DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CHECK LIST-RECORDS RECEIVED AND WELL STATUS

Operator: **Southern California Gas Company** WELL DESIGNATION **"Fernando Fee" 34BR**

API No. **03722302** SE **34** T: **3N** R.: **16W** , **SB** B. and M.

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

Type of Notice: **Rework** **Date** **7/29/2016** **Report Number:** **P216-0162**

RECORDS RECEIVED (ATTACH PAGES IF REQUIRED)

	Date	OK	NEED	Remarks
Well Summary (OG100)				
History (OG103)				
E-Log				
Mud Log				
Dipmeter				
Directional				
Core and/or SWS				
Press Test			✓	

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 _____

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

No. P 216-0162

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 03, 2016

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

Your proposal to **Rework** well **"Fernando Fee" 34BR**, A.P.I. No. **037-22302**, Section **34**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, **Any** area, **Sesnon-Frew** pool, **Los Angeles** County, dated **7/29/2016**, received **8/1/2016** has been examined in conjunction with records filed in this office. (Lat: **34.306330** Long: **-118.539412** Datum:**83**)

THE PROPOSAL IS APPROVED PROVIDED:

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

Continued on Next Page

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

Engineer Kris Gustafson
Office (805) 654-4761

KG/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 ✓

P216-0162

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 Fernando Fee 34BR, API No. 037-22302,

Sec. 34, 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: 7800 feet. The effective depth is: 7795 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 X profile at 7342' and open SSD at 7307'.
6b - Circulate well with 8.5 ppg KCL brine down tbg. through SSD at 7307' 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.

Rec'd 08-01-16 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/

Rec'd 08-01-16 DOGGR Ventura.

Well

Fernando Fee 34BR (Redrill)

API #: 04-037-22302-00
Sec 34, T3N, R16W

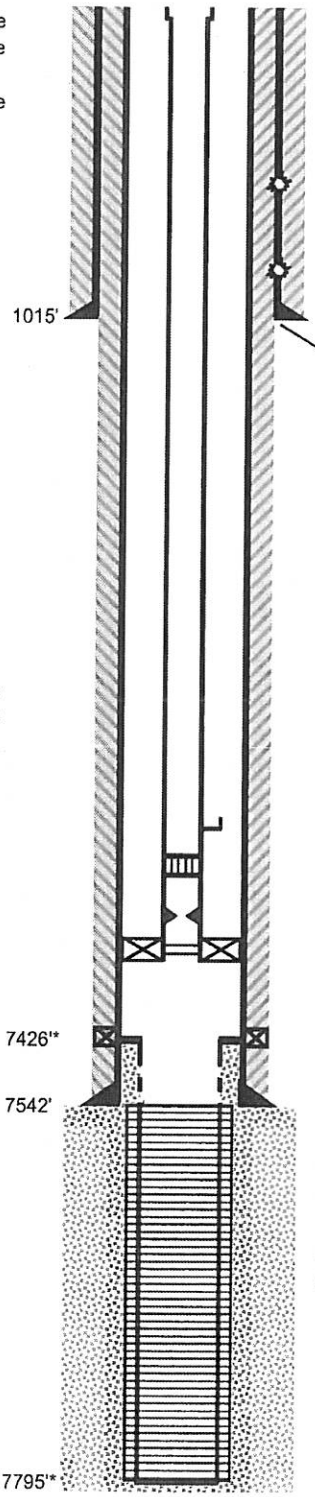
Operator: So. California Gas Co.

Lease: Fernando Fee
Field: Aliso Canyon
Status: Idle Gas Storage
BFW:
USDW:

Ground Elevation: 2212' asl
Datum to Ground: 23' KB
†OH Datum to Ground: 19' KB

Spud Date: 12/19/1980
Redrill (RD) Kick-off Date: 11/15/1993
Completion Date: 12/17/1993

Junk: None



13-3/8" TOC Surface
8-5/8" TOC Surface

17-1/2" Hole

Surface Casing
13-3/8", 54.5#, K-55
0' - 1015'

CMT'D w/ 650 SKS + Pumped
200 SKS in Annulus Top Job

1015'

12-1/4" Hole
(assumed)

Production Casing
8-5/8", 36#
0' - 7542'

CMT'D w/ 3719 CF/2145 SKS,
60 BBLS CMT Returns to Surface

TOL 7426'*

7542'

14" Hole

Liner
4-1/2", 13.6#, N-80
7426' - 7795' (See Notes*)

7795'*

TD 7800'
TVD (7662')
Directionally Drilled: Yes (TD is 190' W, 1253' N of Surf)

Tubing
3-1/2" 0' - 12'
2-7/8", 6.5#, L-80 12' - 7351'

±570' 13-3/8" CSG Leak (300 SKS CMT SQZ'D, 11/18/1993)

872' - ±905' 13-3/8" CSG Leaks Btwn. (300 SKS + 250 SKS + 230 SKS CMT SQZ'D, 11/17-20/1993)

1015' Redrill (RD) KOP (from OH) into this wellbore (See History)

7268' GLM

7307' WEA "XO" Sliding Sleeve

7342' On / Off Tool w/ "X" Profile
7350' - 7351' Halliburton WB PCKR w/ Latch
7351' Tail

7423' 8-5/8", 40# ECP (Inflated w/ 95 CF/83 SKS)

Liner Perfs:
7459' - 7539' Semi-slots
7539' - 7791' WWS

Gravel Packed w/
274 CF (118% of Caliper Volume) 20-40 resin coated

Wellbore History
Orig. Hole (OH) TD @ 8410'† (See Fernando Fee 34B OH) RD KOP @ 1015' TD @ 7800'

Notes
*Drilling report (12/14/1993) states 4-1/2" liner landed @ 7783' DD (7793' WLD) & top of landing nipple at 7417' DD (7427' WLD), later tagged bottom of liner @ 7795', top @ 7426'.

Top of Zone Markers	md (tvd)
MP	7234' (7103')
S1	7550' (7415')
S4	7644' (7508')
S8	7720' (7583')

Prepared by: CAM (6/29/2016)

InterAct

Rec'd 08-01-16 DOGGR Ventura.

Completed Work Summary - Fernando Fee 34BR		
Step	Work Completed	Date
4b	USIT log confirms cement to surface and shows good bond from bottom of logged interval across and significantly above the MP.	7/13/2012
5b	Packer set at 7350'.	12/15/1993

Casing Pressure Test Safety Check (1000 psi)

Well	Packer Depth MD/TVD	Casing Size/Grade/Weight	Depth MD	Burst PSI	85% of Burst PSI	Pressure at Depth w/1000 psi Surface Pressure	Press < 85% of Burst
Porter 32	7438'/7390'	7", 23#, J-55	3489	4360	3706	2542	Yes
		7", 23#, N-80	5238	6340	5389	3315	Yes
		7", 26#, N-80	6828	7240	6154	4018	Yes
		7", 29#, N-80	7438	8160	6936	4288	Yes
Porter 32A	7160'/7142'	8-5/8", 36#, K-55	5848	4460	3791	3585	Yes
		8-5/8", 36#, N-80	7160	6490	5517	4165	Yes
Porter 39	8400'/8346'	7", 29#, N-80	60	8160	6936	1027	Yes
		7", 23#, J-55	4070	4360	3706	2799	Yes
		7", 23#, N-80	5775	6340	5389	3553	Yes
		7", 26#, N-80	7268	7240	6154	4212	Yes
		7", 29#, N-80	8400	8160	6936	4713	Yes
Fernando Fee 32B	7350'/6863'	8-5/8", 36#, K-55	5863	4460	3791	3591	Yes
		8-5/8", 36#, N-80	6810	6490	5517	4010	Yes
		6-5/8", 28#, K-55*	7350	6970	5925	4249	Yes
Fernando Fee 32D	7032'/7012'	8-5/8", 36#, K-55	5564	4460	3791	3459	Yes
		8-5/8", 36#, N-80	7032	6490	5517	4108	Yes
Fernando Fee 34BR	7350'/7217'	8-5/8", 36#, K-55	7350	4460	3791	4249	No

* Actual pipe in well is a non-API grade so assumed closest size, weight & grade of API pipe

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CHECK LIST-RECORDS RECEIVED AND WELL STATUS

Operator: **Southern California Gas Company** WELL DESIGNATION **"Fernando Fee" 34BR**

API No. **03722302** SE **34** T: **3N** R.: **16W** , **SB** B. and M.

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

Type of Notice: **Rework** **Date** **7/19/2016** **Report Number:** **P216-0146**

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Core and/or SWS				

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WELL STATUS INQUIRY

DATE: _____

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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 _____

JRAL 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 216-0146

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
July 21, 2016

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

Your proposal to **Rework** well **"Fernando Fee" 34BR**, A.P.I. No. **037-22302**, Section **34**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, **Any** area, **Sesnon-Frew** pool, **Los Angeles** County, dated **7/19/2016**, received **7/20/2016** has been examined in conjunction with records filed in this office. (Lat: **34.306330** Long: **-118.539412** 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, and a Multi-Arm Caliper Inspection** shall be performed to demonstrate that the **8 5/8"**casing has integrity.
5. Prior to commencing injection, a pressure test is conducted to demonstrate the mechanical integrity of the **8 5/8"** casing.
6. Injection shall be through tubing and packer only. Injection or withdrawal through the casing is not permitted.
7. In all other respects, the provisions of Division Order #1109 and its amendments shall remain in effect.
8. This office shall be contacted by phone prior to making any program changes and no changes are made without Division approval.

   THIS DIVISION SHALL BE NOTIFIED TO:

   a. Inspect the installed blowout prevention equipment prior to commencing **downhole** operations.
   b. Witness a pressure test of the **8 5/8"** casing prior to commencing injection.

Continued on Next Page

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

Engineer Kris Gustafson
Office (805) 654-4761

KG/kg

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By Clifford Knight 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. Eight block tests have been proposed for this well.
5. 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.**
6. **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 07-20-16 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	1151	

P2116-0146

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 FF 34B, API No. 04-037-22302-00,

Sec. 34, 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: 7800 feet. The effective depth is: 7795 feet.

Present completion zone(s): S1,S4, S8 (Name). Anticipated completion zone(s): None (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		City/State	Zip Code
P. O. Box 2300		Chatsworth	91313-2300
Name of Person Filing Notice	Telephone Number:	Signature	Date
Ella Lein	661.340.4250	E.L.	7/19/2016
Individual to contact for technical questions:	Telephone Number:	E-Mail Address:	
Ella Lein	661.340.4250	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 07-20-16 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/

Rec'd 07-20-16 DOGGR Ventura.

Well
Fernando Fee 34BR (Redrill)

API #: 04-037-22302-00
Sec 34, T3N, R16W

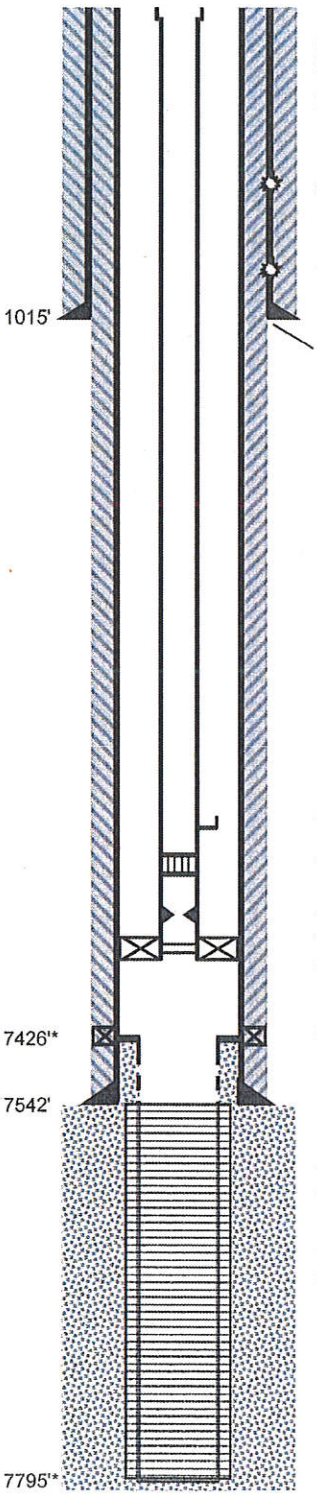
Operator: So. California Gas Co.

Lease: Fernando Fee
Field: Aliso Canyon
Status: Idle Gas Storage
BFW:
USDW:

Ground Elevation: 2212' asl
Datum to Ground: 23' KB
†OH Datum to Ground: 19' KB

Spud Date: 12/19/1980
Redrill (RD) Kick-off Date: 11/15/1993
Completion Date: 12/17/1993

Junk: None



Surface Casing
13-3/8", 54.5#, K-55
0' - 1015'

CMT'D w/ 650 SKS + Pumped
200 SKS in Annulus Top Job

Production Casing
8-5/8", 36#
0' - 7542'

CMT'D w/ 3719 CF/2145 SKS,
60 BBLS CMT Returns to Surface

Liner
4-1/2", 13.6#, N-80
7426' - 7795' (See Notes*)

Tubing
3-1/2" 0' - 12'
2-7/8", 6.5#, L-80 12' - 7351'

±570' 13-3/8" CSG Leak (300 SKS CMT SQZ'D, 11/18/1993)

872' - ±905' 13-3/8" CSG Leaks Btwn. (300 SKS + 250 SKS + 230 SKS CMT SQZ'D, 11/17-20/1993)

1015' Redrill (RD) KOP (from OH) into this wellbore (See History)

7268' GLM

7307' WEA "XO" Sliding Sleeve

7342' On / Off Tool w/ "X" Profile
7350' - 7351' Halliburton WB PCKR w/ Latch
7351' Tail

7423' 8-5/8", 40# ECP (Inflated w/ 95 CF/83 SKS)

Liner Perfs:
7459' - 7539' Semi-slots
7539' - 7791' WWS

Gravel Packed w/
274 CF (118% of Caliper Volume) 20-40 resin coated

Wellbore History

Orig. Hole (OH) TD @ 8410'†
(See Fernando Fee 34B OH)
RD KOP @ 1015'
TD @ 7800'

Notes

*Drilling report (12/14/1993) states 4-1/2" liner landed @ 7783' DD (7793' WLD) & top of landing nipple at 7417' DD (7427' WLD), later tagged bottom of liner @ 7795', top @ 7426'.

Top of Zone Markers	md (tvd)
MP	7234' (7103')
S1	7550' (7415')
S4	7644' (7508')
S8	7720' (7583')

TD 7800'
TVD (7662')
Directionally Drilled: Yes (TD is 190' W, 1253' N of Surf)

Prepared by: CAM (6/29/2016)

InterAct

Rec'd 07-20-16 DOGGR Ventura.

Well
Fernando Fee 34BR (Redrill)

API #: 04-037-22302-00
Sec 34, T3N, R16W

Proposed

Operator: So. California Gas Co.

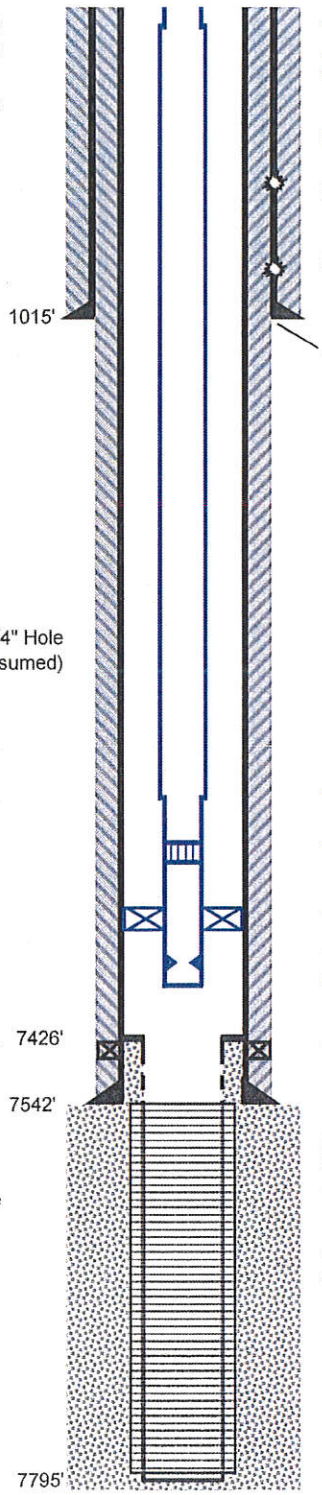
Lease: Fernando Fee
Field: Aliso Canyon
Status: Idle Gas Storage
BFW:
USDW:

Ground Elevation: 2212' asl
Datum to Ground: 23' KB
†OH Datum to Ground: 19' KB

Spud Date: 12/19/1980
Redrill (RD) Kick-off Date: 11/15/1993
Completion Date: 12/17/1993

Junk: None

Wellbore History
Orig. Hole (OH) TD @ 8410'† (See Fernando Fee 34B OH)
RD KOP @ 1015'
TD @ 7800'



13-3/8" TOC Surface
8-5/8" TOC Surface

17-1/2" Hole

Surface Casing
13-3/8", 54.5#, K-55
0' - 1015'

CMT'D w/ 650 SKS + Pumped 200 SKS in Annulus Top Job

Production Casing
8-5/8"
0' - 704' 36#, N-80
704' - 2815' 36#, K-55
2815' - 5603' 36#, J-55
5603' - 7542' 36#, N-80

CMT'D w/ 3719 CF/2145 SKS, 60 BBLS CMT Returns to Surface

Liner
4-1/2", 13.6#, N-80
7426' - 7795'

40' 4-1/2" x 5-1/2" X-Over

Tubing
0' - 40' 4-1/2", 12.6#, L-80, TCPC
40' - 7251' 5-1/2", 20#, L-80, TCPC
7251' - 7355' 4-1/2", 12.6#, L-80, TCPC

±570' 13-3/8" CSG Leak (300 SKS CMT SQZ'D, 11/18/1993)

872' - ±905' 13-3/8" CSG Leaks Btwn. (300 SKS + 250 SKS + 230 SKS CMT SQZ'D, 11/17-20/1993)

1015' Redrill (RD) KOP (from OH) into this wellbore (See History)

7252' 5-1/2" x 4-1/2" X-Over

7290' Sliding Sleeve (3.81" Open Down)

7335' 4-1/2" X 8-5/8" TCPC Production PCKR

7353' "XN" No-Go Nipple (3.81" w/3.725" no-go)
7355' Wireline Re-entry Guide

7435' - 7445' 8-5/8", 40# ECP (Inflated w/ 95 CF/83 SKS)

Liner Perfs:
7459' - 7539' 1.5" x 0.012", 12R, 6"C Slots
7539' - 7791' 0.012", 90 Wire WWS

Gravel Packed w/
274 CF (118% of Caliper Volume) 20-40 resin coated

Top of Zone Markers	md (tvd)
MP	7234' (7103')
S1	7550' (7415')
S4	7644' (7508')
S8	7720' (7583')

TD 7800'
TVD (7662')
Directionally Drilled: Yes (TD is 190' W, 1253' N of Surf)

Prepared by: CAM (6/29/2016)
Updated by: LD (7/18/2016)

InterAct

Rec'd 07-20-16 DOGGR Ventura.

Well
Fernando Fee 34BR (Redrill)

API #: 04-037-22302-00
Sec 34, T3N, R16W

Production Casing Pressure Test - Program

Operator: So. California Gas Co.

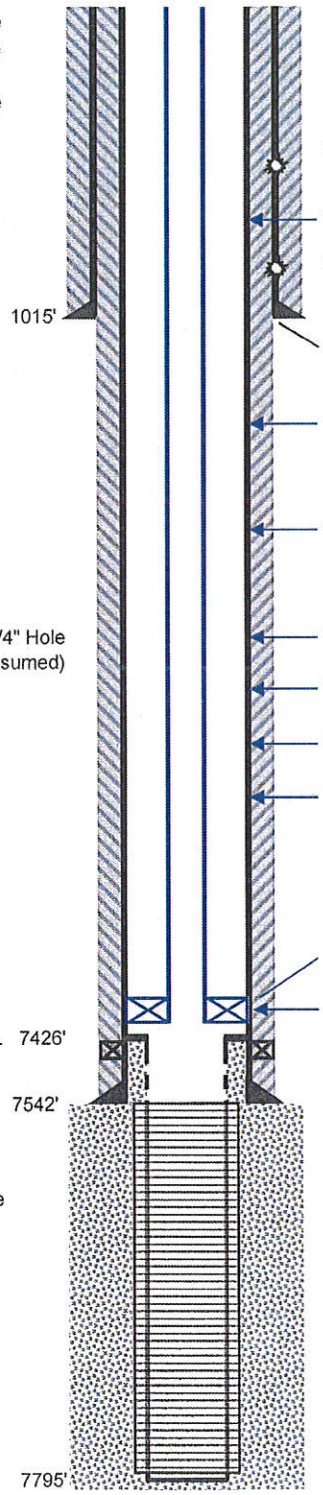
Lease: Fernando Fee
Field: Aliso Canyon
Status: Idle Gas Storage
BFW:
USDW:

Ground Elevation: 2212' asl
Datum to Ground: 23' KB
†OH Datum to Ground: 19' KB

Spud Date: 12/19/1980
Redrill (RD) Kick-off Date: 11/15/1993
Completion Date: 12/17/1993

Junk: None

Wellbore History
Orig. Hole (OH) TD @ 8410'† (See Fernando Fee 34B OH)
RD KOP @ 1015'
TD @ 7800'



±570' 13-3/8" CSG Leak (300 SKS CMT SQZ'D, 11/18/1993)

TEST 1 704' to Surface - 3625 psi

872' - ±905' 13-3/8" CSG Leaks Btwn. (300 SKS + 250 SKS + 230 SKS CMT SQZ'D, 11/17-20/1993)

1015' Redrill (RD) KOP (from OH) into this wellbore (See History)

TEST 2 2000' to Surface - 3379 psi

TEST 3 3000' to Surface - 2923 psi

TEST 4 4000' to Surface - 2572 psi

TEST 5 4500' to Surface - 2221 psi

TEST 6 5000' to Surface - 2045 psi

TEST 7 5603' to Surface - 1868 psi

8-5/8" Test Packer, Move and Set at each TEST Location

TEST 8 7416' to Surface - 1657 psi

7435' - 7445' 8-5/8", 40# ECP (Inflated w/ 95 CF/83 SKS)

Liner Perfs:
7459' - 7539' 1.5" x 0.012", 12R, 6"C Slots
7539' - 7791' 0.012", 90 Wire WWS

Gravel Packed w/
274 CF (118% of Caliper Volume) 20-40 resin coated

Top of Zone Markers	md (tvd)
MP	7234' (7103')
S1	7550' (7415')
S4	7644' (7508')
S8	7720' (7583')

TD 7800'
TVD (7662')
Directionally Drilled: Yes (TD is 190' W, 1253' N of Surf)

Prepared by: CAM (6/29/2016)
Updated by: LD (7/18/2016)

InterAct

Rec'd 07-20-16 DOGGR Ventura.

		External Casing Backup Pressure			Pressure Test Net Burst Pressure @ Depth								Tubing Leak Net Burst Pressure @ Depth	Test Pressuree > 85% of Burst	Test Pressure < Tubing Leak - Net Burst (Gas-filled annulus)
Depth (TVD)	85% of Burst Strength	Fluid / Formation Pressure Gradient	External Casing Backup Pressure	Internal Water Hydrostatic	1	2	3	4	5	6	7	8	Gas-Filled Annulus		
				Surface Test Pressure	3625	3379	2923	2572	2221	2045	1869	1657	3625		
				Test Packer Depth	704	2000	3000	4000	4500	5000	5603	7542			
				Test Down Casing or Tubing	Casing	Casing	Casing	Casing	Casing	Casing	Casing	Casing			
				Bridge Plug Depth											
0	5517	0.00	0	0	3625	3379	2923	2572	2221	2045	1869	1657	3625		
704	5517	0.00	0	311	3936	3690	3234	2883	2532	2356	2180	1968	3689		
1000	3791	0.00	0	442	-	3821	3365	3014	2663	2487	2311	2099	3716	86%	
1500	3791	0.00	0	663	-	4042	3586	3235	2884	2708	2532	2320	3761	91%	
2000	3791	0.00	0	884	-	4263	3807	3456	3105	2929	2753	2541	3806	96%	
2500	3791	0.00	0	1105	-	-	4028	3677	3326	3150	2974	2762	3852	90%	
3000	3791	0.00	0	1326	-	-	4249	3898	3547	3371	3195	2983	3897	95%	
3500	3791	0.00	0	1547	-	-	-	4119	3768	3592	3416	3204	3942	92%	
4000	3791	0.00	0	1768	-	-	-	4340	3989	3813	3637	3425	3988	97%	
4500	3791	0.00	0	1989	-	-	-	-	4210	4034	3858	3646	4033	94%	
5000	3791	0.00	0	2210	-	-	-	-	-	4255	4079	3867	4078	95%	
5603	3791	0.00	0	2477	-	-	-	-	-	-	4346	4134	4133	97%	
5842	5517	0.00	0	2582	-	-	-	-	-	-	-	4239	4154		
6500	5517	0.00	0	2873	-	-	-	-	-	-	-	4530	4214		
7542	5517	0.00	0	3334	-	-	-	-	-	-	-	4991	4308		
				0.442 psi/ft int. grad.									0.091 psi/ft int. grad.		

SoCal Gas Company

Well Operations Procedure

FF 34B

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 #:	04-037-22302-00		
Datum:	2212'		
KB to GL:	23'		
MD:	7,800'		
TVD:	7662'		
PBMD:	7,795'	**Nature of Plug Back:**	Bottom of Liner

Geologic Markers:

Top of Zone Markers	MD	TVD
MP	7234'	7103
S1	7550	7415
S4	7644'	7508'
S8	7720'	7583'

Casing Data:

Surface Casing: 13-3/8", 54.5#, K-55 Cem @ 1,015'
Intermediate Casing: 8-5/8", 36#, K-55, 0 – 7,542'

Liner: 4-1/2", 13.6#, N-80, 7426' - 7795'

(274 CF (118% of Caliper Volume) 20-40 resin coated)

Tubing Data:

Item	Description	OD Nominal	ID	Length	Cum Length	Top Depth	Bottom Depth
Tubing hanger	Tubing hanger	7.825	3.5	0.75	7,342.82	11.2	11.9
Swedge - reducing	2-7/8" X 3-1/2" crossover	3 1/2	2.441	1.12	7,342.07	11.9	13.1
Tubing (blue)	2-7/8" fatigue nipple	2 7/8	2.441	1.08	7,340.95	13.1	14.1
Tubing (blue)	2-7/8" pup jt.	2 7/8	2.441	2	7,339.87	14.1	16.1
Tubing (blue)	2-7/8" pup jt.	2 7/8	2.441	4.2	7,337.87	16.1	20.3
Tubing (blue)	231 jts. 2-7/8" L-80 tubing	2 7/8	2.441	7,243.00	7,333.67	20.3	7,263.30
Tubing (blue)	2-7/8" pup jt.	2 7/8	2.441	4.2	90.67	7,263.30	7,267.50
Mandrel - dummy	2-7/8" gas lift mandrel	4 1/2	2.441	6.35	86.47	7,267.50	7,273.90
Tubing (blue)	2-7/8" pup jt.	2 7/8	2.441	2	80.12	7,273.90	7,275.90
Tubing (blue)	1 jt 2-7/8" L-80 tubing	2.785	2.441	31.45	78.12	7,275.90	7,307.30
Sliding sleeve - Closed	WEA 2-7/8" XO sliding sleeve	3 5/8	2.375	3.1	46.67	7,307.30	7,310.40
Tubing (blue)	1 jt 2-7/8" L-89 tubing	2 7/8	2.441	31.35	43.57	7,310.40	7,341.80
On-off tool 1	On/Off tool 2-7/8"X5-7/8" with 2.313 X profile	5 7/8	2.313	1.84	12.22	7,341.80	7,343.60
Tubing (blue)	2-7/8" pup jt	2 7/8	2.441	6.3	10.38	7,343.60	7,349.90
J-Latch	Latch	2 7/8	2.441	1.08	4.08	7,349.90	7,351.00
Seal assembly	Seal Assembly		2.441	3	3	7,351.00	7,354.00

Wellhead: 5 M (see the attachment for details)

Perforations: 7459' - 7539' Semi-slots
7539' - 7791' WWS
Completed in S1, S4, S8

Current Status: Idle for inspection

Permit Status: Pending

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 ~ 43 bbls and
   ii. The tubing/casing annulus is ~ 378 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.
   b.) If planning to mill or fish, lay down production string and PU 2-7/8" P110 to be used as work string.

7. Pick up 2-7/8" P110 workstring and RIH with 7, 26# positive ID casing scraper to top of liner @ 7,426'. Circulate well clean. POOH.

8. RIH with stinger to PBMD @ 7,795' 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 @ 7426', 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 7,426' to surface
    d.) CBL from 7,426' 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.

SoCal Gas Company

SoCalGas
A Sempra Energy utility

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 @ 704'. 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.

    a.) Pressure test to 115% of the wells maximum allowable operating pressure (3625 psi) as per attached Pressure Test Schedule.
    b.) Engineering team to analyze log and pressure test results and recommend any additional remediation.

Test	Packer Depth ft	Test Pressure Casing, psi
1	704	3625
2	2000	3379
3	3000	2923
4	4000	2572
5	4500	2221
6	5000	2045
7	5603	1869
8	7542	1657

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. If HEC was used to kill well consider pumping bleach treatment to break polymer. RIH with clean out string to PBMD @ 7,845' and spot bleach treatment. POOH.

19. 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 ~**7355'***

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* ***~7,335'***
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. *+/- 7234 ft - 5-1/2" 20# L-80 TCPC tubing to surface*
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. *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.

20. Land tubing as per vendor specifications.

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

21. Rig-up slickline unit and lubricator. Set a plug in the 2.75" XN profile.

22. 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.

23. RIH with WL and recover XN plug. Shift the sliding sleeve open. RDMO WL.

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

25. RDMO.

UNLOAD WELL

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

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

WELL LATERAL HYDROTESTING

28. 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 Co** WELL DESIGNATION **"Fernando Fee" 34BR**

API No. **03722302** SE **34** T: **3N** R.: **16W** , **SB** B. and M.

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

Type of Notice: **None** **Date** **Report Number:**

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				
		✓		
WST				

NEW STATUS

DATE: 7/12

NOTICE OF RECORDS DUE

DATE: _____

DATE: _____

DATE: _____

DATE: _____

WELL STATUS INQUIRY

DATE: _____

DATE: _____

Well Stat

Change Required: _____

Change Done: _____

ABANDONMENTS/REABANDONMENTS/DRILLS/REDRILLS

ABANDONMENT DATABASE : _____ SURFACE INSPECTION NEEDED _____ COMPLETED _____
Date and Inspector

FINAL LETTER NEEDED _____ COMPLETED _____ DRILL/REDRILL DATABASE _____
(Date)

ENGINEER'S CHECK LIST

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

LOCATION _____ ELEVATION: _____ CONFIDENTIAL RELEASE DATE: _____ PERMIT REQUIREMENTS MET _____

CLERICAL CHECK LIST

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

REMARKS

Not Permittable WDR2

RECORDS SCANNED: 11/16/12
(Date)

RECORDS APPROVED: 11/16/12
(Date and Engineer)

Modified OGD2

AOR Datbase _____

Rec'd 09-18-12 DOGGR D2 Ventura

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

HISTORY OF OIL OR GAS WELL

Operator: Southern California Gas Company Field: Aliso Canyon County: Los Angeles
Well: Fernando Fee 34 BR Surface Location: Sec 34 3N 16W S.B.B.M.
A.P.I. No. 03722302 Todd Van de Putte Title: Senior Storage Field...
(President, Secretary, or Agent)

Date: 9/17/2012 Signature: Todd R Van de Putte
(Person Submitting Report)

Address: PO Box 2300, SC9365, Chatsworth, CA, 91313-2300 Telephone Number: 818-701-3339

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

Start Date	Ops. DOGGR Rpt
7/2/2012	Moved in the Ensign #321 rig pump and associated equipment from the Porter 69 site to the FF 34 BR wellsite. Spotted the mud pump and moved in the Ensign #321 rig. Rigged up and tied down the hoist. Rigged up to kill the well.
7/3/2012	Opened the well with 2600 psig pressure on the tubing and 2800 psig on the casing. Bled down the pressure to confirm the sliding sleeve was open. Rigged up and pumped 30 bbl hi-vis HEC polymer pill and dipslaced with 43 bbl, 9.6 ppg NaCl brine. Started kill schedule and pumped 428 bbl of brine with polymer returns to the surface. Monitored the well and made up the Class III 5M BOP equipment. Secured the rig and the well.
7/5/2012	Opened the well with 1400 psig pressure on the tubing and 300 psig on the casing. Bled down the pressure from the casing, rigged up and circulated out the gas cut brine. Installed the back pressure plug and nippled down the production tree. Nippled up, function tested the Class III 5M BOPE and secured the well.
7/6/2012	Moved in and rigged up the WEA BOPE test truck. Tested the pipe rams to 5000 psig (high) and 300 psig (low). Tested the Hydril annular preventer to 3500 psig (high) and 300 psig (low). Opened the well with 1400 psig on the tubing and 450 psig on the casing. Rigged up and circulated out the gas. Installed a back presure plug and tested the blind rams to 5000 psig. Tested the choke manifold and control valves to 5000 psig. Removed the back pressure plug, unlanded the 2-7/8" tubing and released from the Otis seals. Pulled out of the well to 6700' and secured the well.
7/9/2012	Changed the drilling line. Opened the well with 200 psig on the tubing and 400 psig on the casing. Bled down the well and circulated out the gas. Pulled out of the well and laid down the production equipment (recovered wire line tools stuck in the tubing). Made up an 8-5/8" casing scraper and a bumper sub on 2-7/8" tubing. Ran in the well to 7000' and secured the well.
7/10/2012	Opened the well with 0 psig on the tubing and 50 psig on the casing. Bled off the casing pressure and filled the well with 15 bbl of brine. Ran in the well to 7350' and tagged the Otis permanent packer. Rigged up and pumped 50 bbl of HEC polymer and displaced with 40 bbl of brine. Pulled out of the well and laid down the 8-5/8" casing scraper and the bumper sub. Measured and picked up (18) joints of 2-1/16" tubing. Ran in the well and tagged at 7795' (no fill). Pulled out of the well to 4700' and secured the well.
7/11/2012	Opened the well with 0 psig on the tubing and 0 psig on the casing. Filled the well with 10 bbl of brine. Pulled out of the well and laid down (18) jts of the 2-1/16" tubing. Made up a WEA 8-5/8" retrieveable bridge plug and ran in the well to 7342' and set the bridge plug. Filled the well with 17 bbl of brine and presure tested the annulus to 500 psig for twenty minutes. Pulled out of the well. Rigged down the tubing equipment and the working floor. Secured the well.
7/12/2012	The well was standing full of brine. Nippled down the Class III 5M BOPE. Removed the tubing head and sent in for refurbishment. Removed and replaced the primary seals and packoff. Reinstalled the Class III 5M BOPE and rigged up the working floor. Secured the well.
7/13/2012	Waited on the wireline unit. Rigged up the Schlumberger wire line unit and associated equipment. Made up the 8-5/8" USIT tools and ran in the well to 7324'. Ran the USIT log from 7324' to surface. Rigged down the wireline unit and associated equipment. Secured the well.
7/16/2012	Rigged down the working floor and nippled down the Class III 5M BOPE. Nippled up the refurbished tubing head and pressure tested to 3000 psig and 5000 psig. Nippled up the Class III 5M BOPE. Rigged up the working floor and the tubing equipment. Ran in the well with 233 jts. of 2-7/8" tubing. Pulled out of well and laid down the used tubing. Laid down 132 jts of 2-7/8" tubing and secured the well.
7/17/2012	Pulled out of the well and laid down 100 jts of 2-7/8" used tubing. Changed out the tubing trailers and made up a 8-5/8" bridge plug retrieving tool. Measured and picked new 2-7/8", 6.5#, L-80 tubing to 6770' and secured the well.
7/18/2012	Measured and picked up new 2-7/8", 6.5#, L-80 tubing to the 8-5/8" bridge plug at 7342'. Engaged and released the bridge plug and circulated the well. Pulled out of the well and laid down the 8-5/8" retrieveable bridge plug and the retrieving tool. Made up an HES seal assembly, a 6' 2-7/8" pup joint, WEA on/off tool , 1 jt of 2-7/8" tubing , a WEA sliding sleeve, 1 jt of 2-7/8" tubing, and a gas lift mandrel. Ran in the well to the Oits permanent packer. engaged packer and spaced out the tubing (Could not latch the seals in the Otis packer). Secured the well.

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

HISTORY OF OIL OR GAS WELL

Operator: Southern California Gas Company | Field: Aliso Canyon | County: Los Angeles
Well: Fernando Fee 34 BR | Surface Location: Sec 34 3N 16W S.B.B.M.
A.P.I. No: 03722302 | Todd Van de Putte | Title: Senior Storage Field...
(President, Secretary, or Agent)

Date: 9/17/2012 | Signature: Todd R Van de Putte
(Person Submitting Report)

Address: PO Box 2300, SC9365, Chatsworth, CA, 91313-2300 | Telephone Number: 818-701-3339

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, balling tests, and initial production data.

Start Date	Ops. DOGGR Rpt
7/19/2012	Respaced the 2-7/8" tubing in the well and pulled 15,000lb over string weight to check the latch. Landed the donut in the tubing hanger. Filled the well and pressure tested the tubing/casing annulus to 500 psig surface pressure(annulus would not test). Unlanded the completion string, pulled out of the well and laid down the production equipment. (Seals not damaged, sent the seals, on/off tool and the sliding sleeve to the shop for inspection). Ran in the well with a kill string to 3200' and secured the well.
7/20/2012	Pulled out of the well with the kill string. Made up a set of re-dressed seals, a 6', 2-7/8", 6.5#, L-80 pup jt., an on/off tool, (1) jt of 2-7/8", 6.5#, L-80 tubing, HES sliding sleeve, (1) jt of 2-7/8", 6.5#, L-80 tubing, and gas lift mandrel. Ran in the well, spaced out the completion string and pulled 15,000lb over string weight to check the latch. Landed in the tubing hanger with 14,000lb compression. Pressure tested the 2-7/8" tubing x 7" production casing annulus to 600 psig surface pressure (with 9.6 ppg brine in the hole) for twenty minutes (tested good). Installed the back pressure plug and nippled down the Class III 5M BOPE and nippled up the production tree. Secured the well.
7/23/2012	Rigged down the Ensign #321 production rig and associated equipment for the move to SS-6. Cleaned the location.

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

REPORT ON PROPOSED CHANGE OF WELL DESIGNATION

Ventura, California
February 17, 1994

R.D. Phillips, Agent
Southern Calif. Gas Company
810 S. Flower St.
Los Angeles, CA. 93005

Your request, dated October 19, 1993, proposing to change the designation of well(s) in Sec. 34, T. 3N, R. 16W, SB B.&M., Aliso Canyon field Los Angeles County, District No. 2, has been received.

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

Change name of well from "Fernando Fee" 34B to "Fernando Fee" 34BR.

tkc

WILLIAM E. GUERARD, Jr.
State Oil and Gas Supervisor

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

OGD157

OPERATOR So Cal Gas
LSE & NO SFZU FF-34B
MAP (254)

	(1)	( )	( )	( )	( )	( )
INTENTION	Drill Y.S	LOG01N16	Rework	Redrill		
NOTICE DATED	11-10-80	—	2-18-93	10-19-93		
P-REPORT NUMBER	280-401	—	293-059	293-394		
CHECKED BY/DATE	FT 1-5-82	—				
MAP LETTER DATED	1-9-82			3/12/94		
SYMBOL	✱			Name Change		

	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED
NOTICE	11-12-80		—		2-19-93		10-21-93					
HISTORY	3-6-81		—		4-6-93		1-28-94					
SUMMARY	3-6-81		—					WWW				
DIGL IES/ELECTRIC LOG	2-20-81		DUAL SP, THERMAL DECAY TIME LOG 10/11/90 + 11/1/90									
DIRECTIONAL SURV	3-6-81						2-10-94	DWK				
CORE/SWS DESCRIP												
OTHER MS/LCH CDL/NS Caliper Photon	2-20-81		DUAL SP, THERMAL DECAY TIME LOGS 2 NO COPIES 6-10-91				DI/SFL GR/Calip/CCL DLL/Micro SFL 1/11/94					
RECORDS COMPLETE	JR		6-10-91 SAM		4-15-93	FMN	FMN 3/25/94					

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:

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 Company Field Aliso Canyon County Los Angeles
Well Fernando Fee #34BR , Sec. 34 , T 3N , R 16W , S.B. & M.
A.P.I. No. 037-22302-01 Name M. A. Woiemberghe (Person submitting report) Title Agent (President, Secretary or Agent)
Date January 25 19 94

Signature D. G. Neville for M. A. Woiemberghe

P. O. Box 3249 Los Angeles, CA 90051-1249 (213) 244-2680
(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	
1993	
10/29	Moved in Pride Rig #435.
10/30	Killed well with fresh water. Nippled up BOPE.
10/31	Tested BOPE to 3500 psi. Unlanded tubing hanger. Rig down for repair.
11/01	Pulled out of well with production tubing. Ran in well with 498' of 2-3/8" tubing on 2-7/8" tubing. Tagged fill at 8198' (207' fill). Reversed out fill to 8398'. Rigged up cementers. With tubing tail at 8398', pumped 145 cu.ft. Class G cement with 0.4% CFR-2. Displaced with 43.5 bbls water. Pulled up to 7193' and reverse circulated.
11/02	Ran in well and tagged cement at 7855'. Pumped 210 bbls of 72 pcf abandonment mud. Cement and mud placement approved by Division of Oil & Gas Engineer, Pete Wygle. Pulled out of well laying down 2-3/8" tubing. Rigged up wireline and shot four 1/2" holes at 4362'. Set Halliburton EZSV drillable retainer at 4350'. Ran in well with 2-7/8" tubing and stabbed into retainer. Pressure tested retainer and found tubing leak. Replaced one 2-7/8" collar. Pressure tested retainer again and found another tubing leak.
11/03	Pulled out of well looking for leak. Pressure tested 2-7/8" tubing string while running in well. Repaired collar leak. Stabbed into retainer. Squeezed 78 cu.ft. of Class G cement below retainer. Final squeeze pressure was 1475 psi at 3.0 bpm. Pulled out of retainer and pumped 50 cu.ft. of Class G cement on top of retainer. Pulled tubing to 4195' and reversed out.
11/04	Pumped 141 bbls of 72 pcf abandonment mud . Pulled out of well laying down 2-7/8" tubing. Ran in well with casing cutter and cut 8-5/8" casing at 1815'. Nippled down BOPE. Rigged up hydraulic casing jacks and pulled 400,000 lbs. Unable to pull slips out of casing head. Nippled up 13-5/8" Hydril bag.

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JAN 28 1994
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES
VENTURA, CALIFORNIA

D.O.G. 1/26/94

OG103 (6/91/GSR1/5M)

11/05 Nippled down 13-5/8" Hydril bag. Removed slips from head. Pulled 450,000 lbs on casing with no results. Ran in well and set Haliburton EZSV retainer at 1805'. Installed bag. Ran in well with 2-7/8" tubing and stabbed into retainer. Squeezed 50 cu.ft. of Class G cement below retainer. Final squeeze pressure was 500 psi at 4.0 bpm. Pulled out of retainer and pumped 50 cu.ft. of Class G cement on top of retainer. Pulled tubing to 1655' and reversed out. Cement job witnessed by Pete Wygle of the Division of Oil & Gas. Changed well over to 72 pcf abandonment mud. Pulled out of well. Ran in well with casing cutter.

11/06 Ran in well with casing cutter. Cutter tool stopped at 461'. Pulled out of well and found that cutter was broken. Ran in well with 7-5/8" mill. Mill stopped at 1002'. Pulled out of well and found damage to side skirt of mill. Ran in well with 2-7/8" tubing to 1250'. Pulled out of well. Ran in well with 7-21/32" impression block. Impression block stopped at 1002'. Pulled out of well laying down tubing. Picked up drill pipe. Ran in well with 5-1/2" hydraulic casing cutter. Cut 8-5/8" casing at 1220'. Unable to retract cutters. Pulled 135,000 lbs. to free cutters. Pulled out of well and found that two knives were broke off.

11/07 Pulled casing loose with 230,000 lbs. Laid down 20' of 8-5/8" casing. Pulled 10' and casing became stuck. Rigged up and jacked casing loose. Pulled out of well laying down 8-5/8" casing. Laid down 29 joints plus 2 ft of 8-5/8" casing. Ran in well with 12-1/4" bit.

11/08 Ran in well with 12-1/4" bit. Circulated and reamed from 916' to 1222'.

11/09 Pulled out of well. Ran in well with 11-1/2" x 17-1/2" under-reamer. Stopped at shoe and cleaned out bridge. Under-reamed hole to 17-1/2" from 1010' to 1015'. Rig down to repair power swivel. Under-reamed from 1015' to 1132'. Power swivel broke down. Pulled out of well.

11/10 Pulled out of well and laid down under-reamer. Ran in well open ended to 1222'. Circulated out 5' fill. Rigged up cementers. Pumped 525 cu.ft. of Class G cement with 0.75% CFR-2 and 2% CaCl2. Cemented from 1222' to 800'. Pulled up to 750' and reversed out. Pulled out of well laying down drill pipe. Nippled down Hydril bag. Released rig.

11/10 Moved in Kenai #44 (drilling rig).

11/11 Moved in Kenai #44 (drilling rig).

11/12 Moved in Kenai #44 (drilling rig).

11/13 Moved in Kenai #44 (drilling rig). Nippled up BOPE.

11/14 Tested BOPE to 2500 psi. Annular BOP failed. Installed new annular BOP. Tested O.K. BOPE test witnessed by Steve Mulqueen of the Division of Oil & Gas. Ran in hole with 12-1/4" bit to 885'. Pressure tested casing and found leak. Cleaned out soft cement to 978'. Drilled out cement from 978' to 1000'. Re-tested casing and noted leak-off rate of 0.4 BPM at 280 psi. Drilled out to 1010'. Circulated well and gained 18 bbls of the 20 bbls which was lost previously. Pulled out of hole.

11/15 Made up and ran directional kick off BHA with 1-3/4° kick sub. Directionally drilled from 1010' to 1236'. Wiped hole to 922' due to fill. Circulated and conditioned mud. Wiped hole to 1176' and had no fill. Surveyed and directionally drilled to 1455'.

11/16 Directional drilled and surveyed from 1455' to 1510'. Pulled out of hole . Ran in hole with 13-3/8" full bore packer. Located leak in 13-3/8" casing as being below 860' (able to pump 6 BPM at 370 psi). Pulled out of hole. Ran in hole with bridge plug and, set at 982'. Ran in with packer. Located bottom of casing leak at 905'. Pulled out of hole. Ran back in hole and pumped 15 sacks of 20 mesh sand. Waited for sand to settle.

11/17 Waited on delivery of 8-12 mesh sand. Ran in and changed hole over to water. Spotted 24 sacks of 8-12 sand. Pulled out and made up full bore packer. Isolated leak and set packer at 778'. Squeezed 300 sacks of Class G cement with 1.25% calcium chloride. Pulled out of hole and waited on cement. Made scraper run. Made up full bore packer. Ran in hole and tested casing for additional leaks. Found leaks.

11/18 Set packer at 527'. Squeezed 300 sacks of Class G cement with 1.75% calcium chloride. Held 250 psi for 4 hours. Bled off pressure. Released packer and pulled out of hole. Waited on cement. Closed blind rams and pressured up to 300 psi. Tested O.K. Ran in hole and tagged cement at 547'. Cleaned out and tested at 700' to 300 psi. Tested O.K. Ran in hole and cleaned out to 900'. Pressured up and obtained leak off of 1.2 bpm at 200 psi. Cleaned out to 940'. Pulled out of hole.

11/19 Made up packer. Located leak and set packer at 808'. Established squeeze rate of 0.6 bpm. Squeezed away 250 sacks of Class G cement with 1.75% calcium chloride. Held pressure on cement for four hours. Released packer and pulled out of hole. Waited on cement. Closed blind rams and tested to 300 psi. Ran in hole and tagged cement at 834'. Cleaned out to 849' and tested to 300 psi. (O.K.). Cleaned out cement to 900'. Tested to 255 psi. Leaked off at 0.7 bpm. Cleaned out to 942' and pulled out of hole. Ran in hole with open ended drill pipe and circulated clean.

11/20 Pumped 230 sacks Class G cement with 2% calcium chloride. Pulled to 550'. Circulated. Closed annular preventer and pressured up to 300 psi. Held pressure on cement for four hours. Released pressure and pulled out of hole. Waited on cement. Closed blind rams, and pressured to 300 psi (held pressure). Ran in hole and tagged cement at 682'. Cleaned out to 850'. Tested casing to 300 psi. Test witnessed and approved by Pete Wygle with Division of Oil & Gas. Cleaned out cement to 950'. Cleaned out sand to 982'. Circulated hole clean.

11/21 Pulled out of hole. Ran in hole and retrieved bridge plug. Made up bottom hole assembly. Ran in hole and reamed from 1018' to 1510'. Pulled out of hole. Made up locked up assembly. Ran in hole. Reamed from 1450' to 1510'. Drilled and surveyed from 1510' to 1771'. Picked up to 1731' to make connection. Hole sloughing. Worked through slough to 1670'. Circulated and conditioned mud. Drilled and surveyed from 1771' to 1945'.

11/22 Circulated and conditioned mud. Raised mud weight to 73.5 pcf. Directionally drilled from 1945' to 1987'. Changed bottom hole assembly. Drilled and surveyed from 1987' to 2471'.

11/23 Circulated, surveyed and pulled out of hole. Changed bottom hole assembly and ran in hole. Drilled and surveyed from 2471' to 2829'. Circulated and pulled out of hole. Changed bottom hole assembly. Ran in hole to 2829'. Cleaned out 5' of fill. Drilling at 2829'.

11/24 Drilled and surveyed from 2829' to 3104'. Wiped hole to 1715' with no fill. Drilled and surveyed from 3104' to 3382'. Wiped hole to 1960' with no fill. Drilled and surveyed from 3382' to 3535'.

11/25 Drilled and surveyed from 3535' to 3626'. Wiped hole to 2900'. Drilled to 3811'. Tripped for new bit. #5. Held BOPE drill on trip out. Tripped in hole. Safety reamed from 3780' to 3811'. Drilled and surveyed to 4083'.

11/26 Wiped hole from 4083' to 3243'. Drilled and surveyed from 4083' to 4370'. Wiped hole from 4370' to 3243'. Drilled and surveyed from 4370' to 4649'. Wiped hole from 4649' to 4187'. Drilled and surveyed to 4743'.

11/27 Drilled from 4683' to 4930'. Surveyed at 4870'. Wiped hole to 3000'. Drilled and surveyed from 4930' to 5235'. Wiped hole to 3740'. Drilled and surveyed from 5235' to 5431'.

11/28 Drilled and surveyed from 5431' to 5481'. Wiped hole to 4791'. Drilled and surveyed from 5481' to 5665'. Tripped out for new bit and angle-dropping BHA. Tripped in hole. Reamed from 5542' to 5665'. Drilled and surveyed from 5665' to 5823'. Wiped hole to 4898'.

11/29 Drilled and surveyed from 5823' to 5956'. Tripped out for BHA. Cut and slipped drilling line. Tripped in hole. Reamed from 5881' to 5956'. Drilled and surveyed from 5956' to 6221'. Wiped hole to 5296'. Drilled and surveyed from 6221' to 6283'.

11/30 Surveyed at 6223'. Tripped out to retrieve directional survey tool. Tripped in hole. Drilled and surveyed from 6283' to 6468'. Wiped hole to 5500'. Drilled and surveyed from 6468' to 6654'. Wiped hole to 5729'.

12/01 Drilled and surveyed from 6654' to 7037'. Wiped hole on 8 hour intervals with 50,000 lbs. drag.

12/02 Drilled from 7037' to 7089'. Pulled out of hole to change bit. Slipped drilling line. Ran in hole to 7089'. Drilled from 7089' to 7215'. Circulated, surveyed and wiped hole. Drilled from 7215' to 7385'.

12/03 Drilled from 7385' to 7402'. Circulated and surveyed at 7342'. Wiped hole with 40,000-50,000 lbs drag and 48' of fill. Drilled from 7402' to 7494'. Wiped hole with 15,000-25,000 lbs drag and 22' of fill. Drilled from 7494' to 7555'. Circulated and wiped hole with 35,000 lbs drag. Circulated and surveyed at 7465' and wiped hole with 30,000 to 40,000 lbs drag. Circulated and pulled out to log. Hole taking fluid. Ran in hole. Circulated and conditioned mud. Spotted lost circulation material. Pumped dry job and pulled out of hole.

12/04 Pulled out of hole. Rigged up loggers. Ran DIL/GR/SP/Caliper & Sonic Array logs. Rigged down loggers. Changed over to 10 lines. Ran in hole. Staged in and broke circulation at 2600', 5200' and 7465'. Reamed from 7465' to 7555' and circulated.

12/05 Pulled out of hole. Laid down 8" drill collars. Changed pipe rams and pulled wear bushing. Rigged up to run casing. Began running 8-5/8" casing, pressure testing connections with Gatorhawk. Broke circulation at 6128' and continued running casing.

12/06 Ran 182 joints of 8-5/8", 36#, LT&C casing to 7542'. External casing packer (top of inflated element) at 7423'. Flag joints ran at 7264' and 3009'. Bottom 5 joints were grit blasted, thread locked and welded on bottom of collars. Dressed casing with 85 centralizers and 8 scratchers. Externally pressure tested all couplings. Rigged up cementers. Pumped 15 bbls of water, followed by 30 bbls of Super Flush followed by 15 bbls of water. Pumped 2904 cu.ft. (1436 sacks) of 11.6 ppg Class G lead cement (with 15% Silicalite and 15% Spherelite), followed by 815 cu.ft. (709 sacks) of 15.8 ppg Class G tail cement (with 1% Halad-322 and 0.15% HR-7), followed by 95 cu.ft. (83 sacks) of 15.8 ppg Class G inflation cement (same additives as tail slurry). Displaced cement with 437 bbls of water. Inflated external casing packer with 2700 psi. Received 60 bbls of cement returns to surface. Nippled down BOPE. Installed slips and made cut off. Landed casing, installed tubing head and tested. Nippled up BOPE.

12/07 Nippled up and function tested BOPE. Strung blocks to 8 lines. Ran in hole with 4-1/2" drill pipe and laid down drill pipe. Pulled wear bushing. Picked up 3-1/2" kelly. Set test plug and pressure tested BOPE. BOPE test witnessed and approved by Pete Wygle of the Division of Oil and Gas. Pulled test plug. Installed wear bushing.

12/08 Picked up 7-5/8" bit on 3-1/2" drill pipe. Cleaned out cement from 7202' to 7520'. Tested casing to 1500 psi. Cleaned out cement to shoe at 7542'. Changed fluid system over to 2% KCl with XC polymer. Cleaned pits. Circulated and conditioned fluid. Started drilling out cement wiper plug at 7542'.

12/09 Tripped out of hole. Changed bottom hole assembly. Tripped back in hole. Worked through tight spot at 7433' (8-5/8" 40# ECP). Drilled out shoe at 7542'. Drilled and surveyed 7-5/8" hole to 7800'. Circulated and wiped hole to shoe (6' fill). Circulated and conditioned fluid for logs.

12/10 Pulled out of hole. Ran DILL-MSFL-SP-GR log. Ran in hole with 7-5/8" X 14" under-reamer. Opened 7-5/8" hole to 14" hole from 7542' to 7597'.

12/11 Opened 7-5/8" hole to 14" from 7597' to 7724". Tripped out of hole. Tripped in hole with 7-5/8" re-run bit. Cleaned out bridges from 7725' to 7785'. Cleaned out fill from 7785' to 7800'. Circulated hole clean. Tripped out of hole.

12/12 Tripped out of hole. Picked up under-reamer #2. Tripped in hole. Opened 7-5/8" hole to 14" from 7724' to 7800'. Circulated hole clean. Wiped hole to shoe. No fill. Circulated hole clean. Tripped out of hole for logs. Rigged up loggers.

12/13 Ran Caliper/GR/CCL log from 7810' to 6900'. Ran in hole changed over completion fluid to 2% KCL with HEC polymer. Tripped out of hole. Ran in hole with 4-1/2", 13.6#, N-80 liner. Packer malfunctioned. Tripped out of hole with liner assembly.

12/14 Ran 366' of 4-1/2", 13.6#, N-80 liner. Made up cup-type over-the-top gravel packing tool with 355' of 2-3/8" CS Hydril tubing for tail. Ran liner in well and tagged fill at 7783' DD (7793' WLD). Top of landing nipple at 7417' (7427' WLD). Rigged up gravel packers. Pumped 284 cu.ft. of resin coated 20-40 Ottawa sand. Packed off with 274 cu.ft. (118% of caliper volume) sand in place. Reversed out 10 cu.ft. of sand. Waited 4 hours from time of pack-off. Pressured on pack; held O.K.

12/15 Ran in hole and set lead seal drive-over adapter. Pulled out of hole. Made up tubing tail on drill pipe and ran in hole. Circulated liner clean. Pulled out of hole laying down drill pipe. Rigged up wireline and set Otis 8-5/8" BWD packer at 7350'. Rigged up to run 2-7/8" production tubing.

12/16 Ran 233 joints and 2 pup joints (7309' total) of 2-7/8", 4.7#, N-80, 8rd EUE tubing. Latched into packer at 7350'. Landed production string with 9000 lbs down on packer. Tested seals, casing and packer to 1000 psi. Removed BOPE. Installed xmas tree. Tested tree to 5000 psi. Changed well over to 2% KCl water (with 5 gal per 100 bbl Ucarcide, 5gal per 100 bbl Hib 19, and 2.5 gal per 100 bbl COS).

12/17 Finished changing well over to 2% KCl water. Released rig.

FINAL PRINT

THE GAS COMPANY
[redacted]

FF 34BR
FF 34BR
ALISO CANYON
CALIFORNIA

S U R V E Y L I S T I N G

by
Eastman Teleco

Your ref : REDRILL
Our ref : svy3139
License :

Date printed : 7-Jan-94
Date created : 16-Nov-93
Last revised : 10-Dec-93

Field is centred on 0.000,0.000,999.00000,+
Structure is centred on 0.000,0.000,3.00000,N

Slot location is s0 0 39.852,w1 28 58.469
Slot Grid coordinates are N -1227.377, E 631.720
Slot local coordinates are 4016.00 S 2067.00 E
Reference North is True North

THE GAS COMPANY
[redacted],FF 34BR
ALISO CANYON,CALIFORNIA

SURVEY LISTING Page 1
Your ref : REDRILL
Last revised : 10-Dec-93

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	RECTANGULAR COORDINATES	Dogleg Deg/100Ft	Vert Sect
0.00	0.00	0.00	0.00	0.00 N 0.00 E	0.00	0.00
440.00	0.75	190.00	439.99	2.84 S 0.50 W	0.17	-2.73
860.00	3.50	176.00	859.66	18.34 S 0.08 W	0.66	-18.13
1014.00	4.13	196.03	1013.32	28.36 S 1.29 W	0.95	-27.87
1038.00	4.50	174.00	1037.26	30.12 S 1.43 W	7.03	-29.60
1100.00	2.00	190.00	1099.15	33.61 S 1.36 W	4.25	-33.06
1191.00	1.30	326.00	1190.14	34.32 S 2.21 W	3.37	-33.63
1283.00	3.50	348.00	1282.05	30.71 S 3.38 W	2.55	-29.89
1375.00	7.00	351.00	1373.65	22.42 S 4.84 W	3.81	-21.48
1441.00	9.30	352.00	1438.98	13.16 S 6.22 W	3.49	-12.12
1542.00	12.00	351.00	1538.23	5.29 N 8.99 W	2.68	6.54
1636.00	11.50	351.00	1630.26	24.20 N 11.99 W	0.53	25.68
1729.00	11.00	350.00	1721.48	42.09 N 14.98 W	0.58	43.82
1874.00	9.80	347.00	1864.09	67.74 N 20.16 W	0.91	69.95
2027.00	9.50	347.00	2014.93	92.73 N 25.93 W	0.20	95.51
2120.00	9.50	346.00	2106.65	107.65 N 29.51 W	0.18	110.80
2272.00	9.00	342.00	2256.68	131.13 N 36.22 W	0.54	135.00
2426.00	8.50	342.00	2408.88	153.41 N 43.46 W	0.32	158.10
2523.00	9.00	340.00	2504.75	167.36 N 48.27 W	0.60	172.60
2675.00	11.80	340.00	2654.24	193.14 N 57.65 W	1.84	199.47
2766.00	13.30	344.00	2743.07	211.95 N 63.72 W	1.90	218.95
2889.00	14.30	346.00	2862.52	240.29 N 71.30 W	0.90	248.09
3054.00	14.00	347.00	3022.51	279.51 N 80.71 W	0.23	288.26
3209.00	14.00	348.00	3172.90	316.12 N 88.83 W	0.16	325.66
3384.00	14.30	347.00	3342.60	357.88 N 98.09 W	0.22	368.33
3566.00	14.30	347.00	3518.96	401.68 N 108.20 W	0.00	413.14
3761.00	14.50	348.00	3707.83	449.02 N 118.70 W	0.16	461.50
3939.00	14.00	349.00	3880.35	491.96 N 127.44 W	0.31	505.25
4125.00	14.00	350.00	4060.83	536.20 N 135.64 W	0.13	550.21
4320.00	14.30	350.00	4249.91	583.15 N 143.92 W	0.15	597.86
4496.00	14.30	351.00	4420.46	626.02 N 151.09 W	0.14	641.32
4683.00	13.80	352.00	4601.86	670.92 N 157.81 W	0.30	686.72
4870.00	13.50	353.00	4783.58	714.67 N 163.57 W	0.20	730.84
5062.00	13.50	354.00	4970.28	759.20 N 168.65 W	0.12	775.64
5235.00	13.50	354.00	5138.50	799.36 N 172.87 W	0.00	815.99
5421.00	13.50	354.00	5319.36	842.55 N 177.41 W	0.00	859.38
5605.00	13.50	355.00	5498.27	885.30 N 181.52 W	0.13	902.28
5763.00	11.50	356.00	5652.52	919.39 N 184.23 W	1.27	936.40
5850.00	10.80	356.00	5737.88	936.17 N 185.40 W	0.80	953.17
5911.00	9.80	356.00	5797.90	947.05 N 186.16 W	1.64	964.05
6037.00	9.50	358.00	5922.11	968.14 N 187.28 W	0.36	985.07
6223.00	9.30	359.00	6105.62	998.51 N 188.07 W	0.14	1015.23
6408.00	9.50	358.00	6288.13	1028.71 N 188.87 W	0.14	1045.23
6594.00	9.80	357.00	6471.50	1059.86 N 190.23 W	0.18	1076.25
6779.00	9.50	358.00	6653.88	1090.84 N 191.59 W	0.18	1107.10
6966.00	9.50	358.00	6838.32	1121.68 N 192.66 W	0.00	1137.77
7155.00	9.50	359.00	7024.72	1152.87 N 193.48 W	0.09	1168.74
7342.00	9.00	0.00	7209.29	1182.92 N 193.75 W	0.28	1198.52
7596.00	8.25	4.00	7460.42	1220.97 N 192.48 W	0.38	1235.98
7780.00	10.00	6.00	7642.08	1250.03 N 189.89 W	0.97	1264.35

All data is in feet unless otherwise stated
Coordinates from FF 34BR and TVD from wellhead (2235.50 Ft above mean sea level).
Vertical section is from wellhead on azimuth 351.65 degrees.
Declination is 0.00 degrees, Convergence is 0.00 degrees.
Calculation uses the minimum curvature method.
Presented by Eastman Teleco

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	RECTANGULAR COORDINATES		Dogleg Deg/100Ft	Vert Sect	
7800.00	10.00	6.00	7661.78	1253.48 N	189.52 W	0.00	1267.72	PROJECTED TO T.D.

Actual TD: 7795'

All data is in feet unless otherwise stated
Coordinates from FF 34BR and TVD from wellhead (2235.50 Ft above mean sea level).
Vertical section is from wellhead on azimuth 351.65 degrees.
Declination is 0.00 degrees, Convergence is 0.00 degrees.
Calculation uses the minimum curvature method.
Presented by Eastman Teleco

Comments in wellpath

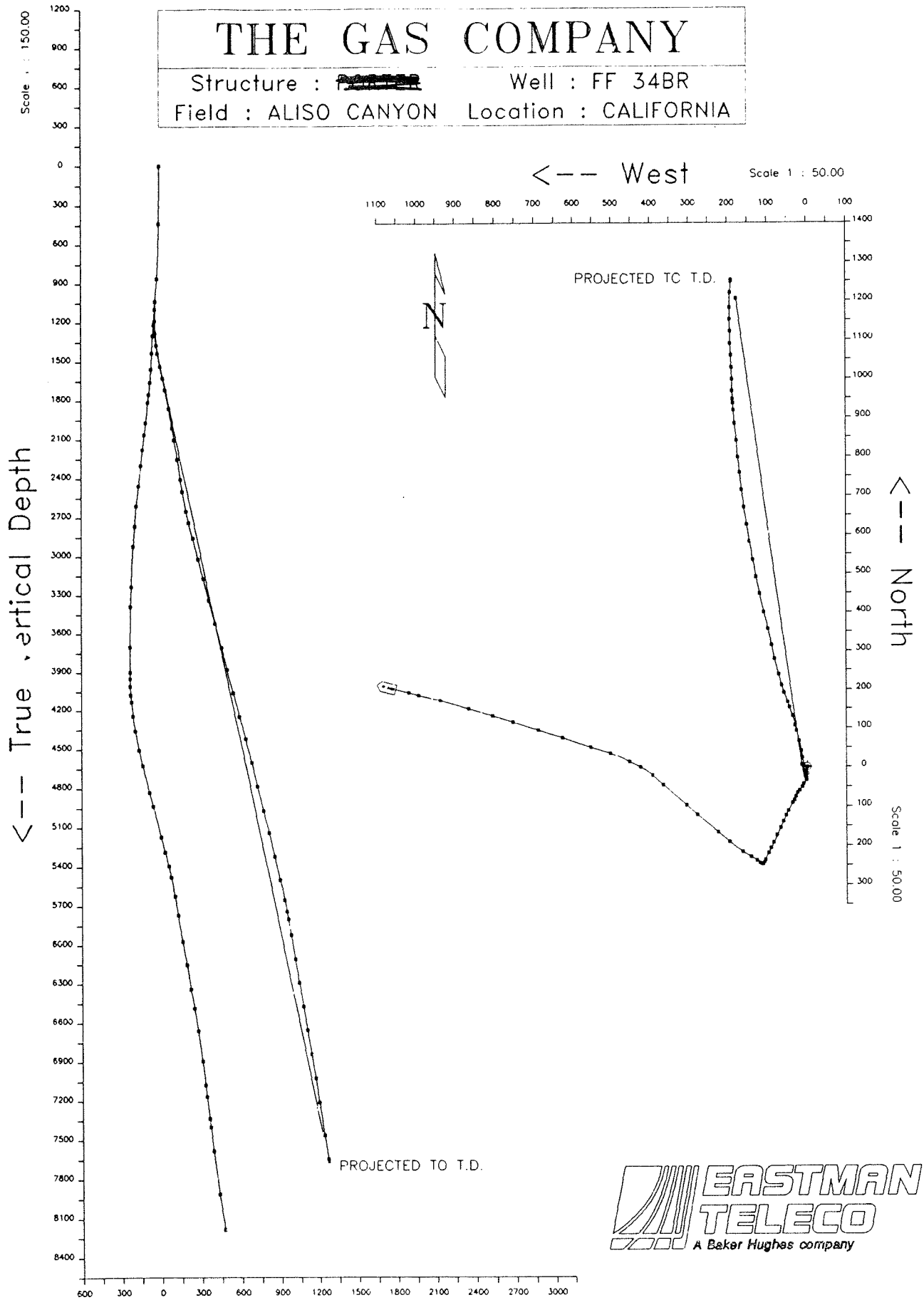
MD	TVD	Rectangular Coords.		Comment
7800.00	7661.73	1253.48 N	189.52 W	PROJECTED TO T.D.

All data is in feet unless otherwise stated
Coordinates from FF 34BR and TVD from wellhead (2235.50 Ft above mean sea level).
Bottom hole distance is 1267.73 on azimuth 351.40 degrees from wellhead.
Vertical section is from wellhead on azimuth 351.65 degrees.
Declination is 0.00 degrees, Convergence is 0.00 degrees.
Calculation uses the minimum curvature method.
Presented by Eastman Teleco

THE GAS COMPANY

Structure : [redacted] Well : FF 34BR

Field : ALISO CANYON Location : CALIFORNIA



EASTMAN TELECO
A Baker Hughes company

Scale 1 : 150.00

Vertical Section on 351.65 azimuth with reference 0.00 N, 0.00 E from FF 34BR

037-22302

THE GAS COMPANY
PORTER

FF 34BR
FF 34BR
ALISO CANYON
CALIFORNIA
34 - 3 - 16

S U R V E Y L I S T I N G

by
Eastman Teleco

Your ref : REDRILL
Our ref : svy3139
License :

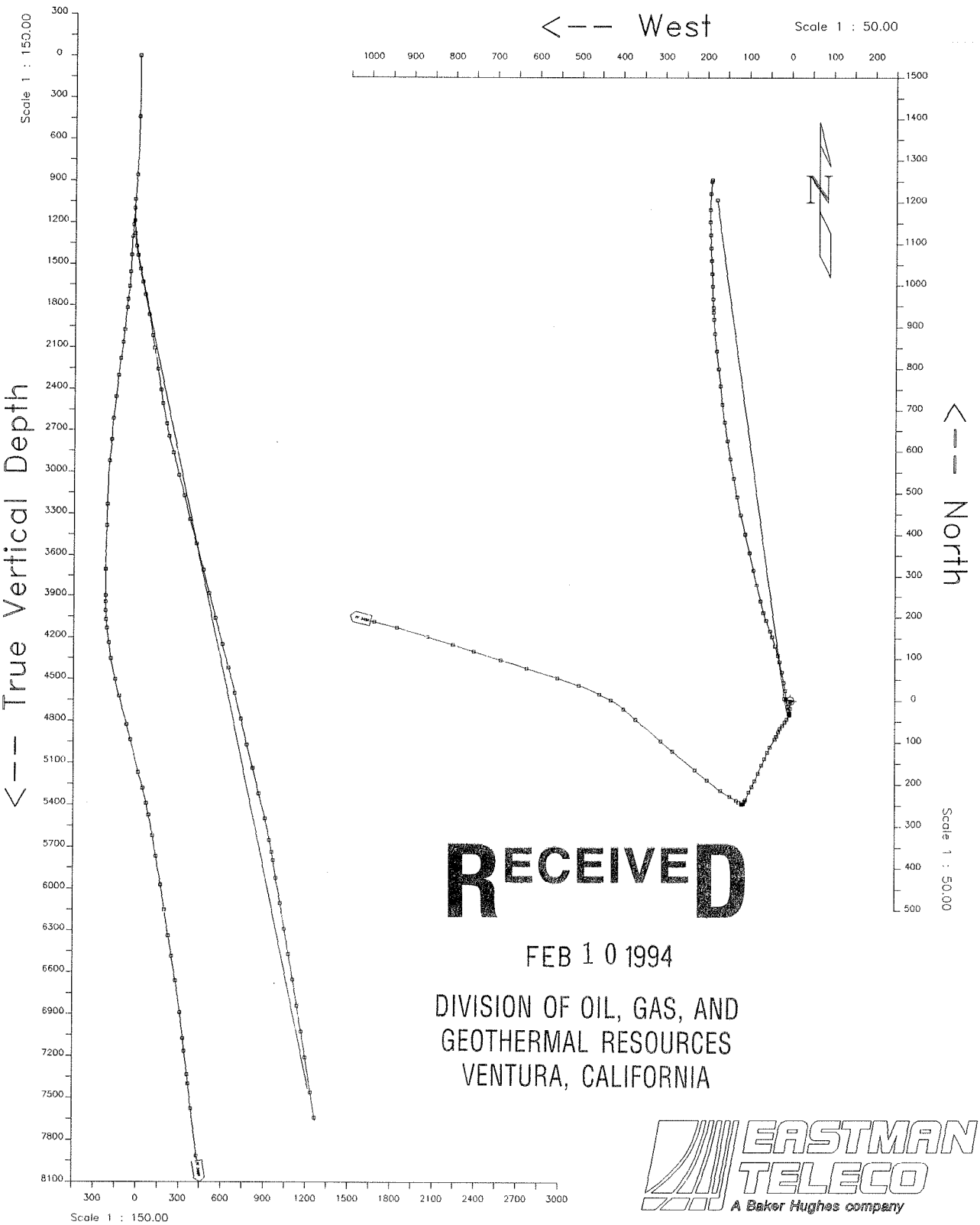
Date printed : 13-Jan-94
Date created : 16-Nov-93
Last revised : 10-Dec-93

Field is centred on 0.000,0.000,999.00000,+
Structure is centred on 0.000,0.000,3.00000,N

Slot location is s0 0 39.852,w1 28 58.469
Slot Grid coordinates are N -1227.377, E 631.720
Slot local coordinates are 4016.00 S 2067.00 E
Reference North is True North

THE GAS COMPANY

Structure : PORTER Well : FF 34BR
Field : ALISO CANYON Location : CALIFORNIA



EASTMAN TELECO
A Baker Hughes company

Vertical Section on 351.65 azimuth with reference 0.00 N, 0.00 E from FF 34BR

THE GAS COMPANY
PORTER,FF 34BR
ALISO CANYON,CALIFORNIA

SURVEY LISTING Page 1
Your ref : REDRILL
Last revised : 10-Dec-93

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	RECTANGULAR COORDINATES	Dogleg Deg/100Ft	Vert Sect
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1014.00	4.13	196.03	1013.32	28.36 S 1.29 W	0.95	-27.87
1038.00	4.50	174.00	1037.26	30.12 S 1.43 W	7.03	-29.60
1100.00	2.00	190.00	1099.15	33.61 S 1.36 W	4.25	-33.06
1191.00	1.30	326.00	1190.14	34.32 S 2.21 W	3.37	-33.63
1283.00	3.50	348.00	1282.05	30.71 S 3.38 W	2.55	-29.89
1375.00	7.00	351.00	1373.65	22.42 S 4.84 W	3.81	-21.48
1441.00	9.30	352.00	1438.98	13.16 S 6.22 W	3.49	-12.12
1542.00	12.00	351.00	1538.23	5.29 N 8.99 W	2.68	6.54
1636.00	11.50	351.00	1630.26	24.20 N 11.99 W	0.53	25.68
1729.00	11.00	350.00	1721.48	42.09 N 14.98 W	0.58	43.82
1874.00	9.80	347.00	1864.09	67.74 N 20.16 W	0.91	69.95
2027.00	9.50	347.00	2014.93	92.73 N 25.93 W	0.20	95.51
2120.00	9.50	346.00	2106.65	107.65 N 29.51 W	0.18	110.80
2272.00	9.00	342.00	2256.68	131.13 N 36.22 W	0.54	135.00
2426.00	8.50	342.00	2408.88	153.41 N 43.46 W	0.32	158.10
2523.00	9.00	340.00	2504.75	167.36 N 48.27 W	0.60	172.60
2675.00	11.80	340.00	2654.24	193.14 N 57.65 W	1.84	199.47
2766.00	13.30	344.00	2743.07	211.95 N 63.72 W	1.90	218.95
2889.00	14.30	346.00	2862.52	240.29 N 71.30 W	0.90	248.09
3054.00	14.00	347.00	3022.51	279.51 N 80.71 W	0.23	288.26
3209.00	14.00	348.00	3172.90	316.12 N 88.83 W	0.16	325.66
3384.00	14.30	347.00	3342.60	357.88 N 98.09 W	0.22	368.33
3566.00	14.30	347.00	3518.96	401.68 N 108.20 W	0.00	413.14
3761.00	14.50	348.00	3707.83	449.02 N 118.70 W	0.16	461.50
3939.00	14.00	349.00	3880.35	491.96 N 127.44 W	0.31	505.25
4125.00	14.00	350.00	4060.83	536.20 N 135.64 W	0.13	550.21
4320.00	14.30	350.00	4249.91	583.15 N 143.92 W	0.15	597.86
4496.00	14.30	351.00	4420.46	626.02 N 151.09 W	0.14	641.32
4683.00	13.80	352.00	4601.86	670.92 N 157.81 W	0.30	686.72
4870.00	13.50	353.00	4783.58	714.67 N 163.57 W	0.20	730.84
5062.00	13.50	354.00	4970.28	759.20 N 168.65 W	0.12	775.64
5235.00	13.50	354.00	5138.50	799.36 N 172.87 W	0.00	815.99
5421.00	13.50	354.00	5319.36	842.55 N 177.41 W	0.00	859.38
5605.00	13.50	355.00	5498.27	885.30 N 181.52 W	0.13	902.28
5763.00	11.50	356.00	5652.52	919.39 N 184.23 W	1.27	936.40
5850.00	10.80	356.00	5737.88	936.17 N 185.40 W	0.80	953.17
5911.00	9.80	356.00	5797.90	947.05 N 186.16 W	1.64	964.05
6037.00	9.50	358.00	5922.11	968.14 N 187.28 W	0.36	985.07
6223.00	9.30	359.00	6105.62	998.51 N 188.07 W	0.14	1015.23
6408.00	9.50	358.00	6288.13	1028.71 N 188.87 W	0.14	1045.23
6594.00	9.80	357.00	6471.50	1059.86 N 190.23 W	0.18	1076.25
6779.00	9.50	358.00	6653.88	1090.84 N 191.59 W	0.18	1107.10
6966.00	9.50	358.00	6838.32	1121.68 N 192.66 W	0.00	1137.77
7155.00	9.50	359.00	7024.72	1152.87 N 193.48 W	0.09	1168.74
7342.00	9.00	0.00	7209.29	1182.92 N 193.75 W	0.28	1198.52
7596.00	8.25	4.00	7460.42	1220.97 N 192.48 W	0.38	1235.98
7780.00	10.00	6.00	7642.08	1250.03 N 189.89 W	0.97	1264.35

All data is in feet unless otherwise stated
Coordinates from FF 34BR and TVD from wellhead (2235.50 Ft above mean sea level).
Vertical section is from wellhead on azimuth 351.65 degrees.
Declination is 0.00 degrees, Convergence is 0.00 degrees.
Calculation uses the minimum curvature method.
Presented by Eastman Teleco

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	R E C T A N G U L A R C O O R D I N A T E S	Dogleg Deg/100Ft	Vert Sect	
7800.00	10.00	6.00	7661.78	1253.48 N 189.52 W	0.00	1267.72	PROJECTED TO T.D.

All data is in feet unless otherwise stated
Coordinates from FF 34BR and TVD from wellhead (2235.50 Ft above mean sea level).
Vertical section is from wellhead on azimuth 351.65 degrees.
Declination is 0.00 degrees, Convergence is 0.00 degrees.
Calculation uses the minimum curvature method.
Presented by Eastman Teleco

Comments in wellpath

MD	TVD	Rectangular Coords.		Comment
7800.00	7661.78	1253.48 N	189.52 W	PROJECTED TO T.D.

All data is in feet unless otherwise stated
Coordinates from FF 34BR and TVD from wellhead (2235.50 Ft above mean sea level).
Bottom hole distance is 391.62 on azimuth 330.25 degrees from wellhead.
Vertical section is from wellhead on azimuth 351.65 degrees.
Declination is 0.00 degrees, Convergence is 0.00 degrees.
Calculation uses the minimum curvature method.
Presented by Eastman Teleco

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

No. T294-13

Report on Operations

R.D. Phillips, Agents
Southern California Gas Co.
810 S. Flower St.
Los Angeles, CA 90017

Ventura, California
January 10, 1994

Your operations at well "Fernando Fee" 34-B, API No. 037-22302, Sec. 34, T. 3N, R. 16W, S.B. B.&M. Aliso Canyon Field, in Los Angeles County, were witnessed on 11-21-93. Pete Wygle, representative of the supervisor, was present from 0100 to 0300. There were also present R. Ellis, Drlg. Foreman

Present condition of well: 13 3/8" cem 1010', damaged @ 570' ± (sqz off) & 872' (sqz off); 8 5/8" cem 7540'. TD (pres. hole) 7555'. TD (first hole) 8410'.

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

DECISION:

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

scv

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

By

Patrick J. Kinnear
Deputy Supervisor

OG109 (Modified 1993)

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

No. T293-268

Report on Operations

R.D. Phillips, Agents
Southern California Gas Co.
810 S. Flower St.
Los Angeles, CA 90017

Ventura, California
November 22, 1993

Your operations at well "Fernando Fee" 34-B, API No. 037-22302-01, Sec. 34, T. 3N, R. 16W, S.B. B.&M. Aliso Canyon Field, in Los Angeles County, were witnessed on 11-15-93. Steve Mulqueen, representative of the supervisor, was present from 0900 to 1000. There were also present Bruce Brian, Kenai Foreman

Present condition of well: 13 3/8" cem 1010'. 8 5/8" cem 8177' cp 4362', milled 1010' - 1220', cut @ 1815'; 5 1/2" ld 8062' - 8405', perfs @ int 8073' - 8405'. TD 8410'. Plugged w/cem 8398' - 7855', plugged w/ 125 cf cem below ret. @ 4350', plugged w/cem 4350' - 4200'±, plugged w/ 50 cf of cem below ret. @ 1805', 1805' - 1667' ± & 1222' - 800'.

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.

scv

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

By Patrick J. Kinnear

Patrick J. Kinnear
Deputy Supervisor

OG109 (Modified 1993)

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

No. T293-269

Report on Operations

R.D. Phillips, Agents
Southern California Gas Co.
810 S. Flower St.
Los Angeles, CA 90017

Ventura, California
November 22, 1993

Your operations at well "Fernando Fee" 34 B, API No. 037-22302-01, Sec. 34, T. 3N, R. 16W, S.B. B.&M. Aliso Canyon Field, in Los Angeles County, were witnessed on 11-5-93. Pete Wygle, representative of the supervisor, was present from 1500 to 1600. There were also present J. Burns, Contract Foreman

Present condition of well: 13 3/8" cem 1010'; 8 5/8" cem 8177', cut @ 1815', perf & sqz @ 4362 5 1/2" ld 8062' - 8405', perf @ ints 8073' - 8405'. TD 8410'. Plugged w/cem 8398' - 7855', w/125 cf below ret @ 4350', w/cem 4350' - 4200' ±, w/50 cf below ret @ 1805', & w/cem 1805', - 1667' ±.

The operations were performed for the purpose of redrilling.

DECISION:

The plugging operations as witnessed and reported are approved.

scv

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

By Patrick J. Kinnear

Patrick J. Kinnear
Deputy Supervisor

OG109 (Modified 1993)

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

No. P293-394

PERMIT TO CONDUCT WELL OPERATIONS

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

GAS STORAGE

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

Ventura, California
October 25, 1993

Your proposal to redrill well "Fernando Fee" 34BR, A.P.I. No. 037-22302-01, Section 34, T. 3N, R. 16W, S.B. B.&M., Aliso Canyon field, ---- area, Sesnon-Frew pool, Los Angeles County, dated 10/19/93, received 10/21/93, has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. Blowout prevention equipment conforming to DOGGR Class II 2M requirements shall be installed and maintained in operating condition at all times during plugging operations.
2. Hole fluid of a quality and in sufficient quantity is used to control all subsurface conditions in order to prevent blowouts.
3. A diligent effort shall be made to clean out the well to at least 8410'.
4. All portions of the well not plugged with cement are filled with inert mud fluid having a minimum density of 72 lbs./cu. ft and a minimum gel-shear strength of 25 lbs./100 sq. ft.
5. Blowout prevention equipment conforming to DOGGR Class IIIB 3M requirements is installed on the 13-3/8" casing and maintained in operating condition at all times during redrilling operations.
6. Drilling fluid of a quality and in sufficient quantity is used to control all subsurface conditions in order to prevent blowouts during redrilling operations.
7. Blowout prevention practice drills are conducted at least weekly and recorded on the tour sheet.
8. This office shall be consulted before sidetracking the well or running any additional casing.

Continued on Page 2

Blanket Bond
SAF:sf

Engineer Steven A. Fields

Phone (805) 654-4761

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

By

Patrick J. Kinnear
Deputy Supervisor

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

Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended.

OG111 (Modified 1993)

9. If extensive, unplanned drill pipe operations occur (such as fishing, milling, etc.) and there is a possibility of casing damage, the casing must be pressure-tested prior to resuming normal operations. This Division must be notified to witness the test.
10. The 9-5/8" casing is cemented with sufficient cement to fill behind this casing to at least 500 feet above the uppermost oil and/or gas zone or anomalous pressure interval, whichever is higher.
11. Blowout prevention equipment conforming to DOGGR Class IIIB 5M requirements is installed on the 9-5/8" casing and maintained in operating condition at all times during redrilling operations.
12. Drilling fluid of a quality and in sufficient quantity is used to control all subsurface conditions in order to prevent blowouts.
13. Requirements specified in our approval of the gas storage project dated July 26, 1986 shall apply.
14. A mechanical integrity test, consisting of a noise log or static temperature survey shall be run within 90 days after well is return to gas storage operations.
15. This office shall be consulted before initiating any changes or additions to this proposed operation, or if operations are to be suspended.
16. THIS DIVISION SHALL BE NOTIFIED:
    a. To witness the location and hardness of the cement plug at 7962'.
    b. To witness the mudding of the well.
    c. To witness the location and hardness of the cement plug at 4262'.
    d. To witness a pressure test of the blowout prevention equipment prior to commencing redrilling operations.
    e. To witness a mechanical intregrity test within three months after well is returned to gas storage.

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

NOTICE OF INTENTION TO REWORK WELL

FOR DIVISION USE ONLY			
BOND	FORMS		EDP WELL
	OGD114 ✓	OGD121 ✓	FILE
BB			

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

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to rework well Fernando Fee 34B *(Well designation)*, API No. 037-22302-01

Sec. 34, T. 3N, R. 16W, SB B.& M., Aliso Canyon Field,

Los Angeles County.

1. The complete casing record of the well (present hole), including plugs and perforations, is as follows:

See Attached

2. The total depth is: 8410 feet. The effective depth is: 8410 feet.

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

4. Present zone pressure: 3000 psi. Anticipated/existing new zone pressure: 3000 psi.

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

(or)

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

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

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

See Attached

DIVISION OF OIL AND GAS
RECEIVED
OCT 21 1993
VENTURA, CALIFORNIA

Note: If the well is to be redrilled, show the proposed bottom-hole coordinates and estimated true vertical depth.
The Division must be notified if changes to this plan become necessary.

Name of Operator	Telephone Number	
Southern California Gas Company	(213) 244-2665	
Address	City	Zip Code
P. O. Box 3249	Los Angeles	90051-1249
Name of Person Filing Notice	Signature	Date
E. S. Sinclair for R. D. Phillips	E. S. Sinclair	10/19/93
Agent		

File In Duplicate

OG107 (3/90/GSR1/5M)

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

NOTICE OF INTENTION TO REWORK WELL
FERNANDO FEE 34B

The complete casing record of the well (present hole), including plugs and perforations is as follows:

0' - 1010'	13-3/8"	54.5#	K-55.
0' - 8177'	8-5/8"	36# & 40#	N-80 Packer at 7997'.
8062' - 8405'	5-1/2"	20#	K-55 Wire Wrapped Liner.

The proposed work is as follows:

1. Move in, rig up, install and test BOPE. - Inspect
2. Pull production tubing.
3. Attempt to clean out to TD at 8410'.
4. Set cement plug from 8410' to 7950'±. - TAG
5. Mud well from 7950' to 4362'±. witness
6. Lay a 100 linear foot cement plug from 4362' to 4262'±. - TAG
7. Mud well from 4262' to approx. 1800' (base of fresh water). witness
8. Cut and pull 8-5/8" casing from 1815'±.
9. Lay cement plug from 1915' to 915'±. - [illegible]
10. Clean out cement and kick off below shoe at 1010', drill new hole to approx. 8000'±. Test BOPE
11. Install 9-5/8", 54.5# casing from 0' - 7800'± cementing casing to 7800'.
12. Drill out shoe of 9-5/8" casing to 8300'± and open hole below 9-5/8" casing to approx. 15". Test BOPE
13. Install 5-1/2", 17# liner from approx. 7700' - 8300'±.
14. Gravel pack liner.
15. Install packer and production tubing.
16. Remove BOPE and install xmas tree.
17. Release well for service.

NOTE: Well will be renamed Fernando Fee 34BR after redrill completion.

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 Company **Field** Aliso Canyon **County** Los Angeles
Well Fernando Fee 34 B, **Sec** 34, **T** 3N, **R** 16W S.B. **B. & M.**
A.P.I. No. 037-22302 **Name** R. D. Phillips (Person submitting report) **Title** Agent (President, Secretary or Agent)
Date April 1, 1993.

Signature J. A. Hemmerly for R. D. Phillips

P. O. Box 3249 Los Angeles, CA. 90051-1249 (213) 244-2687
(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.

DIVISION OF OIL AND GAS
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APR 06 1993
VENTURA, CALIFORNIA

Date 1993	
03/15	Move in - rig up.
03/16	Installed back pressure valve. Nippled down x-mas tree. Installed BOPE. Couldn't get test on BOPE. Attempted unsuccessfully to pull seals out of packer. Secured well.
03/17	Chemically cut 3-1/2" tubing at 7937'. Unlanded and re-dressed tubing hanger. Re-tested BOPE. Tested blind rams, pipe rams, choke manifold and casing valves to 5000 psi. Casing kill valve would not test. Pulled up to 6945'. Secured well.
03/18	Pulled out of well with 3-1/2" tubing. Ran in well with overshot, four 4-3/4" drill collars, bumper sub, and jars on 3-1/2" tubing. Worked over tubing body fish at 7937'. Jarred tubing seals out of packer. Pulled tubing to 7800'.
03/19	Pulled out of well with 3-1/2" tubing. Recovered all of fish. Laid down fishing tools and fish. Installed 2-7/8" pipe rams. Picked up and ran in well with 2-7/8" tubing to 2170'.
03/20	Pulled out of well with kill string. Plug tested seals. Completed well with 2-7/8" tubing as follows: Baker seal assembly and locator sub, 1 jt 2-7/8" 8rd tubing, Otis 2.205" 'XN' nipple, 2 jts 2-7/8" tubing, 2-7/8" MMA GLM, 11 jts 2-7/8" tubing, 2-7/8" MMA GLM, 20 jts 2-7/8" tubing, 2-7/8" MMA GLM, 26 jts 2-7/8" tubing, 2-7/8" MMA GLM, 32 jts 2-7/8" tubing, 2-7/8" MMA GLM, 38 jts 2-7/8" tubing, 2-7/8" MMA GLM, 45 jts 2-7/8" tubing, 2-7/8" MMA GLM, 77 jts 2-7/8" tubing, 2-7/8" pup jts, crossover from 2-7/8" 8rd to 3-1/2" 8rd to donut. **NOTE: This tubing is not latched. Run tubing movement calculations before setting tubing plugs.**

DOG 4/5/93

Internally pressure tested tubing to 4000 psi. Stabbed seals into packer. Landed tubing with 11,000 lbs compression on packer.

03/22 Installed back pressure valve. Removed BOPE. Installed and tested xmas tree to 5000 psi. Removed back pressure valve. Released rig at 10:00 a.m. Rig down.

03/25 Tested blind rams, choke manifold, pipe rams and stripping rams to 3000 psi. Attempted to run in well with 1-1/4" coiled tubing. Unable to go below gas lift mandrel at 7893'. Pulled out of well.

03/26 Installed gas lift mandrel bypass tool on end of 1-1/4" coiled tubing unit. Ran in well to 8240'. (Tagged fill). Cleaned out fill to 8377' with 3% KCl fluid foamed with nitrogen. Pulled out of well. Rigged down coiled tubing unit.

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

No.P293-059
Field Code 010
Area Code 00
New Pool Code 30
Old Pool Code 30

PERMIT TO CONDUCT WELL OPERATIONS
GAS STORAGE

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

Ventura, California
February 22, 1993

Your proposal to rework well "Fernando Fee" 34-B, A.P.I. No. 037-22302, Section 34, T. 3 N, R. 16W, S.B. B.&M., Aliso Canyon field, --- area, Sesnon-Frew pool, Los Angeles County, dated 2-18-93, received 2-19-93, has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. Blowout prevention equipment conforming to DOG Class III 3M requirements shall be installed and maintained in operating condition at all times.
2. Hole fluid of a quality and in sufficient quantity is used to control all subsurface conditions in order to prevent blowouts.
3. This office shall be consulted before initiating any changes or additions to this proposed operation, or if operations are to be suspended.
4. THIS DIVISION SHALL BE NOTIFIED:
   a. To inspect the installed blowout prevention equipment before commencing downhole operations.

Blanket Bond
PK:SF:nr

Engineer Steve Fields

Phone (805) 654-4761

WILLIAM F. GUERARD, Jr.
Acting State Oil and Gas Supervisor

By
Patrick J. Kinnear
Deputy Supervisor

A copy of this permit and the proposal must be posted at the well site prior to commencing operations. Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended.
OG111

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

Notice of Intention to Rework Well

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

FOR DIVISION USE ONLY		
BOND	FORMS	
	OGD 114	OGD 121
BB	2-1993 ✓	

DIVISION OF OIL AND GAS

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to rework well Fernando Fee #34B ✓ (Well designation), API No. 037-22302 ✓

Sec. 34, T. 3N, R. 16W, SB B. & M., Aliso Canyon ✓ Field, Los Angeles County.

The present condition of the well is as follows:

1. Total depth 8410'

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

   See Attachment

DIVISION OF OIL AND GAS
RECEIVED
FEB 19 1993
VENTURA, CALIFORNIA

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

4. Present zone pressure 1900 psig ; New zone pressure _____

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

   (or)

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

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

The proposed work is as follows:

See Attachment

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

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

Address P. O. Box 3249 (Street)

Los Angeles, (City) CA (State) 90051 (Zip)

Telephone Number (213) 244-2665

Southern California Gas Co. (Name of Operator)

By E. S. Sinclair for R. D. Phillips (Agent) (Name - Printed)

E. S. Sinclair 2-18-93 (Name - Signature) (Date)

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

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

NOTICE OF INTENTION TO REWORK WELL
Fernando Fee #34B

ATTACHMENT

2. Complete casing record, including plugs and perforations (Present Hole)

0' -	1010'	13-3/8"	54.5#	K-55 Buttress
0' -	8177'	8-5/8"	36 & 40#	N-80 Buttress, packer at 7997'.
8062' -	8404'	5-1/2"	20#	K-55 Wire wrapped liner.

The proposed work is as follows:

1. Move in, rig up, install and test BOPE.
2. Pull tubing and clean out well.
3. Install tubing with new gas lift design.
4. Recomplete well and return to service.

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

REPORT ON PROPOSED CHANGE OF WELL DESIGNATION

Ventura, California

November 12, 1991

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

Your request, dated July 24, 1991, proposing to change the designation of well(s) in Sec. 34, 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" FF-31 (037-00685)	"Fernando Fee" 31 (037-00685)
"SFZU" FF-33 (037-00687)	"Fernando Fee" 33 (037-00687)
"SFZU" FF-34 (037-00688)	"Fernando Fee" 34 (037-00688)
"SFZU" FF-35 (037-00689)	"Fernando Fee" 35 (037-00689)
"SFZU" MX-1A (037-21891)	"Mission Adrian" 1A (037-21891)
"SFZU" MA-1B (037-21892)	"Mission Adrian" 1B (037-21892)
"SFZU" MA 5 (037-00695)	"Mission Adrian" 5 (037-00695)
"SFZU" MA 5-A (037-22309)	"Mission Adrian" 5A (037-22309)
"SFZU" PF-3 (037-00646)	"Porter Fee" 3 (037-00646)
"SFZU" FF-34-A (037-22044)	"Fernando Fee" 34-A (037-22044)
"SFZU" FF-34-B (037-22302)	"Fernando Fee" 34-B (037-22302)
"SFZU" MA-3 (037-00693)	"Mission Adrian" 3 (037-00693)
"SFZU" MS-4 (037-00694)	"Mission Adrian" 4 (037-00694)
"SFZU" PF-1 (037-00644)	"Porter Fee" 1 (037-00644)
"SFZU" PF-2 (037-00645)	"Porter Fee" 2 (037-00645)

M. G. MEFFERD, State Oil and Gas Supervisor

By _____
Deputy Supervisor
PATRICK J. KINNEAR

OGD157 (10/85/DWRR/1M)

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

API No. 037-22302

WELL SUMMARY REPORT

Operator	Well				
Southern California Gas Co.	Fernando Fee #34B				
Field	**County**	**Sec.**	**T.**	**R.**	**B.&M.**
Aliso Canyon	Los Angeles	34	3N	16W	S.B.

Location (Give surface location from property or section corner, street center line and/or California coordinates)
4016' south and 2067' east of station #84

Elevation of ground above sea level
2212'

Commenced drilling (date)
12-19-80

Completed drilling (date)
2-4-81

Commenced producing (date)
Gas storage well
☐ Flowing ☐ Pumping
☐ Gas lift

Name of producing zone(s)
Sesnon

Total depth

(1st hole)	(2nd)	(3rd)
8410'		

Present effective depth
8405'

Junk
None

Depth measurements taken from top of:
☐ Derrick Floor ☐ Rotary Table ☒ Kelly Bushing
Which is 19' feet above ground

GEOLOGICAL MARKERS S_4 — **DEPTH** 8190'

DIVISION OF OIL AND GAS
RECEIVED
MAR 6 1981
SANTA PAULA, CALIFORNIA

Formation and age at total depth
Sesnon Zone, Miocene

	Clean Oil (bbl per day)	Gravity Clean Oil	Percent 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 (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 & Cubic Feet of Cement	Depth of Cementing (if through perforations)
13-3/8"	Surface	1010'	54.5#	K-55 - Butt	New	17-1/2"	978 cu.ft.	-
8-5/8"	Surface	8177'	36# and 40#	N-80 - Butt	New	12-1/4"	1852 cu. ft.	-

PERFORATED CASING (Size, top, bottom, perforated intervals, size and spacing of perforation and method.)
343' 5-1/2" 20# K-55 landed 8405', 10 mesh w.w. 8405'-8183' and 8110'-8073'
Top 8062' - Gravel flow packed with 276 sacks 20-40 mesh gravel

Was the well directionally drilled? ☒ Yes ☐ No
If yes, show coordinates at total depth
282' N and 1323' W

Electrical log depths
8180' and 8330'

Other surveys
Cement bond, density, neutron and photon

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	Title	
P. S. Magruder Jr.	Manager Underground Storage	
Address	**City**	**Zip Code**
P.O. Box 3249 Terminal Annex	Los Angeles	90051
Telephone Number	**Signature**	**Date**
(213) 689-3561	P. S. Magruder Jr.	3/5/81

OG100 (12-76-GSRI-12M)

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 or County Aliso Canyon
Well Fernando Fee #34B, Sec. 34, T 3N, R 16W, S.B. & M.
A.P.I. No. 037-22303 Name P.S. MAGRUDER JR. (Person submitting report) Title AGENT (President, Secretary or Agent)
Date 3/5, 1981

Signature P.S. Magruder

P. O. Box 3249, Terminal Annex, Los Angeles, CA 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	GWD #98763 was issued to drill a new gas storage well to the Sesnon Zone.
12-19	Spudded in 17-1/2" hole @ 12 midnight (12-19-80).
12-20	1st Day. Drilled 17-1/2" hole to 193' - 742'. Wiped hole.
12-21	2nd Day. Drilled 17-1/2" hole with Bit #1 from 592' to 1010'. Wiped hole. Circulated and condition mud to run casing. Lost 100 bbl mud - mixed LCM & regained full returns. Pulled out to run casing. Ran 13 joints, 13-3/8" casing. Layed down casing. Ran in with drilling assembly to condition hole.
12-22	3rd Day. Circulated & cleaned hole to run casing. Ran and cemented 13-3/8" casing at 1010' with 450 sacks Class "G" cement mixed with 8% gel and 3% calcium chloride - followed with 200 sacks of neat Class "G" cement mixed with 3% calcium chloride.
12-23	4th Day. Pumped 200 sacks of Class "G" cement mixed with 3% calcium chloride in annulus. Welded on casing head on 13-3/8" casing. Installed BOPE. Tested blind rams, choke and kill lines, and Kelly cock valve at 2700 psi.
12-24	5th Day. Tested pipe rams and Hydril at 2700 psi with water. Drilled 12-1/4" hole from 1010' - 1314' with Bit #2.
12-25	6th Day. Drilled 12-1/4" hole from 1314' - 1616'. Ran Bit #3 and drilled from 1616' - 1749'.
12-26	7th Day. Drilled 12-1/4" hole with Bit #3 from 1749' - 2103'.
12-27	8th Day. Drilled 12-1/4" hole from 2103' - 2760'.
12-28	9th Day. Drilled 12-1/4" hole from 2760' - 2935'. Ran in with Bit #5. Drilled from 2935' - 3285'.
12-29	10th Day. Survey and Trip for new bit @3402'. Drilled from 3402' - 3913'.

12-30 11th Day. Made up Dyna Drill #1. Circulated 1-1/2 hours. Condition mud. After conditioning mud and cleaning out to bottom, picked up and oriented Dyna Drill. Atttemped to drill, Dyna Drill failed to turn. Laid down Dyna Drill, picked up new Dyna Drill. Oriented Dyna Drill and directionally drilled from 3913' - 4066'.

12-31 12th Day. Finished Dyna Drill run #1 from 3913' - 4098'. Trip for new bit at 4098'. Dyna Drill #2 from 4098' - 4191'. Laid down Dyna Drill.

1981

1-01 13th Day. Reamed Dyna Drill run from 3913' - 4191'. Directionally drilled from 4191' - 4683'.

1-02 14th Day. Ran Bit #10.

1-03 15th Day. Directionally drilled from 4683' to 5231'. Ran Dyna Drill #3.

1-04 16th Day. Dyna Drill #3 from 5231'- 5351'.

1-05 17th Day. Ran Dyna Drill #4.

1-06 18th Day. Dyna drilled to 5411'.

1-07 19th Day. Drilled and Dyna drilled to 5644'.

1-08 20th Day. Directionally drilled 12-1/4" hole from 5644' - 6290'. Run in with Bit #18.

1-09 21st Day. Directionally drilled 12-1/4" hole from 6290' - 6661'.

1-10 22nd Day. Ran in with Bit #19. Directionally drilled 12-1/4" hole from 6661' - 6894'.

1-11 23rd Day. Ran Bit #20. Directionally drilled 12-1/4" hole from 6894' - 7058'.

1-12 24th Day. Directionally drilled 12-1/4" hole from 7058' - 7331'.

1-13 25th Day. Directionally drilled to 7650'. Ran Bit #22. Drilled 12-1/4" hole from 7331' - 7512'.

1-14 26th Day. Ran in with Bit #23. Directionally drilled 12-1/4" hole from 7542' - 7779'.

1-15 27th Day. Directionally drilled 12-1/4" hole from 7779' - 7917'.

1-16 28th Day. Directionally drilled 12-1/4" hole from 7917' - 8036'.

1-17 29th Day. Directionally drilled 12-1/4" hole from 8036' - 8130'. Circulated and conditioned mud for log. Ran Welex induction and caliper logs.

1-18 30th Day. Ran in and drilled 12-1/4" hole from 8130' - 8180'. Ran Welex induction log. Circulated and condition mud for 8-5/8" casing.

1-19 31st Day. Circulated and conditioned mud. Pulled out and laid down drill collars. Ran 8-5/8" casing.

1-20 32nd Day. Cemented 8-5/8" casing at 8189' with 502 cu. ft. of wash followed with 1200 cu. ft. 1-1 Class "G" lite Poz cement mixed with 1% D-65 and 0.5% D-60 and followed with 403 cu. ft. of Class "G" cement mixed with 0.75% D-65 and 0.5% D-60 followed with 250 cu. ft. "Self Stress" mixed with 0.5% D-65 and 0.2% D-108. Cemented in place at 1:45 a.m. Unflanged BOPE. Set casing slips and cut off 8-5/8" casing. Installed seal flange and tubing head. Pressure tested well head seals to 5000 psi. Installed BOPE.

1-21 33rd Day. Pressure tested BOPE to 3000 psi. Laid down 5" drill pipe. Changed pipe rams. Picked up drill collar 6 - 4-3/4". Picked up 3-1/2" drill pipe. Put rubbers on each joint from 4000' to bottom.

1-22 34th Day. Picked up 3-1/2" drill pipe. Located top cement 8012'. Tested pipes rams to 3000 psi. Drilled out cement to float collar 8074' and drilled out to 8168'. Circulated hole clean. Ran Welex cement bond and neutron log. Top cement at 4910'.

1-23 35th Day. Drilled out shoe at 8174'. Drilled 7-5/8" hole from 8177' - 8330'. Circulated bottom up. Ran Welex induction, density, and neutron logs.

1-24 36th Day. Drilled 7-5/8" hole from 8330' - 8410'.

1-25 37th Day. Circulated bottom up. Pulled to shoe of 8-5/8". Cleaned mud tanks. Ran in circulated clay mud out of well with 78#/cu. ft. polymer completion fluid. Ran in with 15" hole opener. Opened 7-5/8" hole to 15" from 8180' - 8272'.

1-26 38th Day. Opened 7-5/8" hole to 15" from 8272' - 8303'. Ran hole opener #2. Opened hole from 8303' - 8342'.

1-27 39th Day. Opened 7-5/8" hole to 15" to 8410'. Gauge reamed 15" hole from 8180' - 8315'.

1-28 40th Day. Gauge reamed 15" hole from 8315' - 8410'. Ran Dresser Atlas caliper log. Circulated completion fluid out of well with clean completion fluid filtered through a 5 micron filter.

1-29 41st Day. Picked up 342' of 5-1/2" liner. Ran in and hung liner. Bottom at 8405'. Top liner 8063'. Tested lead seal and port collar with 900 psi. Opened port collar. Circulated 1/2 hour.

1-30 42nd Day. Gravel packed with 275 sacks of 20-40 mesh gravel. Closed port collar. Tested with 1000 psi. Pulled out of hole. Made up Baker washing tool. Ran in and washed liner. Ran in well with gravel packing tool.

1-31 43rd Day. Ran in located port collar. Tested with 800 psi. Regravel packed well with 1 sack in place. Total sacks in place 276. Ran Dresser Atlas Photon Log which showed incomplete fill with gravel from 8185' - 8205'. Ran in well washed liner. Relogged, but found interval still incompletely packed.

2-01 44th Day. Ran photon log. Ran wash tool wash liner. Photon log same. Ran Baker Model D packer on Dresser Atlas wire line. Packer set at 7997'. Laid down 3-1/2" drill pipe.

2-02 45th Day. Laid down 3-1/2" drill pipe. Picked up 3-1/2" tubing. Pulled 3-1/2" tubing out of hole.

2-03 46th Day. Made up stab in tools. Hydro tested 3-1/2" tubing in well at 5000 psi. Landed on packer with 20,000#. Tested xmas tree at 5000 psi.

2-04 47th Day. Released rig at 6:00 a.m. 2-4-81.

Eastman Whipstock
A PETROLANE COMPANY

REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY

SO. CAL GAS COMPANY
COMPANY

FF34-B
WELL NAME

ALISO CANYON
LOCATION

JOB NUMBER	TYPE OF SURVEY	DATE
P1280-D0321	SINGLE-SHOT	1-9-81

SURVEY BY — LONG BEACH — OFFICE

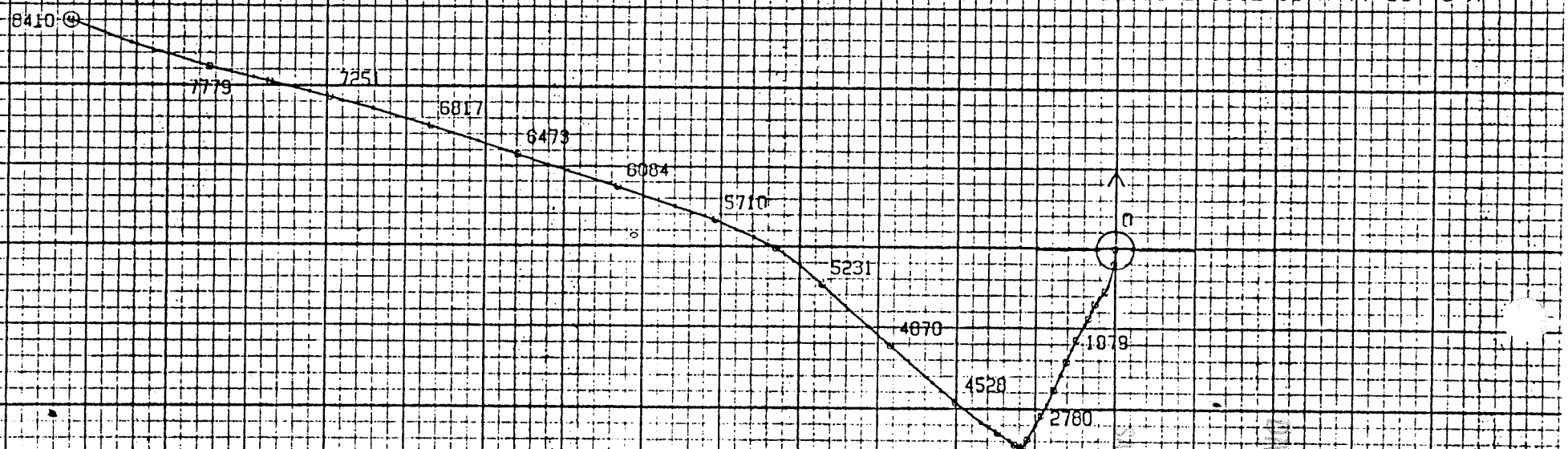
SO. CAL GAS
WELL: FF34-B
LOCATION: ALISO CANYON

EASTMAN WHIPSTOCK, INC.

HORIZONTAL PROJECTION

SCALE 1 IN. = 200 FEET
DEPTH INDICATOR: MD

FINAL STATION:
DEPTH 8410 MD, 8182.43 TVD
NORTH 281.58 WEST 1322.51
CLOSURE 1352.16 N 77 58 49 W



SO. CAL GAS
WELL: FF34-B
LOCATION: ALISO CANYON
FILE: B1-422
DATE: 12-29-80
DECL:
ELEV: 2231'
TYPE: CONTROL
SEC. BEARING: N76W
JOB:
VENDOR: EASTMAN WHIPSTOCK
SURVEYOR: KEN WALKER

CONTROL K/W

VERTICAL SECTION CALCULATED IN PLANE OF PROPOSAL
DIRECTION: N 77 DEG. 0 MIN. W

RECORD OF SURVEY

ANGLE AVERAGING METHOD

ELL: FF34-B
OCATION: ALISO CANYON

TIME 25:29:47 DATE 29-JAN-81

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH FEET	TRUE VERTICAL DEPTH FEET	VERTICAL SECTION FEET	SUBSEA TVD FEET	RECTANGULAR COORDINATES FEET	CLOSURE DISTANCE FEET	CLOSURE DIRECTION D M	DOG SEVE DG/1
0.	0 0	0 0	0.	0.00	0.00	-2231.00	0.00	0.00	0 0	0.
440.	0 45	S 10 0 W	440.	439.99	-0.15	-1791.01	2.84 S 0.50 W	2.88	S 10 0 W	0.
860.	3 30	S 4 0 E	420.	859.70	-2.86	-1371.30	18.39 S 1.32 W	18.44	S 4 5 W	0.
1220.	5 30	S 33 0 W	360.	1218.59	-2.12	-1012.41	45.73 S 8.39 W	46.50	S 10 24 W	0.
1304.	5 15	S 25 0 W	84.	1302.22	0.05	-928.78	52.62 S 12.20 W	54.01	S 13 3 W	0.
1438.	4 15	S 53 0 W	134.	1435.76	4.92	-795.24	61.24 S 19.19 W	64.17	S 17 24 W	1.
1561.	4 15	S 25 0 W	123.	1558.42	8.91	-672.58	68.32 S 24.92 W	72.73	S 20 2 W	1.
1666.	5 45	S 22 0 W	105.	1663.02	10.58	-567.98	76.72 S 28.57 W	81.86	S 20 26 W	1.
1759.	7 30	S 25 0 W	93.	1755.40	12.54	-475.60	86.56 S 32.85 W	92.58	S 20 47 W	1.
1821.	8 15	S 32 0 W	62.	1816.82	14.81	-414.18	94.02 S 36.90 W	101.00	S 21 26 W	1.
1979.	7 45	S 28 0 W	158.	1973.28	21.24	-257.72	113.06 S 47.90 W	122.79	S 22 58 W	0.
2072.	8 30	S 23 0 W	93.	2065.35	24.08	-165.65	124.93 S 53.56 W	135.92	S 23 12 W	1.
2187.	8 30	S 25 0 W	115.	2179.08	27.32	-51.92	140.46 S 60.47 W	152.92	S 23 18 W	0.
2312.	7 30	S 25 0 W	125.	2302.87	30.94	71.87	156.22 S 67.82 W	170.31	S 23 28 W	0.
2469.	8 0	S 23 0 W	157.	2458.43	34.98	227.43	175.56 S 76.43 W	191.48	S 23 32 W	0.
2625.	6 30	S 27 0 W	156.	2613.19	39.07	382.19	193.41 S 84.75 W	211.16	S 23 40 W	1.
2780.	5 15	S 26 0 W	155.	2767.37	42.78	536.37	207.60 S 91.83 W	227.01	S 23 52 W	0.
2935.	5 15	S 36 0 W	155.	2921.72	47.16	690.72	219.76 S 99.14 W	241.09	S 24 17 W	0.
3247.	2 0	S 26 0 W	312.	3233.10	53.26	1002.10	236.67 S 109.30 W	260.69	S 24 47 W	1.
3402.	1 30	S 19 0 W	155.	3388.03	54.04	1157.03	241.04 S 111.11 W	265.42	S 24 45 W	0.
3716.	0 45	S 59 0 W	314.	3701.97	56.74	1470.97	245.84 S 114.99 W	271.40	S 25 4 W	0.
3913.	0 15	S 60 0 W	197.	3898.96	57.99	1667.96	246.71 S 116.47 W	272.82	S 25 16 W	0.
3960.	2 45	S 76 0 W	47.	3945.94	58.99	1714.94	247.17 S 117.61 W	273.72	S 25 27 W	5.
4021.	3 45	N 64 0 W	61.	4006.84	62.43	1775.84	246.81 S 121.05 W	274.89	S 26 8 W	3.
4086.	6 0	N 45 0 W	65.	4071.61	67.53	1840.61	243.60 S 125.55 W	274.05	S 27 16 W	4.
4148.	8 30	N 52 0 W	62.	4133.11	74.41	1902.11	238.41 S 131.41 W	272.23	S 28 52 W	4.
4256.	11 0	N 63 0 W	108.	4239.55	91.65	2008.55	228.59 S 146.83 W	271.68	S 32 43 W	2.
4374.	14 0	N 55 0 W	118.	4354.76	115.94	2123.76	215.43 S 168.72 W	273.64	S 38 4 W	2.
4528.	16 30	N 50 0 W	154.	4503.33	152.80	2272.33	190.77 S 200.86 W	277.02	S 46 29 W	1.
4653.	18 45	N 50 0 W	125.	4622.46	186.52	2391.46	166.45 S 229.85 W	283.79	S 54 5 W	1.

CONTROL R/W

COMPUTATION

LL: FF34-B
CATION: ALISO CANYON

TIME 25:29:47 DATE 29-JAN-81

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH FEET	TRUE VERTICAL DEPTH FEET	VERTICAL SECTION FEET	SUBSEA TVD FEET	RECTANGULAR COORDINATES FEET	CLOSURE DISTANCE FEET	CLOSURE DIRECTION D M	DOGL SEVER DG/1
4870.	19 0	N 50 0 W	217.	4827.80	249.07	2596.80	121.32 S 283.63 W	308.49	S 66 50 W	0.
4984.	19 0	N 49 0 W	114.	4935.58	281.99	2704.58	97.22 S 311.85 W	326.65	S 72 41 W	0.
5231.	18 0	N 49 0 W	247.	5169.82	351.19	2938.82	45.80 S 371.00 W	373.82	S 82 58 W	0.
5350.	19 0	N 49 0 W	119.	5282.67	384.53	3051.67	21.03 S 399.50 W	400.05	S 86 59 W	0.
5462.	19 30	N 63 0 W	112.	5388.41	419.00	3157.41	0.38 S 430.11 W	430.11	S 89 57 W	4.
5554.	20 0	N 62 0 W	92.	5475.00	449.10	3244.00	13.98 N 457.69 W	457.90	N 88 15 W	.
5710.	20 15	N 72 0 W	156.	5621.47	501.96	3390.47	34.95 N 507.10 W	508.30	N 86 3 W	2.
5865.	20 45	N 72 0 W	155.	5766.66	556.04	3535.66	51.72 N 558.72 W	561.11	N 84 43 W	0.
6084.	20 30	N 72 0 W	219.	5971.62	632.89	3740.62	75.56 N 632.09 W	636.59	N 83 11 W	0.
6273.	20 0	N 72 0 W	189.	6148.94	698.05	3917.94	95.78 N 694.30 W	700.88	N 82 9 W	0.
6473.	19 30	N 72 0 W	200.	6337.17	765.38	4106.17	116.66 N 758.58 W	767.50	N 81 15 W	0.
6631.	19 45	N 72 0 W	158.	6486.00	818.24	4255.00	133.06 N 809.05 W	819.92	N 80 40 W	0.
6817.	19 45	N 73 0 W	186.	6661.05	880.90	4430.05	151.96 N 868.99 W	882.18	N 80 5 W	0.
7058.	17 0	N 74 0 W	241.	6889.77	956.73	4658.77	173.54 N 941.83 W	957.69	N 79 34 W	1.
7251.	16 45	N 76 0 W	193.	7074.46	1012.72	4843.46	188.04 N 995.95 W	1013.54	N 79 19 W	0.
7344.	16 45	N 76 0 W	93.	7163.51	1039.52	4932.51	194.52 N 1021.96 W	1040.30	N 79 13 W	0.
7520.	17 15	N 76 0 W	176.	7331.82	1090.97	5100.82	206.97 N 1071.88 W	1091.68	N 79 4 W	0.
7589.	17 30	N 77 0 W	69.	7397.67	1111.57	5166.67	211.78 N 1091.92 W	1112.27	N 79 1 W	0.
7779.	17 30	N 77 0 W	190.	7578.88	1168.71	5347.88	224.63 N 1147.59 W	1169.37	N 78 55 W	0.
8130.	16 45	N 70 0 W	351.	7914.32	1271.87	5683.32	253.99 N 1246.69 W	1272.30	N 78 29 W	.
8410.	16 45	N 70 0 W	280.	8182.44	1351.96	5951.44	281.58 N 1322.52 W	1352.16	N 77 59 W	0.

ATION AT MD. 8410' IS A PROJECTED STATION.

FINAL CLOSURE - DIRECTION: N 77 DEGS 59 MINS W
DISTANCE: 1352.16 FEET

25:29:47
29-JAN-81
FILE NUMBER: 422

SO. CAL GAS
WELL: FF34-B
LOCATION: ALISO CANYON

CONTROL K/W

ONVERSATIONAL SURVEY PROGRAM V02.11

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

REPORT OF CORRECTION OR CANCELLATION

Santa Paula, California

Dec. 29, 1980

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

In accordance with notice dated 12/22/80

the following change pertaining to your well "SFZU" FF-34-B (037-22302),

Aliso Canyon field, Los Angeles County,

Sec. 34, T. 3N, R. 16W, S.B. B. & M., is being made in our records:

[X] The corrected location is 4016'S and 2067'E of Station 84

[ ] The corrected elevation is

[ ] Report No. P280-401, dated Nov.17, 1980, has been corrected as follows: 8 5/8" casing

[ ] Your notice to (Drill, abandon, etc.) dated,

and our report No. P, issued in answer thereto, are hereby cancelled inasmuch as the work will not be done. If you have a drilling bond on file covering this notice it will be returned. No request for such return is necessary.

[ ] Other:

MAP | MAP BOOK | CARDS | COPIED | PUNCHED 114 | 121

Memo

b

State Oil and Gas Supervisor

By John L. Hardoin, Deputy Supervisor

OG 165 (1-77-GSR1-3M)

SOUTHERN CALIFORNIA gas COMPANY

810 SOUTH FLOWER STREET, LOS ANGELES, CALIFORNIA

JOHN W. TENFELDER
Drilling Superintendent

Mailing Address BOX 3249 TERMINAL ANNEX, LOS ANGELES, CALIFORNIA 90051

December 22, 1980

Division of Oil and Gas
146 South Ojai Street
P. O. Box 67
Santa Paula, CA 93060

Gentlemen:

Please find attached a revised Notice of Intention to Drill New Well for Fernando Fee #34-B, Aliso Canyon field, Los Angeles County. The revision is due to the fact that we have made some minor changes in the surface location and production string casing.

For your convenience, we have also attached a copy of the original Notice of Intention to Drill Well which was sent to you on November 10, 1980.

Very truly yours,

J. W. Tenfelder

JWT:mev
Attach.

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS RECEIVED
DEC 29 1980
SANTA PAULA, CALIFORNIA

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

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to commence drilling well Fernando Fee #34-B, API No.____ (Assigned by Division)

Sec. 34, 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____ (Direction) along section / property line (Cross out one) and ____ feet____ (Direction)

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

4016' south and 2067' east 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: 1200 feet N76°W (Direction) and____ feet____ (Direction)

Elevation of ground above sea level 2212 feet.

All depth measurements taken from top of Kelly Bushing (Derrick Floor, Rotary Table, or Kelly Bushing) that is 19 feet above ground.

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	Surface	1,000'	1,000'	Surface
8 5/8"	36 &40#	N-80 Butt	Surface	8,200'	8,200'	4,000'
5 1/2"	20#	K-55 LT&C	8,100'	8,400'	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, 8,400', 3,600 psi (Name, depth, and expected pressure) Estimated total depth 8,400'

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.)	
Southern California Gas Company	Corporation	
Address	**City**	**Zip Code**
P.O. Box 3249 Terminal Annex	Los Angeles	90051
Telephone Number / **Name of Person Filing Notice**	**Signature**	**Date**
(213) 689-3561 P.S. Magruder Jr.	P. S. Magruder Jr.	12/22/80

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.

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS
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In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to commence drilling well Fernando Fee #34-B, API No.____ (Assigned by Division),
Sec. 34, 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____ (Direction) along section / property line and ____ feet____ (Direction)
(Cross out one)

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

see corrected notice → 4,034' south and 2,085' east 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:
1,200' feet N76°W (Direction) and____ feet____ (Direction)

Elevation of ground above sea level 2,212 feet.

All depth measurements taken from top of Kelly Bushing (Derrick Floor, Rotary Table, or Kelly Bushing) that is 19 feet above ground.

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	Surface	1,000'	1,000'	Surface
9 5/8"	40, 43.5 & 47#	Butt N-80 LT&C	Surface	8,200'	8,200'	4,000'
5 1/2"	20#	K-55 LT&C	8,100'	8,400'	w.w. liner, gravel packed	

see corrected notice

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

Intended zone(s) of completion Sesnon, 8,400', 3,600 psi (Name, depth, and expected pressure) Estimated total depth 8,400'

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.)	
Southern California Gas Company	Corporation	
Address P.O. Box 3249 Terminal Annex	**City** Los Angeles	**Zip Code** 90051
Telephone Number (213) 689-3561	**Name of Person Filing Notice** P.S. Magruder, Jr.	**Signature** P.S. Magruder, Jr. by J. Teufel	**Date** 11/10/80

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.

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

No. P 280-401

REPORT ON PROPOSED OPERATIONS

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

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

Santa Paula, California
Nov.17, 1980

Your proposal to drill gas storage well "SFZU" FF-34-B,
A.P.I. No. 037-22302, Section 34, T. 3N, R. 16W, S.B. B. & M.,
Aliso Canyon field, Main area, Sesnon-Frew pool,
Los Angeles County, dated 11/10/80, received 11/12/80 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 control 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 ~~9~~ 8 5/8" casing and maintained in operating condition at all times.
6. This office shall be consulted before placing any plugs or sidetracking any hole.
7. THIS DIVISION SHALL BE NOTIFIED TO WITNESS:
   a. A pressure test of the blowout prevention equipment before drilling below 1000'.
   b. A test of the ~~9~~ 8 5/8" shut-off above the zone to be produced.

Blanket Bond
MD:b

M. G. MEFFERD, State Oil and Gas Supervisor

By John F. Hardoin, Deputy Supervisor

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

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DEPARTMENT OF CONSERVATION

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264	T 11-18	✓	66	✓	✓

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to commence drilling well ~~Fernando Fee~~ "SFZU" FF #34-B, API No. 037-22302 (Assigned by Division)

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~~4,034~~ 4016' south and ~~2,085~~ 2067' east from Station #84

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Address P.O. Box 3249 Terminal Annex	**City** Los Angeles	**Zip Code** 90051
Telephone Number (213) 689-3561	**Name of Person Filing Notice** P.S. Magruder, Jr.	**Signature** P.S. Magruder, Jr. by J. Teufel **Date** 11/10/80

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Information for compliance with the California Environmental Quality Act of 1970 (C.E.Q.A.).

If an environmental document has been prepared by the lead agency, please submit a copy of the document with this notice *or* supply the following information:

Lead Agency: _____

Contact Person: _____

Address: _____

_____

Phone: ( ) _____

FOR DIVISION USE ONLY
District review of environmental document (if applicable)? Yes ☐ No ☐
Remarks: _____
_____
_____

CRITICAL WELL

As defined in the California Administrative Code, 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 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.

Exceptions or additions to this definition may be established by the supervisor upon his own judgment or upon written request of an operator. This written request shall contain justification for such an exception.