Rec'd 10-25-16 DOGGR 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 32 A Sec. 27, T3N, R16W, S.B.B.&M.

A.P.I. No. 03721872 Name Tom McMahon (Person submitting report) Title SIMP Project Manager (President, Secretary, or Agent)

Date 10/3/2016 (Month, day, year) Signature Thomas J McMahon

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

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

Daily Operation Period: 3/22/2016 - 3/23/2016

Operations this Report Period (DOGGR)

Daily Operation Period: 3/23/2016 - 3/24/2016

Operations this Report Period (DOGGR)

Held safety meeting with crew. Rigged up Onyx flowback skid. Assisted So Cal operator unlocked wellhead and indentified gas group lines. Bullhead 30 bbls of Hi Visc pill followed by 62 bbls of 8.5# polymer kill fluid. Pumped 320 bbls and established return to tank. Circulated 50 bbls and successfully bled well down. Installed back pressure valve and removed wellhead. Installed 11" x 9" spool with 11" 5M BOPE. Installed kill & return lines. Installed 11" 5M Hydril bag. Installed work floor.

Daily Operation Period: 3/24/2016 - 3/25/2016

Operations this Report Period (DOGGR)

Held safety meeting. Shut in tubing pressure was 40 psi & shut in casing pressure was 0 psi. Bled down well with no flow. Rigged up Weatherford Tester. Changed out door seal on blind ram. Tested pipe rams, choke manifold, remote kill line, 2- kill valves & 2-check valves, return line & valves to choke manifold, 2- 3-1/2" TIW valves & blinds to 300 psi low and 5000 high, 300 psi low & 3500 psi high on hydril bag. Repaired leaks as needed. Ernie Blevens with DOGGR waived the witness on the BOPE test. Deferred

Daily Operation Period: 3/25/2016 - 3/26/2016

Operations this Report Period (DOGGR)

Held safety meeting. Had field pressure of 1033 psi, 0 psi shut in pressure on tubing & casing. Bled well down. Pumped 62 bbls with 46 bbls to get returns. Released G6 packer and pulled free at 90,000 over string weight. Pulled out of the hole with completion string. Made up & ran in the hole with 8-5/8 scraper and bumper sub below 50 joints of 3-1/2" tubing. Mark Davis with DOGGR performed a BOPE inspection. Shut in & secured well.

Daily Operation Period: 3/26/2016 - 3/27/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1030. Shut in casing & tubing pressure 0. Continued with 8-5/8" scraper run. Tagged @ 6566'. Pulled out of the hole. Made up 7" scraper with bumper sub. Ran in the hole & tagged 4-1/2" liner & 7113'. Pulled out of the hole to @ 4515'. Closed in well.

Daily Operation Period: 3/28/2016 - 3/29/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1023 psi. Casing & tubing shut in pressure was 0 psi. Bled down well with casing on slight vacuum. Pulled out of hole with remaining 3-1/2" tubing. Laid down 7" scraper. Made up & ran 15 joints of 2-3/8" PH-6. Ran 228 joints of 3-1/2" tubing and tagged down @ 7474'. Installed circulating head & king swivel. Broke circulation and reversed out fill from 7474' to 7479' bottom. Circulated clean. Pulled 178 joints of 3-1/2" tubing. Closed in well. Secured location.

Daily Operation Period: 3/29/2016 - 3/30/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1021 psi. Casing & tubing had 0 psi, both on a vacuum. Bled down well. Filled hole with 4 bbls. Pulled out of the hole with 50 joints of 3-1/2" 9.3# EUE tubing. Laid down 15 joints of 2-3/8" PH-6 tubing (work string). Installed 7" x 11" shooting flange. Installed western wireline lubricator. Rigged Western Wireline truck & Scientific Drilling gyro survey tools. Ran in hole and surveyed well from 7470'. Took survey readings from 7470' to 100'. Rigged down wireline truck & tools. Ran in hole to 7108' and set Weatherford bridge plug. Released from on & off tool. Tested to 650 psi. Good test. Pulled tubing to 6478'. Closed in well. Secured location.

Daily Operation Period: 3/30/2016 - 3/31/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1015 psi. Casing & tubing shut in pressure was 0 psi. Bled down well. Ran in hole and laid 10' of sand on top of 7" bridge plug with 3 - 50# sacks of sand. Pulled out of the hole and laid down retrieving head. Spotted EP Wireline truck (Schlumberger). Made up USIT log & ran in the hole to 7090'. Logged from 7090' to surface. Closed in well. Secured location.

Rec'd 10-25-16 DOGGR Ventura.

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HISTORY OF OIL OR GAS WELL

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Well Fernando Fee 32 A Sec. 27, T3N, R16W, S.B.B.&M.

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Date 10/3/2016 (Month, day, year) Signature

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Daily Operation Period: 3/31/2016 - 4/1/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1029 psi. Casing & tubing shut in pressure was 0 psi. Bled down well. Spotted & rigged up Baker Wireline. Made up & ran in the hole with 7" Vertilog to 7089'. Logged 7" casing 7085' to 6566'. Pulled out of the hole. Laid down Vertilog tool. Made up & ran in the hole with 60 arm caliber log. Tagged @ 7086'. Logged well from 7081' to surface. All logs correlated to open hole log. Closed in well. Secured location.

Daily Operation Period: 4/1/2016 - 4/2/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1033 psi. Casing & tubing shut in pressure was 0 psi. Bled down well. Made up & ran in the hole with 8-5/8" Vertilog to 6557'. Logged from 6539' to surface. Laid down Vertilog tool. Service & checked calibrations on 60 arm caliber logging tool. Ran in the hole to 6600' & logged from 6595' to surface. Picked 7" & 8-5/8" 10' sections of casing & checked the calibration on the 60 arm caliber logging tool. Laid down logging tool. Checked good. Laid down logging tool. Rigged down & loaded out Baker Atlas. Closed well in. Secured location.

Daily Operation Period: 4/2/2016 - 4/3/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1044 psi. Casing & tubing shut in pressure was 0 psi. Bled down well. Picked up & ran in the hole with 8-5/8" 36# WFT packer to 1000'. Set & tested to 500 psi. Good test. Ran in the hole to 3438' & set packer. Rigged up pump to tubing & pressured up to 2000 psi. Rigged up PROS tester and pressured up to 2250 psi. Held for 1 hour with 244 psi build up. DOGGR did not approve the test. Rigged up to casing & tested casing to 2623 psi. Held for 1 hour and approved by Kris Gustafson with DOGGR. Bled off casing pressure. Closed in well. Secured location.

Daily Operation Period: 4/4/2016 - 4/5/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1044 psi. Had 30 psi on casing & tubing. Bled down. Rigged up PROS tester. Pressure tested thru the tubing from 3438' to 7098' top of sand above bridge plug that was set at 7108'. Tested at 2272 psi. Good test with 7# of decrease in pressure in an hour. Release packer & pulled to 2500'. Reset packer. Pressure tested casing from 2500' to surface. Tested at 3130 psi. Good test with 13# pressure decrease in an hour. Released packer & pulled to 1000'. Reset packer. Pressure tested casing from 1000' to surface. Tested at 3645 psi. Good test with x# decrease in pressure. All test witnessed by Erie Blevins with DOGGR. Released packer. Pulled out of the hole & laid down packer assembly. Closed in well. Secured location.

Daily Operation Period: 4/5/2016 - 4/6/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1038 psi. Had 0 psi on well. Bled well down. Rigged down tubing equipment. Removed work floor. Rigged down BOPE. Cameron pulled wellhead plugs & de-energized tubing spool & wellhead. Removed tubing spool. Installed 13-5/8" x 11" 5M spool & 11" double gate BOPE. Shut blinds. Tested to 1000 psi. Closed in well. Secured location. Waiting on tubing spool redress.

Daily Operation Period: 4/8/2016 - 4/9/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1048 psi. Had 0 psi on well. Bled down. Removed double gate BOPE. Installed tubing spool. Tested primary seal at 300 psi low, 2760 psi high, bled down to 2400 psi. Held for 20 minutes and bled down to 2300 psi (100 psi drop off). Tested secondary seals at 300 psi low & 2760 psi high. Good test recorded with chart. All test were 15 minute test, except primary high test. Installed Class III BOPE. Function tested. Installed work floor and tubing equipment. Rigged up 3" line and remote kill line to BOPE. Shut blind rams. Closed in well. Secured location.

Daily Operation Period: 4/9/2016 - 4/10/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1053 psi. Had 0 psi on well. Bled down well. Installed tubing hanger & tested BOPE at 2000 psi. Tested good and recorded with chart. Made up & ran in the hole with WFT on & off retrieving head. Rigged up production swivel. Circulated from 7089' to 7109'. Engaged & released 7" RBP. Pulled to 7065'. Packer hung up, pulled 40K over string weight with no success. Ran in hole to 7095'. Closed in well. Secured location. Let elements on packer relax until Monday morning.

Rec'd 10-25-16 DOGGR Ventura.

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HISTORY OF OIL OR GAS WELL

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Well Fernando Fee 32 A Sec. 27, T3N, R16W, S.B.B.&M.
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Date 10/3/2016 (Month, day, year)
Signature
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Daily Operation Period: 4/11/2016 - 4/12/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure was 1053 psi. Had 40 psi on tubing & casing. Bled down well. Filled hole with 7 bbls of kill fluid. Pulled from 7095' to 7065'. Worked thru spot at 7065' with 25K over string weight. Pulled out of the hole & laid down 7" RBP assembly. Ran in the hole with 228 joints of 3-1/2" 9.3# N80 tubing to @ 7031'. Closed in well. Secured location.

Daily Operation Period: 4/13/2016 - 4/14/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure was 1057 psi. Had 0 psi on tubing & casing. Bled down well. Filled hole with 4 bbls of kill fluid. Pulled out of the hole and laid down 146 joints of 3-1/2" 9.3# N80 tubing. Leaving 82 joints in the hole for a kill string. Closed in well. Secured location.

Daily Operation Period: 4/14/2016 - 4/15/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1050 psi. Had 0 psi on tubing & casing. Bled down well. Filled hole with 2 bbls. Pulled out of the hole and laid down 82 joints. Hauled off 228 joints of 3-1/2" 9.3# N-80 production string. Hauled in & off loaded 124 joints of 3-1/2" 9.3# EUE L-80 tubing. Made up & run in the hole with 7" 26# Haliburton PLT V-2 Mechanical set packer, 10' pup joint, XN nipple (with end test plug), 1 joint of 3-1/2" 9.3# EUE L-80 tubing, 4.5 OD Durasleeve, 1 joint of 3-1/2" 9.3# EUE L-80 tubing. Solid tested tubing to 5000 psi. Rigged up Western Wireline & recovered end test tool. Ran 2 joint of 3-1/2" 9.3# EUE L-80 tubing & made up WFT hydro test bar tools. Tested in hole with a total of 47 jts above Durasleeve & 48 total. Closed in well. Secured location.

Daily Operation Period: 4/15/2016 - 4/16/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1050 psi. Had 0 psi on tubing & casing. Bled down well. Filled hole with 2 bbls. Displaced tubing with 13 bbls of 8.5# kill fluid. Hydro tested in hole at with 74 joints of 3-1/2" 9.3# EUE L-80 tubing. Hauled in 111 joints. Hydro tested in the hole with 35 joints of 3-1/2" 9.3# EUE L-80 tubing. Had wind issues throughout the day. Closed well in with 159 joints in the hole, tested at 5000 psi. Secured location.

Daily Operation Period: 4/16/2016 - 4/17/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1054 psi. Had 0 psi on tubing & casing. Bled down well. Filled hole with 2 bbls. Hydro tested in hole with 66 joints of 3-1/2" 9.3# EUE L-80 tubing. Spaced out packer & landed completion string. Laid down hydro test tools & rigged down unit. Pumped 100 bbls of KCL water with Biocide (Packer Fluid). Set packer with COE @ 7087.67' and 10K of compression on packer. Ran in rams. Pressure tested casing to 1000 psi & held for 5 minutes. Rigged up Western Wireline and set PXN plug @ 7074'. Rigged down Western Wireline unit. Closed in well. Secured location.

Daily Operation Period: 4/18/2016 - 4/19/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1055 psi. Had 0 psi on tubing & casing. Bled down well. Rigged up Pros testing unit. Pressure tested 3-1/2" tubing agianst PXN plug at 7074' to 3700 psi. Good test. Pressure tested 7" and 8-5/8" casings against completion packer with COE @7088' to 1000 psi. All test witnessed & approved by Clifford Knight with DOGGR. Rigged down tubing equipment & work floor. Removed BOPE. Installed & tested wellhead tree to 300 psi low & 3000 psi high. Both test were charted and recorded for 20 minutes each. Moved rig equipment. Rigged down mast & moved off location.

Daily Operation Period: 8/24/2016 - 8/24/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1236 psi. Had 250 psi on tubing & 30 psi on the casing. Rigged up & killled well with Onyx crew. Pumped a total of 395 bbls of polymer. Bled down well. Removed wellhead & installed 9"5M x 11"5M spool. Installed 11" 5M Class III BOPE. Closed in well. Secured rig & cleaned location.

Time Log

Code 1	Code 2	Com
SMTG	Safety Meeting	Held safety meeting. Field pressure 1236 psi. Had 250 psi on tubing & 30 psi on the casing.

Rec'd 10-25-16 DOGGR Ventura.

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HISTORY OF OIL OR GAS WELL

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Time Log

Code 1	Code 2	Com
RURD	Rig Up/Down	Rigged up mast and spotted associate rig equipment.
WKLL	Kill Well	Moved in and spotted Onynx. Rigged up kill manifold. Moved in and spotted Pacific Petroleum. Rigged up Vac Truck & carbon filter canister. Rigged up mud pump. Filled kill tank with polymer. Killed well with 8.5# polymer. Pumped xxx bbls holding 200 psi back pressure. Bled down well.
WKLL	Kill Well	Waiting on Doby Vac truck to fill kill tank. Hauled in 300 bbls of polymer.
WKLL	Kill Well	Pumped 395 bbls holding 200 psi back pressure. Bled down well. No flow.
WHDI	Install Wellhead	Installed back pressure valve. Removed welhead tree.
BOPI	Install BOP's	Installed 9" 5M x 11" 5M spool & 11" 5M Class III BOPE.
CLSL	Clean & Secure Lease	Closed in well & secured rig. Cleaned location.

Daily Operation Period: 8/25/2016 - 8/25/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1238 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well (on a vacuum). Rigged up Weatherford Tester. Changed out drams from 2-7/8" to 3-1/2" rams. Tested pipe rams, choke manifold, remote kill line, kill valves & check valves, return line & valves to choke manifold & blinds to 300 psi low and 5000 high. Pressure tested hydril bag to 300 psi low & 3500 psi high. Repaired leaks as needed. Waiting on DOGGR for BOPE inspection. Shutdown rig waiting on verification on choke line. Ran in rams. Closed in well & secured rig. Cleaned location.

Time Log

Code 1	Code 2	Com
SMTG	Safety Meeting	Held safety meeting. Field pressure 1238 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well, well on a vacuum.
BOPPT	Pressure Test BOP's	Rigged up Weatherford Tester. Changed out rams from 2-7/8" to 3-1/2" rams. Tested pipe rams, choke manifold, remote kill line, kill valves & check valves, return line & valves to choke manifold & blinds to 300 psi low and 5000 high. Pressure tested hydril bag to 300 psi low & 3500 psi high. Repaired leaks as needed. Shutdown waiting on DOGGR to performed BOPE inspection. Rigged down Weatherford tester.
DTIM	Downtime	Ran out tubing hanger rams to release Haliburton packer. Waiting on DOGGR for BOPE inspection. Shutdown rig waiting on verification on choke line. Ran in rams.
SMTG	Safety Meeting	Closed in well & secured rig. Cleaned location.

Daily Operation Period: 8/26/2016 - 8/26/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1238 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well. Kris Gustafson with DOGGR performed a BOPE Inspection. Released Halburton packer & pulled out of the hole and laid down 75 joints of 3-1/2" 9.3# EUE L80 tubing with bottom of packer @ 4729'. Closed in well & secured rig. Cleaned location.

Time Log

Code 1	Code 2	Com
SMTG	Safety Meeting	Held safety meeting. Field pressure 1238 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well.
DTIM	Downtime	Waiting on DOGGR.
BOPPT	Pressure Test BOP's	Kris Gustafson with DOGGR performed BOPE inspection.
PACP	Pull packer	Released Haliburton PLT V2 packer and laid down 75 joints of 3-1/2" EUE 9.3# L80 tubing, with bottom of packer @ 4729'.

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Time Log

Code 1	Code 2	Com
SMTG	Safety Meeting	Closed in well & secured rig. Cleaned location.

Daily Operation Period: 8/27/2016 - 8/27/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1232 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well. Pulled out of the hole with 146 joints of 3 -1/2" EUE L80 tubing, sliding sleeve, 1 joint of 3-1/2" EUE L80 tubing, XN nipple, 10' pup joint & 7" PLT V2 Haliburton packer. Loaded out 3-1/2" tubing on trailers. Hauled in and off loaded 50 joints of 2-7/8" CTR P110 tubing. Hauled in and off loaded mills and drill collars. Changed out pipe rams from 3-1/2" to 2-7/8". Ran in the hole with WFT 7.8125" string mill, 5-3/4" pony collar, 7.8125" string mill, 2- 4-3/4" drill collars below 26 joints of 2-7/8" CTR P110 tubing with bottom of string mill @ 912'. Landed string on tubing hanger. Closed in well & secured rig. Cleaned location.

Time Log

Code 1	Code 2	Com
SMTG	Safety Meeting	Held safety meeting. Field pressure 1232 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well.
PACP	Pull packer	Pulled out of the hole with 146 joints of 3-1/2" EUE L80 tubing, sliding sleeve, 1 joint of 3-1/2" EUE L80 tubing, XN nipple, 10' pup joint & 7" PLT V2 Haliburton packer. Loaded out 3-1/2" tubing.
GOP	General Operations	Changed out pipe rams from 3-1/2" to 2-7/8".
TBRU	Run Tubing	Hauled in and off loaded 50 joints of 2-7/8" CTR P110 tubing. Hauled in and off loaded mills and drill collars. Ran in the hole with WFT 7.8125" string mill, 5-3/4" pony collar, 7.8125" string mill, 2- 4-3/4" drill collars below 26 joints of 2-7/8" CTR P110 tubing with bottom of string mill @ 912'. Landed string on tubing hanger.
CLSL	Clean & Secure Lease	Closed in well & secured rig. Cleaned location.

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

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1241 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well. Rotated down with WFT 7.8125" string mill, 5-3/4" pony collar, 7.8125" string mill assembly from 912' to 1167' (Milled out tight spots @ 917', 1035'-1039', 1042'-1044'). Pulled out of the hole. Laid down string mills. Made up & ran in the hole with 7-3/8" O.D. Cut Lip Shoe, 3 joints of 7-3/8" Hyd Washpipe to 1187'. Landed tubing on tubing hanger. Loaded & moved out Power Swivel. Closed in well & secured rig. Cleaned location.

Time Log

Code 1	Code 2	Com
SMTG	Safety Meeting	Held safety meeting. Field pressure 1241 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well.
GOP	General Operations	Installed circulating head. Moved in, spotted & rigged up 90 ton Ensign Power Swivel.
GOP	General Operations	Rotated down with WFT 7.8125" string mill, 5-3/4" pony collar, 7.8125" string mill assembly from 912' to 1167'. (Milled out tight spots @ 917', 1035'-1039', 1042'-1044').
GOP	General Operations	Loaded out Power Swivel. Removed circulating head.
TRIP	Tripping	Pulled out of the hole. Laid down string mills.
GOP	General Operations	Made up & ran in the hole with 7-3/8" O.D. Cut Lip Shoe, 3 joints of 7-3/8" Hyd Washpipe.
TRIP	Tripping	Ran in the hole to 1187' with no restrictions.
CLSL	Clean & Secure Lease	Landed tubing on hanger and ran in rams. Closed in well and secured rig. Cleaned location. Loaded out & moved Power Swivel off location.

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

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1237 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well. Pulled out of the hole with 34 joints of 2-7/8" CTR P110 tubing. Laid down 3 joints of 7-3/8" washpipe. Laid down 2- 4-3/4" drill collars. Loaded out all drifting equipment from WFT. Moved in WFT metal skin equipment from Porter 26A and offloaded. Laid out metal skin equipment and measured. Prepped metal skins. Ran 2-7/8" CTR P110 kill string to 1101'. Landed tubing and secured well & rig. Cleaned location.

Time Log

Code 1	Code 2	Com
SMTG	Safety Meeting	Held safety meeting. Field pressure 1237 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well.
TRIP	Tripping	Ran out rams. Laid down tubing hanger. Pulled out of the hole with 34 joints of 2-7/8" CTR P110 tubing. Laid down 3 joints of 7-3/8" washpipe. Laid down 2- 4-3/4" drill collars out of derrick.
GOP	General Operations	Moved in WFT metal skin equipment.
DTIM	Downtime	Waiting on Weatherford metal skin equipment from Porter 26A.
GOP	General Operations	Moved in and offloaded WFT metal skin equipment. Measured equipment.
TRIP	Tripping	Ran in the hole with 34 joints of 2-7/8 CTR P110 tubing for kill string. Landed on tubing hanger @ 1101'.
GOP	General Operations	Drifted metal skins and installed o-rings. Removed plastic wrap and preeped metal skins.
CLSL	Clean & Secure Lease	Closed in well & secured rig. Cleaned location.

Daily Operation Period: 8/31/2016 - 8/31/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1237 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well. Pulled out of the hole with 34 joints of 2-7/8" CTR P110 tubing. Made up cone assembly to the bottom joint of 7" metal skin pipe. Rigged up Weatherford high torque tongs. Ran a toatl of 7 joints. Ran spear assembly and latched onto cone assembly. Picked up setting tool and ran 2 joints of 2-7/8" CTR P110 tubing. Made up bumper sub and sliding sleeve. Ran 24 joints of 2-7/8" CTR P110. Rigged up mud pumpand pulled bottom of 7" metal skin to 1133'. Pumped down tubing & pressured up to 2800 psi. Set Metal Skin and pulled cone and expanded Metal Skin from bottom 1133' to top at 869'. Pulled out of the hole and laid down tools. Ran 24 joints for kill string and landed tubing on tubing hanger. Closed in well & secured rig. Cleaned location.

Time Log

Code 1	Code 2	Com
SMTG	Safety Meeting	Held safety meeting. Field pressure 1237 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well.
TRIP	Tripping	Pulled out of the hole with 34 joints of 2-7/8" CTR P110 tubing.
GOP	General Operations	Made up cone assembly to the bottom joint of 7" metal skin pipe. Rigged up Weatherford high torque tongs. Ran a toatl of 7 joints. Ran spear assembly and latched onto cone assembly. Picked up setting tool and ran 2 joints of 2-7/8" CTR P110 tubing. Made up bumper sub and sliding sleeve. Ran 24 joints of 2-7/8" CTR P110. Rigged up mud pumpand pulled bottom of 7" metal skin to 1133'. Pumped down tubing & pressured up to 2800 psi.
TRIP	Tripping	Set Metal Skin and pulled cone and expanded Metal Skin from bottom 1133' to top at 869'. Pulled out of the hole and laid down tools.
TRIP	Tripping	Ran 24 joints for kill string and landed tubing on tubing hanger. Closed in well & secured rig. Cleaned location.
CLSL	Clean & Secure Lease	Closed in well & secured rig. Cleaned location.

Rec'd 10-25-16 DOGGR 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 32 A Sec. 27, T3N, R16W, S.B.B.&M.
A.P.I. No. 03721872 Name Tom McMahon (Person submitting report) Title SIMP Project Manager (President, Secretary, or Agent)
Date 10/3/2016 (Month, day, year) Signature
Address PO Box 2300, SC9365, Chatsworth, CA, 91313-2300 Telephone Number 714-398-5020

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

Daily Operation Period: 9/1/2016 - 9/1/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1261 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well. Pulled out of the hole and laid down 24 joints of 2-7/8" CTR P110 tubing. Rigged up Western Wireline. Made up Caliber log & installed lubricator. Logged well from 6566' to surface. Offloaded 115 joints of 3-1/2" EUE 9.3# L80 tubing. Made up re-entry guide, XN nipple w/ 2.635" profile, 10' pup joint, 2' pup joint, 7" Haliburton PLT V2 Packer, 6' pup joint, 1 joint, X nipple w/ 2.75" profile, 1 joint of 3-1/2" EUE L80 tubing, 4-1/2" OD Sliding sleeve 3-1/2" EUE w/ max 2.812 ID w/ 2.75" profile, 2 joints of 3-1/2" EUE L80 tubing. Rigged up Western Wireline Slick line. Set plug in XN nipple and solid tested completion equipment to 5000 psi. Held solid for 20 minutes. Good test. Continued running in the hole with 46 joints of 3-1/2" 9.3# L80 tubing (50 joints total) testing tubing to 5000 psi. Rigged down tester. Closed in well & secured rig. Cleaned location.

Time Log

Code 1	Code 2	Com
SMTG	Safety Meeting	Held safety meeting. Field pressure 1261 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well.
TBPUL	Pull Tubing	Pulled out of the hole and laid down 24 joints of 2-7/8" CTR P110 tubing.
WIRL	Wireline	Moved in & spotted Western Wireline. Rigged up lubricator and logging tools. Ran in the hole and logged well from the top of the 7" casing @ 6566' to surface. Rigged down logging tools and lubricator.
BOPPT	Pressure Test BOP's	Changed out rams from 2-7/8" to 3-1/2". Test rams 300 psi low & 5000 psi high. Offloaded 115 joints of 3-1/2" EUE 9.3# L80 tubing.
TBRU	Run Tubing	Made up re-entry guide, XN nipple w/ 2.635" profile, 10' pup joint, 2' pup joint, 7" Haliburton PLT V2 Packer, 6' pup joint, 1 joint, X nipple w/ 2.75" profile, 1 joint of 3-1/2" EUE L80 tubing, 4 -1/2" OD Sliding sleeve 3-1/2" EUE w/ max 2.812 ID w/ 2.75" profile, 2 joints of 3-1/2" EUE L80 tubing. Rigged up Western Wireline Slick line. Set plug in XN nipple and solid tested completion equipment to 5000 psi. Held solid for 20 minutes. Good test. Continued running in the hole with 46 joints of 3-1/2" 9.3# L80 tubing (50 joints total) with re-entry guide @ 1608'. [Tools and collars hanging up going into metal skin top @ 869'.
CLSL	Clean & Secure Lease	Closed in well & secured rig. Cleaned location.

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

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1261 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well. Measured in the hole picking up 46 joints of 3-1/2" EUE 9.3# L80 tubing testing tubing to 5000 psi. Offloaded 125 joints of 3-1/2" EUE 9.3# L80 tubing. Continued measuring in the hole picking up 28 joints of 3-1/2" EUE 9.3# L80 tubing testing tubing to 5000 psi (total joints in the hole 124 jts) with Re-entry guide @ 3921'. Rigged down Ace Pump tester. . Closed in well & secured rig. Cleaned location.

Time Log

Code 1	Code 2	Com
SMTG	Safety Meeting	Held safety meeting. Field pressure 1261 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well.
TBRU	Run Tubing	Rigged up Ace Pump hydro tester. Measured in the hole picking up 46 joints of 3-1/2" EUE 9.3# L80 tubing testing tubing to 5000 psi. Offloaded 125 joints of 3-1/2" EUE 9.3# L80 tubing. Continued measuring in the hole picking up 28 joints of 3-1/2" EUE 9.3# L80 tubing testing tubing to 5000 psi (total joints in the hole 124 jts) with Re-entry guide @ 3921'. Rigged down Ace Pump tester.
CLSL	Clean & Secure Lease	Closed in well & secured rig. Cleaned location.

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

Rec'd 10-25-16 DOGGR Ventura.

HISTORY OF OIL OR GAS WELL

Operator Southern California Gas Company Field Aliso Canyon County Los Angeles
Well Fernando Fee 32 A Sec. 27, T3N, R16W, S.B.B.&M.
A.P.I. No. 03721872 Name Tom McMahon (Person submitting report) Title SIMP Project Manager (President, Secretary, or Agent)
Date 10/3/2016 (Month, day, year) Signature
Address PO Box 2300, SC9365, Chatsworth, CA, 91313-2300 Telephone Number 714-398-5020

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

Daily Operation Period: 9/6/2016 - 9/6/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1250 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well. Took 3 bbls to fill well. Measured in the hole picking up 102 joints of 3-1/2" EUE 9.3# L80 tubing testing tubing to 5000 psi. Made up tubing hanger and landed @ 7107' with COE @ 7091'. Rigged down Ace Pump testers. Pumped @ 70 bbls of packer fluid. Set packer with 10K compression. Ran in rams. Tested casing to 1101 psi, final pressure was 1097 a loss of 4 psi (less than 1%). Bled down well. Closed in well & secured rig.

Time Log

Code 1	Code 2	Com
SMTG	Safety Meeting	Held safety meeting. Field pressure 1250 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well. Took 3 bbls to fill well.
TBRU	Run Tubing	Measured in the hole picking up 102 joints of 3-1/2" EUE 9.3# L80 tubing testing tubing to 5000 psi (226 joints total). Made up tubing hanger and landed @ 7107' with COE @ 7091'. Rigged down Ace Pump testers.
GOP	General Operations	Pumped @ 80 bbls of packer fluid. Set packer with 5K compression. Released and reset at 10K. Ran in rams.
PACS	Set packer	Tested casing at 1101 psi and lost 4 psi in 1 hour to 1097 psi (less than 1%). Witnessed by Hafiz Ali with DOGGR. Bled down casing.
SMTG	Safety Meeting	Closed in well & secured rig. Cleaned location.

Daily Operation Period: 9/7/2016 - 9/7/2016

Operations this Report Period (DOGGR)

Held safety meeting. Field pressure 1253 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well. Rigged up Western Wireline. Ran in the hole and installed plug in XN nipple @ 7105'. Pressure tested 3-1/2" tubing string to 3708 psi. Held for 1 hour. Final pressure was 3694 psi (Less than 1%). Test was witnessed and approved by Cliff Knight with DOGGR. Removed BOPE And installed wellhead tree. Tested tubing hanger seals to 300 psi low & 5000 psi high. Rigged down mast. Moved rig and equipment off location.

Time Log

Code 1	Code 2	Com
SMTG	Safety Meeting	Held safety meeting. Field pressure 1253 psi. Had 0 psi on tubing & 0 psi on the casing. Bled down well.
WIRL	Wireline	Rigged up Western Wireline. Ran in the hole and installed plug body in XN nipple @ 7105'. Pulled out of the hole. Ran in the hole and set equalizing prong. Pulled out of the hole & rigged down Western Wireline.
PTST	Pressure Test	Rigged up mud pump to the 3-1/2" productionstring. Pressured up to 2000 psi. Rigged up Pros and continued pressuring up to 3700 psi. Had a leak at the TIW and 3-1/2" pup joint connection. Bled down. Put teflon tape on TIW pin. Retested to 3708 psi. Held for 1 hour. Final pressure reading was 3694 psi (less than 1%). Test was witness and approved by Cliff Knight with DOGGR. Bled down tubing and rigged down Pros.
GOP	General Operations	Rigged down tubing handling equipment. Removed work floor.
BOPR	Remove BOP's	Removed 11" 5M Class III BOPE. Loaded out on trailer.
WHDI	Install Wellhead	Changed out API ring. Installed wellhead tree. Tested tubing hanger & tree to 300 psi low & 5000 psi high 20 minute test on both. Tested tree valves & stem to 5000 psi & held for 20 minutes.
RURD	Rig Up/Down	Rigged down crown & guy lines. Rigged down mast. Moved rig off location. Moved mud pump & circulating tanks and spotted for next location.
CLSL	Clean & Secure Lease	Cleaned location. Secured rig.

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

Rec'd 08-15-16 DOGGR Ventura.

HISTORY OF OIL OR GAS WELL

Operator: Southern California Gas Company
Well: Fernando Fee 32 A
A.P.I. No. 03721872
Date: 7/25/2016
Address: PO Box 2300, SC9365, Chatsworth, CA, 91313-2300

Field: Aliso Canyon County: Los Angeles
Surface Location: Sec. 27, T3N, R16W, S.B.B.&M.
Name: Tom McMahon Title: SIMP Project Manager
(President, Secretary, or Agent)
Telephone Number: 714-398-5020
Signature: Thomas A McMahon
(Person Submitting Report)

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 this Report (DOGGR)
3/23/2016	Held safety meeting with crew. Rigged up Onyx flowback skid. Assisted So Cal operator unlocked wellhead and indentified gas group lines. Bullhead 30 bbls of Hi Visc pill followed by 62 bbls of 8.5# polymer kill fluid. Pumped 320 bbls and established return to tank. Circulated 50 bbls and successfully bled well down. Installed back pressure valve and removed wellhead. Installed 11" x 9" spool with 11" 5M BOPE. Installed kill & return lines. Installed 11" 5M Hydril bag. Installed work floor.
3/24/2016	Held safety meeting. Shut in tubing pressure was 40 psi & shut in casing pressure was 0 psi. Bled down well with no flow. Rigged up Weatherford Tester. Changed out door seal on blind ram. Tested pipe rams, choke manifold, remote kill line, 2- kill valves & 2-check valves, return line & valves to choke manifold, 2- 3-1/2" TIW valves & blinds to 300 psi low and 5000 high, 300 psi low & 3500 psi high on hydril bag. Repaired leaks as needed. Ernie Blevens with DOGGR waived the witness on the BOPE test.
3/25/2016	Held safety meeting. Had field pressure of 1033 psi, 0 psi shut in pressure on tubing & casing. Bled well down. Pumped 62 bbls with 46 bbls to get returns. Released G6 packer and pulled free at 90,000 over string weight. Pulled out of the hole with completion string. Made up & ran in the hole with 8-5/8 scraper and bumper sub below 50 joints of 3-1/2" tubing. Mark Davis with DOGGR performed a BOPE inspection. Shut in & secured well.
3/26/2016	Held safety meeting. Field pressure 1030. Shut in casing & tubing pressure 0. Continued with 8-5/8" scraper run. Tagged @ 6566'. Pulled out of the hole. Made up 7" scraper with bumper sub. Ran in the hole & tagged 4-1/2" liner & 7113'. Pulled out of the hole to @ 4515'. Closed in well.
3/28/2016	Held safety meeting. Field pressure 1023 psi. Casing & tubing shut in pressure was 0 psi. Bled down well with casing on slight vacuum. Pulled out of hole with remaining 3-1/2" tubing. Laid down 7" scraper. Made up & ran 15 joints of 2-3/8" PH-6. Ran 228 joints of 3-1/2" tubing and tagged down @ 7474'. Installed circulating head & king swivel. Broke circulation and reversed out fill from 7474' to 7479' bottom. Circulated clean. Pulled 178 joints of 3-1/2" tubing. Closed in well. Secured location.
3/29/2016	Held safety meeting. Field pressure 1021 psi. Casing & tubing had 0 psi, both on a vacuum. Bled down well. Filled hole with 4 bbls. Pulled out of the hole with 50 joints of 3-1/2" 9.3# EUE tubing. Laid down 15 joints of 2-3/8" PH-6 tubing (work string). Installed 7" x 11" shooting flange. Installed western wireline lubricator. Rigged Western Wireline truck & Scientific Drilling gyro survey tools. Ran in hole and surveyed well from 7470'. Took survey readings from 7470' to 100'. Rigged down wireline truck & tools. Ran in hole to 7108' and set Weatherford bridge plug. Released from on & off tool. Tested to 650 psi. Good test. Pulled tubing to 6478'. Closed in well. Secured location.
3/30/2016	Held safety meeting. Field pressure 1015 psi. Casing & tubing shut in pressure was 0 psi. Bled down well. Ran in hole and laid 10' of sand on top of 7" bridge plug with 3 - 50# sacks of sand. Pulled out of the hole and laid down retrieving head. Spotted EP Wireline truck (Schlumberger). Made up USIT log & ran in the hole to 7090'. Logged from 7090' to surface. Closed in well. Secured location.
3/31/2016	Held safety meeting. Field pressure 1029 psi. Casing & tubing shut in pressure was 0 psi. Bled down well. Spotted & rigged up Baker Wireline. Made up & ran in the hole with 7" Vertilog to 7089'. Logged 7" casing 7085' to 6566'. Pulled out of the hole. Laid down Vertilog tool. Made up & ran in the hole with 60 arm caliber log. Tagged @ 7086'. Logged well from 7081' to surface. All logs correlated to open hole log. Closed in well. Secured location.
4/1/2016	Held safety meeting. Field pressure 1033 psi. Casing & tubing shut in pressure was 0 psi. Bled down well. Made up & ran in the hole with 8-5/8" Vertilog to 6557'. Logged from 6539' to surface. Laid down Vertilog tool. Service & checked calibrations on 60 arm caliber logging tool. Ran in the hole to 6600' & logged from 6595' to surface. Picked 7" & 8-5/8" 10' sections of casing & checked the calibration on the 60 arm caliber logging tool. Laid down logging tool. Checked good. Laid down logging tool. Rigged down & loaded out Baker Atlas. Closed well in. Secured location.

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

Rec'd 08-15-16 DOGGR Ventura.

HISTORY OF OIL OR GAS WELL

Operator: Southern California Gas Company
Well: Fernando Fee 32 A
A.P.I. No. 03721872
Date: 7/25/2016
Address: PO Box 2300, SC9365, Chatsworth, CA, 91313-2300

Field: Aliso Canyon County: Los Angeles
Surface Location: Sec. 27, T3N, R16W, S.B.B.&M.
Name: Tom McMahon Title: SIMP Project Manager
(President, Secretary, or Agent)
Telephone Number: 714-398-5020

Signature: _____
(Person Submitting Report)

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 this Report (DOGGR)
4/2/2016	Held safety meeting. Field pressure 1044 psi. Casing & tubing shut in pressure was 0 psi. Bled down well. Picked up & ran in the hole with 8-5/8" 36# WFT packer to 1000'. Set & tested to 500 psi. Good test. Ran in the hole to 3438' & set packer. Rigged up pump to tubing & pressured up to 2000 psi. Rigged up PROS tester and pressured up to 2250 psi. Held for 1 hour with 244 psi build up. DOGGR did not approve the test. Rigged up to casing & tested casing to 2623 psi. Held for 1 hour and approved by Kris Gustafson with DOGGR. Bled off casing pressure. Closed in well. Secured location.
4/4/2016	Held safety meeting. Field pressure 1044 psi. Had 30 psi on casing & tubing. Bled down. Rigged up PROS tester. Pressure tested thru the tubing from 3438' to 7098' top of sand above bridge plug that was set at 7108'. Tested at 2272 psi. Good test with 7# of decrease in pressure in an hour. Release packer & pulled to 2500'. Reset packer. Pressure tested casing from 2500' to surface. Tested at 3130 psi. Good test with 13# pressure decrease in an hour. Released packer & pulled to 1000'. Reset packer. Pressure tested casing from 1000' to surface. Tested at 3645 psi. Good test with x# decrease in pressure. All test witnessed by Erie Blevins with DOGGR. Released packer. Pulled out of the hole & laid down packer assembly. Closed in well. Secured location.
4/5/2016	Held safety meeting. Field pressure 1038 psi. Had 0 psi on well. Bled well down. Rigged down tubing equipment. Removed work floor. Rigged down BOPE. Cameron pulled wellhead plugs & de-energized tubing spool & wellhead. Removed tubing spool. Installed 13-5/8" x 11" 5M spool & 11" double gate BOPE. Shut blinds. Tested to 1000 psi. Closed in well. Secured location. Waiting on tubing spool redress.
4/8/2016	Held safety meeting. Field pressure 1048 psi. Had 0 psi on well. Bled down. Removed double gate BOPE. Installed tubing spool. Tested primary seal at 300 psi low, 2760 psi high, bled down to 2400 psi. Held for 20 minutes and bled down to 2300 psi (100 psi drop off). Tested secondary seals at 300 psi low & 2760 psi high. Good test recorded with chart. All test were 15 minute test, except primary high test. Installed Class III BOPE. Function tested. Installed work floor and tubing equipment. Rigged up 3" line and remote kill line to BOPE. Shut blind rams. Closed in well. Secured location.
4/9/2016	Held safety meeting. Field pressure 1053 psi. Had 0 psi on well. Bled down well. Installed tubing hanger & tested BOPE at 2000 psi. Tested good and recorded with chart. Made up & ran in the hole with WFT on & off retrieving head. Rigged up production swivel. Circulated from 7089' to 7109'. Engaged & released 7" RBP. Pulled to 7065'. Packer hung up, pulled 40K over string weight with no success. Ran in hole to 7095'. Closed in well. Secured location. Let elements on packer relax until Monday morning.
4/11/2016	Held safety meeting. Field pressure was 1053 psi. Had 40 psi on tubing & casing. Bled down well. Filled hole with 7 bbls of kill fluid. Pulled from 7095' to 7065'. Worked thru spot at 7065' with 25K over string weight. Pulled out of the hole & laid down 7" RBP assembly. Ran in the hole with 228 joints of 3-1/2" 9.3# N80 tubing to @ 7031'. Closed in well. Secured location.
4/13/2016	Held safety meeting. Field pressure was 1057 psi. Had 0 psi on tubing & casing. Bled down well. Filled hole with 4 bbls of kill fluid. Pulled out of the hole and laid down 146 joints of 3-1/2" 9.3# N80 tubing. Leaving 82 joints in the hole for a kill string. Closed in well. Secured location.
4/14/2016	Held safety meeting. Field pressure 1050 psi. Had 0 psi on tubing & casing. Bled down well. Filled hole with 2 bbls. Pulled out of the hole and laid down 82 joints. Hauled of 228 joints of 3-1/2" 9.3# N-80 production string. Hauled in & off loaded 124 joints of 3-1/2" 9.3# EUE L-80 tubing. Made up & run in the hole with 7" 26# Haliburton PLT V-2 Mechanical set packer, 10' pup joint, XN nipple (with end test plug), 1 joint of 3-1/2" 9.3# EUE L-80 tubing, 4.5 OD Durasleeve, 1 joint of 3-1/2" 9.3# EUE L-80 tubing. Solid tested tubing to 5000 psi. Rigged up Western Wireline & recovered end test tool. Ran 2 joint of 3-1/2" 9.3# EUE L-80 tubing & made up WFT hydro test bar tools. Tested in hole with a total of 47 jts above Durasleeve & 48 total. Closed in well. Secured location.
4/15/2016	Held safety meeting. Field pressure 1050 psi. Had 0 psi on tubing & casing. Bled down well. Filled hole with 2 bbls. Displaced tubing with 13 bbls of 8.5# kill fluid. Hydro tested in hole at with 74 joints of 3-1/2" 9.3# EUE L-80 tubing. Hauled in 111 joints. Hydro tested in the hole with 35 joints of 3-1/2" 9.3# EUE L-80 tubing. Had wind issues throughout the day. Closed well in with 159 joints in the hole, tested at 5000 psi. Secured location.

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

Rec'd 08-15-16 DOGGR Ventura.

HISTORY OF OIL OR GAS WELL

Operator: Southern California Gas Company
Well: Fernando Fee 32 A
A.P.I. No. 03721872

Date: 7/25/2016

Address: PO Box 2300, SC9365, Chatsworth, CA, 91313-2300

Field: Aliso Canyon County: Los Angeles
Surface Location: Sec. 27, T3N, R16W, S.B.B.&M.
Name: Tom McMahon Title: SIMP Project Manager
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Telephone Number: 714-398-5020

Signature: _____
(Person Submitting Report)

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Start Date	Ops this Report (DOGGR)
4/16/2016	Held safety meeting. Field pressure 1054 psi. Had 0 psi on tubing & casing. Bled down well. Filled hole with 2 bbls. Hydro tested in hole with 66 joints of 3-1/2" 9.3# EUE L-80 tubing. Spaced out packer & landed completion string. Laid down hydro test tools & rigged down unit. Pumped 100 bbls of KCL water with Biocide (Packer Fluid). Set packer with COE @ 7087.67' and 10K of compression on packer. Ran in rams. Pressure tested casing to 1000 psi & held for 5 minutes. Rigged up Western Wireline and set PXN plug @ 7074'. Rigged down Western Wireline unit. Closed in well. Secured location.
4/18/2016	Held safety meeting. Field pressure 1055 psi. Had 0 psi on tubing & casing. Bled down well. Rigged up Pros testing unit. Pressure tested 3-1/2" tubing agianst PXN plug at 7074' to 3700 psi. Good test. Pressure tested 7" and 8-5/8" casings against completion packer with COE @7088' to 1000 psi. All test witnessed & approved by Clifford Knight with DOGGR. Rigged down tubing equipment & work floor. Removed BOPE. Installed & tested wellhead tree to 300 psi low & 3000 psi high. Both test were charted and recorded for 20 minutes each. Moved rig equipment. Rigged down mast & moved off location.

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

No. T **216-0395**

REPORT ON OPERATIONS

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

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

Ventura, California
September 09, 2016

Your operations at well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Sec. **27**, T. **03N**, R. **16W**, **SB** B.&M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **9/7/2016**, by **Clifford R. Knight**, a representative of the supervisor.

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

DECISION:

APPROVED

CRK/TKC

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By pp. E
Patricia A. Abel, *District Deputy*

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

No. T 216-0395
16,1

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

Operator: So Cal Gas					Well: Fernando Fee 32A
Sec. 27	T. 3N	R. 16W	B.&M. SB	API No.: 037-21872	Field: Aliso Canyon
County: Los Angeles					Witnessed/Reviewed on: C. Knight / 9-7-16

C. Knight, representative of the supervisor, was present from 0800 to 1100.

Also present were: Mike McGiness

Casing record of the well: Completion Pressure Testing
7105' XN nipple tubing plug

The Internal MIT was performed for the purpose of pressure testing the 3½" ~~casing~~ tubing above 7105' (2) (prior to injecting fluid)

☒ The Internal MIT is approved since it indicates that the 3½" casing has mechanical integrity above 7105' at this time..

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

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

Tubing Test ONLY
0938 3718 psi
1638 3694 psi

The 3½" tubing and tubing plug at 7105' held @3700 psi for 60 minutes.

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

No. T **216-0379**

REPORT ON OPERATIONS

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

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

Ventura, California
August 31, 2016

Your operations at well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Sec. **27**, T. **03N**, R. **16W**, **SB** B.&M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **8/26/2016**, by **Kris Gustafson**, a representative of the supervisor.

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

DECISION:

APPROVED

KG/TKC

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By
Patricia A. Abel, *District Deputy*

API No. 037-21872 DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES T 216-0379 #12, L

BLOWOU PREVENTION EQUIPME MEMO

Operator SoCal Gas Well Fernando Fee 32A Sec. 27 T. 03N R. 16W
Field Aliso Cyn County Los Angeles Spud Date

VISITS:	Date	Engineer	Time	Operator's Rep.	Title
1st	8/26/16	K. Casterson	(1145 to 1245)	Mike McGinnis	Company
2nd			(to)		

Contractor Ensign Rig # 335 Contractor's Rep. & Title Jason Cofield Pusher
Casing record of well:

OPERATION: Testing (inspecting) the blowout prevention equipment and installation. Critical well? Y ☐ N ☒
DECISION: The blowout prevention equipment and its installation on the 8 5/8 " casing are approved.

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

REQUIRED BOPE CLASS: III 5M

CASING RECORD OF BOPE ANCHOR STRING

Size	Weight(s)	Grade(s)	Shoe at	CP at	Cement Details	Top of Cement Casing	Top of Cement Annulus

BOP STACK

API Symb.	Ram Size (in.)	Manufacturer	Model or Type	Vert. Bore Size (in.)	Press. Rtg.	Date Last Overhaul
A	CSO	Shaffer	Spherical	11	5M	
Rd	3 1/2	"	LXT	"	↓	
Rd	CSO	"	LXT	"	↓	
S						

TEST DATA

Gal. to Close	Recov. Time (Min.)	Calc. GPM Output	psi Drop to Close	Secs. to Close	Test Date	Test Press.
23.0					8/25	3.5M *
2.46					↓	5M
2.46					↓	↓

ACTUATING SYSTEM

Accumulator Unit(s) Working Pressure 3000 psi
Total Rated Pump Output gpm Fluid Level
Distance from Well Bore 50 ft. OK

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

CONTROL STATIONS

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

EMERG. BACKUP SYSTEM

				Press.	Wkg.Fluid
6	N_2 Cylinders	1	L= 51 "	2600	8.54 gal.
	Other:	2	L= "	2700	9.09 gal.
		3	L= "	2800	9.63 gal.
		4	L= "	2750	9.36 gal.
		5	L= "	2700	9.09 gal.
		6	L= "	2700	9.09 gal.
			TOTAL:	OK	gal.

TOTAL: OK

AUXILIARY EQUIPMENT

	No.	Size (in.)	Rated Press	Connections: Weld	Connections: Flange	Connections: Thread	Test Press.
Fill-up Line							
Kill Line		2	5M		X	X	5M *
Control Valve(s)	2						
Check Valve(s)	1						
Aux. Pump Cnnct.							
Choke Line		3"					
Control Valve(s)	2						
Pressure Gauge							
Adjstble Choke(s)	2/3	3"					
Bleed Line		2"					
Upper Kelly Cock							
Lower Kelly Cock							
Standpipe Valve							
Stndpipe Pres. Gau.							
Pipe Safety Valve		3 1/2					
Internal Preventer							

HOLE FLUID MONITORING EQUIPMENT

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

Hole Fluid Type	Weight	Storage Pits (Type & Size)
KCL Poly.	8.5	Baker tank (425 bbls)

REMARKS AND DEFICIENCIES:
* Review but not witnessed by Division inspector.

OGD9 (9/06)

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CHECK LIST-RECORDS RECEIVED AND WELL STATUS

Operator: **Southern California Gas Company** WELL DESIGNATION **"Fernando Fee" 32-A**

API No. **03721872** SE **27** T: **3N** R.: **16W** , **SB** B. and M.

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

Type of Notice: **Supplementary** **Date** **8/22/2016** **Report Number:** **P216-0212**

RECORDS RECEIVED (ATTACH PAGES IF REQUIRED)

	Date	OK	NEED	Remarks
Well Summary (OG100)			✓	
History (OG103)	10/3/16	✓		
E-Log				
Mud Log				
Dipmeter				
Directional				
Core and/or SWS				
Gyro tools	3/29/16		✓	
USIT	3/31/16	✓		
Vertilog, MAC	4/1/16	✓✓		
Vertilog	4/2/16	✓		
Press Test ✓4/5/16 &	4/3/16 ✓	✓✓		& 4/18/16 ✓
Caliper	9/1/16	✓		
Press Test	9/6/16	✓		
" "	9/7/16	✓		

NEW STATUS

DATE: _____

NOTICE OF RECORDS DUE

DATE: _____

DATE: _____

DATE: _____

DATE: _____

WELL STATUS INQUIRY

DATE: _____

DATE: _____

Well Stat

Change Required: _____

Change Done: _____

ABANDONMENTS/REABANDONMENTS/DRILLS/REDRILLS

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

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

ENGINEER'S CHECK LIST

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

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

CLERICAL CHECK LIST

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

REMARKS

RECORDS SCANNED: _____
(Date)

RECORDS APPROVED: D.O. 10/25/16
(Date and Engineer)

Modified OGD2

AOR Datbase _____

URAL 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 216-0212

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

PERMIT TO CONDUCT WELL OPERATIONS

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

Ventura, California
August 24, 2016

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

Your **Supplementary** proposal to **REWORK** well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Section **27**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, **Any** area, **Sesnon-Frew** pool, **Los Angeles** County, dated **8/22/2016**, received **8/23/2016** has been examined in conjunction with records filed in this office. (Lat: **34.313191** Long: **-118.540210** 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 pressure test is conducted to demonstrate the mechanical integrity of the **8 5/8" casing and the installed casing patch. This test must be to 115% of the maximum operating pressure.**
5. **A Multi-Arm Caliper Inspection** shall be performed to demonstrate that the **8 5/8"** casing and patch have integrity.
6. A Temperature and Noise log are run on the well from the packer to surface.
7. Injection is only permitted through the tubing and packer, and must be set in cemented casing immediately above the approved zone of injection.
8. This office shall be contacted by phone prior to making any program changes and no changes are made without Division approval.
9. **THIS DIVISION SHALL BE NOTIFIED TO:**
   a. Inspect the installed blowout prevention equipment prior to commencing **downhole** operations.
   b. Witness a pressure test of the **8 5/8"** casing and casing patch prior to commencing injection.
   c. Witness a mechanical integrity test within three months after injection has commenced.

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 P. E. Gallegos
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.

Rec'd 08-23-16 DOGGR Ventura.

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

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

P16-0212

SUPPLEMENTARY NOTICE

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

A notice to the Division of Oil, Gas, and Geothermal Resources, dated 08/22/2016, stating the intention to

Rework (Drill, Rework, Abandon) well Fernando Fee 32 A, API No. 037-21872-01,

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

should be amended because of changed conditions.

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

The total depth is: 7500 feet. The effective depth is: 7479 feet.

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

Present zone pressure: storage psi. Anticipated/existing new zone pressure: storage psi.

We now propose: (A complete program is preferred and may be attached.)
See attached program

If well is to be redrilled or deepened, show proposed coordinates (from surface location) and true vertical depth
at total depth: _____ feet _____ (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 Mark Ghann-Amoah	Telephone Number: 806-401-2979	Signature [signature]	Date 08/22/2016
Individual to contact for technical questions: Mark Ghann-Amoah	Telephone Number: 806-401-2979	E-Mail Address: mghann-amoah@semprautilities.com	

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

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 08-23-16 DOGGR Ventura.

SoCal Gas Company

SoCalGas
A Sempra Energy utility

Well Operations Procedure

Fernando Fee 32 A
Aliso Canyon
Storage Integrity Management Program
8/22/2016 Well Completion

Primary Engineer:	**Mark Ghann-Amoah**	818 700-3888 (ofc)/806 401-2979 (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:	Mike McGinnis	562 225-5305 (mobile)
Well Work Superintendent:	Mike Volkmar	562 685-3810 (mobile)

Well Data:

API #:	037-21872-01
KB to GL:	18.9'
MD:	7500'
TVD:	7254'
Effective Depth:	7479'
PBMD:	7479'

Nature of Plug Back: Bottom of liner

Objective:

The intent of this program is to run patches and complete well as part of the Storage Integrity Management Program (SIMP). This project will include dressing the 8-5/8" casing as close to drift as possible, running a casing patch in well, running completion string and pressure testing both the casing annulus and tubing. This well will be converted to tubing flow only.

Geologic Markers:

Zone Top (Formation)	MD (Feet)	TVD (Feet)
UDA2	6083	5944.57
LDA	6593	6413.156
MP	**6861**	**6659.461**
S1	7186	6958.778
S2	7230	6999.39
S4	7286	7051.119
S6	7310	7073.332
S8	7371	7129.791
S10	7410	7165.888

SoCal Gas Company

SoCalGas
A Sempra Energy utility

Well Operations Procedure

Casing Data (See attached wellbore schematic):

Surface Casing:	13 - 3 / 8", 54.5 #, K - 55, Cemented @ 990' ▪ Cement to surface
Production Casing:	8 – 5 / 8", 36 #, K - 55, 0' / 3438' 8 – 5 / 8", 36 #, N - 80, 3438' / 7022', Cemented @ 7022'
Cemented Liner:	7", 26 #, 513 Hydril, 6566' / 7250' ▪ Good Cement returns to TOL
Wire-wrap Liner:	4.5", 11.6 #, 7113' / 7479', 0.012" WWS, 6"OD Shroud ▪ Gravel Packed with 162 cubic feet of 20-40 sand

Wellhead: 9" 5M (3 – 1 / 8" Master)
11" x 9" 5M Shaffer Tubing Head / 3.5" EUE Hanger
11" Casing Spool 5M
13-5/8" 5M x 11" 5M DSA
13-5/8" 5M casing head SOW 13-3/8"

Current Status: Shut in

Permit Status: Pending

Well work History/Analysis:

This well was recently inspected and completed in April, 2016. After completing well and moving the workover rig to a different well. It was observed this well did not pass the Baker magnetic flux Leakage log **("Verti-log")** run due to noted pits at or around 977' to 1012'.

The Aliso Canyon SIMP engineering team reviewed the results of the log and agreed on taking the following actions to remediate known mechanical integrity defect and recomplete well;

a) Dress 8 – 5 / 8" to drift or as close to drift as possible

b) Set expandable casing patch in 8 – 5 / 8" casing from ~943' to 1133'

c) Run 3 – 1 / 2" completion with packer set in the 7" cemented casing

d) Pressure test casing annulus and tubing string per DOGGR requirement.

SoCal Gas Company

SoCalGas
A Sempra Energy utility

Well Operations Procedure

WELL WORK PROGRAM TO ABANDON WELL ?

1. MIRU Ensign double w/o rig w/all equipment – pump, Baker tank, Shaker and mixer.
   a) Perform JSA, JSP, CW. Safety Review: Talk about possible things that can hurt y'all.

2. Spot 500 bbl Baker tanks and HEC polymer.
   - **NOTE:** Well will have a "PXN" plug in the 3.5" "XN" Profile Nipple at +/- 7074'.
   a) Connect pump to the tubing and vent the casing through the choke manifold to the SoCalGas withdrawal system.
   b) Treat all brine with Biocide, 5 gals/100bbls
   c) Tubing volume is ~ 62bbls
   d) Tubing x 8-5/8"casing annulus is ~ 313bbls, Tubing x 7"casing annulus is ~ 14bbls.
   e) The 7" Liner volume is ~21bbls, The 4.5"Liner volume is ~6bbls

3. Install 3.5" Shaffer backpressure valve in tubing hanger. ND tree and NU BOPE.
   a) Send-in tree components to Cameron for inspection.

4. Install 11" Class III 5M BOPE per Gas Company Standard 224.05 and in accordance with the DOGGR permit. All connections and valves must be flanged and at least 5000 psig rated.
   a) 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.
   b) Pressure test the Class III 5M annular preventer to 3500 psig for 20 minutes. Test blind rams and the 3.5" pipe rams to 5000 psig for 20 minutes. Test all lines and connections to 5000 psig.
   c) All tests are to be charted and witnessed by a DOGGR representative.
   d) Pull back pressure valve from tubing hanger.

5. Release tubing and Halliburton's versatrieve packer at +/- 7091', POOH and lay down BHA
   a) Send tubing hanger to Cameron for inspection

6. Change pipe rams from 3.5" to 2-7/8" for 2-7/8" work string

7. RIH w/stiff assembly (DC/work string / Mill / C/O assembly) to dress 8-5/8" casing to drift, POOH
   - NOTE: Follow Weatherford well prep requirements and / or procedure

8. RIH w/7" x 8-5/8" expandable Metal skin patch and set at 943' / 1133'
   NOTE: Follow Weatherford procedure for handling, make-up and installation of patches.

9. Nipple down 11" Class III 5 M BOPE, tubing spool, and primary pack-off.
   a) Send wellhead equipment to Cameron for refurbishment if necessary

10. Reinstall tubing spool and the 11" Class III BOPE and function test. Inspect and retest all connection broken in process.
    a) NU refurbished well head from Cameron and install BOPE.
    b) Pressure test BOPE and refurbished wellhead.

c) All tests are to be charted and witnessed by a DOGGR representative.

11. RIH w/same type completion string and set packer at +/- 7080'

12. Land tubing on tubing hanger as per vendor specification.
NOTE: Utilize Force Analysis / Tube Move Calculations for packer setting as per HES engineer.

13. Notify DOGGR to witness pressure tests of annulus to 1000 psi and tubing to 3700 psi. Both tests to be an hour in duration and recorded digitally.

14. RIH and recover plug from on/off tool. RIH and shift the sliding sleeve open.

15. Install BPV in tubing hanger. Nipple down the Class III 5M BOPE and install the production tree and test to 5000 psig. Remove BPV.

16. RDMO

Rec'd 08-23-16 DOGGR Ventura.

Well
Fernando Fee 32A

API #: 04-037-21872-01
Sec 27, T3N, R16W

Operator: So. California Gas Co.

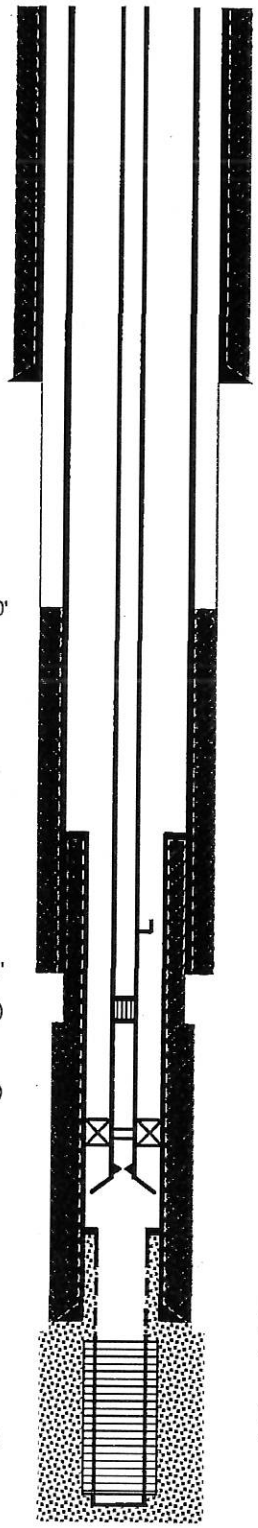
Lease: Fernando Fee
Field: Aliso Canyon
Status: Active Gas Storage
BFW:
USDW:

Ground Elevation: 1995' asl
Datum to Ground: 18.90' KB

Spud Date: 7/6/1978
Redrill (RD) Kick-off Date: 11/26/2008
Completion Date: 12/30/2008

Junk: None

Wellbore History
Orig. Hole (OH) TD @ 7485'
(See Fernando Fee 32A OH)
RD KOP @ 7022'
TD @ 7500'



13-3/8" TOC Surface

17-1/2" Hole

Surface Casing
13-3/8", 54.5#, K-55
0' - 990'

CMT'D w/ 962 CF + 202 CF
Braden-head SQZ'D,
Good CMT Returns to Surface

990'

8-5/8" ETOC 4330'

12-1/4" Hole

Production Casing
8-5/8"
0' - 3438' 36#, K-55
3438' - 7022' 36#, N-80

CMT'D w/ 1260 CF (from 7294' in OH)

8-5/8" Top of Window 7022'

7-1/2" Hole (7022' - 7037')

10" Hole (7037' - 7252')

CMT'D Liner
7", 26#, 513 Hydril
6566' - 7250'

7113'

CMT'D w/ 115 CF,
Good CMT Returns at TOL

7250'

WWS Liner
4-1/2", 11.6#
7113' - 7479'

12" Hole (7252' - 7500')

7479'

TD 7500'
TD VSS (-4793')
Directionally Drilled: Yes (TD is 1372' W, 168' N of Surf, 6867' TVD)

Tubing
3-1/2"
0' - 7090'

6566' 7" TOL & TOC

8-5/8" x 7" Lap Test Approved

6998' GLM

7022' Redrill (RD) KOP (from OH) into this wellbore (See History)

7035' Sliding Sleeve XD Profile

7069' On/Off Tool w/ X Profile

7080' G-6 Mech PCKR

7089' XN Nipple

7090' Bell Guide

Liner Perfs:
7188' - 7270' Semi Slots
7270' - 7479' 0.012" WWS w/ 6" O.D. Shroud

Gravel Packed w/
162 CF 20-40

Top of Zone Markers		
UDA2	6083'	(-3931')
LDA	6593'	(-4399')
MP	6861'	(-4645')
S1	7186'	(-4945')
S4	7286'	(-5037')
S8	7371'	(-5116')

(Top of zones of Original Completion)

Prepared by: MAM (3/23/2016)

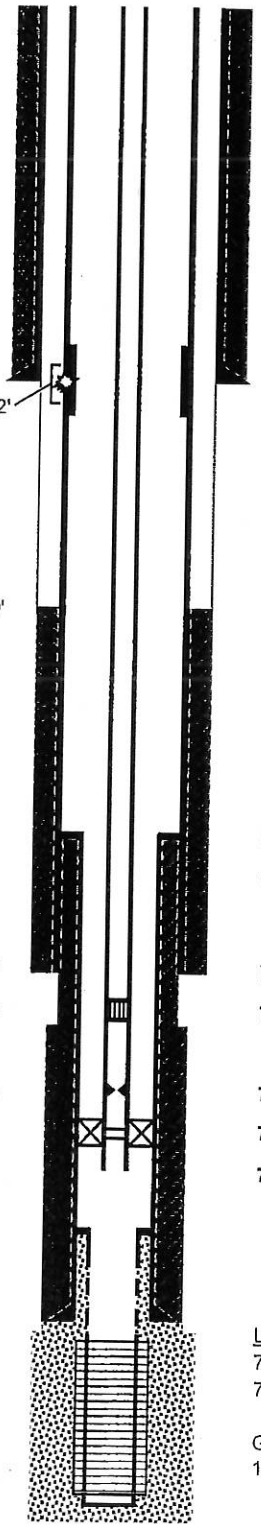
inteiAct

Rec'd 08-23-16 DOGGR Ventura.

Well
Fernando Fee 32A

API #: 04-037-21872-01
Sec 27, T3N, R16W

Proposed



13-3/8" TOC Surface

17-1/2" Hole

Surface Casing
13-3/8", 54.5#, K-55
0' - 990'

CMT'D w/ 962 CF + 202 CF
Braden-head SQZ'D,
Good CMT Returns to Surface

990'

8-5/8" CSG Pits At or Around 977' - 1012'

8-5/8" ETOC 4330'

12-1/4" Hole

Production Casing
8-5/8"
0' - 3438' 36#, K-55
3438' - 7022' 36#, N-80

CMT'D w/ 1260 CF (from 7294' in OH)

8-5/8" Top of Window 7022'

7-1/2" Hole (7022' - 7037')

10" Hole (7037' - 7252')

CMT'D Liner
7", 26#, 513 Hydril
6566' - 7250'

7113'

CMT'D w/ 115 CF,
Good CMT Returns at TOL

7250'

WWS Liner
4-1/2", 11.6#
7113' - 7479'

12" Hole (7252' - 7500')

7479'

TD 7500'
TVD (7244')
Directionally Drilled: Yes (TD is 1560' W, 211' N of Surf)

Tubing
3-1/2", 9.3#, L-80
0' - 7088'

943' - 1133' Expandable Metal Skin Patch

6566' 7" TOL & TOC

8-5/8" x 7" Lap Test Approved

7022' Redrill (RD) KOP (from OH) into this wellbore (See History)

7033' Sliding Sleeve

7069' 'XN' Nipple

7080' Halliburton PCKR

7088' Wireline Re-entry Guide

Liner Perfs:
7188' - 7270' Semi Slots
7270' - 7479' 0.012" WWS w/ 6" O.D. Shroud

Gravel Packed w/
162 CF 20-40

Operator: So. California Gas Co.

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

Ground Elevation: 1995' asl
Datum to Ground: 18.90' KB

Spud Date: 7/6/1978
Redrill (RD) Kick-off Date: 11/26/2008
Completion Date: 12/30/2008
Last Rework Date: 4/16/2016

Junk: None

Wellbore History
Orig. Hole (OH) TD @ 7485'
(See Fernando Fee 32A OH)
RD KOP @ 7022'
TD @ 7500'

Top of Zone Markers	md (tvd)
UDA2	6083' (5945')
LDA	6593' (6413')
MP	6861' (6659')
S1	7186' (6959')
S4	7286' (7051')
S8	7371' (7130')
S12	7448' (7201')

(Top of zones of Original Hole Completion)

Prepared by: MAM (3/23/2016)
Updated by: CAM (8/22/2016)

interAct

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

No. T **216-0305**

REPORT ON OPERATIONS

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

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

Ventura, California
August 05, 2016

Your operations at well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Sec. **27**, T. **03N**, R. **16W**, **SB** B.&M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **4/18/2016**, by **Clifford R. Knight**, a representative of the supervisor.

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

DECISION:

APPROVED

CRK/TKC

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By _____
Patricia A. Abel, *District Deputy*

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

No. T 216-0305
16, 1

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

Operator: So Cal Gas					Well: Fernando Fee 32A
Sec. 27	T. 3N	R. 16W	B.&M. SB	API No.: 037-21872	Field: Aliso Canyon
County: Los Angeles					Witnessed/Reviewed on: C. Knight — 4/18/16

C. Knight, representative of the supervisor, was present from 0600 to 1030.

Also present were: Mike McGuiness

Casing record of the well:

3 1/2" tubing + plug
Packer: 7087'
7" Casing

The Internal MIT was performed for the purpose of pressure testing the 7" casing above 7087' (2) (prior to injecting fluid)

☒ The Internal MIT is approved since it indicates that the 7" casing has mechanical integrity above 7087' at this time..

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

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

3 1/2" Tubing

Time	psi
0801	3724
0901	3706

pass ✓

Packer pressure test

Time	psi
0932	1000
1032	995

pass

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CHECK LIST-RECORDS RECEIVED AND WELL STATUS

Operator: **Southern California Gas Compoany** WELL DESIGNATION **"Fernando Fee" 32-A**

API No. **03721872** SE **27** T: **3N** R.: **16W** , **SB** B. and M.

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

Type of Notice: **Supplementary** **Date** **8/1/2016** **Report Number:** **P216-0176**

RECORDS RECEIVED (ATTACH PAGES IF REQUIRED)

	Date	OK	NEED	Remarks
Well Summary (OG100)			✓	
History (OG103)	7/25/16	✓		
E-Log				
Mud Log				
Dipmeter				
Directional				
Core and/or SWS				
USIT	3/30/16	✓		
Ventilog, MAC	3/31/16	✓		

NEW STATUS

DATE: ~~8~~

NOTICE OF RECORDS DUE

DATE: Oct. 25, 2016

DATE: _____

DATE: _____

DATE: _____

WELL STATUS INQUIRY

DATE: _____

DATE: _____

Well Stat

Change Required: _____

Change Done: _____

ABANDONMENTS/REABANDONMENTS/DRILLS/REDRILLS

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

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

ENGINEER'S CHECK LIST

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

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

CLERICAL CHECK LIST

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

REMARKS

RECORDS SCANNED: _____ (Date)

RECORDS APPROVED: D.O. 10/25/16 (Date and Engineer)

Modified OGD2

AOR Datbase _____

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

No. P 216-0176

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 04, 2016

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

Your **Supplementary** proposal to **REWORK** well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Section **27**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, **Any** area, **Sesnon-Frew** pool, **Los Angeles** County, dated **8/1/2016**, received **8/3/2016** has been examined in conjunction with records filed in this office. (Lat: **34.313191** Long: **-118.540210** Datum:**83**)

THE PROPOSAL, COVERING WORK ALREADY COMPLETED, IS APPROVED.

NOTE:

1. This permit is being issued as part of Division Order No. 1109 dated March 4, 2016. Any well that fails any of the testing must be taken out of service and isolated from the storage reservoir pursuant to the Safety Review Testing Regime.
2. Pressure testing witnessed and approved on 4/18/2016. This permit approves the plugging and suspension of the well until 4/18/2017.
3. The required History of Oil or Gas Well (OG103) shall include a complete description of the required pressure testing. **An updated casing and tubing diagram shall be included with the well history.**
4. **A Well Summary Report (Form OG 100)** and **Well History (Form OG 103)** shall to be submitted to the Division within 60 days after the well is drilled, reworked, plugged and abandoned, or if the work is suspended. Any additional well work will require an additional notice to be submitted to this office prior to resuming well operations.

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

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

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.

OG111 (revised 6/2011)

ATTACHMENT 1
TO DOGGR ORDER 1109

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

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

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

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

REQUIRED TESTS FOR EACH WELL IN THE FACILITY

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

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

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

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

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

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

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

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

REQUIRED TESTS IF A WELL IS INTENDED TO RESUME OPERATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

REQUIREMENTS FOR WELLS RESUMING OPERATIONS IN ALISO CANYON

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

Gustafson, Kris@DOC

From: Ghann-Amoah, Mark <MGhann-Amoah@semprautilities.com>
Sent: Wednesday, August 3, 2016 4:09 PM
To: Gustafson, Kris@DOC
Cc: Knight, Clifford@DOC; Ortiz, David@DOC; McMahon, Thomas D.; Iguaz, Jose; ZACHRY, JAKE M (KRUMMRICH)
Subject: RE: FF-32A

Kris,

I confirm that no work has been done on this well since the pressure testing on 4/18/2016 that was witnessed by Cliff Knight.

Thanks,

MARK GHANN-AMOAH
Field Storage Engineer
Aliso Canyon
Desk Phone : 818-700-3888
Cell Phone :806-401-2979
mghann-amoah@semprautilities.com

SoCalGas A Sempra Energy utility

From: Gustafson, Kris@DOC [mailto:Kris.Gustafson@conservation.ca.gov]
Sent: Wednesday, August 03, 2016 3:57 PM
To: Ghann-Amoah, Mark; Iguaz, Jose
Cc: Knight, Clifford@DOC; Ortiz, David@DOC
Subject: [EXTERNAL] FF-32A

Gentlemen,

I would like to confirm that no work has been done on this well since the pressure testing on 4/18/2016 that was witnessed by Cliff Knight. I believe that this pressure test would satisfy 7b of Order 1109 for the plugback and suspension of this well. Please note, since the pressure testing was witnessed and approved on 4/18/2016, that the one year clock for re-evaluation will begin on that date. So, SCG would need to repair or abandon the well by 4/18/2017 and not one year from the permit issue date.

Please confirm the work history or let me know if you have any questions.

Thanks,

Kristopher R. Gustafson, P.G.
Engineering Geologist
Division of Oil Gas and Geothermal Resources
1000 S. Hill Road, Suite 116
Ventura CA 93003-4458
Office: (805) 654-4761

Rec'd 08-03-16 DOGGR Ventura.

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

P216-0176

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

OIL, GAS & GEOTHERMAL

SUPPLEMENTARY NOTICE

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

A notice to the Division of Oil, Gas, and Geothermal Resources, dated 08/02/2016, stating the intention to Rework (Drill, Rework, Abandon) well Fernando Fee 32 A, API No. 037-21872,
Sec. 27, T. 3N, R. 16W, S.B. B.&M., Aliso Canyon Field, Los Angeles County
should be amended because of changed conditions.

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

The total depth is: 7500 feet. The effective depth is: 7479 feet.

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

Present zone pressure: Storage psi. Anticipated/existing new zone pressure: Storage psi.

We now propose: (A complete program is preferred and may be attached.)
The Southern California Gas Company intends to take this well out of operations and isolate from the gas storage reservoir per the First Amended Safety Review Testing Regime: Steps 4b-7b

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: Mark Ghann-Amoah	Telephone Number: 806-401-2979	Signature	Date: 08/01/2016
Individual to contact for technical questions: Mark Ghann-Amoah	Telephone Number: 806-401-2979	E-Mail Address: mghann-amoah@semprautilities.com	

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

Rec'd 08-03-16 DOGGR Ventura.

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

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

CRITICAL WELL DEFINITION

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

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

WELL OPERATIONS REQUIRING BONDING

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

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

Completed Work Summary - FF32A		
Step	**Work Completed**	**Date**
4b	Decent cement bond across MP per Ultra Sonic Cement Evaluation (Top MP at 6861' MD)	11/18/2008
5b	7" Mechanical packer set on 3-1/2", 9.3#, L-80 tubing at 7088'	4/16/2016
5b	Tubing plug set in No-Go nipple at 7074'	4/16/2016
6b	Tubing and casing filled with 3% KCl by forward circulating prior to setting packer	4/16/2016
7b	Tubing pressure tested to 3700 psi against tubing plug at 7074' for 1 hr. Approved by C. Knight	4/17/2016
7b	Casing pressure tested to 1000 psi against packer at 7088' for 1 hr. Approved by C. Knight	4/17/2016

Rec'd 08-03-16 DOGGR Ventura.

Well
Fernando Fee 32A

API #: 04-037-21872-01
Sec 27, T3N, R16W

Operator: So. California Gas Co.

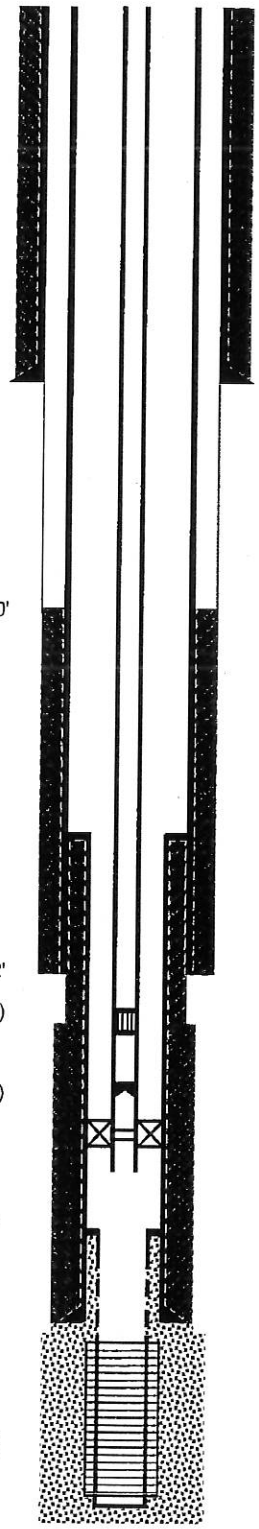
Lease: Fernando Fee
Field: Aliso Canyon
Status: Active Gas Storage
BFW:
USDW:

Ground Elevation: 1995' asl
Datum to Ground: 18.90' KB

Spud Date: 7/6/1978
Redrill (RD) Kick-off Date: 11/26/2008
Completion Date: 12/30/2008
Last Rework Date: 4/16/2016

Junk: None

Wellbore History
Orig. Hole (OH) TD @ 7485'
(See Fernando Fee 32A OH)
RD KOP @ 7022'
TD @ 7500'



13-3/8" TOC Surface

17-1/2" Hole

Surface Casing
13-3/8", 54.5#, K-55
0' - 990'

CMT'D w/ 962 CF + 202 CF
Braden-head SQZ'D,
Good CMT Returns to Surface

990'

8-5/8" ETOC 4330'

12-1/4" Hole

Production Casing
8-5/8"
0' - 3438' 36#, K-55
3438' - 7022' 36#, N-80

CMT'D w/ 1260 CF (from 7294' in OH)

8-5/8" Top of Window 7022'

7-1/2" Hole (7022' - 7037')

10" Hole (7037' - 7252')

CMT'D Liner
7", 26#, 513 Hydril
6566' - 7250'

7113'

CMT'D w/ 115 CF,
Good CMT Returns at TOL

7250'

WWS Liner
4-1/2", 11.6#
7113' - 7479'

12" Hole (7252' - 7500')

7479'

TD 7500'
TVD (7244')
Directionally Drilled: Yes (TD is 1560' W, 211' N of Surf)

Tubing
3-1/2", 9.3#, L-80 (4/16/2016)
0' - 7092'

6566' 7" TOL & TOC

8-5/8" x 7" Lap Test Approved

7022' Redrill (RD) KOP (from OH) into this wellbore (See History)

7037' Sliding Sleeve

7073' XN' Nipple w/ Plug in place
7084' Halliburton PCKR (4/16/2016)
(COE @ 7088')
7092' Wireline Re-entry Guide

Top of Zone Markers	md (tvd)
UDA2	6083' (5945')
LDA	6593' (6413')
MP	6861' (6659')
S1	7186' (6959')
S4	7286' (7051')
S8	7371' (7130')
S12	7448' (7201')

(Top of zones of Original Hole Completion)

Liner Perfs:
7188' - 7270' Semi Slots
7270' - 7479' 0.012" WWS w/ 6" O.D. Shroud

Gravel Packed w/
162 CF 20-40

Prepared by: MAM (3/23/2016)
Updated by: LD (8/2/2016)

InterAct

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

No. T216-0132

REPORT ON OPERATIONS

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

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

Ventura, California
April 20, 2016

Your operations at well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Sec. **27**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **4/18/2016**. **Clifford R. Knight**, a representative of the supervisor.

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

DECISION:

APPROVED

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By _____
Patricia A. Abel
District Deputy

CRK/tkc
OG109

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

No. T 216-0132
16,1

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

Tubing

Operator: So Cal Gas					Well: Fernando Fee 32A
Sec. 27	T. 03N	R. 16W	B.&M. SB	API No.: 037-21872	Field: Aliso Canyon
County: Los Angeles					Witnessed/Reviewed on: C. Knight / 4-18-16

C. Knight, representative of the supervisor, was present from 0730 to 0915.

Also present were: Mike McGuiness, Chris Willard (CPROs)

Casing record of the well:

3 1/2" L-80 Tubing 9.3#

PXN Plug 7074'

Halliburton 3 1/2 - 2.75" 7041'
XD sliding sleeve

Packer — 7087' COE
7" PLT V2 - 29#

The Internal MIT was performed for the purpose of pressure testing the 3 1/2 " ~~casing~~ tubing above 7074' PXN Plug (2) (prior to injecting fluid)

☐ The Internal MIT is approved since it indicates that the _____" casing has mechanical integrity above _____' at this time..

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

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

Tubing
08:01 3724 psi Start
08:18 3709 psi
09:01 3706 psi Finish

The tubing held 115% of reservior pressure for 60 minutes with minimal pressure loss. Witnessed by DOGGR - C. Knight

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

2 of 2

No. T 216-0132
16,1

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

Packer at 1000 psi

Operator: So Cal Gas					Well: Fernando Fee 32A
Sec. 27	T. 3N	R. 16W	B.&M. SB	API No.: 037-21870	Field: Aliso Canyon
County: Los Angeles					Witnessed/Reviewed on: C.Knight 4-18-16

C.Knight , representative of the supervisor, was present from 0915 to 10:45 .

Also present were: Mike McGuiness Chris Willard (CPROs)

Casing record of the well: 13 3/8 54.5# K-55 0-990'
8 5/8" 0-3438' 36# K-55, 3438-7022 36# N-80
7" 26# 6566-7250'
• Packer — 7087' COE
7" PLT-V2 29#
• XD Sliding Sleeve 7041'
• 4 1/2" 11.6# 7113-7479'

Kick-off Point 7022'
TD @ 7500'

MP 6861'
S1 7186'
S4 7286'
S8 7371'

The Internal MIT was performed for the purpose of pressure testing the 8 5/8/7 " casing above 7087' COE ' (2) (prior to injecting fluid)

☐ The Internal MIT is approved since it indicates that the _____" casing has mechanical integrity above _____ ' at this time..

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

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

packer

09:32 1000.2 psi Start
10:32 995.4 psi Finish

The packer in the 5" Casing held 1,000 psi for 60 minutes w/ 5 psi decrease. Witnessed by DOGGR - C. Knight

DEPARTMENT OF CONSERVATION
DI' ON OF OIL, GAS & GEOTHERMAL RESOL :S
.J00 S. Hill Rd, Suite 116 Ventura, CA 93003-445o
Phone:(805) 654-4761 Fax:(805) 654-4765

No. T216-0102

REPORT ON OPERATIONS

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

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

Ventura, California
April 20, 2016

Your operations at well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Sec. **27**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **4/4/2016**. **Ernest Blevins**, a representative of the supervisor.

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

DECISION:

APPROVED

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By
Patricia A. Abel
District Deputy

EB/tkc
OG109

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

No. T 216-0102
#16, 1

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

Operator: So CA Gas					Well: Fernando Fee 32-A
Sec. 27	T. 3N	R. 16W	B.&M. SB	API No.: 037-21872	Field: Aliso Canyon
County: Los Angeles					Witnessed/Reviewed on: 4-4-16

Ernie Blevins, representative of the supervisor, was present from 0500 to 1500.

Also present were: Mike McGinnis w/ So CA Gas

Casing record of the well:

8 5/8" Casing

Bridge Plug @ 7108

10' sand cap up to 7098'

1. Packer set @ 3438' - Pressure 2272 → 2265 psi 0758-0858 (-7 psi Loss)
2. Packer raised to 2500 - 3130 psi → 3117 psi 1015-1117 am (-13 psi Loss)
3. Packer raised to 1000' - 3643 psi → 3634 psi 12:36 → 13:36 (-9 psi Loss)

The Internal MIT was performed for the purpose of pressure testing the 8 5/8" casing above each interval' (2) (prior to injecting fluid)

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

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

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

1. @ 3438' w/ 2272 psi for 60 min = Pass Loss of 7psi = .3% in 1 hour
2. @ 2500' w/ 3130 psi for 60 min = Pass Loss of 13psi = .4% in 1 hour
3. @ 1000' w/ 3643 psi for 60 min = Pass Loss of 9psi = .2% in 1 hour

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

No. T216-0107

REPORT ON OPERATIONS

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

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

Ventura, California
April 20, 2016

Your operations at well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Sec. **27**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **4/2/2016**. **Kris Gustafson**, a representative of the supervisor.

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

DECISION:

WITNESSED

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By _____
Patricia A. Abel
District Deputy

KG/tkc
OG109

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

No. T 216-0107
16, 3

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

Operator: So Cal Gas					Well: FF-32-A
Sec. 27	T. 3N	R. 16W	B.&M. SB	API No.: 037-21872	Field: Aliso Canyon
County: Los Angeles					Witnessed/Reviewed on: 4/2/16 @ 0830

K. Gustafson / , representative of the supervisor, was present from 0830 to 1230.

Also present were: Mike McGinnis w/ SoCalGas

Casing record of the well:

8 5/8" CSG CIBP in 7"

CIBP = 7108' w/ 10' sand cap.

PKR set @ 3438' for 1st test. (2622 psi)

PKR set @ 2500' for 2nd test.

PKR set @ 1000' for 3rd test. (3685 psi)

Tbg tested to 2220 psi
fluid = 8.5 ppg
1st test no good due to heat retention in tbg
Tbg = 2265 psi
2272 psi Loss of 0758-0858 7 psi = PASS 4-4-16

The Internal MIT was performed for the purpose of pressure testing the 8 5/8" casing above ~~(2) (prior to injecting fluid)~~ in block intervals

☒ The Internal MIT is approved since it indicates that the 8 5/8" casing has mechanical integrity above the injection zone at this time..

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

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

The Packer was set & the casing was tested in 3 blocks. The packer was at 3438', 2500', & 1000' and the casing held pressure for 60 min w/o a loss.

Pending Senior Approval.

DEPARTMENT OF CONSERVATION
D ON OF OIL, GAS & GEOTHERMAL RESOL ES
1000 S. Hill Rd, Suite 116 Ventura, CA 93003-4458
Phone:(805) 654-4761 Fax:(805) 654-4765

No. T216-0095

REPORT ON OPERATIONS

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

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

Ventura, California
April 20, 2016

Your operations at well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Sec. **27**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **3/25/2016**. **Mark Davis**, a representative of the supervisor.

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

DECISION:

APPROVED

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By _____
Patricia A. Abel
District Deputy

MD/tkc
OG109

API No. 037-21872 DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES T 216-0095

BLOWOU PREVENTION EQUIPME MEMO 12,1

Operator SO. CAL. GAS CO. Well "FERNANDO FEE "32A Sec. 27 T. 3N R. 16W

Field ALISO CANYON County LOS ANGELES Spud Date

VISITS:	Date	Engineer	Time	Operator's Rep.	Title
1st	3-25-2016	MARK DAVIS	(0600 to 0800)	MIKE VOLKMAR	CONSULTANT
2nd			(to)		

Contractor EMSIGN Rig # 335 Contractor's Rep. & Title

Casing record of well:

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

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

Proposed Well Opns: REWORK . MACP: psi

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

REQUIRED BOPE CLASS: II 5M

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

BOP STACK

API Symb.	Ram Size (in.)	Manufacturer	Model or Type	Vert. Bore Size (in.)	Press. Rtg.	Date Last Overhaul
A	—	HYDRIL		11"	5M	
Rd	3½	SHAFFER		11"	5M	
Rd	CSO	SHAFFER		11"	5M	

TEST DATA

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

ACTUATING SYSTEM

Accumulator Unit(s) Working Pressure 3000 psi

Total Rated Pump Output — gpm Fluid Level

Distance from Well Bore 70 ft. 2/3

	Accum. Manufacturer	Capacity	Precharge
1	KOOMEY	— gal.	1500 psi
2		gal.	psi

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

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

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

TOTAL:

AUXILIARY EQUIPMENT

		No.	Size (in.)	Rated Press	Connections: Weld	Connections: Flange	Connections: Thread	Test Press.
	Fill-up Line							
X	Kill Line		3"	5M			X	
X	Control Valve(s)	2		5M			X	
	Check Valve(s)							
	Aux. Pump Cnnct.							
X	Choke Line		2"	5M			X	
X	Control Valve(s)	9		"			X	
	Pressure Gauge							
X	Adjstble Choke(s)	2	2"	"			X	
	Bleed Line							
	Upper Kelly Cock							
	Lower Kelly Cock							
	Standpipe Valve							
	Stndpipe Pres. Gau.							
X	Pipe Safety Valve		3½	5M				
	Internal Preventer							

Hole Fluid Type	Weight	Storage Pits (Type & Size)
LEASE H_2O	—	500 BBLS

REMARKS AND DEFICIENCIES:

OGD9 (9/06)

DEPARTMENT OF CONSERVATION
DI ON OF OIL, GAS & GEOTHERMAL RESOL ES
000 S. Hill Rd, Suite 116 Ventura, CA 93003-4458
Phone:(805) 654-4761 Fax:(805) 654-4765

No. T**216-0077**

REPORT ON OPERATIONS

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

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

Ventura, California
April 20, 2016

Your operations at well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Sec. **27**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **3/8/2016**. **Clifford R. Knight**, a representative of the supervisor.

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

DECISION:

WITNESSED

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By _____
Patricia A. Abel
District Deputy

CRK/tkc
OG109

DEPARTMENT OF CONSERVATION
D ON OF OIL, GAS & GEOTHERMAL RESOL ES
1000 S. Hill Rd, Suite 116 Ventura, CA 93003-4458
Phone:(805) 654-4761 Fax:(805) 654-4765

No. T216-0076

REPORT ON OPERATIONS

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

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

Ventura, California
April 19, 2016

Your operations at well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Sec. **27**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, in **Los Angeles** County, were witnessed on **4/19/2016**. **Clifford R. Knight**, a representative of the supervisor.

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

DECISION:

WITNESSED

Kenneth A. Harris Jr.
State Oil and Gas Supervisor

By
Patricia A. Abel
District Deputy

CRK/tkc
OG109

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

216-0076

No. T 216-0077

15,3

MECHANICAL INTEGRITY TEST (MIT)

Operator: So Cal Gas					Well: Fernando Fee 32A
Sec. 27	T. 3N	R. 16W	B.&M. SB	API No.: 037-21872	Field: Aliso Canyon
County: Los Angeles					Witnessed/Reviewed on: C. Knight 3/8/16

C. Knight, representative of the supervisor, was present from 0900 to 1230.

Also present were: Nick Arhour (Intoract), Sergio Macias, Chris Maniesa

Casing record of the well:

19 - 990'	13 3/8"	Surface Casing	7148 - 7268	4 1/2"	Liner
3433 - 7022'	8 5/8"	production Casing	7268 - 7270	6"	Crossover
6566 - 7250'	7"	Casing joints	7270 - 7454	6"	wire wrapped screen
1 - 7090'	3 1/2"	Tubing	7454 - 7479	4 1/2"	Circulating shoe
7078 - 7080'	6"	Packer G6 Mech	7125 - 7126	5 1/2"	Sliding sleeve (Open)
7032 - 7036	3 1/2"	Sliding Sleeve	7113.5'	5 7/8"	Liner packer
7118 - 7128'	5 1/2"	Liner	7188 - 7268'	4 1/2	slotted liner (perfs upper)
7128 - 7148	5"	Liner			

100'/min Temp. Survey Speed

The MIT was performed for the purpose of perform temp survey and noise log survey. Follow up any temp anomaly with noise log (detailed)

☐ The MIT is approved since it indicates that all of the injection fluid is confined to the formations below 7078 feet at this time.

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

Well: Fernando Fee 32A	Date: 3/8/16	Time: 0900
Observed rate: — B/D	Meter rate: — B/D	Fluid level: none feet
Injection pressure: 1051 psi	MASP:	Pick-up depth: 7452 feet
Initial annulus pressure: 1051 psi	Pressure after bleed-off: no bleed psi	
Casing vented during test (Y/N)	Survey company: Well Analysis Corp.	

SPINNER COUNTS

DEPTH	COUNTS	RATE	DEPTH	COUNTS	RATE	COMMENTS:

TRACER CASING AND TUBING RATE CHECKS

Interval	Time (sec.)	Rate (B/D)	Background log: NA to NA
			COMMENTS: Temp survey anamalys; 5240 - 5300' (possible water flood zone?) Water disposal well is off.

TOP PERFORATION CHECK

Top perforation depth: 7188 - 7424	Wait at: for seconds	~~Beads: (Y/N)~~
Casing shoe at: 7250	WSO holes at:	Arrival time: *Calculated* *Actual*

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

PACKER CHECK

Packer at: 7078	Wait at: for seconds	~~Beads: (Y/N)~~
Tubing tail at: 7090	Tubing size: 3 1/2	2nd Packer at: Mandrel: ~~Gas lift~~ 6992

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

COMMENTS: Water flood "off" ~5300' as seen in current temp survey. Past temp survey had shown water flood clearly

NATURAL RESOURCES AGENCY OF CALIFORNIA

DEPARTMENT OF CONSERVATION

DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES

1000 S. Hill Rd, Suite 116, Ventura, CA 93003-4458 Phone:(805) 654-4761

NOTICE OF RECORDS DUE

Ventura, California
3/29/2016

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

In accordance with Division 3 of the California Public Resources Code, the following records are due (covering the reworking notice dated 11/17/2008) for your well "Fernando Fee" 32-A (037-21872).

Aliso Canyon Field, Los Angeles County, Sec. 27, T. 03N, R. 16W, SB B.&M.

Records, in duplicate are due within 60 days after completion of any well work or tests. Failure to provide such records may result in enforcement action, including issuance of violations, civil penalties and orders of the supervisor, pursuant to PRC 3236.5.

[X] Well Summary (Form OG 100)	[X] All Logs	[ ] Velocity Survey
[X] History (Form OG 103, OGG 103)	[ ] Dipmeter (computed)	[ ] Temperature Survey
[ ] Core of sidewall sample (Form OG 101, OGG 101)	[ ] Oil and/or gas analysis	[ ] Spinner survey
[X] Directional survey	[ ] Water analysis	[ ] Standard Annular Pressure Test
[ ] Other	[ ] Pressure measurements (flowing or static)	[ ] RA Tracer survey (fluid migration test)

Include all history after notice dated 10/01/2008 performed on "Fernando Fee" 32-A regarding the unretrievable seal assembly and the redrill work proposed in the supplementary notice.

REPORTS FOR THE MONTH OF *: Production, oil and gas disposition, and injection reports are due on or before the 30th day of each month for the preceding calendar month. Division forms must be signed in the spaces provided.*

OIL AND GAS OPERATION	GEOTHERMAL OPERATION
[ ] Production and disposition reports (Form OG 110 or computer report)	[ ] Production reports (Form OGG 110)
[ ] Injection reports (Form OG 110B or computer report)	[ ] Injection reports (Form OGG 110B)

Name: Clifford R. Knight	Title: Engineering Geologist	Signature: Clifford R. Knight

OG170 (03/01/2012)

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CHECK LIST-RECORDS RECEIVED AND WELL STATUS

Operator: **Southern California Gas Company** WELL DESIGNATION **"Fernando Fee" 32-A**

API No. **03721872** SE **27** T: **3N** R.: **16W** , **SB** B. and M.

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

Type of Notice: **Rework** **Date** **3/23/2016** **Report Number:** **P216-0036**

RECORDS RECEIVED (ATTACH PAGES IF REQUIRED)

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

NEW STATUS

DATE: _____

NOTICE OF RECORDS DUE

DATE: _____

DATE: _____

DATE: _____

DATE: _____

WELL STATUS INQUIRY

DATE: _____

DATE: _____

Well Stat

Change Required: _____

Change Done: _____

ABANDONMENTS/REABANDONMENTS/DRILLS/REDRILLS

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

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

ENGINEER'S CHECK LIST

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

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

CLERICAL CHECK LIST

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

REMARKS

RECORDS SCANNED: _____
(Date)

RECORDS APPROVED: _____
(Date and Engineer)

Modfied OGD2

AOR Datbase _____

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 216-0036

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
March 25, 2016

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

Your proposal to **Rework** well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Section **27**, T. **03N**, R. **16W**, **SB** B. & M., **Aliso Canyon** field, **Any** area, **Sesnon-Frew** pool, **Los Angeles** County, dated **3/23/2016**, received **3/23/2016** has been examined in conjunction with records filed in this office. (Lat: **34.313191** Long: **-118.540210** 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 Temperature and Noise log are run on the well from the packer to surface.
5. **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.
6. Prior to commencing injection, a pressure test is conducted to demonstrate the mechanical integrity of the **8 5/8"** casing.
7. Injection shall be through tubing and packer only. Injection or withdrawal through the casing is not permitted.
8. This office shall be contacted by phone prior to making any program changes and no changes are made without Division approval.
9. **THIS DIVISION SHALL BE NOTIFIED TO:**
   a. Inspect the installed blowout prevention equipment prior to commencing **downhole** operations.
   b. Witness a pressure test of the tubing and **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 _____
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 or above **800'±**.
2. No operation shall be undertaken or continued that will contaminate or otherwise damage the environment.
3. This permit is being issued as part of Division Order No. 1109 dated March 4, 2016. Any well that fails any of the testing must be taken out of service and isolated from the storage reservoir pursuant to the Safety Review Testing Regime.
4. The required History of Oil or Gas Well (OG103) shall include a complete description of the required pressure testing. **An updated casing and tubing diagram shall be included with the well history.**
5. **A Well Summary Report (Form OG 100)** and **Well History (Form OG 103)** shall to be submitted to the Division within 60 days after the well is drilled, reworked, plugged and abandoned, or if the work is suspended. Any additional well work will require an additional notice to be submitted to this office prior to resuming well operations.

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

ATTACHMENT 1
TO DOGGR ORDER 1109

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

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

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

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

REQUIRED TESTS FOR EACH WELL IN THE FACILITY

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

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

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

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

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

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

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

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

REQUIRED TESTS IF A WELL IS INTENDED TO RESUME OPERATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

REQUIREMENTS FOR WELLS RESUMING OPERATIONS IN ALISO CANYON

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

rec'd 03-23-16 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 ✓
	CAL WIMS ✓	1151 ✓

P216-0036

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 32A, API No. 037-21872,

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

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

See attached wellbore schematic

The total depth is: 7500 feet. The effective depth is: 7479 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.)

See attached program

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

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

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

Name of Operator: Southern California Gas Company			
Address: P. O. Box 2300		City/State: Chatsworth	Zip Code: 91313-2300
Name of Person Filing Notice: Jovy Kroh	Telephone Number: (937)239-0279	Signature: Jovy Kroh	Date: 03/23/16
Individual to contact for technical questions: Jovy Kroh	Telephone Number: (937)239-0279	E-Mail Address: jkroh@semprautilities.com	

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

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

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

CRITICAL WELL DEFINITION

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

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

WELL OPERATIONS REQUIRING BONDING

1. Drilling, 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/

WORKOVER PROJECT

Fernando Fee 32A – Well Inspection

DATE: March 23, 2016

OPERATOR: SOUTHERN CALIFORNIA GAS COMPANY

FIELD: ALISO CANYON

API NUMBER: 037-21872

ELEVATION: All depths based on original KB, 18.9' above GL

SURFACE LOCATION: SEC 27, T3N, R16W, S.B. B&M

OBJECTIVE

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

WELL RECORD

Current Status:	Shut-in
TD:	7500'md
Last Workover:	Re-drilled October 2008, Completed 12/30/2008
Casing Record:	See attached wellbore schematic Note: Max hole angle 24°inclination at 5789' At liner top at 6566' hole angle is 23° inclination
Tubing Record:	See attached tubing detail

GEOLOGIC MARKERS

	MD	Zone	TVDss
FF32A	6083	UDA2	-3931
FF32A	6593	LDA	-4399
FF32A	6861	MP	-4645
FF32A	7186	S1	-4945
FF32A	7230	S2	-4985
FF32A	7286	S4	-5037
FF32A	7310	S6	-5059
FF32A	7371	S8	-5116
FF32A	7410	S10	-5152
FF32A	7448	S12	-5187

Estimated Field Pressure: 1043 psi on 03/23/2016 (Variable)

Estimated Bottomhole Temperature: 130°F Last temp survey 09/29/2014

PROGRAM NOTES

1. BOPE requirements in Gas Company Standard 224.05 shall be fully implemented at all times.

2. The storage reservoir pressures shall be monitored during the workover with a minimum of 300 psig overbalance for well control fluids.

3. Prepare the location by removing all relevant landscaping/lighting fixtures as well as surface piping and electrical components as needed. Locate rig anchors, reinstall if necessary.

4. DOGGR permit must be posted on site. Notify the DOGGR as required for BOPE testing as stated on permit.

PRE-RIG WORK

De-energize and remove all laterals. Install companion flanges for circulating out the well.

WELLWORK PROGRAM

1. Move in production rig and rig pump with tank, shaker, and mixer.

2. Spot 500 bbl Baker tanks and fill with 8.6 ppg KCl brine.
   2.1 Connect pump to the tubing and vent the casing through the choke manifold to the SoCalGas system.
   2.2 Treat all brine with Biocide, 5 gals/100 bbls

3. If the well is not standing full of brine, then circulate out the well with an HEC polymer pill with approximately 8.6 ppg KCl brine. The 4-1/2" liner volume is approximately 6 bbl, and the 7" liner volume is approximately 21 bbl. The tubing volume is approximately 62 bbl. The tubing x 8-5/8"casing annulus is approximately 313 bbl, and the tubing x 7" casing annulus is approximately 14 bbl.

   NOTE: Verify field surface pressure to ensure the proper fluid density is used prior to circulating out the well and for well control during workover operations.

4. +++Install a Class III 5M BOPE per Gas Company Standard 224.05 and in accordance with the DOGGR permit. All connections and valves must be flanged and at least 5000 psig rated.
   a.) Pressure test the Class III 5M annular preventer to 3500 psig for 20 minutes. Test blind rams and the 3-1/2" pipe rams to 5000 psig for 20 minutes. Test all lines and connections to 5000 psig.
   b.) Perform a 300 psig low pressure test on the annular preventer, blind rams and pipe rams for 20 minutes. Test all lines and connections to 300 psig.
   c.) All tests are to be charted and witnessed by a DOGGR representative.

5. Pick up a joint of tubing with safety valve, attempt to unland the 3-1/2" 9.2#, N-80 tubing string, *release G-6 mechanical packer,* and POOH with the completion tubing string. POOH and lay down tubing and completion jewelry.

6. Pick up 8-5/8" 36# casing scraper on tubing and scrape to 7" liner top at 6566', or as deep as possible. Circulate well clean. POOH.

7. Pick up 7" 26# casing scraper on tubing and scrape to 4-1/2" liner top at 7113', or as deep as possible. Circulate well clean. POOH.

8. Pick up liner cleanout assembly and RIH to clean out to the bottom of the 4-1/2" liner at 7479' or as deep as possible.

9. Rig up wireline unit and run gyro survey bottom of 4-1/2" liner at 7479' (or as deep as possible) to surface. Rig down wireline.

10. Make up and run a 7" retrievable bridge plug on 3-1/2" tubing. Set at approximately 7108'(5 ft above liner top, or as deep as possible) pressure test, and sand off.

11. Rig up SLB wireline unit and log USIT/Neutron/CBL/GR in high resolution mode (1.5" vertical measurement) in the 7" x 9-5/8" production casing from the top of the bridge plug to surface. Rig down SLB wireline.

12. Rig up Baker wireline. Perform logs in two runs in the 7" x 9-5/8" production casing from the top of the bridge plug to surface. Rig down Baker wireline.
    12.1 Run #1: Log Baker Vertilog.
    12.2 Run #2: Log 60-arm real-time caliper.

13. Using 8-5/8" test packer, run Pressure Integrity Test on 7" x 9-5/8" casing from bridge plug to surface to a minimum of 3625 psi as per schedule.
    13.1 Engineering team to analyze USIT and pressure test results and recommend any additional remediation.

14. Inspect production tree and pressure test the wellhead seals to a minimum of 3625 psig.
    a.) Nipple down the 11" Class III 5M BOPE, crossover spool, and primary pack-off.
    b.) Replace the pack-off seals and reinstall a tubing head, refurbished as necessary.
    c.) Pressure test all the wellhead seals to 3625 psig.
    d.) Reinstall the 11" Class III 5M BOPE on the tubing head and function test.

15. Pick up and run tubing with bridge plug retrieving head to top of sand. Circulate out sand. Release bridge plug at approximately 7108', re-circulate out the well if necessary. POOH and lay down tubing.

16. Pick up new completion string:
    a.) 4-1/2" 12.6# L-80 EUE 8RD wireline re-entry guide
    b.) 4-1/2" 12.6# x 8-5/8" 36# TCPC production packer
    c.) 10' pup joint 4-1/2" 12.6# L-80 TCPC tubing
    d.) 4-1/2" 12.6# L-80 TCPC XN no-go nipple
    e.) 8' Blast joint 4-1/2" 12.6# L-80 TCPC tubing
    f.) Full joint 4-1/2" 12.6# L-80 TCPC tubing
    g.) 4-1/2" 12.6# L-80 TCPC sliding sleeve
    h.) Full joint 4-1/2" 12.6# L-80 TCPC tubing
    i.) 4-1/2" 12.6# TCPC Pin x 5-1/2" 20# TCPC Box Crossover pup joint
    j.) 5-1/2" 20# L-80 TCPC tubing to surface
    k.) Pup joints 5-1/2" 20# L-80 TCPC tubing for space-out
    l.) 4' 5-1/2" 20# L-80 TCPC fatigue nipple (pin x pin)
    m.) 10-3/4" Tubing hanger with 4-1/2" EUE top box / 4" BPV / 5-1/2" TCPC btm box

17. RIH with new completion string and land as per vendor specification.
    17.1 Keep sliding sleeve closed while RIH with completion string.
    17.2 Ensure new production packer depth is at or above depth at which retrievable bridge plug was just pulled from.

18. Rig up slickline. RIH with slickline and set tubing plug in XN nipple. POOH.

19. Notify DOGGR to witness pressure tests: 1 hour each, recorded digitally.
    19.1 Pressure test the 3-1/2" tubing x 7" casing annulus with production packer to 1000 psig surface pressure
    19.2 Pressure test the tubing to 3625 psig surface pressure

20. RIH with slickline and pull tubing plug from XN nipple. POOH. RIH with slickline and shift sliding sleeve open. POOH.

21. Rig up nitrogen unit. Reverse circulate nitrogen, pumping down annulus and taking returns out tubing. Rig down nitrogen unit.

22. RIH with slickline and shift sliding sleeve closed. POOH, rig down slickline.

23. Fill annulus with packer fluid including corrosion inhibitor.
    23.1 Vent nitrogen returns as appropriate.
    23.2 Monitor annulus fluid level and re-fill with packer fluid as necessary.

24. Nipple down the Class III 5M BOPE and install the production tree and test to 5000 psig.

25. Release production rig, rig down and move out.

WELL LATERAL HYDROTESTING

26. Per Gas Company Standard 182.0170, pressure test the tubing and casing pump-in 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.

27. Reinstall the hydro-tested laterals.

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

29. 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.

ec'd 03-23-16 DOGGR Ventura

Well
Fernando Fee 32A

API #: 04-037-21872-00
Sec 27, T3N, R16W

Operator: So. California Gas Co.

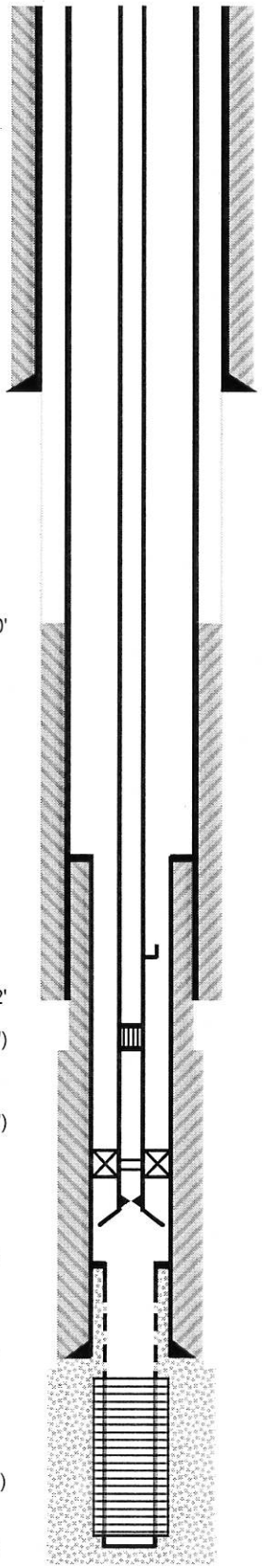
Lease: Fernando Fee
Field: Aliso Canyon
Status: Active Gas Storage
BFW:
USDW:

Ground Elevation: 1995' asl
Datum to Ground: 18.90' KB

Spud Date: 7/6/1978
Redrill (RD) Kick-off Date: 11/26/200
Completion Date: 12/30/2008

Junk: None

Wellbore History
Orig. Hole (OH) TD @ 7485'
(See Fernando Fee 32A OH)
RD KOP @ 7022'
TD @ 7500'



13-3/8" TOC Surface

17-1/2" Hole

Surface Casing
13-3/8", 54.5#, K-55
0' - 990'

CMT'D w/ 962 CF + 202 CF
Braden-head SQZ'D,
Good CMT Returns to Surface

990'

8-5/8" ETOC 4330'

12-1/4" Hole

Production Casing
8-5/8"
0' - 3438' 36#, K-55
3438' - 7022' 36#, N-80

CMT'D w/ 1260 CF (from 7294' in OH)

8-5/8" Top of Window 7022'

7-1/2" Hole (7022' - 7037')

10" Hole (7037' - 7252')

CMT'D Liner
7", 26#, 513 Hydril
6566' - 7250'

7113'

CMT'D w/ 115 CF,
Good CMT Returns at TOL

7250'

WWS Liner
4-1/2", 11.6#
7113' - 7479'

12" Hole (7252' - 7500')

7479'

TD 7500'
TD VSS (-4793')
Directionally Drilled: Yes (TD is 1372' W, 168' N of Surf, 6807' TVD)

Tubing
3-1/2"
0' - 7090'

6566' 7" TOL & TOC

8-5/8" x 7" Lap Test Approved

6998' GLM

7022' Redrill (RD) KOP (from OH) into this wellbore (See History)

7035' Sliding Sleeve XD Profile

7069' On/Off Tool w/ X Profile

7080' G-6 Mech PCKR

7089' XN Nipple
7090' Bell Guide

Liner Perfs:
7188' - 7270' Semi Slots
7270' - 7479' 0.012" WWS w/ 6" O.D. Shroud

Gravel Packed w/
162 CF 20-40

Top of Zone Markers		
UDA2	6083'	(-3931')
LDA	6593'	(-4399')
MP	6861'	(-4645')
S1	7186'	(-4945')
S4	7286'	(-5037')
S8	7371'	(-5116')
(Top of zones of Original Completion)		

Prepared by: MAM (3/22/2016)

InterAct

Fernando Fee 32 A

Completion

API	Field Name	Operator	County	State
03721872	Aliso Canyon	Southern California Gas Company	Los Angeles	California

Ground Elevation (ft)	KB-Ground Distance (ft)	Spud Date
1,995.00	19.00	7/7/1978 00:00

Re-drill 1, 3/23/2016 10:52:05 AM

MD (ftKB)	Vertical schematic (actual)
19.0	
19.4	Fatigue Nipple; 19.0-20.1; 1.06; 8 1/2; 2.992; 2-1
20.0	
20.3	
25.9	
36.1	Tubing Pup Joint; 20.1-44.7; 24.65; 3 1/2; 2.992; 2-2
44.6	Surface casing (linepipe); 19.0-990.0; 971.00; 13 3/8; 12.422; 1-1
990.2	Production casing; 19.0-3,433.0; 3,414.00; 8 5/8; 7.828; 3-1
3,433.1	Tubing; 44.7-6,988.2; 6,943.46; 3 1/2; 2.992; 2-3
6,565.9	Production casing; 3,433.0-7,022.0; 3,589.00; 8 5/8; 7.828; 3-2
6,988.2	Casing Joints; 6,566.0-7,250.0; 684.00; 7; 6.276; 2-1
6,992.1	Tubing Pup Joint; 6,988.2-6,992.3; 4.11; 3 1/2; 2.992; 2-4
6,998.4	Gas Lift Mandrel; 6,992.3-6,998.5; 6.19; 4; 2.992; 2-5
7,000.7	Tubing Pup Joint; 6,998.5-7,000.7; 2.18; 3 1/2; 2.992; 2-6
7,022.0	Tubing; 7,000.7-7,032.2; 31.54; 3 1/2; 2.992; 2-7
7,032.2	Sliding Sleeve; 7,032.2-7,035.8; 3.63; 3 1/2; 2.750; 2-8
7,035.8	Tubing; 7,035.8-7,067.4; 31.55; 3 1/2; 2.992; 2-9
7,067.3	On-Off Tool with X profile; 7,067.4-7,069.7; 2.33; 5 3/4; 2.750; 2-10
7,069.6	
7,072.8	Tubing Pup Joint; 7,069.7-7,077.9; 8.20; 3 1/2; 2.992; 2-11
7,077.8	Packer-G6 Mech; 7,077.9-7,080.0; 2.10; 6; 2.991; 2-12
7,080.1	Cross Over; 7,080.0-7,082.4; 2.38; 6; 2.991; 2-13
7,082.3	Tubing Pup Joint; 7,082.4-7,088.4; 6.05; 3 1/2; 2.992; 2-14
7,088.6	XN Nipple; 7,088.4-7,089.9; 1.45; 3 1/2; 2.635; 2-15
7,089.9	Guide Shoe; 7,089.9-7,090.4; 0.48; 3 1/2; 2.992; 2-16
7,090.2	
7,113.5	Liner Packer; 7,113.5-7,118.2; 4.72; 5 7/8; 4.000; 4-1
7,118.1	Upper Ext; 7,118.2-7,124.9; 6.69; 5 1/2; 4.892; 4-2
7,125.0	Sliding Sleeve; 7,124.9-7,126.6; 1.71; 5 1/2; 4.000; 4-3
7,126.6	Seal Bore; 7,126.6-7,128.0; 1.44; 5 1/2; 4.000; 4-4
7,128.0	Lower Ext; 7,128.0-7,148.4; 20.40; 5; 4.408; 4-5
7,148.3	Blank Liner; 7,148.4-7,188.3; 39.89; 4 1/2; 4.000; 4-6
7,188.3	Slotted Liner; 7,188.3-7,268.5; 80.17; 4 1/2; 4.000; 4-7
7,250.0	
7,268.4	Cross Over; 7,268.5-7,270.3; 1.81; 6; 4.000; 4-8
7,270.3	
7,304.1	Wire Wrap Screen Liner; 7,270.3-7,474.2; 203.88; 6; 4.000; 4-9
7,474.1	Circulating Shoe; 7,474.2-7,479.0; 4.80; 4 1/2; 4.000; 4-10
7,479.0	
7,500.0	

of t gth	External Casing Backup Pressure: Fluid / Formation Pressure Gradient	External Casing Backup Pressure	Internal Water Hydrostatic	Net Burst Pressure @ Depth: 1	2	3	4	5	6	7	8	Final	Net Burst Pressure @ Gas-Filled Annulus	Test Pressure > 85% of Burst
		Surface Test Pressure		3625	3100	2600						2220	3625	
		Test Packer Depth		1000	2500	3438								
		Test Down Casing or Tubing		Casing	Casing	Casing						Tubing		
		Bridge Plug Depth										7103		
4	0.00	0	0	3625	3100	2600	0	0	0	0		2220	3625	
4	0.00	0	221	3846	3321	2821	-	-	-	-		2441	3670	
4	0.00	0	442	4067	3542	3042	-	-	-	-		2662	3716	86%
4	0.00	0	663	-	3763	3263	-	-	-	-		2883	3761	
4	0.00	0	884	-	3984	3484	-	-	-	-		3104	3806	
4	0.00	0	1105	-	4205	3705	-	-	-	-		3325	3852	89%
4	0.00	0	1326	-	-	3926	-	-	-	-		3546	3897	
4	0.00	0	1520	-	-	4120	-	-	-	-		3740	3937	87%
1	0.00	0	1768	-	-	-	-	-	-	-		3988	3988	
1	0.00	0	1989	-	-	-	-	-	-	-		4209	4033	
1	0.00	0	2210	-	-	-	-	-	-	-		4430	4078	
1	0.00	0	2431	-	-	-	-	-	-	-		4651	4123	
1	0.00	0	2652	-	-	-	-	-	-	-	-	4872	4169	
1	0.00	0	2902	-	-	-	-	-	-	-	-	5122	4220	
6	0.00	0	3094	-	-	-	-	-	-	-	-	5314	4259	
6	0.00	0	3140	-	-	-	-	-	-	-	-	5360	4269	
			0.442										0.091	
			psi/ft										psi/ft	
			int. grad.										int. grad.	

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CHECK LIST-RECORDS RECEIVED AND WELL STATUS

OPERATOR **Southern Calif. Gas Co.** WELL DESIGNATIO **"Fernando Fee" 32-A**

API No. **03721872** SEC **27** , T. **3N** , R. **16W** , **SB** B. and M.

COUNTY: **Los Angeles** FIELD **Aliso Canyon**

Type of Notice: **Supplementary** **Date:** **11/17/2008** **Report Number:** **P208-406**

RECORDS RECEIVED (ATTACH PAGES IF REQUIRED)

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

NEW STATUS

DATE: _____

NOTICE OF RECORDS DUE

DATE: _____

DATE: _____

DATE: _____

DATE: _____

WELL STATUS INQUIRY

DATE: _____

DATE: _____

Well Stat

Change Required: _____

Change Done: _____

ABANDONMENTS/REABANDONMENTS/DRILLS/REDRILLS

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

RECORDS SCANNED: _____ (Date)

RECORDS APPROVED: _____ (Date and Engineer)

Modfied OGD2

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

No. T 208-216

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

Report on Operations

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

Ventura, California
December 18, 2008

Your operations at well "Fernando Fee" 32-A **, API No.** 037-21872
Sec. 27 **, T.** 3N **, R.** 16W , SB **B. & M.** Aliso Canyon
Field in Los Angeles **County,**
were witnessed on 12/1/2008 **by** M. Davis **, representative of the supervisor.**

Operations Witnessed	Result – Def.	Engineer	Date
Lap Test/Pressure Test	Approved – 0	M. Davis	12/1/2008

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

DECISION: Approved

tkc

Hal Bopp
State Oil and Gas Supervisor

By _____
Deputy Supervisor

OG109 Rev9/01 (9/89/GSR1/5M)

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

No. T208-216

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

Operator: SOUTHERN CALIF. GAS CO.					Well: "FERNANDO FEE" 32A
Sec. 27	T. 3N	R. 16W	B.&M. SB	API No.: 037-21872	Field: ALISO CANYON
County: LOS ANGELES					Witnessed/Reviewed on: 12-1-2008

MARC S. DALIS, representative of the supervisor, was present from 22:30 to 00:30.

Also present were: MIKE VOLKMAR - SO. CAL. GAS. CO.

Casing record of the well:

The Internal MIT was performed for the purpose of pressure testing the 7" casing above 7250' (2) (prior to injecting fluid)

☒ The Internal MIT is approved since it indicates that the 7" casing has mechanical integrity above 7250' at this time.. 1000 PSI FOR 15 MIN. OK

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

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

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

No. T 208-217

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

Report on Operations

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

Ventura, California
December 18, 2008

Your operations at well "Fernando Fee" 32-A **, API No.** 037-21872
Sec. 27 **, T.** 3N **, R.** 16W **,** SB **B. & M.**
Field in Aliso Canyon
Los Angeles **County,**
were witnessed on 11/21/2008 **by** M. Davis **, representative of the supervisor.**

Operations Witnessed	Result – Def.	Engineer	Date
Squeeze below retainer	Approved – 0	M. Davis	11/21/2008

The operations were performed for the purpose of plugging back the lower portion of the well.

DECISION: Approved

tkc

Hal Bopp
State Oil and Gas Supervisor

By _____
Deputy Supervisor

OG109 Rev9/01 (9/89/GSR1/5M)

T208-217

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CEMENTING/PLUGGING MEMO

Operator SO. CALIF GAS COMPANY Well No. "FERNANDO FEE" 32A
API No. 037-21872 Sec. 27 T. 3N R. 16W SB B&M
Field ALISO CANYON , County LOS ANGELES . On 11-21-08 ,
(M) / ~~MS~~. MATT S. DAVIS representative of the supervisor, was present from 12:30 to 1500 .

There were also present MIKE VOLKMAR - CONSULTANT,

Casing record of well:

The operations were performed for the purpose of: 2

☒ The plugging/cementing operations as witnessed and reported are approved.

☐ The location and hardness of the cement plug @ _____ ' are approved.

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

Casing				Cemented			Top of Fill		Squeezed Away	Final Pressure	~~Perforations~~
Size	Wt.	Top	Bottom	Date	MO-Depth	Volume	Annulus	Casing			
8 5/8"	36#	Ø'	7294'	11-21-08	RET 7035'	100 FT³	—	7155'	100 FT³	1300 PSI	RET @ 7035'
7"	26#	6566'	7250'	12-1-08	6566'	115 FT³	6566'	—	—	500 PSI	—

Casing/~~tubing~~ ~~recovered~~: 3 1/2" " ~~Shot~~/cut at 7096' ', _____ ', _____ ', Pulled fr. _____ ';
_____ " Shot/cut at _____ ', _____ ', _____ ', Pulled fr. _____ '.

Junk (in hole): PACKER 7155', 3 1/2" 7096'-7155'.

Hole fluid (bailed to) at _____ '. Witnessed by _____

Mudding	Date	bbls	Displaced	Poured	Fill	Engineer

Cement Plugs		Placing	Placing Witnessed		Top Witnessed			
Date	~~Sx Cl~~	MO & Depth	Time	Engineer	Depth	Wt/Sample	Date & Time	Engineer
11-21-08	100 FT³	RET @ 7035'	14:00	MD				

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

No. P **208-406**

010 (Old) Field Code 010 (New)
00 (Old) Area Code 00 (New)
30 (Old) Pool Code 30 (New)

PERMIT TO CONDUCT WELL OPERATIONS

Supplementary Notice-Gas Storage

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

Ventura, California
November 21, 2009

Your proposal to **rework/redrill** well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Section **27**, T. **3N**, R. **16W**, **S.B.** B. & M., **Aliso Canyon** Field, **Sesnon** Pool, **Los Angeles**, County, dated **11/17/08**, received **11/19/08** has been examined in conjunction with records filed in this office.

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: **Class IIIB 5M** on the 8-5/8" casing.
2. Hole fluid of a quality and in sufficient quantity is used to control all subsurface condition in order to prevent blowouts.
3. No program changes are made without prior Division approval.
4. If well work operations have the potential to compromise casing integrity the Division must be notified.

Engineer: Steve Fields

Phone: (805) 654-4761

Hal Bopp
State Oil and Gas Supervisor

By
Bruce Hesson, 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 is completed or the operations have been suspended. Issuance of this permit does not preclude the recipient from the obligation of being in compliance with all applicable Federal, State and Local laws, regulations and ordinances.

OG 111

Redrill

P208-46

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

SUPPLEMENTARY NOTICE

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

A notice to the Division of Oil, Gas, and Geothermal Resources, dated 10/1/2008, stating the intention to

Rework (Drill, Rework, Abandon) well Fernando Fee 32A, API No. 037-21872,

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

should be amended because of changed conditions.

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

13-3/8", 54.5 lb/ft, K55, 0'- 990' (cmtd)
8-5/8", 36 lb/ft, K55, 0'-7294' (cmtd)
5-1/2", 20 lb/ft, K55, 7195'-7485' Wire-wrapped screen, gravel packed in 15" hole with 20-40 gravel

The 8-5/8" casing is perforated with four ½" holes from 7273'-75', 7272' WSO

The total depth is: 7486 feet. The effective depth is: 7486 feet.

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

Present zone pressure: Variable psi. Anticipated/existing new zone pressure: Variable psi.

We now propose: (A complete program is preferred and may be attached.)

The seal assembly could not be retreived from the packer at 7155'. During the course of attempting to retreive the seal assembly, we chemically cut the tubing at a depth of 7095'. We propose to set a retainer above the tubing stub/seal assembly and squeeze cement to abandon the Sesnon sand. We propose to set a whipstock on the retainer and redrill the well to a depth of approximately 7500'. (A complete program is attached).

If well is to be redrilled or deepened, show proposed coordinates (from surface location) and true vertical depth at total depth: 220 feet North (Direction) and 1560 feet West (Direction) Estimated true vertical depth: 7240'

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
9400 Oakdale Ave		Chatsworth	91313
Name of Person Filing Notice	Telephone Number:	Signature	Date
Dan Neville	818-700-3810		11/17/2008
Individual to contact for technical questions:	Telephone Number:	E-Mail Address:	
Dan Neville	818-700-3810	dneville@semprautilities.com	

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

OG123 (10/08)

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/**

WORKOVER PROGRAM

Operator: **Southern California Gas Company**

Field: **Aliso Canyon Storage Field**

Well: **Fernando Fee 32A**

Date: **November 10, 2008** (revised 11/17/08)

API: **037-21872**

Objective: **Remove 3-1/2" tubing and packer. Pull existing 5-1/2" wire-wrapped liner. Clean out and open hole to 12". Gravel pack and recomplete.**

Present Conditions:

Surface casing:
13-3/8", 54.5 lb/ft, K55, Linepipe
0' - 990'

Production casing:
8-5/8", 36 lb/ft, K55
0' – 3438'
8-5/8", 36 lb/ft, N80
3438' – 7309'

Tubing
3-1/2", 9.3 lb/ft, N80, 8rd
0' – 7177'

Note: The well is fitted with Baker Retrieva"D" packer and seals. Blast joints and open SSSV exist above the packer all of which have been in the well since 1978. (see well detail).

Well Kill:

Well kill procedure will use fluids which will provide 300 – 500 psi minimum overbalance at the top of the storage zone (S4). Remove instrumentation. Remove laterals and install companion flanges and valves for killing well.

1) Set two 500 barrel closed top tanks and fill with approximately 800 bbls 10.0 ppg NaCL / XC polymer workover fluid. Use approximately 2 lbs/barrel XC polymer to achieve 60 sec minimum viscosity. Move in pump with 100 bbl circulating tank, shaker and mixer.

2) Dead head 80 barrels of XC polymer workover fluid down tubing to provide required overbalance. Check wellhead pressure prior to pumping and calculate gradient using TVD=7052'. Wellhead pressure on 10/27/08 was 2747 psi. A 10.0 ppg workover fluid provides an overbalance of 435 psi.

3) Kill well per schedule: Maintain constant bottomhole pressure overbalance throughout kill. Vent gas through choke to withdrawal line.

Rig work:

1) Move in heavy work over rig capable of 300,000 lbs. Rig up with sub-base and rotary table. (3-1/2" drill pipe and handling equipment will be used.)

2) Set 2-7/8" LH Shaffer BPV. Remove Xmas tree and send to yard for refurbishment. Tubing wings and master valve to be replaced with new valves.

3) Install Class III B BOPE directly on 10' X 8"-5000psi flange. Fit BOPE with 2-7/8" pipe rams and CSO. BOPE must have connection and valve below the blind rams. Test BOPE system per SoCalGas job instruction. Test to 5000psi. Notify DOGGR to witness testing.

4) Install pup jt of 2-7/8" N-80 tubing in tubing hanger with safety valve in top. Note that well mechanics shows 3-1/2" tubing in well while the tubing hanger schematic shows 2-7/8" hanger. Unland and work RH torque in tubing to get rotation at packer. Rotate at packer while pulling 2000# over until free. Pull and lay down tubing and accessories.

5) If seals/latch cannot be released, chemically cut tubing above SSSV at approximately 7095' and pull and lay down all tubing and accessories. Pick up 3-1/2" drillpipe and wash over tubing stub. Latch onto fish and attempt to work free. If unsuccessful, make an attempt to run through the 3-1/2" tubing stub with 1-1/2" Hydril and lay a cement abandonemt plug across storage zone. If unable to work inside the tubing stub, contact DOGGR and obtain approval to set a retainer above the tubing stub. The retainer is to be set 2 ft above a collar and at least 40 ft above

the stub so that whipstock can be appropriately placed. Reatiner depth will be approximately 7040'. Squeeze cement through retainer for storage zone abandonment. Follow a modified program which involves setting a whipstock above fish, kicking off, and redrilling the storage zone.

6) Pick up retrieving tool for Baker Retreiva D packer. Run in well and attempt to recover packer. If unsuccessful, run 1-1/2" Hydril tubing thru the packer to lay a cement abandonment plug across the storage zone. Follow a modified program which involves setting a whipstock above packer, kicking off, and redrilling the storage zone.

7) Pick up casing cutter with 3-1/8" drill collars on 3-1/2" drill pipe and run in to top of liner. Make cut in blank below liner hanger. (Blank section is second joint from top of liner.

8) Pick up casing spear and run in to top of blank section of liner. Pull liner hanger, tattle tale joint of WWS, and top half of blank.

9) Run spear and engage blank and jar remaining 5 joints of WWS liner out of hole.

10) Run 8-5/8" – 36# positive scraper on 3-1/2" DP to casing shoe. Circulate and condition workover fluid for logging.

11) Run Schlumberger USIT log from casing shoe to surface or as directed by field engineer. Rig down loggers.

12) Make up 5-7/8" bit and clean out from 8-5/8" casing shoe (7287') to TD (7485'). Be prepared to add calcium carbonate sized particles in the event hole starts taking fluid.

13) Make up 12" hole opener and open hole from shoe to TD (7485'). Place high viscosity pill across open hole before pulling out. Change over to filtered clean 3% KCl at top of pill. Fluid to be filtered to 2 micron.

14) Rig up wireleine and run 4 arm caliper log in open hole section.

15) Run approximately 320' of 5-1/2", 0.012" shrouded WWS consisting of the following;

a. 8-5/8" Weatherford hydraulic set liner hanger/packer
b. 5-1/2", 17 lb/ft, LT&C, blank liner(1 joint)
c. 5-1/2", 17 lb/ft, LT&C, semi-perf liner (2 joints)
d. 5-1/2", 17 lb/ft, LT&C, WWS to be equipped with shroud and centralizers. (5 joints). Max O.D. is 6". Open top and bottom of shroud for flow-thru in the event of bridging.

e. 5-1/2" circulating shoe, double flapper.

16) Position liner from 7165' to 7485'. Set packer. Gravel pack with 20-40 Ottowa gravel and filtered 3% KCl water until packed off. Retain a sample of gravel to be sent to lab for sieve analysis.

17) Reverse out excess gravel. Wait 2 hours for pack to settle, bump down as possible. Restress pack. Repack if necessary.

18) Release from liner and pull out with gravel packing tools.

19) Run drive on adapter. Drop 4" Weatherford type steel ball.

20) Run in hole with 1-1/4" tubing tail to bottom of liner and place breaker across liner. Inhibit reaction time of breaker by 12 hours. Immediately pull out and run back in with packer.

21) Pick up 8-5/8" HES G-6 packer assembly as follows:
- a. 8-5/8" production HES G-6 packer at 6950'.
- b. 3-1/2" X 8' L-80 pup joint
- c. 3-1/2" HES LH release on/off tool with XN profile with PXN plug in place in profile.

22) Release from on/off tool and pull out laying down drillpipe.

23) Remove tubing head and seal flange. Replace seals and reenergize. Replace casing wing valves.

24) Run production tubing:
- a. Top half of the HES on/off tool
- b. 1 joint of 3-1/2" EUE 8R L-80 tubing
- c. 3-1/2" HES Durasleeve X profile - sliding sleeve (closed)
- d. 1 joint of 3-1/2" EUE 8R L-80 tubing
- e. 3-1/2" gas lift mandrel with dummy valve
- f. 3-1/2"" EUE 8R L-80 tubing to surface.

25) Latch on to on/off tool. Release and place packer fluid. Space out and land tubing hanger. Run in all hold down studs and test casing to 1500psi for 20 minutes. Test tubing to 1500psi for 10 minutes.Record tests on charts and file originals.

26) Install BPV. Remove BOPE and install tree. Test tree to 5000psi. Remove BPV. Move out workover rig. Clean location.

Modified Program (In the event seals or packer can not be retrieved)

1) Run 8-5/8" – 36# positive scraper on 3-1/2" DP to top of stub. Circulate and condition workover fluid for logging.

2) Run Schlumberger USIT log from top of stub to surface or as directed by field engineer. Rig down loggers.

3) Change hole over to 10 ppg clay base mud.

4) Set a wireline retainer on top of stub. Rig up cementers and pump/squeeze cement equal to casing and liner volume below the stub.

5) Run and set bottom trip whipstock in 8-5/8" casing on top of retainer. Orient whipstock for high ride side exit.

6) Mill window in the 8-5/8" casing using window mill assembly.

7) Drill a 7-5/8" hole from window exit (7040') to the top of the S4 at 7287'.

8) Run underreamer and open hole to 10" from 7040' to 7287'. Circulate hole clean and pump a high viscosity sweep to carry cuttings to surface.

9) Run 7", flush joint casing to 7287' with top at approximately 6860'. Total casing is 11 joints (440'). Casing assembly is as follows:

   a. FJ float shoe tack welded on bottom

   b. 1 Joint 7" FJ sand blasted

   c. Float collar

   d. Landing collar with latch

   e. 10 joints, 7", FJ casing (400')

   f. Running tools

9) Cement casing as per attached cementing program;

10) Pick up 7-5/8" bit with 8-5/8" scraper and clean out cement to top of cemented 7" liner top.

11) Pick up 6-1/8" bit and scraper and clean out cement to shoe of 7". Test casing to 1000 psi for 20 minutes.

12) Clean pits and change mud system over to 10 ppg NaCL XC polymer. Circulate out the clay base mud from the wellbore and replace with XC polymer.

13) Pick up 6-1/8" bit and drill out shoe to a depth of 7490'.

14) Open 6-1/8" hole to 12" from shoe of 7" casing to TD at 7490'. Open hole in 2 stages as recommended by hole opener contractor. Gauge

hole with hole opener. Place high viscosity pill across open hole before pulling out. Change over to clean filtered NaCl above pill.

15) Run 4 arm caliper log in open hole section.

16) Run approximately 320' of 4-1/2", 0.012" shrouded WWS consisting of the following;

a. 7" Weatherford hydraulic set liner hanger/packer.
b. 4-1/2", 17 lb/ft, LT&C, blank liner(1 joint)
c. 4-1/2", 17 lb/ft, LT&C, semi-perf liner (2 joints)
d. 4-1/2", 17 lb/ft, LT&C, WWS to be equipped with shroud and centralizers. (5 joints). Max O.D. is 6". Open top and bottom of shroud for flow-thru in the event of bridging.
e. 4-1/2" circulating shoe, double flapper.

17) Position liner from 7165' to 7485'. Set packer. Gravel pack with 20-40 Ottowa gravel and filtered 3% KCl water until packed off. Retain a sample of gravel to be sent to lab for sieve analysis.

18) Reverse out excess gravel. Wait 2 hours for pack to settle, bump down as possible. Restress pack. Repack if necessary.

19) Release from liner and pull out with gravel packing tools.

20) Run drive on adapter. Drop 4" Weatherford type steel ball.

21) Run in hole with 1-1/4" tubing tail to bottom of liner and place breaker across liner. Inhibit reaction time of breaker by 12 hours. Immediately pull out and run back in with packer.

22) Pick up 8-5/8" HES G-6 packer assembly as follows:

a. 8-5/8" production HES G-6 packer at 6950'.
b. 3-1/2" X 8' L-80 pup joint
c. 3-1/2" HES LH release on/off tool with XN profile with PXN plug in place in profile.

23) Release from on/off tool and pull out laying down drillpipe.

24) Remove tubing head and seal flange. Replace seals and reenergize. Replace casing wing valves.

25) Run production tubing:

a. Top half of the HES on/off tool
b. 1 joint of 3-1/2" EUE 8R L-80 tubing
c. 3-1/2" HES Durasleeve X profile - sliding sleeve (closed)
d. 1 joint of 3-1/2" EUE 8R L-80 tubing
e. 3-1/2" gas lift mandrel with dummy valve
f. 3-1/2"" EUE 8R L-80 tubing to surface.

26) Latch on to on/off tool. Release and place packer fluid. Space out and land tubing hanger. Run in all hold down studs and test casing to 1500psi for 20 minutes. Test tubing to 1500psi for 10 minutes.Record tests on charts and file originals.

27) Install BPV. Remove BOPE and install tree. Test tree to 5000psi. Remove BPV.

28) Rig down. Move out rig. Clean location.

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CHECK LIST-RECORDS RECEIVED AND WELL STATUS

OPERATOR **Southern Calif. Gas Co.** WELL DESIGNATIO **"Fernando Fee" 32-A**

API No. **03721872** SEC **27** , T. **3N** , R. **16W** , **SB** B. and M.

COUNTY: **Los Angeles** FIELD **Aliso Canyon**

Type of Notice: **Rework** **Date:** **10/1/2008** **Report Number:** **P208-332**

RECORDS RECEIVED (ATTACH PAGES IF REQUIRED)

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

NEW STATUS

Symbol: _____

DATE: _____

MAP: _____

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

RECORDS SCANNED: _____ (Date)

RECORDS APPROVED: _____ (Date and Engineer)

Modified OGD2

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

No. T 208-203

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

Report on Operations

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

Ventura, California
November 17, 2008

Your operations at well "Fernando Fee" 32-A **, API No.** 037-21872
Sec. 27 **, T.** 3N **, R.** 16W **,** SB **B. & M.**
Field in Aliso Canyon
Los Angeles **County,**
were witnessed on 11/5/2008 **by** W. Beil **, representative of the supervisor.**

Operations Witnessed	Result – Def.	Engineer	Date
BOPE Test	Approved – 0	W. Beil	11/5/2008

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

DECISION: Approved

tkc

By

Hal Bopp
State Oil and Gas Supervisor

Deputy Supervisor

OG109 Rev9/01 (9/89/GSR1/5M)

API No. 037-21872 DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES T 2S-2W

BLOWOUT PREVENTION EQUIPMENT MEMO

Operator So. Cal Gas Co. Well Fernando Fee 32A Sec. 27 T. 3N R. 16W
Field Aliso Cyn County Los Angeles Spud Date

VISITS:	Date	Engineer	Time	Operator's Rep.	Title
1st	11-05/08	W. Bell	(1500 to 1750)	Mike Volkmar	Consultant
2nd			(to)		

Contractor Key Energy Rig # 447 Contractor's Rep. & Title Jeff Mosier
Casing record of well:

OPERATION: Testing (inspecting) the blowout prevention equipment and installation. Critical well? Y ☐ N ☒
DECISION: The blowout prevention equipment and its installation on the 8 5/8 " casing are approved.

Proposed Well Opns: (REWORK) Retrieve liner - Gravel Pack MACP: psi
Hole size: " fr. ' to ', " to ' & " to ' **REQUIRED BOPE CLASS:** III B 5M

CASING RECORD OF BOPE ANCHOR STRING					Cement Details	Top of Cement	
Size	Weight(s)	Grade(s)	Shoe at	CP at		Casing	Annulus
8 5/8	36	K-55	7294				

BOP STACK							TEST DATA						
API Symb.	Ram Size (in.)	Manufacturer	Model or Type	Vert. Bore Size (in.)	Press. Rtg.	Date Last Overhaul	Gal. to Close	Recov. Time (Min.)	Calc. GPM Output	psi Drop to Close	Secs. to Close	Test Date	Test Press.
A	—	Hydril	GK	9"	5M							11/5/08	3500
RA	3 1/2	Shaffer	—	✓	✓							✓	5K
RA	CSO	✓	—	✓	✓							✓	✓

ACTUATING SYSTEM
Accumulator Unit(s) Working Pressure 3M psi
Total Rated Pump Output gpm
Distance from Well Bore 50' ft. Fluid Level 1/2

	Accum. Manufacturer	Capacity	Precharge
1	Shaffer	80 gal.	1560 psi
2		gal.	psi

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

EMERG. BACKUP SYSTEM			Press.	Wkg. Fluid
✓ N_2 Cylinders	1	L= "	2200	gal.
Other:	2	L= "	2300	gal.
	3	L= "	2600	gal.
	(4)	L= "	2300	gal.
	5	L= "		gal.
	6	L= "		gal.
	TOTAL:			ga

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

TOTAL:

AUXILIARY EQUIPMENT

	No.	Size (in.)	Rated Press.	Connections: Weld	Flange	Thread	Test Press.
Fill-up Line							
✓ Kill Line		2"	5M		✓		5M
✓ Control Valve(s)	2		✓				
✓ Check Valve(s)	1		✓				
— Aux. Pump Connect.			✓				
✓ Choke Line		3"	✓		✓		
✓ Control Valve(s)	6		✓				
✓ Pressure Gauge							
✓ Adjustable Choke(s)	2	2"					✓
— Bleed Line							
— Upper Kelly Cock							
— Lower Kelly Cock							
✓ Standpipe Valve							5M
Standpipe Press. Gau.							
✓ Pipe Safety Valve		3 1/2	5M				5M
— Internal Preventer		✓	✓				✓

Hole Fluid Type	Weight	Storage Pits (Type & Size)
Polymer XP	10#	450 bbls - baker TK

REMARKS AND DEFICIENCIES:

OGD9 (9/00)

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

No. P **208-332**

010 (Old) Field Code 010 (New)
00 (Old) Area Code 00 (New)
00 (Old) Pool Code 00 (New)

PERMIT TO CONDUCT WELL OPERATIONS

Gas Storage

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

Ventura, California
October 2, 2008

Your proposal to **rework** well **"Fernando Fee" 32-A**, A.P.I. No. **037-21872**, Section **27**, T. **3N**, R. **16W**, **S.B.** B. & M., **Aliso Canyon** Field, _____ Area, _____ and _____ Pools, **Ventura**, County, dated **10/01/08**, received **10/01/08** has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED THAT:

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: **Class III B 5M**
2. Drilling fluid of a quality and in sufficient quantity is used to control all subsurface condition in order to prevent blowouts.
3. An approved blowout prevention and control plan shall be available during the proposed operations.
4. This office shall be consulted before sidetracking the well or running any additional casing.
5. 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 tests.
6. This office shall be consulted before initiating any changes or additions to this proposed operation, or if operations are to be suspended.
7. **THIS DIVISION SHALL BE NOTIFIED:**
   a. To witness a pressure test of the blowout prevention equipment prior to retrieving the 8-5/8" packer. Prior to notifying the Division engineer to witness the test, the blind rams must be tested. Information on the blind rams test must be entered on the tour sheet along with the signature of the person is charge.

Note: In the event that a third party BOPE testing company is used then prior to notifying the Division engineer to witness the test, the blind rams and/or pipe rams or annular preventer must be tested. Information on these tests must be entered on the tour sheet along with the signature of the person is charge.

Hal Bopp
State Oil and Gas Supervisor

Engineer: Bruce H. Hesson

Phone: (805) 654-4761

By _____
Bruce Hesson, 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 is completed or the operations have been suspended. Issuance of this permit does not preclude the recipient from the obligation of being in compliance with all applicable Federal, State and Local laws, regulations and ordinances.

OG 111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
ISION OF OIL, GAS, AND GEOTHERMAL RESOU .S

NOTICE OF INTENTION TO REWORK / REDRILL WELL

P208-332

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

FOR DIVISION USE ONLY			
	Forms		EDP Well
Bond	OGD114 ✓	OGD121 ✓	File
10000 600	111 ✓	115 ✓	

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

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to

rework/ *(Circle one)* well Fernando Fee 32A API No 037-21872

Sec. 27 T. 3N R. 16W SBB.&M. Aliso Canyon Field

Los Angeles County.

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

13-3/8", 54.5 lb/ft, K55, 0'- 990' (cmtd)
8-5/8", 36 lb/ft, K55, 0'-7294' (cmtd)
5-1/2", 20 lb/ft, K55, 7195'-7485' Wire-wrapped screen, gravel packed in 15" hole with 20-40 gravel

The 8-5/8" casing is perforated with four ½" holes from 7273'-75', 7272' WSO

GS

2. The total depth is: 7486 feet. The effective depth is: 7486 feet.

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

4. Present zone pressure: Variable storage pressure psi. Anticipated/existing new zone pressure: Variable storage pressure psi.

5. Last produced: _____ *(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 X

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

1. Move-in / rig up kill well. Install Class III 5000 psi BOPE.
2. Pull 3-1/2" tubing and completion assembly.
3. Pick up 3-1/2" drill pipe and retrieve packer at 7155'.
4. Run USIT log from liner top (7195') to surface'.
5. Retrieve 5-1/2" liner.
6. Clean out hole to 7485'.
7. Open hole to 15" from 7294' to 7485'.
8. Run new 5-1/2" liner wws and gravel pack with 20-40 gravel. Lay down drill pipe.
9. Run 3-1/2" tubing, packer, and completion assembly.
10. Rig – down / move out.

OCT - 1 2008

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

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

Name of Operator	Telephone Number	
Southern California Gas Company	818 700 3810	
Address	City	Zip Code
9400 Oakdale Av	Chatsworth, Ca	91313
Name of Person Filing Notice	Signature	Date
Dan Neville		10/1/08

File In Duplicate

OG107 (7/97/GSR/5M)

C.E.Q.A. INFORMATION

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:_____

Lead Agency Contact Person:_____

Address:_____

_____

Phone:_____

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

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 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 State Oil and Gas Supervisor upon his or her own judgment or upon written request of an operator. The written request must contain justification for such an exception.

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.

OCT - 1 2008

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

REPORT ON PROPOSED CHANGE OF WELL DESIGNATION

Ventura, California

October 30, 1991

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

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

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

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

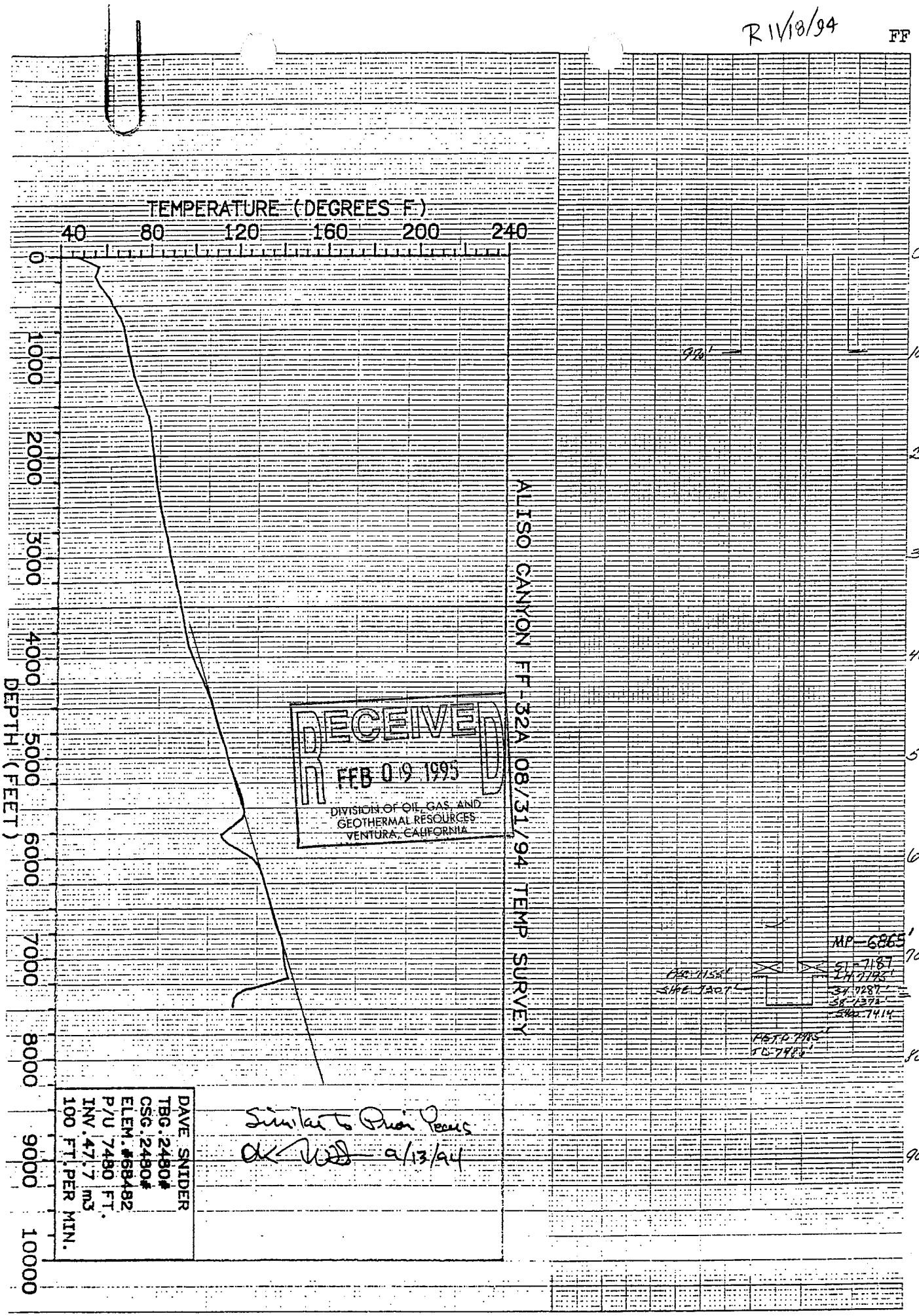
M. G. MEFFERD, State Oil and Gas Supervisor

By Patrick J. Kinnear
Deputy Supervisor
PATRICK J. KINNEAR

OGD157 (10/85/DWRR/1M)

R 11/18/94

FF 32A



4-25-24

OPERATOR So Calif Gas Co
LSE & NO SFZU FF3-A
MAP 254

	(1)		( )		( )		( )		( )		( )	
TENTION	Drill											
ICE DATED	5-25-78											
EPORT NUMBER	278-144											
CKED BY/DATE												
LETTER DATED	6-10-78											
BOL												
	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED	REC'D	NEED
ICE	6-2-78											
TORY	10-25-79											
MARY	10-25-79											
/ELECTRIC LOG	IND 11-1-78 8-18-78											
ECTIONAL SURV	9-29-78											
E/SWS DESCRIP												
CALIPER LOG	8-31-78 9-1-78 9-11-78 9-14-78 11-1-78											
ER photo Comp. Prod												
ORDS COMPLETE	JC											

ENGINEERING CHECK

EPORTS
ERATOR'S NAME
L DESIGNATION
& ELEV
NATURE
FACE INSPECTION
AL LETTER OK

CLERICAL CHECK

POSTED TO 121 170 MAILED FINAL LETTER MAILED
RELEASED BOND

ARKS: not being used - 1979

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
OCT 25 1979
SANTA PAULA, CALIFORNIA

WELL SUMMARY REPORT

SUBMIT IN DUPLICATE

Operator Southern California Gas Co., Well No. Fernando Fee #32-A, API No. 037-21872,

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

Location From Station #84, 1518' Southerly and 1830' Easterly at right angles.
(Give surface location from property or section corner, or street center line and/or lambert coordinates)

Elevation of ground above sea level 1995 feet.

All depth measurements taken from top of Kelly Bushing which is 18.90 feet above ground.
(Derrick Floor, Rotary Table or Kelly Bushing)

In compliance with Sec. 3215, Division 3 of the Public Resources Code, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date November 29, 1978

Signed P.S. Magruder, Jr.

D.S. Smiley
(Engineer or Geologist)

Title Agent

Commenced drilling July 6, 1978

Completed drilling September 13, 1978

Total depth (1st hole) 7486' (2nd) - (3rd) -

Present effective depth 7486'

Junk None

GEOLOGICAL MARKERS	DEPTH
S_4	7310'

Formation and age at total depth Miocene

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

Name of producing zone Sesnon

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

CASING RECORD (Present Hole)

Size of Casing (A. P. I.)	Depth of Shoe	Top of Casing	Weight of Casing	Grade and Type of Casing	New or Second Hand	Size of Hole Drilled	Numbers of Sacks or Cubic Feet of Cement	Depth of Cementing if through perforations
13-3/8"	990'	Surface	54.5#	K-55 Buttress	New	17-1/2"	1000 cu.ft.	
8-5/8"	7294'	"	36#	K-55 LT&C N-80 B	"	12-1/4"	1260 cu.ft.	
5-1/2"	7485'	7195'	20#	K-55 LT&C	"	15" Gravel packed		

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

5-1/2" 20# K-55 LT&C 7485'-7272' 10 mesh wire wrapped.
8-5/8" Jet perforated four ½" HPF 7273'-75' cp'd; 7272' WSO

Was the well directionally drilled? Yes If yes, show coordinates at total depth 202'N & 1548'W

Electrical log depths 7294', 7486' Other surveys Compensated Density & Neutron & Cement Bond Log Caliper Log

ATTACH ONE COPY OF EACH LOG AND SURVEY

OG 100

SUBMIT IN DUPLICATE

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

History of Oil or Gas Well

DIVISION OF OIL AND GAS
RECEIVED
OCT 25 1979
SANTA PAULA, CALIFORNIA

Operator SOUTHERN CALIFORNIA GAS COMPANY Field or County ALISO CANYON
Well FERNANDO FEE #32-A, Sec. 27, T 3N, R 16W, S.B.B. & M.
A.P.I. No. 037-21872 Name P.S. Magruder, Jr. (Person submitting report) Title Agent (President, Secretary or Agent)
Date November 29, 1978.

Signature P.S. Magruder, Jr.

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

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

Date	
1978	
6-27 thru 7-5	Moved Kenai-Camrich Rig #23 from Santa Maria (Contractor's yard) to the wellsite. Rigging up.
7-6	Finished rigging up. Spudded in at 4:00 P.M. All measurements taken from Kelly Bushing 18.90' above ground level. Drilled rat hole and mouse hole. Mud wt. 65#, vis. 53 sec.
7-7	1st Day. Drilled 17-1/2" hole from 70' to 410' with bit #1.
7-8	2nd Day. Drilled 17-1/2" hole from 410' to 471' with bit #1 and to 657' with bit #2. Mud wt. 69#, vis. 53 sec.
7-9	3rd Day. Drilled 17-1/2" hole from 657' to 812' with bit #2. Mud wt. 69#, vis. 40 sec.
7-10	4th Day. Drilled 17-1/2" hole from 812' to 902' with bit #3. Mud wt. 69#, vis. 40 sec.
7-11	5th Day. Drilled 17-1/2" hole from 902' to 990' with bit #4. Rigged up and ran 13-3/8" 54.5# K-55 Buttress casing and cemented at 990' with 762 cu.ft. of gel cement and last 200 cu.ft. of Class "G" Neat cement. Good cement returns. Cement in place at 8:50 P.M.
7-12	6th Day. Landed 13-3/8" casing. Welded 13-5/8" 5000 psi SOW casing head and tested weld with 2000 psi - X-rayed weld - O.K. Installed Class III 5000 psi B.O.P.E.
7-13	7th Day. Rigged up and pressured up to 1100 psi on 13-3/8" casing. Found fluid leak through 13-3/8" shoe. Braden-head squeezed shoe with 202 cu.ft. of Class "G" Neat cement mixed with 3% calcium chloride under 800 psi final pressure. Cement displaced at 4:45 P.M. Tested blind rams and pipe rams with 2700 psi water pressure.

1978

Daily Well Report for FERNANDO FEE #32-A

7-14 8th Day. Tested G.K. Hydril with water to 2700 psi. Tested blow down manifold with nitrogen at 3000 psi. Tested pipe rams, blind rams and Hydril bag to 2700 psi with nitrogen; witnessed by D.O.G. Drilled cement from 975' to 990' (shoe). Drilled 12-1/4" hole from 990' to 1030' with bit #5 and to 1106' with 12-1/4" bit #6.

7-15 9th Day. Drilled 12-1/4" hole from 1106' to 1531 with bit #7.

Mud wt. 67#, vis. 37 sec.

7-16 10th Day. Drilled 12-1/4" hole from 1531' to 1944' with bit #7 and to 2059' with 12-1/4" bit #8.

Mud wt. 68#, vis. 40 sec.

7-17 11th Day. Drilled 12-1/4" hole from 2059' to 2691' with bit #8.

Mud wt. 68#, vis. 35 sec., sand 1/2 %, w.l. 10 cc., solids 5%.

7-18 12th Day. Drilled 12-1/4" hole from 2691' to 2699' with bit #8 and to 3198' with 12-1/4" bit #9.

Mud wt. 69#, vis. 34 sec., w.l. 10 cc., sand 1/2 %, solids 5%.

7-19 13th Day. Drilled 12-1/4" hole from 3198' to 3397' with bit #10. Pulled out and made up Dyna-Drill #1. Ran in hole, plugged bit and Dyna-Drill. Pulled out and picked up Dyna-Drill #2 and 12-1/4" bit #11.

Mud wt. 68.5#, vis. 34 sec., w.l. 6.0 cc., sant 1/2 %, solids 4%.

7-20 14th Day. Finished running in hole with Dyna-Drill #2. Circulated and oriented Dyna-Drill. Dyna-Drilled 12-1/4" hole from 3397' to 3440'. Survey at 3430' - did not check with previous survey. Ran multi-shot survey with Eastman instrument. Pulled out of hole. Ran in hole with 12-1/4" bit #12 on Dyna-Drill #3. Oriented tool. Dyna-Drilled 12-1/4" hole from 3440' to 3445'.

Mud wt. 67#, vis. 35 sec., w.l. 5.6 cc., sand 1/4 %, solids 4%.

7-21 15th Day. Dyna-Drilled 12-1/4" hole from 3445 to 3529' with bit #12 and to 3593' with 12-1/4" bit #13.

Mud wt. 68#, vis. 35 sec., w.l. 5.9 cc., sand 1/2 %, solids 5%.

7-22 16th Day. Dyna-Drilled 12-1/4" hole from 3620' to 3655' with bit #14. Pulled out of hole. Made up drilling set-up. Ran 12-1/4" bit #15 and reamed from 3396' to 3655'.

Mud wt. 68#, vis. 35 sec., w.l. 6.0 cc., sand 1/2 %, solids 5%.

1978 Daily Well Report for FERNANDO FEE #32-A

7-23 17th Day. Directionally drilled 12-1/4" hole from 3655' to 4043' with bit #15.

Mud wt. 69#, vis. 36 sec., w.l. 5.8 cc., sand 3/4 %, solids 6%.

7-24 18th Day. Directionally drilled from 4043' to 4341' with 12-1/4" bit #16.

Mud wt. 70#, vis. 38 sec., 5.9 cc., sand 1%, solids 7%.

7-25 19th Day. Ran 12-1/4" bit #17. Reamed from 4241' to 4341'. Directionally drilled 12-1/4" hole from 4341' to 4514'. Pulled out of hole. Ran 12-1/4" bit #18 on Dyna-Drill #4.

Mud wt. 70#, vis. 40 sec., w.l. 5.9 cc., sand 1%, solids 7%.

7-26 20th Day. Rigged up Scientific Drilling Controls "eye tool". Dyna drilled from 4514' to 4529'. Tools became stuck in hole. Pulled "eye tool" out of hole and spotted 100 barrels of lease crude oil around Dyna-Drill and drill collars. Soaked fish for five (5) hours. Displaced oil from drill pipe. Ran McCullough "spring-tector" with negative results. Ran McCullough string shot and backed off leaving 122' of fish in hole.

7-27 21st Day. Ran screw-in sub on bumper sub, jars and six 7" drill collars. Engaged top of fish at 4407'. Screwed into fish, tripped jars twice and pulled out of hole recovering entire fish in good condition. Ran 12-1/4" bit #RR18 on drilling assembly.

Mud wt. 68#, vis. 36 sec., w.l. 5.2 cc., sand 1/4 of 1 %, solids 4%, oil 5%.

7-28 22nd Day. Directionally drilled 12-1/4" hole from 4529' to 4554' and pulled out of hole. Ran Reed 12-1/4" bit #19 on Dyna-Drill #5. Dyna-Drilled from 4554' to 4614' guided by Scientific Drilling Controls "eye tool". Pulled "eye tool" from well and prepared for trip.

Mud wt. 67#, vis. 37 sec., w.l. 5.4 cc., sand 1/4 of 1%, solids 4%, oil 4%.

7-29 23rd Day. Pulled out of hole. Ran 12-1/4" bit #20 on Dyna-Drill #6. Dyna-Drilled from 4614' to 4680' and pulled out of hole.

Mud wt. 67#, vis. 36 sec., w.l. 5.8 cc., sand trace, solids 4%, oil 3%.

7-30 24th Day. Changed bit and kick sub. Ran 12-1/4" bit #21 on Dyna-Drill #7. Dyna-Drilled from 4680' to 4738'. Pulled out of hole. Made up drilling assembly.

Mud wt. 67#, vis. 36 sec., w.l. 5.8 cc., sand trace, solids 4%, oil 3%.

7-31 25th Day. Ran 12-1/4"bit #22 and reamed from 4645' to 4738'. Directionally drilled 12-1/4" hole from 4738' to 5314'.

Mud wt. 69#, vis. 42 sec., w.l. 5.6 cc., sand 1/4 %, solids 5%, oil 2%.

1978 Daily Well Report for FERNANDO FEE #32-A

8-1 26th Day. Directionally drilled 12-1/4" hole from 5314' to 5386' with bit #23 and to 5591' with 12-1/4" bit #24.

Mud wt. 70#, vis. 45 sec., w.l. 5.4 cc., sand 1/2 %, solids 6%, oil 2%.

8-2 Directionally drilled 12-1/4" hole from 5591' to 5789' with bit #24 and to 5928' with 12-1/4" bit #25.

Mud wt. 70#, vis. 43 sec., w.l. 5.6 cc., sand 1/2 %, solids 6%, oil 1%.

8-3 28th Day. Directionally drilled 12-1/4" hole from 5928' to 6227' with bit #25.

Mud wt. 72.5#, vis. 44 sec., w.l. 5.5 cc., sand trace, solids 6%.

8-4 29th Day. Directionally drilled 12-1/4" hole from 6227' to 6736' with bit #26. Drill string parted. Top of fish at 6694'.

Mud wt. 75#, vis. 42 sec., w.l. 5.7 cc., sand 1/2 %, solids 8%.

8-5 30th Day. Ran in hole with 9-3/8" Bowen overshot. Worked over top of fish at 6695'. Pulled out of hole. Recovered entire fish. Made up 12-1/4" bit #27 and drilling set-up. Ran in hole.

Mud wt. 75#, vis. 40 sec., w.l. 5.4 cc., sand 1/2 %, solids 8%.

8-6 31st Day. Directionally drilled 12-1/4" hole from 6736' to 7087' with bit #27.

Mud wt. 80#, vis. 48 sec., w.l. 5.2 cc., sand 1/4 %, solids 11%.

8-7 32nd Day. Directionally drilled 12-1/4" hole from 7087' to 7270' with bit #28. Gas cut mud weight from 79#/cu.ft. back to 63#/cu.ft. Circulating and conditioning gas cut mud. Pulled out of hole and made up Christensen 9-7/8" core barrel.

Mud wt. 80#, vis. 41 sec., w.l. 5.2 cc., sand trace, solids 11%.

8-8 33rd Day. Cored (Core #1) with 9-7/8" Christensen corehead from 7270'. Cut 21' and recovered 12' - all shale.

Mud wt. 79#, w.l. 5.8 cc., sand trace, solids 12%.

8-9 34th Day. Core #2 cored from 7291' to 7307'. Cut and recovered 16'. Ran 12-1/4" RR bit. Opened 9-7/8" hole to 12-1/4" from 7270' to 7307'. Wiped hole 10 stands. Circulated bottoms up. Pulled out of hole.

Mud wt. 80#, vis. 44 sec., w.l. 5.8 cc., solids 12%, sand trace.

8-10 35th Day. Ran Dresser Atlas Induction and Caliper Log which stopped at 3555'. Made up 12-1/4" rerun bit and ran in to bottom at 7307'. Circulated hole clean. Pulled out of hole and reran Log which stopped at 3680'. Made up 12-1/4" bit. Ran in and reamed from 3450' to 3700'. Ran in to bottom at 7307'.

Mud wt. 80#, vis. 45 sec., w.l. 5.9 cc., solids 12%, sand trace.

1978 Daily Well Report for FERNANDO FEE #32-A - Aliso Canyon

8-11 36th Day. Pulled out of hole. Ran Dresser Atlas Induction and Caliper Log and recorded from 7294' to 900'. Ran 12-1/4" bit to 7307'. Circulated hole clean for casing. Pulled out of hole.

Mud wt. 80#, vis. 45 sec., w.l. 5.9 cc., solids 12%, sand trace.

8-12 37th Day. Ran 178 joints of 8-5/8" casing - total on hook of 7309.27'. Cemented casing with total of 1260 cu.ft. of slurry volume. Used top and bottom rubber plugs. Bumped plug with 1000 psi. Cement in place at 8:30 P.M.

8-13 38th Day. Landed 8-5/8" casing with 260,000# in slips. Cut off 8-5/8" casing. Installed Shafco 13-5/8" 5000# x 10" 5000# double-studded seal flange, 10" 5000# x 8" 5000# Shafco tubing head. Tested seals with 3500 psi. Installed B.O.P.E.

8-14 39th Day. Tested B.O.P.E. as follows:

Blind Rams with water and nitrogen to 4000 psi
Pipe Rams with water and nitrogen to 4000 psi
Hydril Bag with water and nitrogen to 3000 psi

All above tests held for 20 minutes. Made up 7-5/8" bit and 8-5/8" casing scraper. Ran in well to 7000' and circulated.

Mud wt. 79#, vis. 42 sec., w.l. 5.6 cc., solids 12%.

8-15 40th Day. Drilled out float collar at 7184'. Drilled out cement to 7291'. Ran Cement Bond and Neutron Logs. Shot four 1/2" holes at 7275' (Electric Log Depth). Casing at 7294' (E-Log).

8-16 41st Day. Pressure tested four 1/2" holes at 7275' - holes broke down at 14 cu.ft. per minute with 2200 psi. With 4-1/2" open-end drill pipe hung at 7259', mixed and equalized 57 cu.ft. of Class "G" Neat cement mixed with 3% calcium chloride. Braden head squeezed away 40 cu.ft. at 2900 psi. Drilled out cement from 7150' to 7275'. Cleaned out to 7291'.

Mud wt. 76#, vis. 40 sec., w.l. 6.6cc., solids 12%.

8-17 42nd Day. Pressure tested holes at 7275'. Holes broke down at 2600 psi 6 cu.ft. per minute at 2000 psi. Ran in well, hung drill pipe at 7259'. Equalized 58 cu.ft. of Class "G" Neat cement. Braden head squeezed 25 cu.ft. out holes at 2900 psi. Cement in place at 8:30 P.M. Ran in hole and drilled out soft cement from 7160' to 7275'. Pulled out of well. Closed rams and pressure tested casing. Holes broke down at 2500 psi 11 cu.ft. per minute at 2000 psi.

Mud wt. 74#, vis. 40 sec., w.l. 10.2 cc., solids 12%.

8-18 43rd Day. Equalized 86 cu.ft. of Class "G" Neat cement premixed with 0.75% CFR-2. Braden head squeezed 76 cu.ft. cement out of holes at 7275' at 1750 psi. Cement in place at 4:25 A.M. Pulled out of well. Ran bit and casing scraper. Drilled out cement from 7218' to 7275'. Cleaned out to 7291'. Tested 8-5/8" casing with 3000 psi for 20 minutes - O.K.

1978

Daily Well Report for FERNANDO FEE #32-A - Aliso Canyon

8-19 44th Day. Shot four 1/2" holes at 7274'. Pressure tested casing. Holes broke down at 2900 psi 5.4 cu.ft. per minute. Ran in well with open-end drill pipe which was hung at 7259'. Equalized 58 cu.ft. of Class "G" Neat cement premixed with 0.75% CFR-2. Braden head squeezed 50 cu.ft. out of holes at 7274'. Left 8 cu.ft. in casing. Cement in place at 6:50 A.M. Pulled out of well. Made up 7-5/8" bit and 8-5/8" casing scraper. Ran in well and drilled cement from 7218' to 7275'. Pulled out of well. At 9:00 P.M. pressure tested casing with 3000 psi for 20 minutes - O.K.

8-20 45th Day. Shot four 1/2" holes at 7273'. Pressure tested casing. Holes broke down at 3000 psi, no rate. Pressure dropped 250 psi in 5 minutes. Ran in well with open-end drill pipe which was hung at 7259'. Equalized 58 cu.ft. of Class "G" cement premixed with 0.75% CFR-2. Braden head squeezed 19 cu.ft. of cement out of holes at 7273'. Left 39 cu.ft. in casing. Pulled out of hole. Made up 7-5/8" bit and casing scraper. Ran in hole. Drilled out cement from 7107' to 7274'. At 9:00 P.M. pressure tested 8-5/8" casing with 3000 psi for 20 minutes - O.K.

8-21 46th Day. Shot four 1/2" holes at 7272'. Pressure tested holes with 3000 psi for 20 minute test. Ran Lynes WSO tools and set packer at 7222' with tail to 7241'. Opened tool at 8:27 A.M. Closed tool at 9:27 A.M. Had faint blow for four minutes then dead remainder of one hour test. Recovered 15' net rise of normal drilling fluid. IH 3840-IF 50 - FF 50 - FH 3840. Test witnessed by D.O.G. Ran 7-5/8" bit.

Mud wt. 80#, vis. 39 sec., w.l. 7.4 cc., solids 13%, sand trace.

8-22 47th Day. Drilled from 7300' to 7307'. Pulled out of hole. Ran in with 5-3/4" x 3-1/2" x 30' plastic core barrel and 7-5/8" core head. Cored from 7307' to 7326' (recovered 19').

Mud wt. 81#, vis. 37 sec., solids 13%, sand trace.

8-23 48th Day. #2 - Cored from 7326' to 7330' (4' recovery), #3 - cored from 7330' to 7360' (30' recovery), #4 - cored from 7360' to 7390' (29' recovery).

Mud wt. 81#, vis. 41 sec., w.l. 6.2 cc., solids 13%.

8-24 49th Day. #5 - Cored from 7390' to 7420' (recovered 29'), #6 - cored from 7420' to 7450' (recovered 30').

Mud wt. 81#, w.l. 6.2 cc., solids 12%, sand trace.

8-25 50th Day. Core #7 - Cored from 7450' to 7468' (18' recovery), core #8 - cored from 7468' to 7486' (18' recovery). Laid down core barrel and ran 7-5/8" bit.

Mud wt. 80#, vis. 40 sec., solids 12%, sand trace.

8-26 51st Day. Cleaned out from 7307' to 7486'. Pulled out of hole. Ran Induction Electric Log from 7480' to 7292'. Ran Compensated Density Log with Neutron from 7475' to 7295'.

8-27 52nd Day. Circulated clay water drilling fluid out of well with 81#/ cu.ft. brine-polymer completion fluid at 7486'.

1978 Daily Well Report for FERNANDO FEE #32-A - Aliso Canyon

8-28 53rd Day. Ran O.M.T. 7-5/8" x 15" hole opener, opened 7-5/8" hole to 15" from 7304' to 7362'. Hole opener #2 reamed from 7307' to 7333'.

Mud wt. 79#, vis. 40 sec., w.l. 6.5 cc., solids 9%.

8-29 54th Day. Opened 7-5/8" hole to 15" with hole opener #2 from 7337' to 7362' and with hole opener #3 from 7362' to 7374' and with hole opener #4 from 7374' to 7384'.

Mud wt. 79#, vis. 42 sec., w.l. 7.5 cc., solids 9%.

8-30 55th Day. Opened 7-5/8" hole to 15" with hole opener #5 from 7388' to 7410', and with hole opener #6 from 7410' to 7440'.

Mud wt. 79#, vis. 42 sec., w.l. 7.6 cc., solids 9%.

8-31 56th Day. Opened 7-5/8" hole to 15" with hole opener #7 from 7440' to 7454' and with hole opener #8 from 7454' to 7460'. Ran 7-5/8" rerun bit #30. Cleaned out 7-5/8" hole from 7460' to 7486'.

Mud wt. 79#, vis. 43 sec., w.l. 7.8 cc., solids 9%.

9-1 57th Day. Opened 7-5/8" hole to 15" with hole opener #9 from 7460' to 7472' and with hole opener #10 from 7472' to 7485'.

Mud wt. 80#, vis. 41 sec., w.l. 8.6 cc., solids 9%.

9-2 58th Day. Re-reamed 15" hole with hole opener #11 from 7307' to 7485'. Ran Dresser Atlas Caliper Log. (Log showed started opening hole 30' below shoe). Ran hole opener #11. Opened 7-5/8" hole to 15" from 7296' to 7313'.

Mud wt. 80#, vis. 42 sec., w.l. 8.8 cc., solids 9%.

9-3 59th Day. Opened 7-5/8" hole to 15" with hole opener #12 from 7313' to 7326'. Pulled up and reamed from shoe at 7296' to 7326'. Ran Dresser Atlas Caliper Log from 7485' to 7296'. Re-ran 7-5/8" bit. Cleaned out to 7485'.

9-4 60th Day. Changed over to 80# clean polymer fluid. Ran seven joints of 5-1/2", 20#, K-55, LT&C, 10-mesh wire-wrapped liner (total measurement 290.72'). Bottom of liner at 7485'. Port collar at 7198'. Top of liner hanger at 7195'. Tested lead seal with 1000 psi - O.K.

Mud wt. 80#, vis. 44 sec., w.l. 10.4 cc., solids 4%.

9-5 61st Day. Gravel packed 5-1/2" Liner with total of 195 sacks of 20-40 gravel. Washed liner from 7483' up to 7284'.

Mud wt. 80#, vis. 41 sec., w.l. 9.9 cc., solids 4%.

9-6 62nd Day. Pulled liner washer. Ran gravel packing tool. Opened port collar at 7298'. Circulated and attempted to repack liner.

1978

Daily Well Report for FERNANDO FEE #32-A - Aliso Canyon

Pressured up to 1000 psi. Closed ports. Ran Dresser Atlas Photon log from 7485' up to 7195' - top of liner. Ran liner washing tool. Washed liner from 7200' to 7484'.

Mud wt. 80#, vis. 45 sec., w.l. 10.4 cc., solids 4%.

9-7 63rd Day. Washed liner from 7484' up to 7200'. Pulled liner washer and ran gravel packing tool. Opened ports at 7198'. Gravel packed with 29 sacks of 20-40 gravel with 350 psi. Closed port collar and tested tool with 1000 psi. Backscuttled out - no gravel. Opened ports. Circulated with 350 psi. Gravel packed with 70 sacks. Got gravel returns over shaker. Closed ports. Tested with 1000 psi. Backscuttled out 35 sacks of gravel.

9-8 64th Day. Pulled out of well. Ran Dresser Atlas Photon Log and recorded from 7417' up to 7195'. Retested lead seal with 900 psi, O.K.

Mud wt. 80#, vis. 44 sec., w.l. 10.4 cc., solids 4%.

9-9 65th Day. Ran in with 330' of 2-3/8" stinger on 4-1/2" drill pipe. Cleaned out sand bridges from 7417' to 7420' and from 7450' to 7452'. Ran in to bottom of 5-1/2" liner at 7485'. Circulated liner clean. Pulled out. Laid down drill pipe.

10 66th Day. Changed to 3-1/2" pipe rams in B.O.P.E. picked up 3-1/2" tubing.

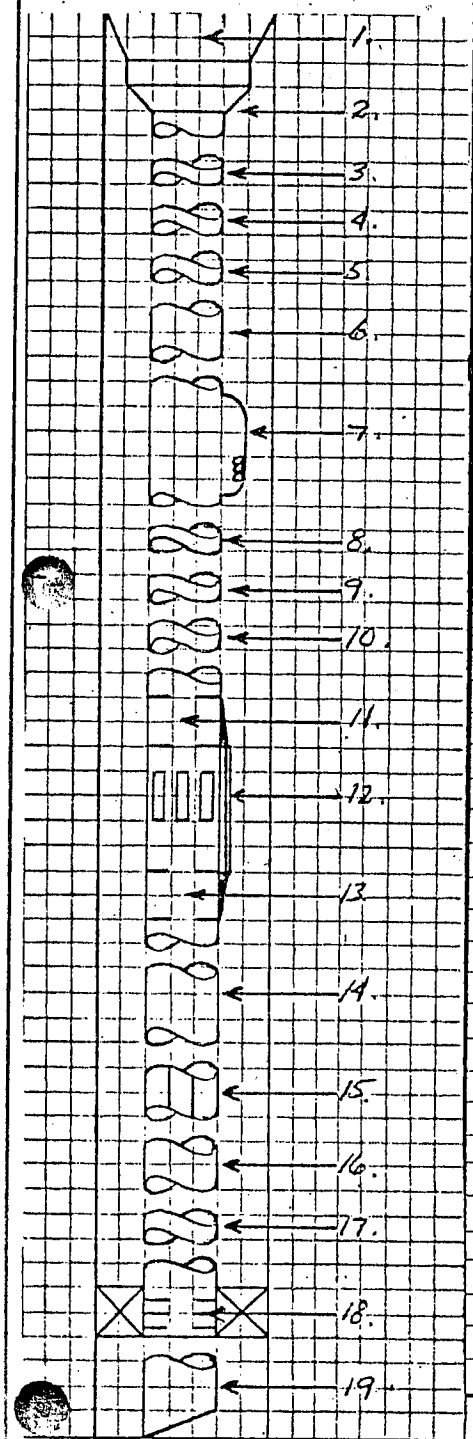
9-11 67th Day. Rigged up. Set Baker "Retrieva-"D" packer at 7155'. Made up Baker seals. Ran in well and stabbed into packer. Tested with 2000 psi for 20 minutes - O.K.

9-12 68th Day. Ran 3-1/2" tubing - hydrotesting to 5000 psi. Stabbed into packer at 7164'. Spaced out tubing string. Landed tubing with 20,000# on packer. Removed B.O.P.E. Installed Xmas tree. Tested tree with 5000 psi for 1 hour 10 minutes.

9-13 69th Day. Changed over to lease water. Installed blank flanges on wellhead and Xmas tree. Checked wellhead valves closed and tightened all wellhead bolts. RIG RELEASED at 4:00 P.M. on September 13, 1978.

pw

WELL PROFILE



OPERATOR: SOUTHERN CALIFORNIA GAS COMPANY

WELL #: FERNANDO FEE #32-A

FIELD: Aliso Canyon

COUNTY: Los Angeles

STATE: California

DATE: September 12, 1978

☒ NEW COMPLETION ☐ WORKOVER

DIVISION OF OIL AND GAS
RECEIVED
OCT 25 1979
SANTA PAULA, CALIFORNIA

	CASING	LINER	TUBING 1	TUBING 2	TUBING 3
SIZE					
WEIGHT					
GRADE					
THREAD					
DEPTH					

ITEM NO.	TUBING DETAILS	LENGTH	DEPTH
1.	Kelly Bushing	18.90	18.90
2.	Tubing Hanger	.40	19.30
3.	Pup Joint 3 1/2" N-80 EUE 8rd	1.10	20.40
4.	Pup Joint 3 1/2" N-80 EUE 8rd	5.61	26.01
5.	Pup Joint 3 1/2" N-80 EUE 8rd	10.10	36.11
6.	229 Joints 3 1/2" 8rd EUE Tubing	7036.64	7072.75
7.	Camco KBUG Mandrel w/DCK-2T valve in pocket	6.38	7079.13
8.	Pup Joint 3 1/2" 8rd EUE N-80	1.78	7080.91
9.	1 Joint 3 1/2" 8rd EUE Tubing	31.84	7112.75
10.	Pup Joint 3 1/2" 8rd EUE N-80	4.14	7116.89
11.	DS-1 NO-GO Nipple 2.813" I.D. - ran empty	-	-
12.	Camco SC-1 Annular Flow Safety System	15.56	7132.45
13.	WP-1 Selective Nipple 2.813" I.D.-ran empty	-	-
14.	20' Blast Joint 3 1/2" 8rd EUE - 2.875" I.D.	20.28	7152.73
15.	"D" NO-GO Nipple - 3.865" I.D. 2.250" O.D.	1.10	7153.83
	Baker Packer set by wireline measurement at.....		7155.00±
16.	10' Blast Joint 3 1/2" 8rd EUE - 2.875" I.D.	9.81	7163.64
17.	Baker Locator Sub	.40	7164.04
18.	Baker Seal Assembly	7.75	7171.79
19.	Baker Production Tube	5.23	7177.02

- NOTES -

Stabbed seals into packer. Pulled 25,000# over tubing weight to check latch-in....O.K. Camco safety valve and GS pack-off to be run after completion of well. Notify Camco in Ventura for further information.

COMMENTS:

SOUTHERN CALIF. GAS CO.-- FERNANDO FEE 32A --EASTMAN MULTI & SINGLE SHOT
FERNANDO FEE LEASE, CA.

SEC BEARING: N8330W
DECL: 16.0E
DATE: JULY-AUGUST 1978
JOB NO: P-0778-S0968
SURVEY BY: EASTMAN WHIPSTOCK INC.
FURR-HANDLY
FILE: 132-2

PLANE OF PROPOSED DIRECTION IS N 83 DEG. 30 MIN. W

RECORD OF SURVEY

ANGLE AVERAGING METHOD

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	TRUE VERTICAL DEPTH FEET	VERTICAL SECTION FEET	RECTANGULAR COORDINATES FEET		DOG LEG SEVERITY DEG/100FT
0.	0 0	0	0.00	0.00	0.00	0.00	0.0
100.	0 45	N 53 W	100.00	0.56	0.39 N	0.52 W	0.8
200.	1 15	S 62 W	199.98	2.31	0.53 N	2.26 W	1.2
300.	1 45	S 72 W	299.95	4.59	0.49 S	4.67 W	0.6
400.	2 15	S 64 W	399.89	7.65	1.80 S	7.91 W	0.6
471.	2 45	S 60 W	470.82	10.21	3.25 S	10.64 W	0.7
500.	2 45	S 67 W	499.79	11.37	3.87 S	11.89 W	1.2
591.	3 15	S 48 W	590.66	15.07	6.43 S	15.90 W	1.2
682.	3 0	S 66 W	681.53	18.90	9.13 S	20.06 W	1.1
718.	3 0	S 69 W	717.48	20.55	9.86 S	21.81 W	0.4
751.	3 15	S 75 W	750.43	22.19	10.41 S	23.52 W	1.2
781.	2 45	S 78 W	780.39	23.66	10.78 S	25.04 W	1.7
812.	3 0	S 85 W	811.35	25.16	11.01 S	26.58 W	1.4
873.	3 30	S 88 W	872.25	28.57	11.22 S	30.03 W	0.9
903.	3 0	S 85 W	902.20	30.24	11.32 S	31.73 W	1.8
964.	4 0	N 75 W	963.09	33.97	11.00 S	35.44 W	2.6
1044.	4 15	N 78 W	1042.88	39.68	9.66 S	41.04 W	0.4
1088.	4 0	N 82 W	1086.77	42.84	9.11 S	44.15 W	0.9
1180.	4 0	N 85 W	1178.54	49.26	8.38 S	50.53 W	0.2
1273.	4 15	N 81 W	1271.30	55.95	7.56 S	57.17 W	0.4
1366.	4 30	N 84 W	1364.03	63.04	6.64 S	64.20 W	0.4
1459.	4 0	N 89 W	1456.77	69.92	6.22 S	71.08 W	0.7
1551.	5 0	S 84 W	1548.49	77.05	6.53 S	78.29 W	1.2
1644.	5 0	S 78 W	1641.14	84.86	7.80 S	86.30 W	0.6
1737.	5 30	S 83 W	1733.75	93.04	9.20 S	94.69 W	0.7
1830.	5 30	S 82 W	1826.32	101.69	10.37 S	103.53 W	0.1
1922.	5 30	S 80 W	1917.90	110.19	11.75 S	112.24 W	0.2
2015.	6 0	S 82 W	2010.43	119.17	13.20 S	121.44 W	0.6
2108.	6 0	S 85 W	2102.92	128.64	14.31 S	131.10 W	0.3
2201.	5 30	S 81 W	2195.45	137.70	15.44 S	140.35 W	0.7

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	TRUE VERTICAL DEPTH FEET	VERTICAL SECTION FEET	RECTANGULAR COORDINATES FEET		DOG LEG SEVERITY DEG/100FT
2293.	5 45	S 84 W	2287.01	146.45	16.62 S	149.29 W	0.4
2386.	5 45	N 87 W	2379.54	155.67	16.86 S	158.60 W	1.0
2479.	5 15	N 82 W	2472.11	164.59	16.01 S	167.48 W	0.7
2571.	4 45	N 79 W	2563.76	172.59	14.68 S	175.38 W	0.6
2664.	4 15	N 82 W	2656.47	179.88	13.48 S	182.58 W	0.6
2757.	4 15	N 79 W	2749.22	186.76	12.34 S	189.38 W	0.2
2850.	4 30	N 71 W	2841.95	193.78	10.51 S	196.23 W	0.7
2942.	4 0	N 74 W	2933.69	200.47	8.46 S	202.73 W	0.6
3035.	3 45	N 84 W	3026.48	206.74	7.26 S	208.90 W	0.8
3128.	4 0	S 85 W	3119.27	212.99	7.20 S	215.19 W	0.8
3221.	3 30	S 72 W	3212.07	218.77	8.41 S	221.15 W	1.1
3313.	3 30	S 79 W	3303.90	224.02	9.82 S	226.59 W	0.5
3406.	4 0	S 62 W	3396.70	229.48	11.85 S	232.32 W	1.3
3485.	5 15	S 75 W	3475.44	235.11	14.19 S	238.25 W	2.1
3518.	5 30	S 85 W	3508.30	238.07	14.72 S	241.29 W	2.9
3548.	6 0	N 84 W	3538.15	241.06	14.70 S	244.30 W	4.0
3575.	6 45	N 80 W	3564.98	244.06	14.28 S	247.26 W	3.2
3610.	8 0	N 82 W	3599.69	248.55	13.58 S	251.70 W	3.6
3707.	10 15	N 79 W	3695.46	263.91	11.04 S	266.87 W	2.4
3802.	12 0	N 82 W	3788.68	282.21	8.01 S	284.95 W	1.9
3894.	14 0	N 86 W	3878.32	302.91	5.85 S	305.53 W	2.4
3987.	14 30	N 85 W	3968.46	325.79	4.05 S	328.36 W	0.6
4080.	14 45	N 85 W	4058.44	349.26	2.01 S	351.75 W	0.3
4141.	16 0	N 86 W	4117.26	365.42	0.74 S	367.87 W	2.1
4237.	17 15	N 89 W	4209.25	392.82	0.46 N	395.31 W	1.6
4330.	21 15	N 90 W	4297.05	423.32	0.73 N	425.97 W	4.3
4440.	22 0	S 86 W	4399.31	463.41	0.69 S	466.49 W	1.5
4554.	21 15	S 87 W	4505.28	504.78	3.25 S	508.42 W	0.7
4570.	20 0	N 90 W	4520.26	510.37	3.40 S	514.05 W	10.2
4635.	19 45	N 89 W	4581.38	532.34	3.21 S	536.15 W	0.6

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	TRUE VERTICAL DEPTH FEET	VERTICAL SECTION FEET	RECTANGULAR COORDINATES FEET	DOG LEG SEVERITY DEG/100FT
4670.	19 0	N 88 W	4614.40	543.91	2.90 S 547.76 W	2.3
4772.	18 45	N 76 W	4710.92	576.90	1.69 N 580.43 W	3.8
4865.	18 45	N 76 W	4798.98	606.53	8.92 N 609.44 W	0.0
4989.	18 0	N 76 W	4916.66	645.29	18.38 N 647.37 W	0.6
5148.	18 0	N 76 W	5067.88	694.00	30.27 N 695.04 W	0.0
5272.	18 15	N 76 W	5185.73	732.25	39.60 N 732.47 W	0.2
5427.	18 0	N 78 W	5333.03	780.16	50.45 N 779.46 W	0.4
5591.	17 45	N 78 W	5489.12	830.26	60.91 N 828.69 W	0.2
5699.	18 45	N 75 W	5591.69	863.83	68.81 N 861.58 W	1.3
5789.	24 0	N 76 W	5675.49	896.32	77.02 N 893.34 W	5.8
5917.	23 45	N 79 W	5792.54	947.84	88.23 N 943.92 W	1.0
6039.	23 45	N 79 W	5904.21	996.82	97.61 N 992.15 W	0.0
6195.	23 15	N 79 W	6047.27	1058.84	109.48 N 1053.21 W	0.3
6363.	23 15	N 79 W	6201.63	1124.95	122.13 N 1118.31 W	0.0
6518.	23 0	N 79 W	6344.17	1185.63	133.75 N 1178.07 W	0.2
6673.	23 15	N 79 W	6486.72	1246.32	145.36 N 1237.82 W	0.2
6870.	23 15	N 81 W	6667.72	1323.94	158.87 N 1314.41 W	0.4
7057.	23 0	N 80 W	6839.70	1397.28	170.99 N 1386.84 W	0.2
7270.	22 15	N 79 W	7036.30	1479.02	185.92 N 1467.41 W	0.4
7486.	22 15	N 79 W	7236.22	1560.56	201.53 N 1547.69 W	0.0

STATION AT 7486' IS PROJECTED.

FINAL CLOSURE - DIRECTION: N 82 DEGS 34 MINS 53 SECS W
DISTANCE: 1560.76 FEET

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

NOTICE OF RECORDS DUE

Santa Paula Calif.

June 7, 1979

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

FINAL NOTICE

In accordance with Division 3 of the Public Resources Code of California the following records are due, covering the drilling of your well(s) No. "SFZU" FF-32-A (037-21872)

Sec. 27, Tp. 3N, R. 16W, S. B. B. & M., Aliso Canyon (Field or County)

- [X] Well summary (Form OG100)
- [ ] Drillers log (Form OG101) NOTE: Not required if electric log is filed.
- [ ] Core record (Form OG101)
- [X] History (Form OG103)
- [ ] Electric log: (1" = 50 ft.)
- [ ] Production report (Form OG110) for months of
- [ ] Other

not received 1979

These records should be submitted *in duplicate* as soon as possible.

Please be sure that the records are signed in the spaces provided.

John L. Hardoin

John L. Hardoin, JR *Deputy Supervisor*

OG170 (2-75-GSR 1-4M)

PW

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

No. T 278-253

DIVISION OF OIL AND GAS

Report on Operations

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

Santa Paula, Calif.
Aug. 23, 1978

Your operations at well "SFZU" FF-32-A, API No. 037-21872, Sec. 27, T. 3N R. 16W S.B., B.& M. Aliso Canyon Field, in Los Angeles County, were witnessed on 8/21/78. Ed Hickey, representative of the supervisor, was present from 1220 to 1300. There were also present Mr. Mike Peterson, Camrich pusher

Present condition of well: 13 3/8" cem 990'; 8 5/8" cem 7307', WSO 7272', T.D. 7307'.

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

DECISION:

THE 8 5/8" SHUT-OFF AT 7272' IS APPROVED.

b

N. G. HEFFERD
State Oil and Gas Supervisor

By
Deputy Supervisor
John L. Hardoin

OG109 (6-77-GSR1-15M)

DIVISION OF OIL AND GAS

__ _____ Formation WATER SHUT- TEST No. T 253 PW

Operator So Cal Gas Company

Well name and no. "SEZU" FF 37-A Sec. 27, T. 3, R. 16, SB B&M

Field ALISO CANYON, County Los Angeles was tested for water shut-off on 8/21/78, Mr. E. Hickey, representative of the supervisor was present from 1220 to 1300. There were also present Mr. Mike Peterson Company Basset

Casing record of well:

13 3/8 cem. 990'; 8 5/8 cem 7307' WSO 7272; T.D. 7307'.

The operations were performed for the purpose of D-8 8 5/8 4

☒ The 8 5/8" shut-off at 7272' is approved.

☐ The seal between the _____" and _____" casings is approved.

☐ The operations are approved as indicating that all of the injection fluid is confined to the formations below _____' at this time.

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

Casing				Cemented			Top of Fill		Sqd. Away	Final Press	Test psi/min. Perfs.
Size	Wt.	Top	Bottom	Date	MO-Depth	Volume	Annulus	Casing			

Depth or interval tested _____

The hole was open to _____' for test.

FORMATION TEST:

Packer(s) 7222' & _____' Tail 7224' Bean size 5/8" Cushion NONE

IHP 3480, IFP 50 FFP 50 FHP 3480

Blow faint blows 4 min dead remainder of test

Open for test 1 Hr. 0 min. Fluid entry 15' drilling mud

BAILING TEST:

The hole fluid was bailed to _____', at _____ on _____ 19__.

The hole fluid was found at _____', at _____ (time) on _____ 19__.

PRODUCTION TEST:

Gauge/meter reading _____ on _____ 19__, at _____ pump depth _____' Engr. _____

Gauge/meter reading _____ on _____ 19__, at _____ Engr. _____

Fluid level _____' surveyed on _____ 19__, reviewed (witnessed) by _____

Total fluid produced, Bbls. _____ Net oil _____ Water _____

Rate: _____ B/D oil, _____ B/D water, _____ % water cut

INJECTION SURVEY:

RA/Spinner/Temperature survey run at _____ B/D & _____ psi on _____ 19__, fluid confined below _____' (Packer depth _____')

4 ½ holes 7272

OGD8 (10-76-GSR1-5M)

pw

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

No. T 278-216

DIVISION OF OIL AND GAS

Report on Operations

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

Santa Paula, Calif.
July 18, 1978

Your operations at well "SFZU" FF-32-A, API No. 037-21872, Sec. 27, T3N, R.16W S.B., B.& M. Aliso Canyon Field, in Los Angeles County, were witnessed on 7/14/78. E.P.Hickey, representative of the supervisor, was present from 0030 to 0545. There were also present Mike Peteron, tool pusher

Present condition of well: ~~13 3/8" cem. 990'; T.D. 1000'.~~

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

DECISION:

THE BLOWOUT PREVENTION EQUIPMENT AND INSTALLATION ARE APPROVED.

b

M. G. MEFFERD
State Oil and Gas Supervisor

By _____
Deputy Supervisor, John L. Hardoin

OG109 (6-77-GSRI-15M)

PW

DIVISION OF OIL AND GAS
BLOWOUT PREVENTION EQUIPMENT MEMO

T 21S

ator SoCal Gas Co. Well "SFZU" FF 32-A Field Pleito Canyon County L.B.

ITS:	Date	Engineer	Time	Operator's Rep.	Title
t	7-13-78	EPK	1730 to 1900	Mike Ferron	Tool Pusher
d	7-14-78	EPK	0030 to 0545	" "	" "

asing record of well: 13 3/8 cem. 990'; T.D. 1000'.

OPERATION: Testing (inspecting) the blowout prevention equipment and installation.
DECISION: The blowout prevention equipment and installation are approved.

oposed Well Opns: New drill MPSP: _____ psi

REQUIRED BOPE CLASS: III 3M 8

le size: _____" fr. _____' to _____', _____" to _____' & _____" to _____'

SING RECORD (BOPE ANCHOR STRING ONLY)					Cement Details	Top of Cement	
ze	Weight(s)	Grade (s)	Shoe at	CP at		Casing	Annulus
13 3/8	54	K-55	990	—	732 cf. w/ 8% bent + 2% CaCl2 followed by 230 cf Class G w/ 2% CaCl2		Surf

BOP STACK						a	b	a/b	TEST DATA			
b.	Ram Sz.	Mfr.	Model or Type	Size In.	Oper. Press	Date Last Overhaul	Gal. to Close	Rec. Time Min.	Calc. GPM Output	psi Drop to Close	Secs. to Close	Test Date	Test Press
	—	Hydril	GK	13 5/8	5M	—						7-14-78	2700
	4 1/2	Schaffer	LWS	13 5/8	5M	—						7-14-78	2700
	CSO	Schaffer	LWS	13 5/8	5M	—						7-14-78	2600

ACTUATING SYSTEM

cum. Unit(s) Wkg. Press. 3000 psi
al Rated Pump Output _____ gpm
stance From Well Bore 50 ft.

Mfr.	Accum. Cap.	Precharge
Koomey	80 gal.	750 psi
	gal.	psi

TROL STATIONS	Elec.	Hyd.
anif. at accum. unit		X
emote at Drlr's stn.	X	
ther:		

RG. BACKUP SYST.	Press.	Wkg. Fl.
2 Cyl No: 3 Tpe: N2	1 2500	gal
ther:	2 2500	gal
	3 2100	gal
	4	gal
	5	gal
	6	gal

AUXILIARY EQUIPMENT

	No.	Sz. (in)	Rated Press.	Connections: Weld	Flan.	Thrd.	
✓ Fill-Up Line							
✓ Kill Line		2"					
✓ Control Valve(s)	2				✓		2600
✓ Check Valve(s)	1						2600
✓ Auxil. Pump Connec.							2600
✓ Choke Line		2"					2600
✓ Control Valve(s)	2						2600
✓ Pressure Gauge							
✓ Adjustable Choke(s)	2						2600
✓ Bleed Line							
✓ Upper Kelly Cock							2700
✓ Lower Kelly Cock							2700
✓ Standpipe Valve							2700
✓ Standpipe Pressure Ga.							
✓ Pipe Safety Valve							2700
✓ Internal Preventer		4 1/2					2700

HOLE FLUID MONITORING EQUIPMENT

	Alarm: Aud.	Vis.	Class
✓ alibrated Mud Pit			A
✓ it Level Indicator	✓	✓	B
Stroke Counter	✓	✓	B
it Level Recorder			C
low Sensor			C
ud Totalizer			C
alibrated Trip Tank			
ther:			

REMARKS: _____

Hole Fluid Type	Weight	Storage-Pits

Pat

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

No. P 278-144

REPORT ON PROPOSED OPERATIONS

Santa Paula, California

June 5, 1978

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

Your proposal to drill gas storage well "SFZU" FF-32-A
(Name and number)
, A.P.I. No. 037-21872, Section 27, T. 3N, R. 16W,
S.B. B. & M., Aliso Canyon field, Los Angeles County,
dated 5/25/78, received 6/2/78, 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 evaporative sumps that 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, 3M, B, shall be installed and maintained in operating condition at all times.
6. Blowout prevention practice drills shall be conducted at least weekly for each crew, and recorded in the log book.
7. This office shall be consulted before placing any plugs.
8. 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 8 5/8" shut-off above the zone to be produced.

Blanket Bond
MWD:r

A COPY OF THIS APPROVAL SHALL BE AVAILABLE AT THE WELL SITE DURING THE PROPOSED OPERATIONS.

M. G. MEFFERD
State Oil and Gas Supervisor

By John L Hardoin
Deputy Supervisor

John L. Hardoin

OG111 (11-76—GSR1—30M)

21572

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Notice of Intention to Drill New Well

DIVISION OF OIL AND GAS
RECEIVED
JUN 2 1978
SANTA PAULA, CALIFORNIA

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.

FOR DIVISION USE ONLY					
MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
254	10-10	✓	BB	✓	✓

DIVISION OF OIL AND GAS

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to commence drilling well No. 45FZ0" FF-32-A FERNANDO FEE #32-A, API No. _____ (Assigned by Division),

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

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

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 property section line and _____ feet _____ (Direction)

at right angles to said line from the _____ corner of property section _____ or

from Station #84, 1518' Southerly and 1830' Easterly at right angles.

If well is to be directionally drilled, show proposed coordinates at total depth 178' Northerly and 1580' Westerly of surface.

Elevation of ground above sea level 1995' feet.

All depth measurements taken from top of Kelly Bushing which is 20 feet above ground. (Derrick Floor, Rotary Table or Kelly Bushing)

PROPOSED CASING PROGRAM

SIZE OF CASING INCHES A.P.I.	WEIGHT	GRADE AND TYPE	TOP	BOTTOM	CEMENTING DEPTHS	CALCULATED FILL BEHIND CASING
13 3/8"	54.5#	K-55 Buttress	0'	1000'	1000'	Surface
8 5/8"	36# and 40#	K-55 & N-80	0'	7500'	7500'	3000'
5 1/2"	17#	K-55 W.W.	7400'	7900'	-	-

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

Intended zone(s) of completion Sesnon, 7500', 2900 psi (Name, depth and expected pressure) Estimated total depth 8000'

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

Address P.O. Box 3249, Terminal Annex (Street)

Los Angeles (City) California (State) 90051 (Zip)

Telephone Number (213) 689-3561

SOUTHERN CALIFORNIA GAS COMPANY (Name of Operator)

By P.S. Magruder (Name) P.S.Magruder, Jr. (Date) 5-25-78

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

OG105 (12-73-GSR1-15M)

PROGRAM TO DRILL NEW GAS STORAGE WELL AT

ALISO CANYON (FERNANDO FEE #32-A)

APPROXIMATE SURFACE LOCATION: From Station #84 - 1518' Southerly and 1830' Easterly at right angles.

BOTTOM HOLE LOCATION: 1340' Southerly and 250' Easterly from Station #84 or 178' Northerly and 1580' Westerly of surface location.

PROGRAM

1. Drill 17 1/2" hole from surface to 1000' using spud mud.

2. Run 1000' of 13 3/8" 54.5# K-55 buttress casing and cement on bottom with 800 cu.ft. of Class "G" cement, mixed with 8% Gel and 3% calcium chloride, followed by 200 sacks of Class "G" cement mixed with 3% calcium chloride. Casing to be fitted on bottom with a float shoe on top of first joint with stop collar and on bottom two joints with two centralizers on each joint. Fill annulus with cement, if required.

3. Weld on 13 5/8" 5000 psi casing head. Inspect weld with Gamma Ray device.

4. Install Class III 5000 psi B.O.P.E. Pressure test complete shut-off and pipe rams to 2700 psi with water and nitrogen. Also pressure test Hydril bag to 2700 psi with water and nitrogen. Pressure test kill manifold to 3000 psi with water and nitrogen.

5. Drilling Fluids Program

DEPTH	WEIGHT	VISCOSITY	WATER LOSS	TYPE
0'-1000'	Spud mud to suit Contractor			
1000'-4000'	72#/cu.ft.	40-50 sec.	15 c.c.	Bentonite-Benex-Ligno-sulphonate
4000'-7500'	72#/cu.ft.*	40-50 sec.	10 c.c.	Ditto
7500'- T.D.	72#/cu.ft.*	40-50 sec.	6 c.c.	"
Completion	72#/cu.ft.*	40-50 sec.	10 c.c.	Brine-Polymer DF

* NOTE: Weight will depend on reservoir pressure at time the well is drilled.

6. Drill 12 1/4" hole to K.O.P. and directionally drill 12 1/4" to top of Sesnon Zone - approximately 7500' - exact depth to be determined

after details of directional work has been calculated by directional company.

7. Run Induction Electric Log using the following scales:

100 Millivolts and 50 OHMS

Also run Caliper Log.

8. Run 8 5/8" casing and cement with 1000 sacks of Class "G" cement. Casing to be fitted with float shoe and two float collars and with scratchers and centralizers on bottom three (3) joints, also with centralizers over collars in deviated hole per design charts. Install tubing head and reinstall B.O.P.E. and pressure test with water and nitrogen, rams to 4000 psi and Hydril bag to 3000 psi Pressure test seals to 3500 psi.

9. Drill out to within 10' of shoe and run Cement Bond Log from bottom to top of cement.

10. Shoot four 1/2" holes in shale immediately above shoe in shale. Pressure test holes to 3000 psi. If holes break down, squeeze under low pressure - Braden head and retest. Test WSO for D.O.G.

11. Drill out cement and drill 7 5/8" hole to a total depth estimated at 8000'.

12. Run Induction Electric Log using the following scales:

100 Millivolts and 60 OHMS

Also run Compensated Density Log and Compensated Neutron Log.

13. Circulate clay-water drilling fluid out of well with brine-polymer drilling fluid. Weight to depend on reservoir pressure.

14. Open 7 5/8" hole to 15" from shoe of 8 5/8" casing to total depth. Run Caliper Log and re-open hole, as required.

15. Circulate brine-polymer drilling fluid out of well with clean filtered brine-polymer drilling fluid - 5 Micron filter.

16. Run approximately 500' of 5 1/2" liner and hang 5' off bottom. Approximate

details are:

Bottom 350' 5 1/2" 17# K-55 10-mesh wire-wrapped GRU-V-KUT or Stancliff.
Next 110' - 5 1/2" 17# J-55 blank.
Next 30' - 5 1/2" 17# J-55 10-mesh wire-wrapped.
Top 10' - port collar and lead seal liner hanger to be fitted on bottom with a closed shoe and over each collar with a centralizer and with welded centralizers on blank casing.

Gravel flow pack with 20-40 mesh gravel - estimate 400 sacks. Close port collar - wash perforations and attempt to displace additional gravel. Repeat as required. Filter drilling fluid returns. Run Photon Log.

17. Set permanent retrievable packer near 7350' - run on wireline but DO NOT set packer in a collar.

18. Run 3 1/2" tubing, change collars, clean pins, apply Baker seal and hydrotest to 5000 psi, holding each test for one minute. Tubing to include:

Production Tube
Four (4) Seals
Locator Sub
10' Heavy Wall Tube
2.25" NO-GO Nipple with 3 1/2" threads
20' Heavy Wall Tube
3 1/2" Annular Flow Safety System
One Joint 3 1/2" Tubing
Gas Lift Mandrel with Pump-out Valve
Bottom 2000' N-80 - balance J-55

19. Land tubing on packer with up to 10,000#.

20. Remove B.O.P.E. and install Xmas tree. Pressure test tree to 5000 psi.

21. Circulate drilling fluid out of well with lease salt water. Set tubing plug in NO-GO nipple. Pressure test seals and packer to 2000 psi. Pull tubing plug and release rig.

G. C. ABRAHAMSON
May 30, 1978

cc: Rig Supervisor
Relief Rig Supervisor
Contract Pusher (2)

D.O.G. ✓
T. Giallonardo
M. Grijalva
D. Justice
D. S. Smiley
Well File

GCA/jp