

SED-248  
SoCalGas Response to SED and DOGGR  
January 26, 2016 Data Request  
I.19-06-016  
ALJs: Hecht/Poirier  
Date Served: April 5, 2021

**SOUTHERN CALIFORNIA GAS COMPANY**

**CPUC-SAFETY AND ENFORCEMENT DIVISION AND DEPARTMENT OF CONSERVATION- DIVISION OF OIL,  
GAS, AND GEOTHERMAL RESOURCES DATED JANUARY 26, 2016**

**General Response:**

The information provided herein and in the enclosed electronic document production is provided in response to the January 26, 2016 data requests of the CPUC-SED and DOGGR. The information provided is based upon the best available information known at this time, and is subject to change as investigation continues and new information becomes available. SoCalGas reserves the right to amend or supplement this information as its investigation continues. Please note that this is a partial production, and additional documents and information will be provided on a rolling basis as our investigation continues. All requests not specifically responded to below will be supplemented on a rolling basis. We reserve the right to request confidential treatment for any document inadvertently produced herein that should be treated as confidential under applicable CPUC rules.

As set out more specifically below, this production includes documents responsive to the following data requests:

- All “A” requests (Detailed Well Data for SS-25)
- All “B” requests (Abnormal Conditions Data for SS-25)
- All “C” requests (Construction - SS-25, 25A, and 25B)
- D1
- D2 (to the extent applicable to 25-A and B)
- D4
- D5
- D6
- E1
- All “H” requests (Operations and Maintenance)

**Detailed Well Data – “Standard Sesnon” 25 (SS-25) (API 037-00776)**

**Question 1:**

All well records.

**Response 1:**

Please see enclosed electronic document production set for copies of all documents comprising the active SS-25 well file, documents Bates range AC\_CPUC\_0000023 - AC\_CPUC\_0000759

**Question 2:**

Complete history of well SS-25 from drilling to the date of the well failure; including, but not limited to, all permanent and non-permanent alteration of casing, all tubing, packer, subsurface safety valves, plugs, sliding sleeve, perforations, cementing and remedial operations, logs.

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**Response 2:**

Please see response to A1.

**Question 3:**

A description of all remedial operations, when conducted, and for what purpose. (include all non-permitted and permitted operations.) Provide copies of the daily report of well operations (engineer's log) for each well operation.

**Response 3:**

Please see response to A1.

**Question 4:**

Information on the current subsurface safety valve (SSSV) installed in the well.

- a. Depth and date the current SSSV was installed. If the SSSV was installed in 1979, provide the history. If a SSSV was required, please provide documentation.
- b. A recorded description of the purpose and function of the current SSSV. Document description of the current SSSV.
- c. Manufacturers specification/design sheet of all SSSVs assemblies used historically on SS-25
- d. The narrative reason for installation of a SSSV in SS-25.
- e. Manufacturer's specifications of the SSSV currently in the well.

**Response 4:**

**Question 5:**

Historical operational narrative overview of ALL SSSVs

- a. Include original SSSVs installed or removed, decommissioned in place, replaced, and repaired.
- b. Why are SSSVs installed in SS-25?
- c. Manufacture specifications All SSSVs installed or removed, decommissioned in place, replaced, and repaired.
- d. maintenance history and issues
- e. Functionality or improvements needed

**Response 5:**

**Question 6:**

The operational history of the current SSSV, including maintenance history and any problems.

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- a. Whether or not the SSSV was functioning as designed prior to the well failure. If not, reason why.
- b. Provide all correspondence between SoCalGas and DOGGR related to the SSSV since 1977.

**Response 6:**

See response to A1.

**Question 7:**

Describe the operational design of injection and withdrawal mechanisms for well SS-25.

- a. What was the injection/withdrawal plan for the past 10 years?
- b. Was gas injected through tubing and packer?
- c. Was gas injected through tubing and tubing/casing annulus simultaneously?
- d. Describe the mechanism for gas withdrawal in well SS-25. Was gas withdrawn through tubing and casing?
- e. Provide technical analysis for injection and withdrawal through the tubing/casing annulus. Why is this injection and withdrawal method used instead of tubing only? Was this method approved for injection? If so, provide documentation.
- f. Describe the stress on the casing of annual cycles of injection and withdrawal through casing?

**Response 7:**

**Question 8:**

Casing diagram detailing the physical condition of the well at the time of the well failure (October 23, 2015) including all subsurface equipment, tubing, packers, subsurface safety valves (SSSV), sleeves, etc.

- a. Details should include, and not limited to: size and depth of holes, casing, tubing, packer, perforations, casing centralizers, cement ports, cement, fish, stubs, plugs, etc. Casing diagram shall include the location of corrosion, well failures, repairs, remedial cementing operations, base of fresh water, base of USDW, lost circulation zones, tops of formations, markers, faults, etc.
- b. All data shall be clearly marked on the wellbore drawing and at a scale that is proportional and easy to read. The wellbore diagram shall be in pdf format no less than 300dpi.
- c. Detailed information should be listed in a column next to the wellbore schematic.

**Response 8:**

See response to A1.

**Question 9:**

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Details of surface wellhead, pressure gauges, and valves, and their function. Include:

- a. Wellhead equipment schematics, include manufacture's specifications.
- b. Recent, within 3 years, wellhead equipment changes
- c. Type and purpose of safety valves. Their testing schedule and results of tests.

**Response 9:**

See response to A1.

**Question 10:**

History of all well leaks, surface and subsurface, since SS-25 was placed on production and later on injection/withdrawal.

- a. Provide depth of casing collars, and problems with casing threads.
- b. Documentation of the location of the leak on the 7" casing and cause.

**Response 10:**

See response to A1.

**B. Abnormal Conditions Data – "Standard Sesnon" 25 (SS-25) (API 037-00776)**

**Question 1:**

A narrative identifying, describing and analyzing any problems encountered during operational history of the well.

**Response 1:**

**Question 2:**

Any casing failures, ruptures, holes, corrosion and their location on the well.

**Response 2:**

Insofar as this request seeks production of documents, see A1.

**Question 3:**

History of all well leaks, surface and subsurface, since SS-25 was placed on production

**Response 3:**

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Insofar as this request seeks production of documents, see A1.

**Question 4:**

Records of history of safety concerns, near misses, upset conditions, outside forces near misses, incidents, failures or any concerns for the operational safety and integrity of SS-25.

**Response 4:**

See response to A1.

**C. Construction - SS-25, S-25A, SS-25B**

**Question 1:**

For well sites SS-25, S-25A, SS-25B, provide any and all design and construction records for since well inception.

**Response 1:**

See response to A1.

As to well SS-25A, please see enclosed electronic document production set for the active well file associated with well SS-25A, Bates range AC\_CPUC\_0000001 - AC\_CPUC\_0000011 and AC\_CPUC\_0000760 - AC\_CPUC\_0001198.

As to well SS-25B, please see enclosed electronic document production set for the active well file associated with well SS-25B, Bates Range AC\_CPUC\_0000012 - AC\_CPUC\_0000022 and AC\_CPUC\_0001199 - AC\_CPUC\_0001587.

**Question 2:**

SS-25, S-25A, SS-25B: Provide any and all well drilling logs since well inception

**Response 2:**

Please see responses to A1 and C1.

**Question 3:**

SS-25: Provide any and all well packer seating and unseating(s), changes, reworks, replacements, etc., whether required for DOGGR inspection or not.

**Response 3:**

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Please see responses to A1 and C1.

**D. Tests**

**Question 1:**

All mechanical integrity tests run on well SS-25 since 1976, including, but not limited to, casing pressure test, noise logs, temperature logs and radioactive tracer surveys. Include whether or not each test was required by DOGGR.

- a. Provide the date of each MIT run and results of the test. Include all Temperature and noise logs for SS-25; include an explanation of all acronyms used. Include the smoothing and sample rate of each log. If available, provide the temperature logs in ASCII/LAS files.
- b. Provide records of MIT evaluations for SS-25.
- c. Provide all documentation of monitoring from 1979 to October 2015. (Refer to remarks on the 1989 temperature survey.)
- d. In the 1989 temperature log there is an anomaly. Provide information on the anomaly and steps taken to identify the cause. Describe the relationship between the anomaly and the SSSV in the well at the time.
- e. In 1991 noise log there is reading. Provide record information on the anomaly and record of steps taken to identify the cause and further investigation and/or mitigation. Describe the relationship between the anomaly and the SSSV in the well at the time.

**Response 1:**

Please see response to A1.

**Question 2:**

All mechanical integrity tests run on gas storage wells, including idle and abandoned, located within 1/4 mile of well SS-25, and the results of the tests. If available, provide the tests in ASCII/LAS files.

- a. What was the required frequency for conducting temperature surveys and other MITs?
- b. What were the reasons for running a particular type of survey?
- c. What is the frequency for measuring annulus pressure? Provide a history of annulus pressures.
- d. What is the requirement for running noise logs and radioactive tracer (RA) surveys? Provide a history of noise logs and RA surveys.
- e. What is the required frequency of reservoir shut-in periods to measure static bottom-hole pressure? Provide a history of reservoir shut-in period and static bottom-hole pressure measurements.
- f. Who runs and provides oversight of the MIT field test? What are their qualifications?

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- g. How MITs were evaluated during and after the field test (provide any written report).
- h. For failed or questionable MITs, at what depth and date were anomalies determined?
- i. Were wells remediated if the MIT failed? If DOGGR was notified, please provide date, contact person, and type of communications.
- j. Most recent fluid levels for wells within ¼ mile of SS-25. Include the method used to determine fluid level.
- k. Data detailing pressure communication between wells.
- l. Any data collected or study conducted by SoCalGas on the effects of wells subject to expansion and contraction during gas cycling in Aliso Canyon Gas Storage project. Provide findings and recommendations for evaluating integrity of wells in the project and risks of long term use of wells.

**Response 2:**

Please see responses to A1 and C1.

**Question 3:**

Tests for corrosion potential of all fluids encountered in well SS-25 and corrosion management plan incorporated into the design and operation of wells in the GS projects with 1 mile of well SS25.

**Response 3:**

Please see responses to A1 and C1.

**Question 4:**

SS-25, S-25A, SS-25B: Provide any and all well water noise logs in scale readable format (1"=200)

**Response 4:**

**Question 5:**

SS-25, S-25A, SS-25B: Provide any and all well water temperature logs in scale readable format (1"=200)

**Response 5:**

Please see responses to A1 and C1.

**Question 6:**

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SS-25, S-25A, SS-25B: Provide any and all well ion logs in scale readable format  
(1"=200)

**Response 6**

Please see responses to A1 and C1.

**E. Injection Pressure**

**Question 1:**

Surface injection pressure (preferably daily) and flow rate for well SS-25 for the past 10 years.

- a. Wellbore deviation angle (from directional survey)
- b. Pipe inside diameter
- c. Temperature of the gas injected at the surface
- d. Reservoir temperature and depth
- e. Gas gravity

**Response 1:**

Please see response to A1

**Question 2:**

For SS-25, is the pressure gauge permanently installed or portable type? Please provide calibration schedule and any calibration documentation.

**Response 2:**

**Question 3:**

Did SS-25 well ever inject above MASP? What is the design pressure limit of the reservoir, wells, and wellhead?

**Response 3:**

**Question 4:**

For the monthly surface injection pressure data for gas storage wells, submitted to DOGGR:

- a. How is the rate calculated? Is it based on 30-day average?
- b. Is the Tubing or Casing pressure?

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**Response 4:**

**Question 5:**

Provide daily and monthly injection tubing and casing pressure and rate for SS-25 since initial injection.

**Response 5**

Please see response to A1

**F. Gas Storage Monitoring Program:**

**Question 1:**

Provide a copy of the gas storage project well monitoring program.

**Response 1:**

**Question 2:**

Has the monitoring program changed over time? If so, describe the changes.

**Response 2:**

**Question 3:**

SS-25: Provide any and all well pumping logs for life of well

**Response 3:**

Please see response to A1

**G. Communication History:**

**Question 1:**

All correspondence between SoCalGas and the DOGGR Ventura district office, related to Aliso Canyon GS project, including, but not limited to, field inspections, well integrity testing, rework operations, notices, permits, removal and installation of the SSSV and the sliding sleeve.

**Response 1:**

**Question 2:**

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Provide dates MIT survey results were submitted to the DOGGR Ventura office since 1989.

**Response 2:**

**Question 3:**

How did SoCalGas communicate with DOGGR before, during, and after running MITs for GS wells? If DOGGR was notified, please provide date, contact person, subject, and type of communications (e-mails, letters, phone-calls, etc.).

**Response 3:**

**Question 4:**

Provide list of communications (e-mails, letters, and phone calls) made by SoCalGas to the DOGGR Ventura district office specific to the SS-25 well failure, prior to start of remedial operations. Include the date, time, subject, contacts and message.

**Response 4:**

**H. Operations and Maintenance:**

**Question 1:**

SS-25, S-25A, SS-25B: Provide any and all maintenance, repair and improvement records since well inception

**Response 1:**

Please see responses to A1 and C1.

**Question 2:**

SS-25, S-25A, SS-25B: Provide any and all well Operations and Maintenance records since well inception

**Response 2:**

Please see responses to A1 and C1.

**Question 3:**

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SS-25, S-25A, SS-25B: Provide any and all well related management directives, analysis, investigations

**Response 3:**

Please see responses to A1 and C1.

**Question 4:**

SS-25, S-25A, and SS-25B: Provide any and all well water circulation, fluid levels, and annular reading records for life of each well.

**Response 4:**

Please see responses to A1 and C1.

**Question 5:**

SS-25: Provide any and all well records cathodic, sacrificial plan and corrosion monitoring records of life of well.

**Response 5:**

Please see response to A1.

**Question 6:**

SS-25: Provide any and all well cathodic, sacrificial plan and monitoring records of life of well.

**Response 6:**

Please see response to A1.

**Question 7:**

SS-25: Provide any and all well fluid compatibility records of life of well

**Response 7:**

Please see response to A1.

**Question 8:**

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SS-25: Provide any and all well fluids, formation fluids, corrosion due to fluid monitoring records of life of well

**Response 8:**

Please see response to A1

**I. Materials**

**Question 1:**

Explain and show historical documents that convey procedures for:

- a. Provide record of review for integrity of SS-25 casing, concrete casing for well surface casing and production casing as inherited by SoCalGas circa 1973.
- b. Provide record of review for inherited surface casing, circa 1973 forward, establishing set elevation as functionally sound set at approximately 990'.
- c. When setting casing, what determines the set depth? Provide a specific example sourced from records you provide to us as requested elsewhere, herein.
- d. How does the depth depend on the loss of circulation?
- e. Explain difference between casing material
- f. What is grade(s) of steel are presently used for outer casing?
- g. If different from aged wells, when did the industry change and why (cite all factors, technology/reference new codes and regulations/new standards of practice)?

**Response 1**

Please see response to A1

**Question 2:**

Explain the historical mixing and setting of casing mix. [DR] SS-25, S-25A, SS-25B

- a. 1 dry sack of Diamix(or equal) cement = (equals) how many cf wet (casing) cement mix.
- b. Neat cement same?
- c. Installation/pumping records
- d. Specify equipment used, hose size to install casing cement
- e. Hole fill methodology; how is the cement mixture installed based on casing depth?

**Response 2:**

**Question 3:**

Provide narrative identifying, analyzing and describing “sidetracking a hole” in gas and

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oil terms? Provide records referenced to complete narrative.

- a. Identify historical narrative of events of this occurring in SoCalGas drilling operations on SS-25, SS-25A, SS-25B since inception of these wells.
- b. Identify elevations of occurrence.
- c. What corrective actions took place?

**J. Well Life**

**Question 1:**

SS-25 historical decommission plans and monitoring

- a. Prior to October of 2015, provide records of how well was to be permanently inoperable and sealed.
- b. Provide narrative and records of projected well abandonment plan.

**Response 1:**

Please see response to A1

**Question 2:**

Provide evaluation records of well facility as inherited. What expected lifespan was given based on the age of well, former operation as an oil well.

**Response 2:**

Please see response to A1

**Question 3:**

Provide record of well diagnostics at time of SoCalGas conversion. Condition of casings, concrete, corrosion, etc.

**Response 3:**

Please see response to A1

**Question 4:**

Provide monitoring, cleaning and pumping records of storage sands, tag sands, fill sands, etc.

- a. Provide diagnostics and analysis of sand draw
- b. Provide critical events signaling beginning well decommissioning phase.

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**Response 4:**

Please see response to A1

**K. Geology-Topography**

**Question 1:**

Provide all recorded seismic event records at Site SS-25, SS-25A, SS-25B since inception

**Response 1:**

Please see responses to A1 and C1

**Question 2:**

Provide all seismic event related inspections at Site SS-25, SS-25A, SS-25B.

- a. Standard SoCalGas inspections
- b. Third party inspections
- c. Contractors – tools used, contracts, scope of
- d. Expert consultants – scope, reports

**Response 2:**

Please see responses to A1 and C1

**Question 3:**

Provide records for all seismic repairs and replacements

**Response 3:**

Please see responses to A1 and C1

**Question 4:**

Provide all topographic surveys at SS-25, SS-25A, SS-25B.

**Response 4:**

Please see responses to A1 and C1

**Question 5:**

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A type log showing the character and depth of the formations, formation tops, marker beds, correlations, fault picks, other geologic features.

- a. Preferably on an SP and resistivity curve.
- b. Include Gamma Ray, density, neutron, and sonic curves, if available.

**Response 5:**

**Question 6:**

All logs, including but not limited to, e-logs (SP and resistivity), gamma, and density neutron, in pdf (300dpi). If available, log data in LAS format on an excel spreadsheet, of any e-log and gamma ray logs run on the SS-25 well or any wells in the vicinity. All logs shall have elevation references, preferably in mean sea level.

**Response 6:**

Please see responses to A1 and C1

**Question 7:**

Geologic structure map of the area within a 1 mile radius of well SS-25, including faults, and other geologic features.

**Response 7**

**Question 8:**

Geologic cross-section clearly detailing the geology, formations, structure, faults, and identifying base of freshwater, base of USDWs, all oil and gas bearing zones, and wells. The cross-section shall be drawn incorporating the SS-25 well and include the gamma or e-log traces used for correlation.

**Response 8:**

**Question 9:**

Contour map (1 mile radius of well SS-25) of the top of the gas storage reservoir (Sesnon Frew formation).

**Response 9:**

**Question 10:**

Isopach map of the gas storage reservoir extending in a 1 mile radius of well SS-25.

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**Response 10:**

**Question 11:**

A surface map identifying all (active and inactive) wells within a 1 mile radius of well SS-25, labeled with the API number and current operational status, such as: OG (oil/gas producer), GS (Gas storage), idle, abandoned, OB (observation), WF (water flood), WD (water disposal). Including any other wells types not listed.

**Response 11:**

**Question 12:**

Was SS-25 affected by the Northridge earthquake? What analysis was conducted to evaluate whether the earthquake affected the well. Were any wells in the area affected?

**Response 12:**

**Question 13:**

All maps and cross-sections shall include direction, scale, elevation and references clearly marked. Submitted in electronic pdf format (300dpi) so it can be expanded without blurring details. Most useful scale must show locations and distances accurately and small enough to read data for the purpose it was intended.

**Response 13:**

**Question 14:**

Provide reports of all Geotechnical studies conducted in the Aliso Storage Reservoir

**Response 14:**

**Question 15:**

Provide SCG analysis of the study and subsequent actions

**Response 15:**

**Question 16:**

Provide any and all water level/circulation log records for SS-25, SS-25A, SS-25B

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**Response 16:**

Please see responses to A1 and C1.