

## PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE  
SAN FRANCISCO, CA 94102-3298



June 14, 2013

GA2012-18

Ms. Jane Yura, Vice President  
Pacific Gas and Electric Company  
Gas Operations – Standards and Policies  
6121 Bollinger Canyon Road, Office # 4460A  
San Ramon, CA 94583

Subject: General Order 112-E Audit of PG&E's General Construction, Welding and Plastic Joining

Dear Ms. Yura:

On behalf of the Safety and Enforcement Division (SED), formerly the Consumer Protection and Safety Division, of the California Public Utilities Commission (Commission), Banu Acimis, Sikandar Khatri, and Alula Gebremedhin conducted an audit of Pacific Gas and Electric Company's (PG&E) General Construction on December 4-6, 2012. The audit consisted of an evaluation of PG&E's Welding and Plastic Joining Standards and qualification records.

A Summary of Audit Findings (Summary), which contains areas of concerns and recommendations identified during SED's audit, is included as an attachment to this letter.

Please provide a written response indicating the measures taken by PG&E to address the areas of concerns and recommendations within 30 days from the date of this letter.

For any questions related to this matter, please contact Banu Acimis at (916) 928-3826 or by email at [banu.acimis@cpuc.ca.gov](mailto:banu.acimis@cpuc.ca.gov).

Sincerely,

A handwritten signature in blue ink that reads "Michael Robertson".

Michael Robertson, Program Manager  
Gas Safety and Reliability Branch  
Safety and Enforcement Division  
California Public Utilities Commission

Enclosure: Summary of Inspection Findings

cc: Larry Berg, PG&E  
Michael Boles, PG&E  
Richard White, PG&E  
Manuel Ornelas, PG&E

## Summary of Inspection Findings

### Areas of Concerns and Recommendations

#### I. **Arc Welder Qualification Standard and Records for Working on Pipelines that Operate at over 20% of SMYS**

SED evaluated PG&E's Arc Welder Qualification Standard for working on pipelines that operate at over 20% of Specified Minimum Yield Strength (SMYS), D-30.2 (Arc Welder Standard, D-30.2) and Arc Welder Qualification test records for piping systems operating at hoop stresses of 20% or more of the SMYS, FD-30.2-A, (Arc Welder qualification test record, FD-30.2-A) and noted the following:

PG&E employee, Eric Hodges, failed two Arc Welder Qualification tests on 11/7/12. His supervisor was notified about the test failure; however, the test form did not show any information regarding the notification.

Similarly, PG&E employee, Tyler Bailey, failed the Exx10 Arc Weld qualification test once on 8/20/09 and twice on 10/20/09. Mr. Bailey passed the test on 11/4/09. There was no email notification sent to his supervisor about the test failures. SED noted that even for an initial qualification test failure, PG&E should have the employee's supervisor notified of the results.

PG&E employee, Gary Grant, failed an Arc Welder qualification test on 7/26/12, but passed the test on 7/31/12. SED noted that there should have been a memo on file or some other form of documentation informing his supervisor about the lapse in his qualification so that Mr. Grant would not perform Arc welding from the day he failed the test until he was qualified again.

Therefore, SED recommends that PG&E do the following improvements and changes to its Arc Welder Standard, D-30.2 and qualification test form, FD-30.2-A:

1. PG&E needs to inform the employees' supervisors of any Arc Welder test failures immediately. PG&E should document this either on the Arc Welder qualification test form or on a separate form to record the name of the employee, date and type of test, and supervisor's notification date. Additionally, PG&E should revise its Arc Welder Standard, D-30.2, to describe the process of documenting supervisor notifications.
2. If a welder has not performed any qualifications or requalification tests in the past six months (lapse in employee's qualification), PG&E needs to properly document this information and notify the supervisor. Additionally, PG&E's needs to revise its Arc Welder Standard D-30.2 to describe the process of documenting lapses in an employee's records.
3. Arc Welder Standard, D-30.2, Item 7 of Qualification Test states in part: "*The weld shall also be qualified by either the radiographic testing requirements of Numbered Document D-31 (for butt welds only), or the destructive testing requirements of Numbered Document D-31.*"

PG&E Arc Welder Standard, D-30.2, Item 9 of Requalification Arc Welders states: "*A. Welders shall be requalified no later than the last day of the sixth calendar month following the calendar month in which the last previous test was satisfactorily passed. Requalification may consist of successfully passing a radiographic examination of a production butt weld, or by repeating the butt-weld test in Item 7...*"

SED reviewed Welder Qualification by Radiographic Examination forms and noted that the form does not indicate that it is part of Arc Welder qualifications. PG&E should revise the title of the form to indicate that the form is a record to provide either qualification or requalification for Arc Welders and PG&E should revise its related standards to indicate the type of form to use.

4. SED found that some Arc Welder qualification test records do not indicate type of bend tests applied to the specimens. Each specimen subjected to the bend tests should be marked on the form to indicate face, root, or side bends. Also, PG&E's Standard of Acceptability for Welding: Nondestructive and Destructive Testing, D-31 should describe the criteria for choosing the type of bend tests for the specimen.
5. SED also noted that Arc Welder Qualification test form, FD-30.2-A, does not have "Classification" information for the employees tested. PG&E should add this information to the form.
6. SED found that PG&E's welder Eric Soria failed the Arc Welder Qualification test on the following dates: 1/30/12, 3/22/12, 4/24/12, 5/22/12; however, the "Further Training Required" field on the test forms were not filled out. Mr. Soria passed the test on 7/30/12. If an employee repeatedly fails a test, PG&E should provide additional training to the employee and the failed test records should indicate that further training is required.

## II. Welder Qualification Standard and Records for Under 20% of SMYS

SED evaluated Welder Qualification Standard, D-30 and Oxyacetylene Weld Test Report for under 20% of SMYS (Oxyacetylene Weld test report), FD-30-B and noted the following:

1. PG&E Oxyacetylene Weld test report form for welders on piping systems operating at hoop stresses of less than 20% of the specified minimum yield strength (SMYS), FD-30-B, revised 7/08, has a memo-to-file field to be completed if a welder has not performed any qualification tests or verification welding in the past six months. However, PG&E's related Standard, Welder Qualification Standard D-30 does not describe the process or when and how this field will be completed.
2. Similarly, PG&E Oxyacetylene Weld test report form FD-30-B has a data field to inform an employee's supervisor of any test failure. However, Standard, D-30 does not describe this notification requirement.

SED determined that PG&E should revise its Standard D-30 to include the procedures to inform supervisors of test failures and fill out a memo when an employee is no longer qualified to perform any type of oxyacetylene welding until the employee successfully passes a destructive test.

SED also recommends that PG&E should keep email notifications sent to the supervisors in the employees' qualification folders.

3. PG&E Oxyacetylene Weld test report form FD-30-B does not indicate if an employee passed or failed as a result of all the destructive tests. Welder qualification and requalification tests, Item 9.C, Test Weld Inspection requirements of Standard D-30 states "*Four root bend samples are required. Three of the four samples must pass in order for the welder to qualify...*"

It is not clear from the test report if an employee has successfully passed the destructive (root bend, knock off, and appearance) tests. The previous version of this form, 07/05, had two check boxes on top of the form to indicate if an employee passed or failed the tests. These check boxes do not appear on the revised form.

SED recommends that form FD-30-B should be revised by adding Pass and Fail boxes to indicate whether or not an employee is qualified to perform welding for under 20% SMYS as a result of series of destructive tests taken.

### III- Plastic Connection Qualification Standard and Records

SED evaluated Qualifications for Joining Plastic Pipe Standard, D-34, Rev. #4, 02-11-10, (Joining Plastic Pipe Standard, D-34) and Plastic Connection Qualification Test Report, FD-34-A and noted the following:

1. General Information, Item 3.A of Joining Plastic Pipe Standard, D-34, states *"The Plastic Connection Qualification Test Report shall be kept for a period of 5 years from the last date entered on the report."*

SED reviewed plastic connection qualification test reports and did not find the deformation records for socket fusion, saddle fusion, 2"-4" Butt (mechanical), 4"-8" Butt (hydraulic), and Electrofusion coupling and saddle deformation test records of two employees. PG&E's employee records only showed their annual verifications. PG&E did not keep deformation test records since some employees obtained their initial qualifications by passing deformation tests more than five years ago and did not need to repeat the deformation tests for the following years.

According to the current record retention policy, PG&E only maintains plastic fusion records documented in the last five years. As can be seen in the following Table, Mr. Kidd and Mr. Coursey passed the deformation tests in 2002; however, PG&E did not keep these records in the employees' qualification folders.

Employee Name	Last Visual Test Date	First Visual Test Date	Deformation Test Date
Gilbert Coe Kidd	6/5/12	6/5/06	7/23/02
Phillip H. Coursey	11/26/12	11/16/06	12/5/02

After our discussion with PG&E representatives, PG&E was able to locate the original deformation test results in its archived qualification reports. SED recommends that PG&E maintain the last deformation test records in its employees' active qualification folders even if the tests were administered five years prior to the current date. PG&E should also change its record keeping retention policy to add this exception to provide complete qualification history of employees.

2. PG&E's Joining Plastic Pipe Standard, D-34, General Information, Item 10 states *"If a connection fails any of the required tests specified in this numbered document, the individual is not qualified in that specific type of connection, but may be qualified for other type(s) of connection(s) if the person passed the required tests. However, if the failure occurred in the socket and saddle fusion assembly, the individual is not qualified for any heat fusion joining."*
  - 2.1 During the audit, PG&E representatives explained that heat fusion also includes electrofusion even though the Plastic Connection Qualification Test Report, FD-34-A lists them separately. Therefore, Item 10 of Joining Plastic Pipe Standard, D-34 should be revised to include electrofusion to heat fusion joining category and the criteria should mention specifically that an individual will not be qualified for any heat fusion joining including electrofusion, if failure occurs in the socket and saddle fusion assembly.
  - 2.2 Item 4 of Joining Plastic Pipe Standard, D-34 states *"Company contractors and QC/Ss must meet the same qualifications as Company employees to perform connections. Under no circumstances, shall individuals perform work for which they are not qualified or have*

*been disqualified. Company contractors and QC/Ss shall be qualified for only the specific connections for the particular job to which they are assigned. There will be no minimum socket and saddle fusion assembly test requirements unless the Company contractor or QC/S will be performing those particular fusions on the job to which they have been assigned..."*

SED noted that if a PG&E employee fails socket or saddle fusion tests, the individual is not qualified for any heat fusion joining including electrofusion as per Item 10. However, this requirement does not apply to company contractors and subcontractors as per Item 4 because there is no minimum socket and saddle fusion assembly test requirement unless the company contractors or subcontractors perform those particular fusions on the job to which they have been assigned.

For example, PG&E's contractor Rafael Aguilera took electrofusion, mechanical, 2"-4" butt (mechanical), socket, and saddle fusion tests on 11/13/12. Mr. Aguilera passed all the tests but the saddle fusion test. On 11/16/12, Mr. Aguilera took 4"-8" butt (hydraulic) fusion test and passed. According to PG&E's standard D-34, if a PG&E employee fails the saddle fusion test, the employee would not be qualified for any heat fusion joining. However, since Mr. Aguilera was a contractor, he was offered to take a 4"-8" butt fusion joining test and after he passed it, he was qualified to perform 4"-8" butt fusion. SED suggests that PG&E apply the same rules to its contractors and subcontractors. Mr. Aguilera should not have been qualified for any heat fusion joining since he failed the saddle heat fusion test three days prior to 4"-8" butt fusion test. However, PG&E's current Standard D-34, Item 4 allowed him to take the test again and become qualified if successful.

SED recommends that PG&E should have the same plastic joining test criteria for all employees including PG&E contractors and subcontractors. PG&E should revise its Joining Plastic Pipe Standard, D-34, to add the minimum heat fusion passing criteria for all employees, contractors, and subcontractors in order to be qualified for all plastic fusion methods.

3. Joining Plastic Pipe Standard, D-34, Test Assembly for Mechanical Connection Qualification, Item 21.B states "*Properly install a Met-fit or Continental stab-type fitting...*"

PG&E's Utility Bulletin: TD-B-91.1B-001 (publication date: 10/04/2011, rev: 0) states "*This bulletin announces that MetFit brand mechanical fittings are no longer available for purchase, and will no longer be approved for use as a connection method for plastic pipe effective November 1, 2011.*"

Therefore, PG&E needs to exclude MetFit brand mechanical fittings from all related standards and procedures by revising Joining Plastic Pipe Standard, D-34, Utility Work Procedure WP4170-08, Polyethylene Mechanical Fitting Connections, Utility Standard S4170- Plastic Pipeline Design, Construction, Maintenance, and Operation. Other related standards may include GS&S A-90- Plastic Main and Service Installation, GS&S A-93- Polyethylene Pipe Specifications and Design Considerations, and GS&S A-93.1 Plastic Gas Distribution System Construction and Maintenance.

4. SED noted that PG&E's Plastic Connection Qualification Test Report, FD-34-A shows that when an employee fails a test, the employee's supervisor must be notified of the failure. However, there are no instructions in the related standard to inform an employee's supervisor when the employee fails all or any of the plastic fusion tests.

SED suggests that PG&E have its supervisors informed for any type of plastic connection test failures. Even if an employee passes the minimum required tests (i.e., heat fusion), but fails other tests, there should be a requirement to inform the employee's supervisor of any failure. Additionally, this requirement should be included in PG&E's Joining Plastic Pipe Standard, D-34.

Similarly, form FD-34-A also has a required "MEMO TO FILE" field for only company employees, which PG&E needs to fill out when an individual has not performed deformation qualification tests or annual verification connections in the last 12 months after the last test date. However, if a PG&E employee has a partial lapse, (i.e., qualified to perform at a minimum socket and saddle heat fusion, but may not be qualified to perform butt fusion, electrofusion, or mechanical connections) PG&E does not need to prepare a memo to the employee's file.

SED recommends that if there are any lapses in an employee's qualification records for performing any type of plastic connection, PG&E should have a memo to file prepared to indicate the type of plastic fusion that the employee is not qualified to perform. Additionally, PG&E should add this requirement to its Joining Plastic Pipe Standard, D-34.

5. PG&E's Joining Plastic Pipe Standard, D-34, General Information, Item 11 states "*If an individual who fails a qualification test may be retested immediately. The person must prepare two additional samples of each connection type that failed, and both of these samples must pass the required tests.*"

SED reviewed related records and noted that if an employee fails a qualification test and is retested immediately and passes two additional tests, the records show only one pass record, not the original failed test and the second passed test result. There is no documentation showing that the employee successfully passed two tests by preparing two additional samples of each connection type that failed.

SED recommends that PG&E should keep all records showing how many times the employee attempted to pass the test including the failed test records.

#### **IV. Qualification Records of Contractor Employees**

SED found that PG&E's General Construction office where PG&E keeps its Title 300 employees' welder and plastic joining qualification records, does not maintain its contractors' records of the jobs they have worked on. SED noted that these records are necessary, not only to confirm that qualified employees are performing the work, but to keep track of training and testing of personnel who regularly perform covered tasks.

SED noted the following examples:

1. SED reviewed Arc Welder qualification test records, and noted that form FD-30.2-A does not have the project or job number information.

SED requested a list of projects that a PG&E contractor employee, Tinagone Kumpanao, worked on in 2011. PG&E was unable to provide this information. SED noted that in order to verify the qualifications of employees for specific projects, PG&E needs to identify the projects an employee worked on the qualification form.

2. SED reviewed Oxyacetylene Weld test records and noted that form FD-30-B does not show the project or job number.
3. SED reviewed the plastic pipe joining qualification records of PG&E's contractors and noted that PG&E did not fill-out the PM # information on Form FD-34-A, which identifies the projects or job numbers that employees worked on.

SED recommends that PG&E record the name or job number of the projects that PG&E's company employees and contractors are qualified to work on. Since PG&E only hires and qualifies contractor employees for specific projects, it is important to document this information on the qualification record.

SED recommends that PG&E record the name or job number of the projects (PM #) that PG&E's contractors are qualified to work on.