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May 9, 2024

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**Re: Ventura Compressor Station Modernization Project – Second PEA Completeness Review. (A.23-08-019)**

This transmittal provides a review of updated material submitted to the CPUC by Southern California Gas Company (SoCalGas) to the CPUC in support of the Application for a Certificate of Public Convenience and Necessity (CPCN) for the Ventura Compressor Station Modernization Project (proposed project). The Proponent's Environmental Assessment (PEA) and formal application (A.23-08-019) were submitted concurrently, dated August 24, 2023.

The CPUC Energy Division CEQA Unit Staff and the CPUC consultant team (Aspen Environmental Group) provided the initial results of review in the PEA Completeness Review, dated September 22, 2023. The CPUC CEQA Unit is now providing a second completeness/deficiency review of the Application and PEA, evaluating the updates provided in packages from SoCalGas dated November 21, 2023, and April 2, 2024.

After completing this second review of the Application and PEA for the project, the CPUC concludes that the Application and PEA remain incomplete. For the areas of: Hazards and Public Safety, Greenhouse Gas Emissions including Health Risks, and Alternatives, the CPUC identifies remaining information gaps that would prevent preparation of an adequate Environmental Impact Report (EIR) in a timely manner. These gaps are explained in the following attachment.

Michael Rosauer
California Public Utilities Commission Energy Division

Attachment: Second PEA Completeness Report

# SECOND PEA COMPLETENESS REVIEW

## Ventura Compressor Station Modernization Project

***Prepared for***

**CPUC Energy Division**

***Submitted by***

Aspen environmental group

**May 2024**

# CONTENTS

# 1. SECOND PEA COMPLETENESS AND DEFICIENCY REPORT

This report provides the results of the CPUC Energy Division CEQA Unit Staff and Aspen Environmental Group for the second round of review of the Ventura Compressor Station Modernization Project. The Proponent's Environmental Assessment (PEA), and the application (A.23-08-019), were submitted concurrently, dated August 24, 2023.

After completing this second review of the Application and PEA for the project, the PEA remains incomplete in the areas of hazards and public safety, greenhouse gas emissions including health risks, and alternatives, as described below.

## 1.1. Deficiency Area #1, Hazards and Public Safety

This category of information will help the CPUC assess how the proposed project would minimize potential hazard to the public in the event of accidents or natural catastrophes. Potential hazards to the public include the risk of serious injury or fatality to persons occupying the area.

These deficiency requests focus on the Risk Assessment (as PEA Appendix S) prepared for SoCalGas by Quest Consultants Inc., filed with the April 2, 2024, transmittal.

**Impact Analysis, Public Safety, Section 5.9.4.4, Accident or Upset Conditions.** Because of the potential for overlapping construction and demolition activities to be taking place within the site concurrent with ongoing operation of the station, the September 2023 PEA Completeness Review requested consideration of a range of scenarios, including third-party mechanical damage to operating systems during construction and demolition heavy lifts. Additional concerns include acts of sabotage.

**Deficiency Request:**

1. Please expand the discussion of risk analysis methodology, especially the failure case definitions, to clarify how scenarios of third-party damage or sabotage would or would not be reflected in Risk Assessment results.

**Hazard Zone Analysis.** The discussions of "indoor releases" (p. A-10) raises questions about the risk to operators or personnel near Potential Explosion Sites (PESs). The description of the facility includes "operations personnel will be on site to inspect and maintain equipment at the facility during normal business hours" (p.3), and this could be expected because of the office building proposed with the project. However, the QRA states that "no personnel are assumed to be in the compressor buildings on a regular basis" (p. A-10). Results imply that the risk assessment accounts for "continuous occupancy" within the facility (p. 15).

**Deficiency Request:**

2. Please clarify whether the analysis considers the potential for any personnel within the defined Potential Explosion Sites and clarify whether the location-specific individual risk (LSIR) results account for continuous occupancy within the facility.

**Shutdown and Isolation Assumptions.** The Risk Assessment identifies "a set of default normal flow conditions" that include the leak duration time of 3 minutes for a rupture hole size (Table A-3). The American Petroleum Institute (API) publication, Recommended Practice (RP) 581, Risk-Based Inspection Methodology, is peer reviewed as Recognized and Generally Accepted Good Engineering Practice (RAGAGEP); the API publication provides guidance for estimating leak durations based on the size of leak and the type of detection and isolation systems in use.

The following table reproduces the classification scheme for detection and isolation systems, according to API RP 581, *Part 3 – Consequence of Failure Methodology*, Table 4.5.

**Detection and Isolation System Rating Guide**

| **Type of Detection System** | **Detection Classification** |
|---|---|
| Instrumentation designed specifically to detect losses by changes in operating conditions (i.e., loss of pressure or flow) in the system | A |
| Suitably located detectors to determine when the material is present outside the pressure-containing envelope | B |
| **Type of Isolation System** | **Isolation Classification** |
| Isolation or shutdown system activated directly from process instrumentation or detectors without operator intervention | A |
| Isolation or shutdown system activated by operators in a control room or other suitable location remote from the leak | B |

Source: API RP 581 Risk-Based Inspection Methodology, *Part 3 – Consequence of Failure Methodology*, Table 4.5 (3rd Edition, 2016).

The following list reproduces the total leak durations from the API RP 581 methodology (Table 4.7 - Leak Duration Based on Detection and Isolation Systems). For a 4-inch leak or larger, the methodology indicates the following duration times for A and B type system combinations:

- Detection-Isolation System Ratings: A-A = 5 minutes.
- Detection-Isolation System Ratings: A-B = 10 minutes.
- Detection-Isolation System Ratings: B-B = 20 minutes.

The CPUC is concerned that for a 4-inch leak or larger, the maximum leak duration times could vary from 5 minutes to 20 minutes, depending on the ratings of detection and isolation systems. By assuming a leak duration of 3 minutes, the Risk Assessment does not appear to be conservative, and it presumes a more rapid isolation that recommended by API.

**Deficiency Request:**

3. Please review the detection and isolation system rating guide (of API RP 581, RP 581, *Part 3 – Consequence of Failure Methodology*, Table 4.5) and summarize the types of detection and isolation systems in use for different sizes of leaks at the existing compressor station and for the proposed project. The descriptions of the detection and isolation systems should be sufficiently detailed for Energy Division Staff and consultants to appropriately classify the systems in terms of API RP 581.
4. Please describe of the type of detection system and isolation system for the scenario (Table A-3) of a 6-inch hole size and rupture releases for the compressor building and outside locations for the proposed project.

**Failure Frequency Definition.** The September 2023 PEA Completeness Review requested information on the assumptions for failure frequency in the consideration potential hazardous releases. Information in Risk Assessment Appendix A relies on “several databases” (p. 13), yet Appendix A does not clearly state the sources of the various failure rates (frequencies) used in Tables A-8 through A-13.

**Deficiency Request:**

5. Please add complete citations to clarify sources of information for each of data tables and define “the Energy Institute” and “UKOOA” (p. A-23).

6. Please elaborate on the claim of "pipeline risk is generally low due to the infrequent failure rates" (p. 35) by referencing a citation for pipeline failure frequency and by explaining the relative differences in pipeline failure rates as compared to other incident rates used in the assessment.

**Results and Assessment.** Results presented in the Risk Assessment (Figures 3-1 through 3-4) include contours for annual fatality risk greater than $10^{-6}$ and "only in industrial or commercial areas" (p. 26). Visualizing the location-specific individual risk and areas of is complicated by a lack of a photo base for the contours.

Additionally, the CPUC would like to shed light on the probability of serious injury. It is unclear whether explosion overpressure endpoints at levels below 2.4 pounds per square inch (Table 2-1) would be reached in the area. In a prior study for CPUC (for the Sacramento Natural Gas Storage Project, 2009), modeling was used to indicate the range of locations far enough from the source of overpressure to indicate where the explosion overpressure level would be incapable of causing injuries.

**Deficiency Request:**

7. Please refine the figures for Location Specific Individual Risk (LSIR) with an overlay of the risk contour plots on a satellite or aerial photo base maps to provide more insight into the specific structures that are located within the risk zones.
8. Please expand the figures for LSIR to include contours for levels less than $10^{-6}$, e.g., $5.0 \times 10^{-7}$ and $3.0 \times 10^{-7}$.
9. Please add hazard modeling endpoints for explosion overpressure at levels less than 2.4 pounds per square inch (psi) to inform the scope of potential serious injury. For example, to assess probability of offsite injury, please include explosion overpressure endpoints of 1.0 psi to 0.70 psi.

**Details on Hazard Extents.** The maximum distances to lower flammable limit (LFL) appear in the Risk Assessment Appendix D for failure cases that are not fully described.

The table below compares the maximum downwind distance to LFL for various selected Failure Cases from the Risk Assessment, Table D-1. In all cases, the distances to LFL for the modernized station are substantially less than for the existing station. The decrease seems large, considering that the gas throughput capacity would substantially increase with the modernized station and operating pressures appear to remain mostly comparable. The report also states that no credit was taken for the block walls attenuating the vapor cloud extent.

**Examples of Maximum Distances [feet] to Lethal Hazard Levels**

| | **Existing Compressor Station** | | **Proposed Project** | |
|---|---|---|---|---|
| **Piping Segments** | Failure Case | Feet to LFL | Failure Case | Feet to LFL |
| Station Inlet | EXS01 | 180 | CSM01* | 15 |
| Station Outlet | EXS07 | 280 | CSM08* | 20 |
| Station Inlet | EXS11 | 185 | CSM11* | 15 |
| Station Outlet | EXS17 | 280 | CSM18* | 20 |
| Station Inlet | EXS 21 | 185 | CSM21* | 15 |
| Station Outlet | EXS27 | 280 | CSM28* | 10 |
| Cooled Gas to Station Outlet | --- | --- | CSM07 | 115 |

Note: * buried lines.
Source: April 2024 Risk Assessment Table D-1.

**Deficiency Request:**

10. Please provide a listing of the assumptions and input parameters for the Failure Cases presented in Table D-2 and specify the factors that resulted in the decreases in distances to lethal hazard levels.
11. Please explain why the distance to LFL is much less than the existing facility for the proposed project failure cases, but the extent of the thermal radiation hazard would be about the same. This appears to assume immediate ignition and jet fire. Also, please explain whether the immediate ignition probability is different for buried lines and unburied lines.
12. Please explain the difference in distance to LFL between unburied failure cases EXS07 and CSM07.

**Details on Overpressure Impacts.** The Risk Assessment Appendix D (Tables D-2 and D-3) indicate that no overpressure endpoints were reached.

Possible factors leading to this result include: presuming rapid isolation and limited release durations, and the modifications to the standard Baker-Strehlow-Tang (BST) method, as disclosed in Risk Assessment Appendix A-2.5 and Appendix B.

The CPUC is concerned that the possibility of an explosion of a flammable vapor cloud may be underestimated. More discussion would help clarify why the overpressure endpoints are not reached within the PES designation zones (confinement areas) such as the existing and proposed compressor house.

**Deficiency Request:**

13. Please elaborate on whether vapor cloud explosion results would be the same if the release duration for a rupture was 5 minutes compared with 3 minutes (Table A-3).
14. Please elaborate on whether vapor cloud explosion results would be the same if standard BST methodology were to be applied to the explosion model.
15. Please define “QMEFS” and provide a copy of the referenced paper by Marx & Ishii (2017) that defines Quest’s QMEFS model.
16. Please provide examples where the QMEFS variation of the BST method was applied in other Risk Assessments for sites in California or in another public-agency review or public decision-making process that may be reviewed by the CPUC.

## 1.2. Deficiency Area #2, Greenhouse Gas Emissions and Health Risk Assessment

With the SoCalGas November 2023 Response to PEA Completeness Review, there is an updated Air Quality and GHG Emissions Technical Report and a revision to PEA Section 5.8.1 identifying a range of natural gas volumes of vented emissions and fugitive emissions from components leaks reported for the years 2021 and 2022.

**Deficiency Request:**

17. Please quantify the reasonably foreseeable proposed project GHG and toxic air contaminant emissions rates associated with natural gas volumes of vented emissions and fugitive emissions from components leaks.
18. Please confirm that vented emissions and fugitive emissions from components leaks are considered and included in the Health Risk Assessment for the predicted health risks during project operation. Please include quantified cancer risk and noncancer hazard indices for these sources.

## 1.3. Deficiency Area #3, Description of Alternatives

In the SoCalGas November 2023 Response to PEA Completeness Review, there is a reference to a "preliminary equipment listing" and a PEA Figure 4-2, Supplemental Electric-Driven Compressor Alternative Site Plan. The conceptual layout of the Supplemental Electric-Driven Compressor Alternative appears in one drawing provided with Appendix A, Detailed Maps and Design Drawings. The figure for this alternative appears to be missing.

**Deficiency Request:**

19. Please provide PEA Figure 4-2, Supplemental Electric-Driven Compressor Alternative Site Plan and a complete description of the components that would be included with the alternative for comparison with the proposed project components.