

SED-316  
SoCalGas Response to SED Data Request 27  
I.19-06-016  
ALJs: Hecht/Poirier  
Date Served: May 17, 2021

**SOUTHERN CALIFORNIA GAS COMPANY  
CPUC-SAFETY AND ENFORCEMENT DIVISION  
DATA REQUEST DATED AUGUST 21, 2018**

**SOCALGAS RESPONSE DATED OCTOBER 5, 2018**

SoCalGas provides the following responses to the California Public Utilities Commission–Safety and Enforcement Division’s August 21, 2018 request for information. These responses are based upon the best available non-privileged information known at this time and are subject to change and/or supplementation as SoCalGas’ investigation continues, and additional information becomes available.

SoCalGas submits these responses, while generally objecting to any request that fails to provide a defined time period to which SoCalGas may tailor its response, and to the extent that any request is overly broad, vague, ambiguous, unduly burdensome, assumes facts, or otherwise fails to describe with reasonable particularity the information sought. SoCalGas further submits these responses without conceding the relevance of the subject matter of any request or response. SoCalGas reserves the right to object to use of these responses, or information contained therein, in any dispute, matter or legal proceeding before any court, action. Finally, at the time of this response, there are no pending oral data requests from the CPUC-SED to SoCalGas.

**Question 1:**

Please identify all of the various maximum pressures that apply to Southern California Gas Company natural gas storage facilities and/or wells. This should include, but not be limited to:

- a. Design pressure
- b. Maximum shut in tubing pressure
- c. Reservoir pressure

**Response 1:**

SoCalGas interprets this request as seeking the following maximum pressures that apply to belowground gas storage infrastructure and/or wells at SoCalGas’ current natural gas storage fields – Aliso Canyon, Honor Rancho, Playa del Rey, and La Goleta. Please note, other than wellhead pressure information, the response does not include pressure information for the above-ground facilities at SoCalGas’ natural gas storage fields.

- a. **Design Pressure:** Gas storage wells are connected to the gas storage reservoir. As a result, each well operates under the same “maximum reservoir pressure.” SoCalGas designs new casing and tubing strings for wells in accordance with American Petroleum Institute (API) Technical Report 5C3 and utilizes a minimum safety factor of 1.15 for internal yield pressure for new casing and tubing. Gas storage wellheads are designed with pressure ratings based on the maximum operating pressure of a well.
- b. **Maximum Shut-In Tubing Pressure:** The maximum shut-in tubing pressure for the SoCalGas storage fields, are as follow:
  - i. Aliso Canyon – 3050 psi. Please note, this maximum surface pressure is based on the original maximum reservoir pressure of 3600 psi. The current maximum

- reservoir pressure of 2,926 psi corresponds to a maximum surface pressure of 2,476 psi.
- ii. Honor Rancho – 3600 psi.
  - iii. Playa del Rey –1491 psi.
  - iv. La Goleta – 1861 psi.
- c. Reservoir Pressure: The maximum reservoir pressure for the SoCalGas storage fields are as follows:
- i. Aliso Canyon – 3600 psi. Please note, this maximum reservoir pressure is the original maximum reservoir pressure for the Aliso Canyon storage field. The current maximum reservoir pressure per DOGGR is 2,926 psi.
  - ii. Honor Rancho – 4400 psi.
  - iii. Playa del Rey – 1700 psi.
  - iv. La Goleta – 2050 psi.

**Question 2:**

Please provide the formulas SoCalGas uses to determine each of the pressures provided in response to question 1.

**Response 2:**

- a. Please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000001 - AC\_CPUC\_SED\_DR\_27\_0000022.
- b. Please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000023 - AC\_CPUC\_SED\_DR\_27\_0000045.
- c. Please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000046 - AC\_CPUC\_SED\_DR\_27\_0000064.

**Question 3:**

Please list all SoCalGas Company documents that talk about or reference the pressures referenced in question 1, and the formulas provided in response to question 2 with regards to SoCalGas natural gas storage facility wells. These documents should include, but not be limited to, requirements, standards, practices, programs, and anything else that sets for instructions or requirements for determining these maximum pressures on SoCalGas natural gas storage facility wells.

**Response 3:**

SoCalGas interprets this request as seeking SoCalGas' current written requirements, standards, programs, and procedures that set forth the instructions or requirements for determining the maximum pressures provided in Response 1 and the formulas provided in Response 2. Please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000001 - AC\_CPUC\_SED\_DR\_27\_0000064.

**Question 4:**

Please provide the terms Southern California Gas Company uses that relate to:

- a. The limits on reservoir pressure at a Southern California Gas Company natural gas storage facility?
- b. The reservoir pressure beyond which a Southern California Gas Company natural gas storage facility reservoir should not operate?
- c. The design pressure at a Southern California natural gas storage facility well.
- d. The Maximum shut in tubing pressure at a Southern California natural gas storage facility well.

**Response 4:**

- a. Minimum Reservoir Pressure and Maximum Reservoir Pressure.
- b. Maximum Reservoir Pressure.
- c. Please see Response 1.a.
- d. Maximum Surface Pressure.

**Question 5:**

Please provide all Southern California Gas Company documents that talk about or reference to the terms SoCalGas has provided in response to question 4. These documents should include, but not be limited to requirements, standards, practices, programs, and anything else that sets forth instructions or requirements for determining the pressure limits on Southern California Gas Company's natural gas storage field reservoirs.

**Response 5:**

SoCalGas objects to this request as overly broad and unduly burdensome. SoCalGas interprets this request as seeking SoCalGas' current written requirements, standards, programs, and procedures that set forth the instructions or requirements for the pressures listed in Response 4. Please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000001 - AC\_CPUC\_SED\_DR\_27\_0000064.

**Question 6:**

Of those documents provided in response to question 5, please list all documents that apply or applied Southern California Gas Company's Aliso Canyon natural gas storage facility.

**Response 6:**

The following documents provided in response to question 5 apply to SoCalGas' Aliso Canyon storage field: Bates range AC\_CPUC\_SED\_DR\_27\_0000065 - AC\_CPUC\_SED\_DR\_27\_0000115.

**Question 7:**

Of those documents provided in response to question 5, please list all documents that applied as of October 23, 2015.

**Response 7:**

The following documents applied as of October 23, 2015: Bates range AC\_CPUC\_SED\_DR\_27\_0000117 -AC\_CPUC\_SED\_DR\_27\_0000131. On October 23, 2015, there was a prior version of Gas Standard 224.070. For the version of Gas Standard 224.070 that existed on October 23, 2015 please see the electronic document with Bates Range AC\_CPUC\_SED\_DR\_27\_0000116.

**Question 8:**

Of those documents provided in response to question 5, please list all documents that applied prior to October 23, 2015.

**Response 8:**

The following documents applied prior to October 23, 2015: Bates range AC\_CPUC\_SED\_DR\_27\_0000153 -AC\_CPUC\_SED\_DR\_27\_0000168. Prior to October 23, 2015, there were earlier versions of Gas Standard 224.070. For the earlier versions of Gas Standard 224.070 that existed prior to October 23, 2015, please see electronic document with Bates range AC\_CPUC\_SED\_DR\_27\_0000132 -AC\_CPUC\_SED\_DR\_27\_0000151.

**Question 9:**

Of those documents requested in questions 3 and 5, are there any that were in existence, but that Southern California Gas Company no longer has?

**Response 9:**

No.

**Question 10:**

If the answer to question 9 is yes, please list all such documents.

**Response 10:**

N/A.

**Question 11:**

Based upon the documents provided in response to question 5, did SoCalGas use a formula or formulas to calculate the maximum pressures identified in response to question 2 for the reservoirs at Aliso Canyon on October 23, 2015?

**Response 11:**

Yes.

**Question 12:**

If the answer to question 11 is yes, please provide the formula or formulas.

- a. Please be sure to identify each variable in the formula;
- b. Provide a definition of each variable in the formula;
- c. Refer to the document and page of the document provided in response to question 4 that is the basis for each formula provided.

**Response 12:**

Please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000001 - AC\_CPUC\_SED\_DR\_27\_0000064.

**Question 13:**

As of October 23, 2015, please identify each reservoir in Aliso that had its reservoir pressure (or concept identified in response to question 4) kept below the results of the required formula or formulas identified in response to question 12.

**Response 13:**

There is only one gas storage reservoir at Aliso Canyon – the Sesnon-Frew Gas Storage Zone. On October 23, 2015, the reservoir pressure of the Sesnon-Frew Gas Storage Zone was below the maximum reservoir pressure of 3600 psi.

**Question 14:**

For the Standard Sesnon reservoir at Aliso Canyon as of October 22, 2015, please identify each variable in the formulas used to calculate the concepts identified in response to question 2, and provide the definition of each variable.

**Response 14:**

There is no “Standard Sesnon” reservoir at Aliso Canyon. There is only one gas storage reservoir at Aliso Canyon – the Sesnon-Frew Gas Storage Zone.

**Question 15:**

Please identify the impact of the most recently installed compressors at Aliso Canyon on the overall reservoir pressure (or term SoCalGas uses to refer to reservoir pressure). Please include the minimum and maximum reservoir pressures for each reservoir at Aliso since the installation of those compressors, as well as the date of each such reservoir pressure.

**Response 15:**

The recently installed compressors do not affect the maximum and minimum reservoir pressures of the Sesnon-Frew Zone storage reservoir at Aliso Canyon.

**Question 16:**

What is the impact of the overall storage volume of each Aliso Canyon reservoir on the reservoir pressure of that reservoir? If this impact can be expressed in a formula, please include that formula, the reference and page number for that formula, and an explanation for how that formula was derived.

**Response 16:**

Please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000023 - AC\_CPUC\_SED\_DR\_27\_0000045.

**Question 17:**

Has SoCalGas used reservoir pressure (or term SoCalGas uses to refer to reservoir pressure) in order to determine which wellhead to place on each well at its storage facilities? If so, please provide all such wells that have received wellheads that account for reservoir pressure.

**Response 17:**

Yes, the maximum reservoir pressure is used to determine which wellhead to place on each well. All wells have received wellheads with a pressure rating above the maximum reservoir pressure.

**Question 18:**

Are wellheads components of well facilities?

**Response 18:**

The wellhead is a component of a gas storage well. Components of a gas storage well include, but are not limited to, the wellhead, tubing, casing, packers and valves.

**Question 19:**

Do wellheads have restrictions with regards to pressure they can withstand from injection and withdrawal?

**Response 19:**

Wellheads are designed for pressure that exceeds reservoir pressure, thus wellheads are able to withstand withdrawal and injection pressure.

**Question 20:**

With regards to wellheads discussed in response to questions 19-21, did the wellhead on SS25 in any way impair the ability to kill SS25? Please explain.

**Response 20:**

No, the wellhead did not impair the ability to kill SS25. SoCalGas had access to all the wellhead valves and connected to the wellhead in the first attempt to kill the well. The wellhead functioned as expected.

Prior to pumping any kill fluid, SoCalGas had Cameron West Coast service the primary seals in the wellhead by injecting plastic sealant to re-energize the primary and secondary seals around the 7" casing inside the wellhead.

**Question 21:**

It is SED's understanding that SoCalGas used the tubing and the casing on SS25 to inject and withdraw gas prior to October 23, 2015. Is this understanding correct? If so:

- a. When did SoCalGas start this practice of injecting and withdrawing gas through the casing on SS25?
- b. Why did SoCalGas decide to inject and withdraw gas through the casing on SS25?
- c. When SoCalGas started the practice of injecting and withdrawing gas through the casing on SS25, did SoCalGas do any safety related studies or analyses with regards to withdrawing or injecting gas into the casing?
- d. Specifically, when SoCalGas started the practice of injecting and withdrawing gas through the casing on SS25, did SoCalGas study the conditions under which the casing would leak?
  - i. If so, please provide all such studies.
  - ii. If not, why not?

**Response 21:**

For SS25, SoCalGas withdrew gas through both the tubing and the tubing-casing annulus, and injected gas through the tubing-casing annulus.

- a. Gas was moved through the casing in SS25 since SoCalGas first began operating the well. SoCalGas previously provided CPUC-SED with a data response listing the month/time range of initial withdrawal/injection for all wells. Please see electronic documents with Bates range Please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000169 -AC\_CPUC\_SED\_DR\_27\_0000174.
- b. Prior to October 23, 2015, withdrawal and injection through the casing was industry practice. Please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000175 -AC\_CPUC\_SED\_DR\_27\_0000350.
- c. At Aliso Canyon prior to the conversion of wells to tubing flow only, in general, high structure wells were operated as casing flow and lower structure wells were operated as tubing flow. For more information, please see the electronic document with Bates range AC\_CPUC\_SED\_DR\_27\_0000351-AC\_CPUC\_SED\_DR\_27\_0000411.
- d. See Response 21.c.

**Question 22:**

Please provide a list of all wells within SoCalGas storage facilities for which SoCalGas has injected and/or withdrawn gas through well casing.

**Response 22:**

SoCalGas interprets this request as seeking information about SoCalGas' Aliso Canyon storage field. SoCalGas previously provided CPUC-SED with a data response that lists the month/time range of initial withdrawal/injection for all wells. Please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000412 -AC\_CPUC\_SED\_DR\_27\_0000417.

**Question 23:**

Please answer questions 21 a-d again, but this time for the entire list of wells provided in response to question 22.

**Response 23:**

For the Aliso Canyon wells within SoCalGas for which SoCalGas has injected and/or withdrawn gas through the well casing:

- a. Gas was moved through the casing in these wells since SoCalGas first began operating the well. SoCalGas previously provided CPUC-SED with a data response listing the month or time range of initial withdrawal/injection for all wells. Please see

- electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000169 - AC\_CPUC\_SED\_DR\_27\_0000174.
- b. Prior to October 23, 2015, withdrawal and injection through the casing was industry practice. Please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000175 -AC\_CPUC\_SED\_DR\_27\_0000350.
  - c. At Aliso Canyon, prior to the conversion of wells to tubing flow only, in general, high structure wells were operated as casing flow and lower structure wells were operated as tubing flow. For more information, please see the electronic document with Bates range AC\_CPUC\_SED\_DR\_27\_0000351 -AC\_CPUC\_SED\_DR\_27\_0000411.
  - d. See Response 21.c.

**Question 24:**

Did SoCalGas provide notice to any agencies when it decided to move gas through the casing on well SS25? If so:

- a. Which agencies?
- b. Please provide all documentation showing such notice for each well.

**Response 24:**

- a. SoCalGas moved gas through the casing in SS25 since the initiation of gas storage operations in the 1970s. There was no requirement to provide formal notice. However, SoCalGas understands that the Division of Oil, Gas and Geothermal Resources (DOGGR) was aware that gas was moved through the casing in SS25.
- b. N/A.

**Question 25:**

If the answer to question 24 is no, please explain.

**Response 25:**

N/A.

**Question 26:**

Please list the titles of, and provide, all industry practices and standards that support and/or allow injecting and withdrawing gas through well casings.

**Response 26:**

A representative listing of industry practices and standards that support and/or allow injecting and withdrawing gas through well casings include:

- American Petroleum Institute, American Gas Association, Interstate Natural Gas Association of America, *Underground Natural Gas Storage Integrity & Safe Operations*, July 6, 2016, pp. 55-56.
- Final Report of the Interagency Task Force on Natural Gas Storage Safety, *Ensuring Safe and Reliable Underground Natural Gas Storage*, October 2016, p. 54.

**Question 27:**

Please list the titles of, and provide, all SoCalGas requirements, standards, practices, memoranda, internal reports, and other documentation that supports and/or allows injecting and withdrawing gas through well casings.

**Response 27:**

N/A.

**Question 28:**

How many active wells did SoCalGas have in its existing natural gas storage facilities prior to October 23, 2015?

**Response 28:**

For a list of SoCalGas wells at SoCalGas' natural gas storage facilities on or around 10/23/15, please see electronic document with Bates range AC\_CPUC\_SED\_DR\_27\_0000418.

**Question 29:**

Of the number of wells provided in response to question 28, how many injected and/or withdrew gas through casing?

**Response 29:**

Please see electronic document with Bates range AC\_CPUC\_SED\_DR\_27\_0000419.

**Question 30:**

How many active wells does SoCalGas have in its existing natural storage facilities as of the date of this data request?

**Response 30:**

For a list of active wells at the Aliso Canyon storage field please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000421 -AC\_CPUC\_SED\_DR\_27\_0000423. For a list of active wells at the non-Aliso storage fields (Playa del Rey, Honor Rancho, and La Goleta), please see electronic document with Bates range AC\_CPUC\_SED\_DR\_27\_0000420.

**Question 31:**

Of the number of wells provided in response to question 30, how many inject and/or withdraw gas through casing?

**Response 31:**

None.

**Question 32:**

How many of the number of wells provided in response to question 31 are at SoCalGas's Aliso Canyon natural gas storage facility?

**Response 32:**

N/A.

**Question 33:**

What was the maximum pressure for each of the pressures identified in response to question 1 for wells at SoCalGas natural gas storage facilities as of October 23, 2015?

- a. Please provide the supporting document, including reference to page number, for the maximum pressure provided in response to question 34.

**Response 33:**

Please see Response 1.

**Question 34:**

What is maximum pressure for each of the pressures identified in response to question 1 for wells at SoCalGas natural gas storage facilities based upon as of the date of this data request?

**Response 34:**

Please see Response 1.

**Question 35:**

How has the basis for calculating the maximum pressures identified in response to question 1 for wells at SoCalGas natural gas storage facilities changed from October 23, 2015 to the date of this data request?

**Response 35:**

Please see Response 1.

**Question 36:**

Provide a spreadsheet showing:

- a. All SoCalGas storage facility wells that currently have subsurface safety valves.
- b. All SoCalGas storage facility wells that no longer have subsurface safety valves.
- c. The date of installation of each subsurface safety valve.
- d. The date of removal of each subsurface safety valve that was removed.
- e. Whether the subsurface safety valve isolates/isolated tubing?
- f. Whether the subsurface safety valve isolates/isolated casing?
- g. Depth of the subsurface safety valve.
- h. If the subsurface safety valve was removed, reason for removal.

**Response 36:**

- a. For a list of current active wells with shallow set SSSVs, please see electronic document with Bates range AC\_CPUC\_SED\_DR\_27\_0000424.
- b. – h.:  
SoCalGas objects to requests 36 b-h as overly broad and unduly burdensome. Notwithstanding this objection, SoCalGas responds as follows: SoCalGas previously prepared and provided this information to CPUC-SED for the Aliso Canyon storage field. Please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000426 - AC\_CPUC\_SED\_DR\_27\_0000430. In addition, SoCalGas previously provided the CPUC with a copy of a data request response to DOGGR. That data request response included a narrative regarding SoCalGas' experience with deep-set SSSVs at SoCalGas' storage fields, and correspondence that SoCalGas had in its records regarding SSSVs. Please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0000431 - AC\_CPUC\_SED\_DR\_27\_0003343.

*Questions 37-40 – On September 6, 2018, counsel for SED provided clarification on Questions 37-40 as follows: “items 37-40 of DR 27 should reference both “job history file” and “well history file”.”*

**Question 37:**

Please provide SoCalGas's definition of job history and well history files as of October 23, 2015.

**Response 37:**

As of October 23, 2015, SoCalGas' well file had four components – (1) well history file, (2) log file, (3) survey file, and (4) invoice file. There was no “job history file.” However, the “well history

file” included DOGGR Form OG-103 (History of Oil and Gas) which details the rig work performed on a well during drilling, abandonment, and workover operations.

**Question 38:**

Please identify all records that must be kept in SoCalGas’s job history and well history files as of October 23, 2015.

**Response 38:**

Please see Response 37. SoCalGas’ practice is to include the following types of documents in the “well history file”: DOGGR Form OG-103 (Well History Report), DOGGR Form OG-100 (Well Summary), Notices of Intent (NOI), Permits to Drill/Rework, and Workover Programs. Operators are required to submit OG-103 and OG-100 to DOGGR within 60 days after the drilling completion, suspension, or abandonment of a well.

**Question 39:**

Please provide all SoCalGas requirements, standards, practices, memoranda, internal reports, and other documentation that show the types of records that were required to be kept in SoCalGas’s job history files as of October 23, 2015.

**Response 39:**

SoCalGas interprets this request as seeking SoCalGas’ formal written requirements, standards, practices, memoranda, internal reports, and other formal written documents that show the types of records required to be kept for a well. For SoCalGas Records Management and Retention Schedule as of and prior to October 23, 2015, please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0003344 -AC\_CPUC\_SED\_DR\_27\_0004205.

**Question 40:**

Please provide the job history file for SS25 as it looked on October 23, 2015.

**Response 40:**

Please see Response 37. For the “well history file” for SS25, please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0004206 -AC\_CPUC\_SED\_DR\_27\_0004430.

**Question 41:**

Please list the titles of, and provide, all SoCalGas requirements, standards, practices, memoranda, internal reports, and other documentation that relate to creating, maintaining, keeping, retaining, modifying and deleting job history files between the point in time at which SoCalGas acquired Aliso Canyon natural gas storage facility and October 23, 2015.

**Response 41:**

SoCalGas interprets this request as seeking SoCalGas' formal written requirements, standards, practices, memoranda, internal reports, and other formal written documents that relate to creating, maintaining, modifying and deleting well file information from the point in time at which SoCalGas acquired the Aliso Canyon storage field and October 23, 2015. SoCalGas objects to this request as overly broad and unduly burdensome. Notwithstanding this objection, SoCalGas responds as follows: For SoCalGas' Records Management and Retention Schedules as of and prior to October 23, 2015, please see electronic documents with Bates range AC\_CPUC\_SED\_DR\_27\_0003344 -AC\_CPUC\_SED\_DR\_27\_0004205.