

## PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE  
SAN FRANCISCO, CA 94102-3298



September 12, 2017

GI-2017-03-PGE29-10

Mr. Sumeet Singh, Vice President  
Pacific Gas and Electric Company  
Portfolio Management & Engineering  
6111 Bollinger Canyon Road, Room 4590-D  
San Ramon, CA 94583

SUBJECT: SED's closure letter for the General Order 112 Gas Inspection of PG&E's Control Room Management Program

Dear Mr. Singh:

The Safety and Enforcement Division (SED) of the California Public Utilities Commission reviewed Pacific Gas and Electric Company's (PG&E) response letter dated July 12, 2017 for the findings identified during the General Order (GO) 112 Inspection of PG&E's Control Room Management Program which was conducted from March 6-10 and April 3-4, 2017<sup>1</sup>.

A summary of the audit findings documented by the SED, PG&E's response to our findings, and SED's evaluation of PG&E's response taken for each identified Violation and Area of Concern and Recommendation is attached.

This letter serves as the official closure of the 2017 GO 112 Inspection of PG&E's Control Room Management Program and any matters that are being recommended for enforcement will be processed through the Commission's Citation Program or a formal proceeding.

Thank you for your cooperation in this inspection. Please contact Sikandar Khatri at (415) 703-2565 or by email at [Sikandar.Khatri@cpuc.ca.gov](mailto:Sikandar.Khatri@cpuc.ca.gov) if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads "Dennis Lee". The signature is fluid and cursive, with the first name "Dennis" and last name "Lee" clearly distinguishable.

Dennis Lee, P.E. - Program and Project Supervisor  
Safety and Enforcement Division

cc: Kenneth Bruno, SED  
Kelly Dolcini, SED  
Mike Bradley, PG&E Compliance Gas Operations  
Susie Richmond, PG&E Gas Operations Regulatory Compliance and Risk Analysis

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<sup>1</sup> General Order 112-F was adopted by the Commission on June 25, 2015 via Decision 15-06-044.

### PG&E's Internal Audit Findings:

PG&E provided SED its finding from the internal review. PG&E's internal review finding is violation of PG&E's standards, and therefore violation of Title 49 Code of Federal Regulations (CFR), §192.13(c) or §192.605(a). SED is aware that PG&E is addressing the identified issue through creation of a Corrective Action Program (CAP) item. Please provide an update on the same.

Topic	Period	Findings	Corrective actions	Proposed action to prevent occurrence	Completion date
Clearances	2014-2017	<b>Non Compliance with Internal Requirements (TD-4441S, Gas Clearances)</b>  It was discovered that communication on key steps between PGE personnel and Gas Control were not completed or documented in accordance with TD-441S. 220 instances of 48,000 discovered Not an imminent safety threat	Reviewing the gas clearance process to further clarify communication requirements to Gas Control  Exploring technology to automate the process  Reissuing a communication to field employees on the importance of the communications	CAP 112670136	tbd

### PG&E's Response:

A tailboard communication on TD-4441S was distributed to Field personnel responsible for completing key communication steps to Gas Control on July 12, 2017 emphasizing the importance of identifying key communication steps and contacting Gas Control.

Refer to attachments, IRSF\_TD-4441S.pdf and IRSF\_BUR-BUR-000007383.pdf for a copy of the tailboard and the relevant procedure.

To increase visibility of the gas clearance process, PGE implemented a live Gas Clearance Dashboard to create a better alignment between stakeholders. This effort provides dynamic metrics which will communicate system health and generate reports to ensure stakeholder accountability.

### SED's Conclusion:

PG&E is taking action to address it; SED recommends that no fine or penalty be imposed.

## **SUMMARY OF INSPECTION FINDINGS**

### **I. Probable Violations**

1. Title 49 CFR §192.605 states in part:

(a) *General. Each operator shall prepare and follow for each pipeline, a manual of written procedures for conducting operations and maintenance activities and for emergency response...*

(b) *Maintenance and normal operations.*

*The manual required by paragraph (a) of this section must include procedures for the following, if applicable, to provide safety during maintenance and operations.*

*(1) Operating, maintaining, and repairing the pipeline in accordance with each of the requirements of this subpart and Subpart M of this part...*

**1.1. Title 49 CFR §192.631 (g) Operating experience states:**

*“Each operator must assure that lessons learned from its operating experience are incorporated, as appropriate, into its control room management procedures by performing each of the following:*

*(1) Review incidents that must be reported pursuant to 49 CFR part 191 to determine if control room actions contributed to the event and, if so, correct, where necessary, deficiencies related to:*

*(i) Controller fatigue...*”

PG&E procedure TD-4436P-02, section 4 Conducting Post-incident Investigations addresses steps required after an incident. In addition, Frequently Asked Question (FAQ) produced by PHMSA for Control Room Management under D.12 emphasizes the importance of fatigue assessment after incidents that have been due to contribution of control room personnel.

SED observed that fatigue analysis was not performed for the control room personnel involved in the Hershey Junction incident that occurred on 6/5/2016. Without performing a fatigue analysis, PG&E wouldn't be able to determine that whether fatigue contributed to the incident. SED discussed with PG&E staff who recognized this deficiency and will take measures to avoid this in future. Please provide an update.

#### **PG&E's response:**

PG&E appreciates the observation, however respectfully disagrees with this finding.

In assessing whether control room personnel contributed to an event, PG&E's procedure TD-4436P-02 states, "This investigation may include performing fatigue assessments to assist in determination."

In reviewing the event, it was determined control room personnel contributed to the event without the need to conduct a fatigue assessment. Post-Accident Testing was initiated and after completion of the test, the employee was off duty.

Fatigue assessments conducted at a later time do not effectively identify whether fatigue was a factor.

Furthermore, Control room personnel receive the required fatigue training and are required to self report and utilize fatigue countermeasures if there is a compromise to their fitness for duty.

The employees on shift are in compliance with annual fatigue recognition training.

Refer to the attached NOV1\_Fatigue\_Training\_Record.xls

**SED's Conclusion:**

SED has reviewed the response and understands that PG&E determined that control room personnel contributed to the incident. However, as outlined above since fatigue is a main contributor to incidents caused by control room personnel, PG&E should always perform fatigue assessments immediately after any future incidents to determine that fatigue or any other factor was the reason. This will provide an opportunity to address the issue accordingly.

## **II. Areas of Concern/ Observations/Recommendations:**

SED made following observations during the audit.

1. For the Pipeline and Hazardous Materials Safety Administration (PHMSA) protocol form item E4-1, bullet 2, PG&E referred SED to PG&E document “SCADA Alarm Management Process”, section 11 which states that:

*“Effectiveness Review*

*11.1 After the change has been implemented, perform an assessment of the effectiveness of the change ...”*

SED made an observation that "Effectiveness Review" should not be limited to “change in alarm” only condition. Please provide an update on the proposed action.

### **PG&E’s Response:**

PG&E has taken this recommendation to evaluate its Alarm Definition and Rationalization Process under consideration, which aligns with the review of the alarm effectiveness process.

### **SED’s Conclusion:**

SED has reviewed the response.

2. PHMSA protocol form item E4-1 addresses Annual Review of the Alarm Management Plan. PG&E provided information on the monthly Key Performance Indicator (KPI) studies, and others including work load study, review of set points and personnel training. However, since these studies are inter-related, there was no comprehensive annual review that includes all such studies and their interaction to identify systemic deficiencies or root cause analyses, if needed. SED recommends such studies will be helpful to provide overall insight in the Alarm Management Plan.

### **PG&E’s Response:**

PG&E respectfully appreciates this recommendation and will consider reviewing such studies and metrics.

### **SED’s Conclusion:**

SED has reviewed the response, and believes that integrated studies will provide a better overall review of the program.

3. SED requested minutes for monthly KPI meetings to get an insight that who was present, what was discussed and how items were identified for further action. PG&E provided document that listed action items, deadlines and to whom these items were assigned. SED recommends that detailed minutes be recorded for such meetings.

### **PG&E’s Response:**

PG&E respectfully appreciates this observation and will consider this recommendation.

### **SED’s Conclusion:**

SED has reviewed the response.

4. PG&E provided reports of “work load study” performed by consultants “Human Centered Solutions” for control room management program, both for transmission and distribution systems. These reports refer to “System Performance Metrics” for comparison.
  - (a) The work load study for Transmission system dated November 9, 2016 states that “Analysis of the Alarm System Effectiveness found several metrics that were not in compliance with the PG&E Alarm System Philosophy metrics.”  
Please provide information on what actions PG&E is taking to address this.
  - (b) SED had inquired which PG&E document has information on Alarm System Philosophy metrics, such as Total Alarms per hour, Emergency Priority per shift, High per shift etc. PG&E mentioned that these were identified earlier in the program but current documents do not have this information. SED recommends that these be included in appropriate document(s).

**PG&E’s Response:**

The metrics identified in the PG&E Alarm System Philosophy in 2012 were used as a guideline to establish PG&E Alarm Management. PG&E respectfully appreciates this observation and is taking measures to explore existing metrics based on the new Alarm Definition and Rationalization Process. The Philosophy metrics are goals that were identified in 2012. Upon investigation into the data on a holistic level, PG&E is meeting those goals.

Based on this observation, PG&E is continuing to look at our metric philosophy.

**SED’s Conclusion:**

SED has reviewed the response and emphasizes that setting goal metrics is an important factor in assessment of the Program.

5. PHMSA protocol form item E6-1, item 2 states procedure should provide a criteria and/or guidelines for prioritizing the resolution and correction of deficiencies. The operator’s documentation should also record the basis for the selection and scheduling of corrective action.  
SED reviewed PG&E document “SCADA Alarm Management Process” which did not contain criteria and/or guidelines for prioritizing the resolution and correction of deficiencies. SED recommends that if it is referred in any other document, please provide the reference or else add to the relevant document(s).

**PG&E’s Response:**

PG&E respectfully appreciates this recommendation and will consider adding criteria into our documents for prioritizing the resolution and correction of deficiencies.

**SED’s Conclusion:**

SED has reviewed the response.

6. During the audit, PG&E stated that they are working on developing a new ADR (Alarm Definition and Rationalization) process. SED recommends that consideration of work load requirements be included into this study to assure the availability of adequate staff. (Reference: PHMSA Protocol form E5-3, FAQ E.07)

**PG&E's Response:**

The intent of the new Alarm Definition and Rationalization Process is to ensure that alarms are defined accordingly and that alarm counts align with staffing levels. This recommendation will be considered in our new Alarm Definition and Rationalization Process.

**SED's Conclusion:**

SED has reviewed the response.

7. PG&E provided a document in response to data request # 29 that shows fatigue metrics. SED recommends that an analysis of different fatigue measures used by each individual will be helpful for PG&E for such studies.

**PG&E's Response:**

PG&E respectfully appreciates this observation and will consider this recommendation.

**SED's Conclusion:**

SED has reviewed the response.

8. PG&E reported a SCADA outage that occurred in May 2016. During this outage, the Control Room inventory list and Planning Tool mismatched on a measurement point. PG&E has already identified it as a lesson learned, however no CAP item was created. During the audit, PG&E stated that they will create a CAP item; please provide an update on the same.

SED also recommends that the Planning tool and Control Room Inventory be compared more frequently than the current Annual practice. Please provide an update on any changes being made.

**PG&E's Response:**

CAP item 112670567 was created and the SCADA Outage Manual Operations Process was updated to include a 30 day requirement for planning to notify the Control Room Management Team of any change to the planning tool.

Refer to 3.6.1 of the attached AOC8\_SCADA\_Outage\_Process.pdf

**SED's Conclusion:**

SED has reviewed the response.

9. SED has reviewed PG&E's document, 'SCADA Alarm Management Process', section 2, "Defining Alarm Limits". PG&E provided another document, "SCADA Transmission Alarm Limits" in response to data request 48, which has been reviewed. In this document, the 'Active' alarm settings for the examples below look appropriate, however, SED has observed discrepancies for 'CRM plan' values. Please provide reason(s) for the same.

Page # in document	Tag	Point Description	CRM Plan Low	CRM Plan Low-Low	Alarm Rule	Active Low	Active Low-Low	SED Comment
1	SDV PT0002	Dav Twn Feed Press	110	140	Special	160	140	Why CRM plan Low is less than Low-Low? What is the meaning of Alarm Rule "Special"?
17	SSB PT0023	SAC GLC PT 23 Press	310	325	1	350	325	Why CRM plan Low is less than Low-Low?
17	ALM PT0002	L-Medanos K1 Suct Press	397	410	7	435	410	Why CRM plan Low is less than Low-Low?
17	SSB PT0025	SAC GLC PT 25 Press	310	325	1	365	325	Why CRM plan Low is less than Low-Low?

**PG&E's Response:**

The cause of the discrepancy is due to an issue with the Excel tool. In Telvent, the operator cannot set a Hi Alarm above the HiHi Alarm or a Lo Alarm below the LoLo. As a result, the CRM SCADA Alarm Database is being automated to avoid such errors and Hi and Lo Alarms are being removed as they are set at the operators discretion.

The Alarm Rule "Special" is referencing how the alarms are set relative to MOP.

"Special" does not fall into any of the Alarm Rules list below:

N/A-No alarm required to be set for point

7-Transmission, MOP - 7 for HiHi, Hi set below HiHi at discretion of operator, Lo set above LoLo at operator discretion and LoLo set per engineer approval

1-Transmission, MOP - 1 for HiHi, Hi set below HiHi at discretion of operator, Lo set above LoLo at operator discretion and LoLo set per engineer approval

**SED's Conclusion:**

SED has reviewed the response.