated Field Pressure: 917 psi on 2/3/2016 (Variable)

Estimated Bottom-hole Temperature: 150°F from 03/10/16 temperature survey

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 as stated on permit.

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.
 - a. Run and set plug in XN nipple (2.205"nogo) @ 6811'. Bleed down 100psi above the plug to test for isolation.
 - b. Run shifting tool to confirm sleeve is in the open position.

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.
 - a.) Connect pump to the tubing and vent the casing through the choke manifold to the SoCalGas withdrawal system.
 - b.) Treat all brine with Biocide, 5 gals/100 bbls
3. Change well over to 8.5 ppg KCL brine. The tubing volume is approximately 44 bbls. and the tubing/casing annulus is approximately 497 bbls. Use HEC polymer as required to minimize lost circulation.
4. Install backpressure valve in tubing hanger. Nipple down tree. Send-in wellhead and tree components to Cameron for inspection.
5. +++Install a 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.
 - a.) Pressure test the Class III 5M annular preventer to 3500 psig for 20 minutes. Test blind rams and the 2-7/8" pipe rams to 5000 psig for 20 minutes. Test all lines and connections to 5000 psig.
 - b.) 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.
 - c.) All tests are to be charted and witnessed by a DOGGR representative.
 - d.) Remove BPV.

6. Attempt to un-latch from Baker Model D packer at 6889' and Otis WB Perma-Drill packer at 6894' (tubing tail at 6930'). POOH laying down all 2-7/8", EUE 8rd, J-55 tubing string and jewelry. Note: tubing landed in 10,000 lbs. compression.
7. If tubing doesn't release, fish tubing and mill over/recover Baker Model D & Otis Perma-Drill packers as required using 2-7/8", 6.5#, P-110 TKC workstring. Run a Baker shoe to burn over the Model D packer. After retrieving Model D packer determine plan to retrieve Otis PermaDrill packer.
8. Pick-up a 9-5/8" all weight scraper for 43.5# - 53.5# casing on 2-7/8" workstring string and RIH to 5-1/2" liner 6933'. Circulate well clean. POOH.
9. RIH with clean-out assembly for 5-1/2", 17# liner on workstring and clean-out to bottom of liner at 7304'. POOH. Note: Found pick-up at 7304' during 03/10/2016 temp. survey.
10. Rig up to run Gyro survey from 7304' to surface. Email final results to bvlasko@semprautilities.com.
11. Make-up and run a 9-5/8" retrievable bridge plug (BP) on workstring string. Set at approximately 6923' (10 ft above liner top), fill hole and pressure test to 1000 psi for 15 minutes. Sand off top of BP. POOH and lay down BP retrieving head.
12. Rig-up wireline unit(s) with lubricator and run the following: Contact Brian Vlasko prior to starting logging operation, 714-655-9506.
 - a.) Ultrasonic imager from BP to surface (SLB)
 - b.) Cement bond log from BP to top of cement (SLB)
 - c.) Magnetic flux leakage BP to surface (Baker)
 - d.) Multi-arm caliper log from BP to surface (Baker)
13. RIH with a test packer and run a Pressure Integrity Test on 9-5/8" casing from surface to BP to 115% of the wells maximum allowable operating pressure (3625 psi) as per attached Pressure Test Schedule. Contact Brian Vlasko prior to starting testing operation. POOH with test packer.
 - a.) Engineering team to analyze log and pressure test results and recommend any additional remediation.
12. Nipple down 11" Class III 5 M BOPE, crossover spool, and primary pack-off.
 - a.) Replace the pack-off seals and reinstall tubing head, refurbished as necessary. Install new wellhead and tree valves.
 - b.) Pressure test all the wellhead seals to 3625 psig.
 - c.) Reinstall the 11" Class III BOPE and function test.
13. RIH with retrieving tool for BP on workstring to top of sand. Circulate out sand and engage BP. Release BP at 6923', circulate as required to control well. POOH and lay down workstring string.

14. RIH with new completion string as follows:
- a.) 3-1/2" 9.2# L-80 EUE 8RD wireline re-entry guide
 - b.) 3-1/2" 9.2# x 9-5/8" 53.5# TCPC production packer
 - c.) 10' pup joint 3-1/2" 9.2# L-80 TCPC tubing
 - d.) 3-1/2" 9.2# L-80 TCPC XN (2.81" w/ 2.75" no-go) nipple
 - e.) Full joint 3-1/2" 9.2# L-80 TCPC tubing
 - f.) 3-1/2" 9.2# L-80 TCPC sliding sleeve (2.81" Open Down)
 - g.) Full joint 3-1/2" 9.2# L-80 TCPC tubing
 - h.) 3-1/2" 9.2# L-80 TCPC tubing to surface
 - i.) Pup joints 3-1/2" 9.2# L-80 TCPC tubing for space-out
 - j.) 4' 3-1/2" 9.2# L-80 TCPC fatigue nipple (pin x pin)
 - m.) 10-3/4" Tubing hanger with 3-1/2" EUE top box / 3" BPV / 3-1/2" TCPC bottom box

Notes: Run sliding sleeve in closed position. Ensure new production packer depth is at or above depth at which retrievable bridge plug was used for pressure testing.

15. Land tubing as per vendor specifications. **Note: amount of compression to set on packer will be determined by Force Analysis / Tube Move Calculations.**
16. Rig-up slickline unit and lubricator. Set a plug in the 3-1/2" XN profile.
17. Notify DOGGR to witness pressure tests of annulus to 1000 psi. and tubing to 3625 psi. Both tests to be an hour in duration and recorded digitally.
18. RIH and recover plug from XN nipple. RIH and shift the sliding sleeve open.
19. Install BPV in tubing hanger. Nipple down the Class III 5M BOPE and install the production tree and test to 5000 psig. Remove BPV.
20. Release production rig, rig down and move out.

UNLOAD WELL

21. Rig-up nitrogen unit. Recover workover fluid by pumping down annulus taking returns up tubing.
22. RIH with slickline and shift sliding sleeve closed. POOH and rig down slickline unit.

WELL LATERAL HYDROTESTING

21. 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.
22. Reinstall the hydro-tested laterals.
23. Install the well safety systems and instrumentation. Install pressure transmitters on

tubing, casing, and surface casing.

24. 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.

Casing Pressure Test Schedule:

Well: Porter 68A											
Depth (TVD)	85% of Burst Strength	External Casing Backup Pressure		Internal Water Hydrostatic	Pressure Test				Tubing Leak Net Burst Pressure @	Test Pressure > 85% of Burst	Test Pressure < Tubing Leak - Net Burst (Gas-filled annulus)
		Fluid / Formation Pressure Gradient	External Casing Backup Pressure		Net Burst Pressure @ Depth						
					1	2	3	Final			
Surface Test Pressure					3625			2250	3625		
Test Packer Depth					3500						
Test Down Casing or Tubing					Casing			Tubing			
Bridge Plug Depth								6923			
0	5381	0.00	0	0	3625			2250	3625		
500	5381	0.00	0	221	3846			2471	3670		
1000	5381	0.00	0	442	4067			2692	3716		
1500	5381	0.00	0	663	4288			2913	3761		
2000	5381	0.00	0	884	4509			3134	3806		
2500	5381	0.00	0	1105	4730			3355	3852		
3000	5381	0.00	0	1326	4951			3576	3897		
3500	5381	0.00	0	1547	5172			3797	3942		
4231	5381	0.00	0	1870	-			4120	4008		
4500	5840	0.00	0	1989	-			4239	4033		
5000	5840	0.00	0	2210	-			4460	4078		
5500	5840	0.00	0	2431	-			4681	4123		
6237	5840	0.00	0	2757	-			5007	4190		
6500	6741	0.00	0	2873	-			5123	4214		
6923	6741	0.00	0	3060	-			5310	4252		
					0.442 psi/ft int. grad.					0.091 psi/ft int. grad.	

Well Porter 68A

API #: 04-037-22742-00
Sec 27, T3N, R16W

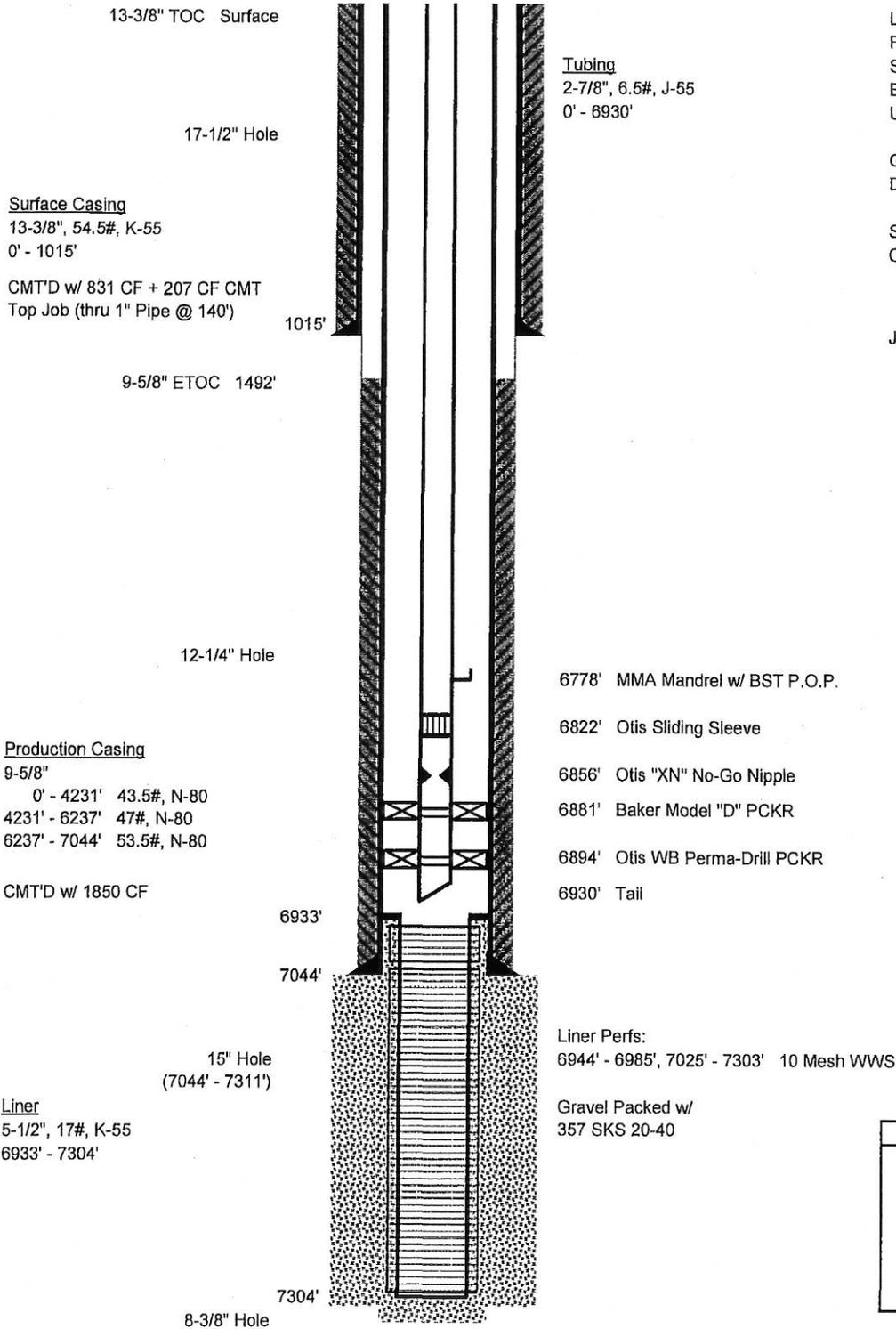
Operator: So. California Gas Co.

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

Ground Elevation: 2080' asl
Datum to Ground: 18' KB

Spud Date: 5/23/1983
Completion Date: 7/4/1983

Junk: None



Top of Zone Markers		
UDA1	5478'	(-3377')
LDA	6189'	(-4088')
MP	6682'	(-4574')
S1	6953'	(-4840')
S4	7054'	(-4940')
S8	7127'	(-5011')
FREW	7272'	(-5154')

TD 7315'
TD VSS (-5196')
Directionally Drilled: Yes (TD is 127' W, 173' S of Surf, 7294' TVD)

Prepared by: MAM (4/14/2016)

interAct

Rec'd 04-25-16 DOGGR Ventura.

**Well
Porter 68A**

API #: 04-037-22742-00
Sec 27, T3N, R16W

Production Casing Pressure Test - Program

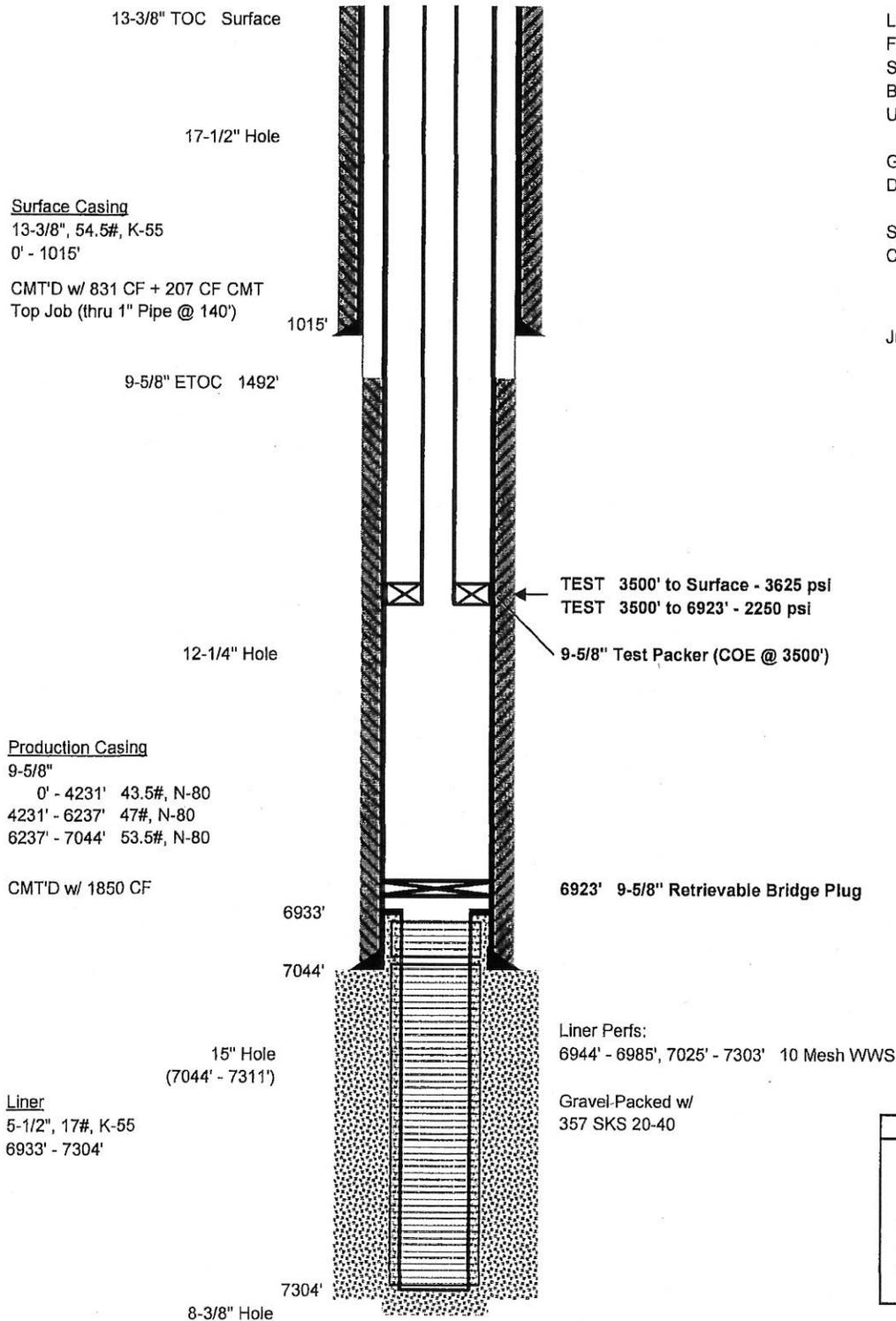
Operator: So. California Gas Co.

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

Ground Elevation: 2080' asl
Datum to Ground: 18' KB

Spud Date: 5/23/1983
Completion Date: 7/4/1983

Junk: None



Production Casing
9-5/8"
0' - 4231' 43.5#, N-80
4231' - 6237' 47#, N-80
6237' - 7044' 53.5#, N-80

CMT'D w/ 1850 CF

Liner
5-1/2", 17#, K-55
6933' - 7304'

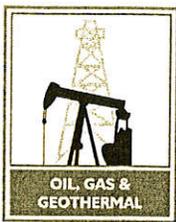
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Prepared by: MAM (4/14/2016)

InterAct

Rec'd 04-25-16 DOGGR Ventura.



DEPARTMENT OF CONSERVATION

No. T216-0091

DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES

1000 S. Hill Rd, Suite 116 Ventura, CA 93003-4456

Phone: (805) 654-4761 Fax: (805) 654-4765

REPORT ON OPERATIONS

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

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

Ventura, California
April 21, 2016

Your operations at well **"Porter" 68A**, A.P.I. No. **037-22742**, Sec. **27**, T. **03N**, R. **16W**, **SB B. & M.**, **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **3/10/2016**. **Ernest Blevins**, a representative of the supervisor.

The operations were performed for the purpose of **demonstrating that all of the injection fluid is confined to the approved zone.**

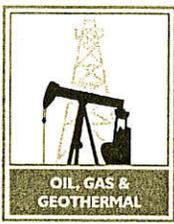
DECISION:

WITNESSED

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By 
Patricia A. Abel
District Deputy

EB/tkc
OG109



DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES
1000 S. Hill Rd, Suite 116 Ventura, CA 93003-4400
Phone:(805) 654-4761 Fax:(805) 654-4765
REPORT ON OPERATIONS

No. T216-0090

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

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

Ventura, California
April 20, 2016

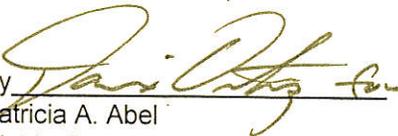
Your operations at well **"Porter" 68A**, A.P.I. No. **037-22742**, Sec. **27**, T. **03N**, R. **16W**, **SB B. & M.**, **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **3/10/2016**. **Ernest Blevins**, a representative of the supervisor.

The operations were performed for the purpose of **demonstrating that all of the injection fluid is confined to the approved zone.**

DECISION:

WITNESSED

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By 
Patricia A. Abel
District Deputy

EB/tkc
OG109

No. T ²¹⁶⁻⁰⁰⁹⁰
216-0091
15,3

MECHANICAL INTEGRITY TEST (MIT)

Operator: <i>So. CA Gas</i>					Well: <i>Porter 68A</i>				
Sec.	T.	R.	B.&M.	API No.:		Field:			
<i>27</i>	<i>3N</i>	<i>16W</i>	<i>SB</i>	<i>037-22742</i>		<i>Aliso Canyon</i>			
County: <i>Los Angeles</i>					Witnessed/Reviewed on: <i>3-10-16</i>				
<i>Ernie Blevins</i>					, representative of the supervisor, was present from ^{<i>Temp Survey</i>} <i>1200</i> to <i>1245</i> .				
Also present were:					<i>Dwayne w/ Well Analysis Corp. Inc.</i>				
Casing record of the well: <i>Prokuski</i>					<i>Noise Survey: 1245-1350</i>				
→ <i>Nick w/ InterAct</i>									
The MIT was performed for the purpose of <i>Temperature & Noise Log</i>									
<input type="checkbox"/> The MIT is approved since it indicates that all of the injection fluid is confined to the formations below _____ feet at this time.									
<input type="checkbox"/> The MIT is not approved due to the following reasons: (specify)									

Well: <i>Porter 68A</i>	Date: <i>3-10-16</i>	Time: <i>1230</i>
Observed rate: <i>Shut-in = static</i> B/D	Meter rate: <i>Shut-in static</i> B/D	Fluid level: <i>—</i> feet
Injection pressure: <i>1093</i> psi	MASP:	Pick-up depth: <i>7313</i> feet
Initial annulus pressure: <i>1093</i> psi	Pressure after bleed-off: <i>—</i> psi	

Casing vented during test (Y/N) *(Y)* Survey company: *Well Analysis Corp. INC.*

SPINNER COUNTS					
DEPTH	COUNTS	RATE	DEPTH	COUNTS	RATE
<i>—</i>			<i>—</i>		
COMMENTS: <i>Spinner Not Used</i>					

TRACER CASING AND TUBING RATE CHECKS			
Interval	Time (sec.)	Rate (B/D)	Background log: _____ to _____
			COMMENTS: <i>Bottom Hole Temp: 157°F</i> <i>Sliding sleeve</i> <i>Sub surface Safety Valve @ 6822'</i>

TOP PERFORATION CHECK

Top perforation depth: *6933 = Liner* Wait at: _____ for _____ seconds Beads: (Y/N) *(Y)*

Casing shoe at: *7044'* WSO holes at: _____ Arrival time: *Calculated* Actual _____

LOG FROM	TO	SLUG @	LOG FROM	TO	SLUG @	COMMENTS:

PACKER CHECK

Packer at: *6889'* Wait at: _____ for _____ seconds Beads: (Y/N) *(Y)*

Tubing tail at: *6930'* Tubing size: *2 7/8"* 2nd Packer at: _____ Mandrel: _____

LOG FROM	TO	SLUG @	LOG FROM	TO	SLUG @	COMMENTS:

COMMENTS: *Noise Survey from 7311 up to surface: Intervals of 10' and 250'*
Temp survey's anomalies: 6950-7300, 1500-1850
No noise anomalies. - eb
Waive for Friday 3-11-16
FF 38 A+B

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 22G0
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

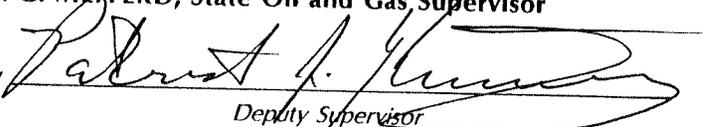
"SFZU" P-12 (037-00701)
"SFZU" P-14 (037-00703)
"SFZU" P-30 (037-00717)
"SFZU" P-31 (037-00718)
"SFZU" P-32 (037-00719)
"SFZU" P-36 (037-00723)
"SFZU" P-37 (037-00724)
"SFZU" P-45 (037-00732)
"SFZU" FF-32 (037-00686)
"SFZU" P-50A (037-22737)
"SFZU" P-68A (037-22742)
"SFZU" P-37-A (037-22046)
"SFZU" FF-32-A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

TO

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

M. G. MEFFERD, State Oil and Gas Supervisor

By



Deputy Supervisor
PATRICK J. KINNEAR

WELL SUMMARY REPORT

Operator Southern California Gas Company		Well Porter #68A				
Field Aliso Canyon		County Los Angeles	Sec. 27	T. 3N	R. 16W	B.&M. S.B.
Location (Give surface location from property or section corner, street center line and/or California coordinates) 496'S & 1388'W of Station #84					Elevation of ground above sea level 2080'	
Commenced drilling (date) 5-23-83	Total depth (1st hole) 7311' (2nd) (3rd)			Depth measurements taken from top of: <input type="checkbox"/> Derrick Floor <input type="checkbox"/> Rotary Table <input checked="" type="checkbox"/> Kelly Bushing Which is 18' feet above ground		
Completed drilling (date) 7-4-83	Present effective depth 7304'			GEOLOGICAL MARKERS		
Commenced producing (date) Gas storage well <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas lift	Junk			DEPTH		
Name of producing zone(s) Seson Frew			Formation and age at total depth Frew zone, Eocene			

	Clean Oil (bbt per day)	Gravity Clean Oil	Percent Water including emulsion	Gas (Mcf per day)	Tubing Pressure	Casing Pressure
Initial Production						
Production After 30 days						

CASING RECORD (Present Hole)

Size of Casing (API)	Top of Casing	Depth of Shoe	Weight of Casing	Grade and Type of Casing	New or Second Hand	Size of Hole Drilled	Number of Sacks or Cubic Feet of Cement	Depth of Cementing (if through perforations)
13-3/8"	0	1015'	54.5#	K-55 Buttress	New	17-1/2"	1038	
9-5/8"	0	4231'	43.5#	N-80 Buttress LT&C	New	12-1/4"	1850	
9-5/8"	4231'	6237'	47#	N-80 Buttress LT&C	New	12-1/4"		
9-5/8"	6237'	7044'		N-80 Buttress LT&C	New	12-1/4"		

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

370.5' 5-1/2" 17# K-55 10 mesh wire wrapped liner landed at 7304', wire wrapped 7302.8'-7025.1' & 6984.6'-6944.3', blank section 7025.1'-6984.6', gravel flow packed in 15" hole with 357 sacks of 20-40 gravel.

Was the well directionally drilled? If yes, show coordinates at total depth

 Yes No 7320' 175'S. & 128'W of surface

Electrical log depths

7321'

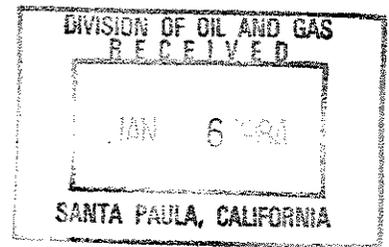
Other surveys Cement bond and neutron, compensated neutron and density and gamma ray, caliper, and photon log.

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.

Name J. P. Anand		Title Agent	
Address P.O. Box 3249 Terminal Annex		City Los Angeles	Zip Code 90051
Telephone Number (213) 689-3925	Signature J. P. Anand	Date 1-4-84	

SUBMIT IN DUPLICATE

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 Aliso Canyon County Los Angeles
Well Porter #68A , Sec. 27, T 3N, R 16W, SB B. & M.
A.P.I. No. 037-22742 Name J. P. Anand Title Agent
Date July 11, 1983 (Person submitting report) (President, Secretary or Agent)

Signature J. P. Anand

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

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

Date

GWO #95003KZ was issued to drill new gas storage well to Sesnon & Frew zones.

1983

- 5-23 1st Day. Spudded in 5-23-83 at 6:00 A.M. with 17½" bit. Drilled from 36' - 265'. Pulled out of hole for bit #2 and continued drilling 17½" hole to 330'.
- 5-24 2nd Day. Drilled to 446' and pulled bit #2. Ran 17½" bit #3 to 550' and pulled out of hole for 17½" bit #4. Continued drilling to 676'.
- 5-25 3rd Day. Drilled 17½" hole to 699' and pulled out of hole for 17½" bit #5. Drilled 17½" hole to 762', pulled out of hole, layed down shock sub and changed to 17½" bit #6. Continued drilling 17½" hole to 872'.
- 5-26 4th Day. Drilled 17½" hole to 884' and pulled out of hole for 17½" bit #7. Drilled 17½" hole to 1015' and pulled out of hole. Moved 17½" stabilizer from top drill collar to above the bit, ran back in hole and circulated. Pulled out of hole and layed down 17½" bit and stabilizers. Rigged up and ran 25 joints of 13-3/8" 54.5# K-55 Buttress casing fitted on bottom with guide shoe landed at 1015'. 13-3/8" casing was run with float collar on top of first joint with two bottom joints equipped with two centralizers and three scratchers. Rigged up Halliburton for cementing. 6 a.m. welding casing head.
- 5-27 5th Day. Cemented 13-3/8" 54.5# K-55 Buttress casing at 1015' with 486 cu.ft. of class "G" cement mixed with 8% gel and 3% CaCl₂, followed by 345 cu.ft. of class "G" cement mixed with 3% CaCl₂. Total volume 831 cu.ft. Rigged down Halliburton and cut 12' off 13-3/8" casing. Welded on 13-3/8", 5000 psi casing head. Pressure tested weld to 1500 psi. Checked weld with X-ray service. Installed Class III 13-5/8" BOPE. Made up 140' of 1" line pipe for top job. Cemented 13-3/8" annulus with 207 cu.ft. of class "G" cement mixed with 3% Calcium Chloride. 6 a.m. drilling out shoe.

- 5-28 6th Day. Tested blind rams to 2700 psi for 20 minutes. Made up 12½" bit #8, one monel and five 8" drill collars and ran in hole. Pressure tested pipe rams and Hydril to 2700 psi. (Tests witnessed and approved by the D.O.G.). Drilled out float collar and cement to 1020'. Pulled out of hole and made up 12½" bit #9. Drilled to 1143' and made up 12½" bit #10 on Dyna-Drill. Drilled 12½" hole to 1259', pulled out of hole to change bit and kick sub.
- 5-29 7th Day. Layed down 1^o kick sub and #10 bit. Made up and ran 1½^o kick sub and 12½" bit #11. Drilled to 1447' and layed down Dyna-Drill, kick sub and bit #11. Made up and ran 12½" bit #12. Stuck pipe going into hole at 1118'. Worked pipe loose. Reamed from 1093' to 1424'. Continued drilling 12½" hole to 1767'.
- 5-30 8th Day. Drilled 12½" hole to 1789'. Pulled out of hole and layed down bit #12 and bottom stabilizer. Made up and ran in hole with 12½" bit #13. Drilled to 1933' and pulled out of hole. Layed down bit #13 and 4 bad joints of drill pipe. Made up and ran 12½" bit #14. Drilled to 1994'. Parted pin on heavy weight drill pipe while reaming. Pulled out of hole, made up and ran overshot, bumper sub, and jars. Recovered entire fish which consisted of: bit #14, bit sub, monel, five 8" drill collars, two stabilizers, and seven joints of heavy weight drill pipe.
- 5-31 9th Day. Layed down fishing tools and bit #14. Made up and ran 12½" bit #15. Magnafluxed heavy weight and regular drill pipe while running in hole. Layed down 10 joints of cracked heavy weight drill pipe. Ran in hole and reamed from 1920' -1994'. Drilled 12½" hole to 2119'. Pulled out of hole due to wash out in heavy weight drill pipe. Layed down 10 additional joints of heavy weight drill pipe and bit #15. Picked up 20 joints of new heavy weight drill pipe. Made up and ran in hole with 12½" bit #16.
- 6-1 10th Day. Reamed from 2029' - 2119' and drilled to 2399'. Measured out of hole, changed stabilizers and layed down bit #16. Ran back in hole with 12½" bit #17, reamed from 2329'-2399', and drilled to 2495'.
- 6-2 11th Day. Drilled to 2800', pulled out of hole, and layed down bit #17. Ran 12½" bit #18 and reamed from 2770'-2800'. Continued drilling to 2991'.
- 6-3 12th Day. Drilled to 3201'. Pulled out of hole and layed down bit #18 and top stabilizer. Ran in hole with 12½" bit #19 and new cross-over 12½" stabilizer. Reamed from 3130'-3201' and continued drilling to 3443'.

- 6-4 13th Day. Drilled to 3585', pulled out of hole, and layed down bit #19. Ran in hole with 12¼" bit #20, reamed from 3480'-3585', and twisted off heavy weight drill pipe. Pulled out of hole, made up and ran overshot, bumper sub and jars. Recovered entire fish which consisted of: bit #20, bit sub, monel, five 8" drill collars, 2 stabilizers and 1 joint of heavy weight drill pipe. Picked up one 8" drill collar and ran in hole while performing ultrasonic inspection on heavy weight, and five joints of regular drill pipe. Refaced box and pins on 8 joints of pipe.
- 6-5 14th Day. Reamed from 3540'-3585'. Drilled to 3713', lost pump pressure, and gained strokes per minute. Pulled out of hole looking for washout. Found washout in two drill collars. Picked up and ran 1 drill collar and 12¼" bit #21 and reamed from 3653'-3713'. Drilled to 3892'.
- 6-6 15th Day. Pulled out of hole and layed down 14 joints 4½" heavy weight drill pipe and bit #21. Picked up 12¼" bit #22 and 20 joints of 5" heavy weight drill pipe. Ran in hole and found tight spot at 2200'. Worked through tight spot and reamed from 3840'-3892'. Drilled to 4079'. Pulled out of hole layed down bit #22. Picked up 3 additional 8" drill collars, 12¼" bit #23, cross-over stabilizer, and ran in hole. Reamed from 4055'-4072'. Drilled to 4158'.
- 6-7 16th Day. Continued drilling to 4527'. Pulled out of hole looking for washouts. Layed down 3 joints of washed out heavy weight drill pipe, bit #23, and two cross-overs. Picked up 12¼" bit #24, two new cross-overs and ran in hole. Reamed from 4497'-4527' and commenced drilling.
- 6-8 17th Day. Drilled to 5001', pulled out of hole and layed down bit 12¼" bit #24. Made up 12¼" bit #25 and ran in hole breaking every joint of heavy weight drill pipe looking for washouts. Reamed from 4295'-5001' and drilled to 5038'.
- 6-9 18th Day. Continued drilling to 5053' and pulled out of hole to casing shoe to repair standpipe leak. Ran back in hole and drilled to 5188'. Pulled out of hole and layed down bit #25 and middle stabilizer. Made up and ran 12¼" bit #26 and new middle stabilizer. Ran in hole servicing heavy weight drill pipe. Reamed from 5113'-5188'. Drilled to 5232'.
- 6-10 19th Day. Continued drilling to 5562', pulled out of hole, layed down bit #26, and bottom stabilizer. Made up 12¼" bit #27 and new bottom stabilizer. Ran in hole servicing heavy weight drill pipe. Reamed "tight" hole from 5464' to 5562'. Drilled to 5655'.
- 6-11 20th Day. Continued drilling to 5830', pulled out of hole and layed down bit #27. Made up 12¼" bit #28 and ran in hole servicing heavy weight drill pipe. Reamed from 5740' to 5830' and drilled to 6036'.

- 6-12 21st Day. Continued drilling to 6051'. Pulled out of hole and layed down bit #28. Made up Dynadrill with 1° bent sub, 12¼" bit #29 and Teleco MWD tool. Drilled to 6146'. Pulled out of hole and changed bent sub to 1½° and bit to 12¼" #30.
- 6-13 22nd Day. Dynadrilled from 6146'-6235', pulled out of hole, and changed to 12¼" bit #30. Reamed from 6168' to 6235'. Continued Dynadrilling from 6235' to 6312'. Pulled out of hole and layed down Teleco, Dynadrill, and bit #30. Made up drilling assembly.
- 6-14 23rd. Day. Ran in hole with 12¼" bit #31 and reamed from 5960' to 6312'. Drilled to 6428' and pulled out of hole. Ran in hole with 12¼" bit #32. Slipped and cut drilling line 88'. Reamed from 6368' to 6428'. Drilled to 6480'.
- 6-15 24th Day. Continued drilling to 6530', pulled out of hole and layed down bit #32. Checked BOPE. Made up 12¼" bit #33 and drilled to 6695'. Pulled out of hole.
- 6-16 25th Day. Checked BOPE, made up and ran in hole with 12¼" bit #34. Reamed from 6665' to 6695' and drilled to 6853'. Circulated and conditioned mud due to sloughing shale at 6853'. Circulated, conditioned and increased mud weight to 71 lbs. per cu.ft. Drilled to 6915' and circulated hole clean. Continued drilling to 6957'.
- 6-17 26th Day. Continued drilling to 7040'. Circulated bottoms up. Made wiper trip from 7040' to 6924'. Circulated and conditioned hole for logs. Pulled out of hole. Rigged up Dresser Atlas and ran Dual Induction and caliper logs from 7040' to 1000'. Rigged up to 10 lines on blocks.
- 6-18 27th Day. Ran in hole with drilling assembly to 7035' and cleaned out 5' fill to 7040'. Pulled up to 7035'. Conditioned mud and circulated. Pulled out of hole and layed down bit #34 and stabilizers. Rigged up to run 9-5/8" casing. Casing run as follows: shoe, 3 joints, float collar, and two scratcher clusters, two centralizers on first seven joints, 1 centralizer per joint to 6000', followed by one centralizer on every third joint to 1000'.
- 6-19 28th Day. Completed running 9-5/8" casing as follows: shoe at 7039', float collar at 6909', 0-4231' 43.5# N-80 Buttress 4231'-6237' 47# N-80 LT&C 6237'-7044' 53.5# N-80 LT&C. Rigged up Halliburton and cemented 9-5/8" casing as follows; 500 cu.ft. mud flush with 0.25 lb/gallon sodium acid pyrophosphate with 3% nonionic surfactant, followed by 1450 cu.ft. of 1:1 class "G" cement with Pozzolan, premixed with 2% gel, 1% dispersant, 0.2% HR-7, and 5% KCl, followed by 400 cu.ft. of class "G" cement mixed with 0.75% dispersant, 0.3% LWL, gas check, and 5% KCl. Used top and bottom plugs. Reciprocated pipe and observed full returns during cementing. Displaced 510 bbls. of mud. Nipped down BOPE, and landed casing with 255,000# on hanger. Installed tubing head and nipped up BOPE.

- 6-20 29th Day. Installed BOPE. Changed to 4½" pipe rams. Pressure tested blind rams, pipe rams, choke manifold and Hydril bag with water (Test approved by the D.O.G.). Layed down 8" drill collars, Servco stabilizers, and 5" heavy weight drill pipe. Installed casing bowl protector. Measured and picked up 6½" drill collars and 4½" heavy weight drill pipe. Made up 8-3/8" bit #35 and ran in hole installing rubber casing protectors.
- 6-21 30th Day. Located top of cement at 6764'. Drilled out cement to 7024'. Circulated and conditioned mud, and pulled out of hole. Tight hole from 4248' to 5089'. Rigged up Dresser Atlas and ran in hole with logging tool which stopped at 3832'. Pulled logging tool out of hole and released Dresser Atlas. Made up concave mill and junk baskets and ran in hole. Milled on casing protectors to 7027' and pulled out of hole. Rigged up Dresser Atlas to run neutron and cement bond logs.
- 6-22 31st Day. Ran cement bond and neutron logs. Rigged down Dresser Atlas. Ran in hole with 8-3/8" bit #35 and drilled to 7208'. Pulled out of hole and layed down bit #35. Made up 8-3/8" bit #36 on Christensen mud motor and drilled to 7315'. Circulated and pulled out of hole for logs.
- 6-23 32nd Day. Rigged up Dresser Atlas and ran Dual Induction, Gamma Ray, Compensated Density and Neutron logs. Cleaned pits and changed over from clay base mud to 63#/cu.ft. HEC polymer completion fluid. Made up and ran Servco SPX 15" hole opener on Christensen mud motor. Stuck hole opener at 7050'. Worked stuck pipe loose and pulled out of hole.
- 6-24 33rd Day. Made up and ran 8-3/8" bit #37 back in hole, replacing worn casing protectors. Reamed from 7039'-7315' and circulated mud. Pulled out of hole and layed down bit #37. Made up and ran Servco SPX 15" hole opener and opened 8' of hole. Pulled out of hole and layed down Christensen mud motor and hole opener. Rigged up McCullough to run casing inspection and caliper logs.
- 6-25 34th Day. Ran McCullough casing inspection and caliper logs. Rigged down loggers. Made up Servco "Rock type" 15" hole opener #2 and opened hole from 7040' to 7113'.
- 6-26 35th Day. Opened hole from 8-3/8" to 15" to 7125'. Pulled out of hole and layed down hole opener #2. Made up and ran Servco "Rock type" hole opener #3. Opened hole to 7239' and pulled out of hole. Layed down hole opener #3. Made up and ran Servco "Rock type" hole opener #4. Opened hole to 7283'.

- 6-27 36th Day. Pulled out of hole with hole opener #4. Made up and ran Servco "Rock type" hole opener #5. Opened hole from 8-3/8" to 15" from 7283' to 7311'. Pulled up to casing shoe at 7039' and gauge reamed to 7311'. Pulled out of hole and layed down hole opener #5. Rigged up Dresser-Atlas and ran caliper log in open hole. Rigged down Dresser-Atlas and loaded out. Rigged up Dial-Log and ran internal caliper log.
- 6-28 37th Day. Ran back in hole to bottom and displaced 550 bbls of hole-opening polymer completion fluid with 63#/cu.ft., 5 micron filtered HEC polymer completion fluid. Pulled out of hole. Rigged up and ran 5½" liner and hanger on drill pipe. Located bottom at 7311' and hung liner 7' off bottom with top of liner at 6933'. Liner assembly consisted of the following: 1.20' closed shoe; 277.70', 5½, 17#, K-55, 10 mesh wire wrapped liner; 40.53' 5½" 17# K-55 blank liner with welded centralizers; 40.27" 5½, 17#, K-55, 10 mesh wire wrapped liner; 6.20' Baker port collar; 4.61' Baker lead seal liner hanger. Liner depths consists of: 370.51' 5½ landed at 7304', shoe 7304' - 7302.8', 10 mesh wire wrapped 7302.8' - 7025.10', blank 7025.10' - 6984.57', 10 mesh wire wrapped 6984.57' - 6944.3', port collar 6944.3' - 6938.10', liner hanger 6938.10' - 6933.49'. Top at 6933.49'. Tested lead seal liner hanger to 800 psi. Rigged up SOLUM and commenced gravel packing at 19 sacks/hr of 20-40 mesh gravel.
- 6-29 38th Day. Gravel packed 5½" 17# wire wrapped liner with 326 sacks of 20-40 mesh gravel. Closed port collar and reverse circulated (no returns of gravel). Pulled out of hole and layed down Baker gravel packing tool. Made up Baker wash tool on 2-3/8" tubing tail and ran back in hole. 6 a.m.: Running in hole with gravel packing tool.
- 6-30 39th Day. Washed liner with Baker wash tool and pulled out of hole. Layed down wash tool and 1 joint of 2-3/8" tubing. Made up Baker gravel pack tool and ran back in hole. Gravel packed 5½" liner. Displaced 30 sacks of 20-40 mesh gravel. Closed port collar and reverse circulated (1 sack of gravel returned). Pulled out of hole and layed down wash tool. Made up wash tool and rewashed liner. Pulled out of hole. 6 a.m.: Gravel packing.
- 7-1 40th Day. Layed down wash tools and 1 joint 2-3/8" tubing. Made up gravel pack tools and ran in hole. Gravel packed 5½" liner with 3 sacks of 20-40 mesh gravel. Closed port collar and reverse circulated (1 sack of gravel returned). Gravel packed liner with a total of 357 sacks. Pulled out of hole and layed down gravel packing tools. Rigged up Dresser Atlas and ran photon log. Rigged down Dresser Atlas and rigged up McCullough to set packer on wireline. Set Otis WB Perma-Drill 9-5/8" packer at 6894'. Made up and ran Otis locator seal assembly.
- 7-2 41st Day. Closed Hydril and pressured to 1500 psi on annulus (Packer test failed). Pulled out of hole and changed to new Otis locator seal assembly. Ran back in hole to pressure test again. (Packer test failed). Pulled out of hole and layed down Otis seal assembly. Rigged up McCullough and set Baker Model D packer at 6889'. Rigged down McCullough. Made up and ran Baker locator seal assembly.

Closed rams and pressured up on annulus to 1500 psi (Packer test failed). Rigged up lay down machine and layed down drill pipe, collars, and Baker seal assembly. Rigged down lay down machine. Changed to 2-7/8" rams and rigged up to run tubing. 6 a.m.: Running 2-7/8" tubing.

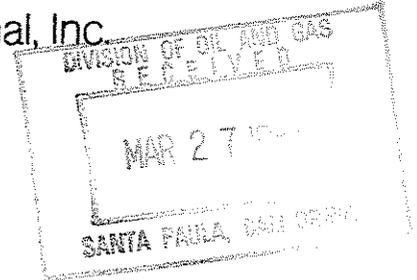
- 7-3 42nd Day. Made up and ran Baker locator seal assembly. Stabbed into Baker model "D" packer set at 6881' and pulled 20,000# over weight of tubing to check latch. Closed rams and pressured up on annulus to 1500 psi (No returns of fluid were observed). Unlatched seal assembly from packer and pulled 2-7/8" J-55, 6.5#/ft. tubing out of hole. Removed casing bowl protector from well head. Made up tubing completion string and ran in hole drifting and hydrotesting tubing to 5000 psi. Stabbed into Model "D" packer with locator seal assembly. Pulled 20,000# over tubing weight and landed tubing on packer with 10,000#.
- 7-4 43rd Day. Installed back pressure valve in doughnut and removed BOPE. Installed XMAS tree and pressure tested tree with oil to 5000 psi. Removed back pressure valve and installed unibolt. Released rig at 3:00 P.M. 7-4-83.
- 7-5 44th Day. Displaced 500 bbls of polymer completion fluid with 500 bbls of biocide treated lease salt water.



SERVCO

Directional Services

Division of Smith International, Inc.



REPORT of SUB-SURFACE DIRECTIONAL SURVEY

SOUTHERN CALIF. GAS CO.

COMPANY

PORTER WELL #68A

WELL NAME

ALISO CANYON

LOCATION

JOB NUMBER

152

TYPE OF SURVEY

SINGLE SHOT

DATE

6/23/83

SURVEY BY
LARRY KESSLER

OFFICE
HUNTINGTON BEACH

SOUTHERN CALIF. GAS CO.
 PORTER WELL #68A
 ALISO CANYON

S.I. SERVCO

DIVISION OF SMITH INTERNATIONAL, INC.
 DIRECTIONAL DRILLING AND WELL SURVEY
 SINGLE SHOT

15 DEG. EAST TO TRUE
 6/23/83

PROPOSED DIRECTION: S 42deg 50min W
 JOB No. 1 152 ; 5/27/83



*** RECORD of SURVEY ***
 VECTOR AVERAGING METHOD
 ANGULAR VALUES ARE DECIMAL

MEAS DEPTH FT	INCL ANGLE	TRUE VERT DEPTH	SUR SEA DEPTH	VERT SECT	D R I F T DIRECTION	T O T A L RECT. COORDINATES	C L O S U R E DIST-DIRECTION	DOG LEG SEVERITY DEG/100FT
0	0.00	0.00		0.00	N 0.0 E	0.00 N	0.00 N 0.00 E	0.0
118	.25	118.00		.24	S 20.0 W	.24 S	.26 S 20.00 W	.2
233	.50	233.00		.92	S 17.0 W	.96 S	1.01 S 18.51 W	.2
393	1.25	392.97		3.09	S 15.0 W	3.31 S	3.45 S 16.43 W	.5
484	1.50	483.95		5.15	S 50.0 W	5.04 S	5.47 S 23.08 W	.9
575	1.75	574.91		7.66	S 60.0 W	6.50 S	7.77 S 33.27 W	.4
667	1.75	666.87		10.41	S 45.0 W	8.19 S	10.44 S 38.31 W	.5
730	1.50	729.84		12.19	S 47.0 W	9.43 S	12.21 S 39.42 W	.4
819	2.00	818.80		14.89	S 36.0 W	11.48 S	14.92 S 39.65 W	.7
862	2.00	861.77		16.39	S 43.0 W	12.64 S	16.41 S 39.64 W	.6
983	1.25	982.72		19.79	S 31.0 W	15.32 S	19.83 S 39.42 W	.7
1061	.50	1060.71		20.90	S 8.0 W	16.38 S	20.96 S 38.60 W	1.0
1122	.75	1121.71		21.22	S 33.0 E	16.98 S	21.32 S 37.22 W	.8
1189	.75	1188.70		21.49	S 25.0 E	17.75 S	21.69 S 35.10 W	.2
1220	.75	1219.70		21.37	N 35.0 E	17.76 S	21.59 S 34.64 W	4.2

MEAS DEPTH FT	INCL ANGLE	TRUE VERT DEPTH	SUB SEA DEPTH	VERT SECT	D R I F T DIRECTION	T O T A L RECT. COORDINATES	C L O S U R E DIST-DIRECTION	DOG LEG SEVERITY DEG/100FT
1250	.25	1249.70		21.20	N 68.0 W	17.58 S 12.22 W	21.41 S 34.80 W	2.8
1281	1.00	1280.70		20.97	N 20.0 E	17.30 S 12.19 W	21.16 S 35.17 W	3.3
1313	1.75	1312.69		20.23	N 35.0 E	16.64 S 11.81 W	20.40 S 35.38 W	2.6
1344	2.50	1343.66		19.09	N 35.0 E	15.69 S 11.15 W	19.25 S 35.40 W	2.4
1376	3.25	1375.62		17.50	N 40.0 E	14.43 S 10.17 W	17.65 S 35.18 W	2.5
1407	4.50	1406.55		15.40	N 40.0 E	12.82 S 8.82 W	15.57 S 34.53 W	4.0
1441	5.75	1440.41		12.37	N 42.0 E	10.54 S 6.83 W	12.55 S 32.94 W	3.7
1504	6.00	1503.08		5.93	N 48.0 E	5.99 S 2.27 W	6.40 S 20.75 W	1.1
1567	5.25	1565.78		-.22	N 47.0 E	1.82 S 2.29 E	2.92 S 51.51 E	1.2
1660	4.25	1658.45		-7.91	N 46.0 E	3.48 N 7.88 E	8.61 N 66.18 E	1.1
1756	3.50	1754.23		-14.38	N 47.0 E	7.95 N 12.58 E	14.88 N 57.72 E	.8
1877	3.00	1875.04		-21.22	N 48.0 E	12.58 N 17.63 E	21.66 N 54.49 E	.4
1979	2.75	1976.91		-26.30	N 51.0 E	15.91 N 21.52 E	26.76 N 53.52 E	.3
2104	2.50	2101.78		-31.88	N 59.0 E	19.20 N 26.19 E	32.47 N 53.75 E	.4
2190	2.25	2187.70		-35.30	N 60.0 E	21.01 N 29.26 E	36.02 N 54.31 E	.3
2312	2.25	2309.61		-39.74	N 69.0 E	23.07 N 33.57 E	40.73 N 55.50 E	.3
2429	1.50	2426.54		-43.16	N 70.0 E	24.41 N 37.15 E	44.45 N 56.69 E	.6
2551	1.00	2548.51		-44.13	S 22.0 E	23.97 N 39.05 E	45.82 N 58.45 E	1.5
2674	1.00	2671.49		-42.87	S 1.0 W	21.90 N 39.43 E	45.11 N 60.95 E	.3
2768	1.00	2765.48		-42.37	S 55.0 E	20.61 N 40.09 E	45.08 N 62.79 E	1.0
2863	1.00	2860.47		-42.53	S 50.0 E	19.61 N 41.40 E	45.81 N 64.66 E	.1
3016	.75	3013.45		-41.99	S 10.0 E	17.76 N 42.60 E	46.15 N 67.37 E	.4
3144	1.25	3141.43		-40.62	S 9.0 E	15.56 N 42.96 E	45.69 N 70.09 E	.4
3269	1.25	3266.40		-38.66	S 8.0 W	12.86 N 42.99 E	44.87 N 73.34 E	.3
3395	.75	3392.38		-36.88	S 5.0 W	10.68 N 42.72 E	44.04 N 75.97 E	.4
3516	1.00	3513.36		-35.28	S 20.0 W	8.90 N 42.29 E	43.22 N 78.12 E	.3
3645	1.25	3642.34		-32.84	S 37.0 W	6.72 N 41.06 E	41.61 N 80.71 E	.3
3770	1.25	3767.31		-30.13	S 38.0 W	4.55 N 39.40 E	39.66 N 83.41 E	.0
3888	2.00	3885.26		-26.80	S 35.0 W	1.85 N 37.43 E	37.47 N 87.17 E	.6
4010	1.75	4007.19		-22.85	S 35.0 W	1.42 S 35.14 E	35.17 S 87.69 E	.2

MEAS DEPTH FT	INCL ANGLE	TRUE VERT DEPTH	SUB SEA DEPTH	VERT SECT	D R I F T DIRECTION	T O T A L RECT. COORDINATES	C L O S U R E DIST-DIRECTION	DOG LEG SEVERITY DEG/100FT
4133	2.25	4130.12		-18.68	S 26.0 W	5.13 S 33.00 E	S 33.40 S 81.17 E	.5
4256	2.75	4253.00		-13.42	S 47.0 W	9.31 S 29.79 E	S 31.21 S 72.64 E	.8
4380	2.25	4376.88		-8.03	S 47.0 W	13.00 S 25.83 E	S 28.92 S 63.29 E	.4
4502	1.75	4498.80		-3.80	S 52.0 W	15.78 S 22.61 E	S 27.57 S 55.09 E	.4
4633	1.50	4629.75		-1.12	S 47.0 W	18.18 S 19.78 E	S 26.87 S 47.42 E	.2
4757	1.25	4753.71		2.79	S 60.0 W	19.96 S 17.42 E	S 26.50 S 41.11 E	.3
4883	1.00	4879.69		5.08	S 70.0 W	21.03 S 15.20 E	S 25.94 S 35.86 E	.3
5008	1.25	5004.66		7.25	S 72.0 W	21.82 S 12.88 E	S 25.34 S 30.55 E	.2
5132	1.00	5128.64		9.34	S 75.0 W	22.52 S 10.55 E	S 24.87 S 25.10 E	.2
5255	1.00	5251.62		11.16	S 75.0 W	23.07 S 8.47 E	S 24.58 S 20.16 E	.0
5380	1.25	5376.60		13.30	S 70.0 W	23.82 S 6.14 E	S 24.60 S 14.45 E	.2
5506	1.25	5502.57		15.86	S 56.0 W	25.06 S 3.71 E	S 25.33 S 8.41 E	.2
5630	.50	5626.55		17.70	S 55.0 W	26.13 S 2.14 E	S 26.21 S 4.69 E	.6
5754	.75	5750.54		18.38	N 58.0 W	26.01 S 1.01 E	S 26.03 S 2.23 E	.6
5878	1.00	5874.53		18.13	N 25.0 W	24.60 S .13 W	S 24.60 S .31 W	.4
6026	.50	6022.51		17.40	N 25.0 W	22.84 S .95 W	S 22.86 S 2.39 W	.3
6107	1.00	6103.51		17.94	S 27.0 W	23.15 S 1.42 W	S 23.19 S 3.52 W	1.7
6139	1.50	6135.50		18.59	S 68.0 W	23.56 S 1.94 W	S 23.64 S 4.70 W	3.1
6169	2.50	6165.48		19.59	S 54.0 W	24.09 S 2.83 W	S 24.25 S 6.70 W	3.7
6198	3.50	6194.44		21.09	S 46.0 W	25.07 S 3.98 W	S 25.39 S 9.02 W	3.7
6228	4.00	6224.37		23.05	S 44.0 W	26.46 S 5.37 W	S 27.00 S 11.46 W	1.7
6257	5.25	6253.28		25.39	S 41.0 W	28.19 S 6.94 W	S 29.03 S 13.83 W	4.4
6318	7.00	6313.92		31.89	S 39.0 W	33.19 S 11.11 W	S 35.00 S 18.51 W	2.9
6382	8.75	6377.31		40.63	S 38.0 W	40.05 S 16.56 W	S 43.34 S 22.46 W	2.7
6443	10.00	6437.49		50.54	S 40.0 W	47.77 S 22.82 W	S 52.94 S 25.54 W	2.1
6505	11.00	6498.45		61.82	S 39.0 W	56.49 S 30.00 W	S 63.96 S 27.98 W	1.6
6577	11.25	6569.10		75.69	S 40.0 W	67.21 S 38.84 W	S 77.62 S 30.03 W	.4
6640	11.25	6630.89		87.97	S 42.0 W	76.48 S 46.90 W	S 89.72 S 31.52 W	.6

SOUTHERN CALIF. GAS
 SA. SERVICE

PORTER 68A

ALIHO CANYON

Page No. 4

MEAS DEPTH FT	INC- ANGLE	TRUE VERT DEPTH	CHUB AREA DEPTH	VERT SECT	D R I F T DIRECTION	T O T A L RECT. COORDINATES	C L C S J R E DIFF-DIRECTION	U J G REC SEVERITY DEC/10MFT
6732	11.00	6721.16		105.81	S 41.0 W	89.86 S 58.71 W	107.34 S 33.16 W	.3
7015	10.50	6999.19		158.53	S 39.0 W	130.28 S 92.65 W	159.86 S 35.42 W	.2
7320	10.50	7299.08		213.99	S 39.0 W	173.47 S 127.63 W	215.37 S 36.34 W	0.0

BOTTOM HOLE CLOSURE: 215.37 ft. S 36deg 20min 39sec W (TRUE)

SOUTHERN CALIF. GAS CO.
S11 SERVCO

PORTER WELL #68A

ALISO CANYON
Page No. 4

MEAS DEPTH FT	INCL ANGLE	TRUE VERT DEPTH	SUB SEA DEPTH	VERT SECT	D R I F T DIRECTION	T O T A L RECT. COORDINATES	C L O S U R E DIST-DIRECTION	DOG LEG SEVERITY DEG/100FT
6732	11.00	6721.16		105.72	S 41.0 W	89.77 S 58.67 W	107.24 S 33.16 W	.3
7015	10.50	6999.19		158.43	S 39.0 W	130.19 S 92.61 W	159.77 S 35.43 W	.2
7245	10.50	7225.34		200.25	S 39.0 W	162.76 S 118.98 W	201.62 S 36.17 W	0.0

BOTTOM HOLE CLOSURE: 201.62 ft. S 36deg 10min 4sec W (TRUE)
2.26' .85'
132.95 93.46'

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PAGE No. 1

SOUTHERN CALIFORNIA GAS CO.
 PORTER WELL NO. 68A
 ALISO CANYON

SINGLE SHOT
 15 DEG.
 S 42.5 W

7-6-83

Job No: 152

Date:

*** RECORD OF SURVEY ***

AVERAGE ANGLE METHOD
 ALL ANGLES ARE DECIMAL

MEAS DEPTH (FT)	INCL ANGLE (DEG)	D R I F T DIRECTION (DEG)	TRUE VERTICAL DEPTH	T O T A L RECT COORDINATES (FT)	V E R T I C A L SECTION (FT)	C L O S U R E DIST. (FT)	DIRECTION (DEG)	D O G L E S SEVERITY (DEG/100')
6640	11.25	S 42 W	6631.00	78.71S 47.76W	90.30	92.07	S 31.25 W	0.00
6732	11.00	S 41 W	6721.27	92.11S 59.41W	108.04	109.60	S 32.82 W	.34
7015	10.50	S 39 W	6999.30	133.13S 92.63W	160.73	162.18	S 34.83 W	.22
7320	10.50	S 39 W	7299.20	176.33S 127.60W	216.21	217.65	S 35.89 W	0.00

BOTTOM HOLE CLOSURE: 217.65 Feet at S 35 Degrees 53 Minutes 34 Seconds W

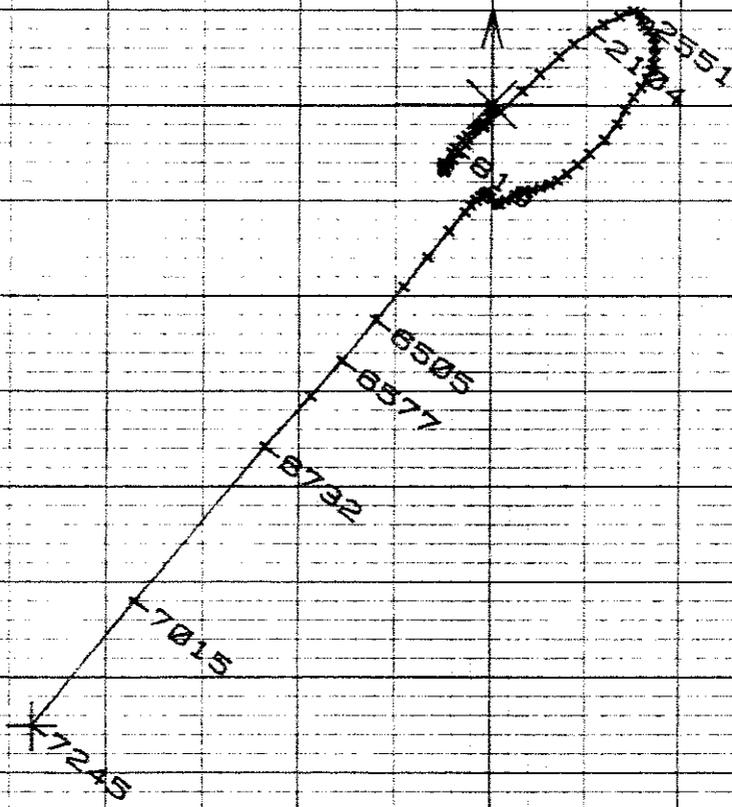
SOUTHERN CALIF. GAS CO.
PORTER WELL #68A
ALISO CANYON

BHL 201.62 FT S 36.17 W OF SURFACE

TVD= 7225.34

MD= 7245.00

SCALE: 1 IN= 50 FT



We hereby certify that the Field Data contained in this report from 118 feet to 7245 feet by our Directional Surveyors, represents to the best of our knowledge, a true and accurate survey of the well at the time the survey was run.

Sii SERVCO
Division of Smith International, Inc.

[Signature]
Division Directional Supervisor

S-121 (11/80)

46 0782

K&E 10 X 10 TO THE INCH 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.

DIVISION OF OIL AND GAS

Report on Operations

Mr. J. P. Anand, Agent
Southern Calif. Gas Co.
Box 3249 Terminal Annex
Los Angeles, CA 90051

Santa Paula, Calif.
June 22, 1983

Your operations at well "SPZU" P-68A, API No. 037-22742,
Sec. 27, T. 3N, R. 16W SB B. & M. Aliso Canyon Field, in Los Angeles County,
were witnessed on 6/20/83 by R. Habel, representative of
the supervisor, was present from 0730 to 1000. There were also present Alex Krivaruchko,
So. Calif. Gas representative

Present condition of well: 13 3/8" cem 1015'; 9 5/8" cem 7040', TD 7042'.

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

DECISION:

THE BLOWOUT PREVENTION EQUIPMENT AND ITS INSTALLATION ON THE 13 3/8" CASING ARE APPROVED.

b

M. G. MEFFERD

State Oil and Gas Supervisor

By

Murray W. Dosch
Deputy Supervisor

Murray W. Dosch

DIVISION OF OIL AND GAS

Report on Operations

Mr. J. P. Anand, Agent
Southern Calif. Gas Co.
Box 3249 Terminal Annex
Los Angeles, CA 90051

Santa Paula, Calif.
June 17, 1983

Your operations at well "SFZU" P-68A, API No. 037-22742,
Sec. 27, T. 3N, R. 16W BB B. & M. Aliso Canyon Field, in Los Angeles County,
were witnessed on 5/27/83 by R. Habel, representative of
the supervisor, was present from 2030 to 2400. There were also present Alex Krivoruchko,
So. Calif. Gas Representative

Present condition of well: 13 3/8" cen 1015'. TD 1015'.

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

DECISION:

THE BLOWOUT PREVENTION EQUIPMENT AND ITS INSTALLATION ON THE 13 3/8" CASING ARE APPROVED.

b

M. G. MEFFERD

State Oil and Gas Supervisor

By [Signature]
Deputy Supervisor
Murray W. Dosch

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

MAILED 1 1983

SANTA PAULA, CALIFORNIA

C.E.Q.A. INFORMATION			
EXEMPT <input type="checkbox"/>	NEG. DEC. <input type="checkbox"/>	E.I.R. <input type="checkbox"/>	DOCUMENT NOT REQUIRED BY LOCAL JURISDICTION <input checked="" type="checkbox"/>
CLASS _____	S.C.H. NO. _____	S.C.H. NO. _____	
See Reverse Side			

FOR DIVISION USE ONLY					
MAP	MAP BOOK	CARDS	BOND	FORMS	
				114	121
254	5-17-83 B&W	✓	B&W	✓	✓

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to commence drilling well "SFZU" P-68A Porter #68A, API No. 037-22742,
(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)

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 _____ along section/property line and _____ feet _____
(Direction) (Cross out one) (Direction)

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

496' southerly thence 1388' westerly of 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:
155' feet southerly and 142' feet westerly
(Direction) (Direction)

Elevation of ground above sea level 2080' feet.

All depth measurements taken from top of Kelly Bushing that is 18' 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	surface	1000'	1000'	surface
9-5/8"	43.5	N-80 Butt	surface	7200'	7200'	3500'
	47, 53.5	& LT&C				
5-1/2"	20#	K-55 LT&C	7070'	7400'		w.w. liner gravel packed

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

Intended zone(s) of completion Sesnon, 7200', 3600 psi Estimated total depth 7400'
(Name, depth, and expected pressure)

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

Name of Operator <u>Southern California Gas Co.</u>	Type of Organization (Corporation, Partnership, Individual, etc.) <u>Corporation</u>	
Address <u>P.O. Box 3249 Terminal Annex</u>	City <u>Los Angeles</u>	Zip Code <u>90051</u>
Telephone Number <u>(213) 689-3925</u>	Name of Person Filing Notice <u>J.P. Anand</u>	Signature <u>J. P. Anand</u>
		Date <u>5-10-83</u>

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.