National Transportation Safety Board
Washington, D.C. 20594

Office of the Chairman

MAR 13 2012

Mr. Christopher P. Johns
President
Pacific Gas and Electric Company
77 Beale Street
San Francisco, California 94105

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CHRISTOPHER P. JOHNS

Dear Mr. Johns:

Thank you for your December 22, 2011, and January 27, 2012, letters regarding Safety Recommendations P-10-2 through -4 and P-11-24 through -31, stated below, which the National Transportation Safety Board (NTSB) issued to the Pacific Gas and Electric Company (PG&E) on January 3, 2011, and September 26, 2001, respectively. In addition, this letter discusses Safety Recommendation P-11-3, also issued on January 3, 2011. We issued these recommendations as a result of our investigation of the September 9, 2010, natural gas pipeline rupture that occurred in a residential area in the City of San Bruno, California. Safety Recommendations P-10-2 and -3 are urgent recommendations. We also appreciate meeting with your staff on February 6, 2012, to discuss actions taken and planned to implement these safety recommendations.

P-10-2

> Aggressively and diligently search for all as-built drawings, alignment sheets, and specifications, and all design, construction, inspection, testing, maintenance, and other related records, including those records in locations controlled by personnel or firms other than Pacific Gas and Electric Company, relating to pipeline system components such as pipe segments, valves, fittings, and weld seams for Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class 1 and class 2 high consequence areas [HCA] that have not had a maximum allowable operating pressure [MAOP] established through prior hydrostatic testing. These records should be traceable, verifiable, and complete.

The NTSB notes that PG&E completed the requested search for as-built drawings, alignment sheets, and specifications, and for design, construction, inspection, testing, maintenance, and other related records, for 2,000 miles of pipelines located in HCAs. These efforts included searching for records related to pipeline system components outside PG&E (such as pipe segments, valves, fittings, and weld seams for PG&E natural gas transmission lines in class 3 and class 4 locations and in class 1 and class 2 HCAs) for which no MAOP has been established through prior hydrostatic testing. These actions satisfy Safety Recommendation P-10-2, which is classified "Closed—Acceptable Action."

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P-10-3

Use the traceable, verifiable, and complete records located by implementation of Safety Recommendation P-10-2 (Urgent) to determine the valid maximum allowable operating pressure, based on the weakest section of the pipeline or component to ensure safe operation, of Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class 1 and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing.

The NTSB notes the following:

- PG&E has met its California Public Utilities Commission (CPUC) deadlines related to records verification and MAOP validation of 760 miles of pipeline in HCAs.
- More than 1600 miles of pipeline in HCAs in PG&E's service territory have undergone records verification and MAOP validation.
- PG&E is working to complete records verification and MAOP validation for all pipelines in HCAs.

Accordingly, pending completion of action to satisfy Safety Recommendation P-10-3, this recommendation is classified "Open—Acceptable Response."

P-10-4

If you are unable to comply with Safety Recommendations P-10-2 (Urgent) and P-10-3 (Urgent) to accurately determine the maximum allowable operating pressure of Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class 1 and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing, determine the maximum allowable operating pressure with a spike test followed by a hydrostatic pressure test.

The NTSB is encouraged that PG&E has tested over 163 miles of pipeline as recommended, including 144 of the 152 pipeline miles having characteristics similar to those of the line that failed in San Bruno. For these miles of pipeline, PG&E has hydrostatically tested, replaced, or verified strength-test pressure records. Also, over the next 3 years (2012-2014), PG&E plans to hydrostatically pressure test approximately 547 additional miles of pipeline. Pending completion of these efforts, Safety Recommendation P-10-4 is classified "Open—Acceptable Response."

P-11-24

Revise your work clearance procedures to include requirements for identifying the likelihood and consequence of failure associated with the planned work and for developing contingency plans.

P-11-26

> Equip your supervisory control and data acquisition system with tools to assist in recognizing and pinpointing the location of leaks, including line breaks; such tools could include a real-time leak detection system and appropriately spaced flow and pressure transmitters along covered transmission lines.

The NTSB understands that PG&E is currently evaluating approaches to revise work clearance procedures and to update its SCADA leak detection capabilities (such as information technology solutions, *Lean Six Sigma* improvement processes, emergency backup relocation exercises, and a new *Data Historian* system to assist operators and planning teams). Pending receipt of further information from PG&E on the completion of these efforts, Safety Recommendations P-11-24 and -26 are classified "Open—Acceptable Response."

P-11-3

> Require your control room operators to notify, immediately and directly, the 911 emergency call center(s) for the communities and jurisdictions in which your transmission and/or distribution pipelines are located, when a possible rupture of any pipeline is indicated.

P-11-25

> Establish a comprehensive emergency response procedure for responding to large-scale emergencies on transmission lines; the procedure should (1) identify a single person to assume command and designate specific duties for supervisory control and data acquisition staff and all other potentially involved company employees; (2) include the development and use of trouble-shooting protocols and checklists; and (3) include a requirement for periodic tests and/or drills to demonstrate the procedure can be effectively implemented.

The NTSB notes that PG&E has made significant progress to address the emergency response issue; however, we point out that Safety Recommendation P-11-3 was classified "Open—Unacceptable Response" (see enclosures) on December 16, 2011, because the process outlined in PG&E's August 26, 2011, letter lacked sufficient detail and guidance to ensure prompt and immediate notification to 911 emergency call center(s). Specifically, the supervisory control and data acquisition (SCADA) operating data and alarms should be the basis for all 911 notifications. To satisfy Safety Recommendation P-11-3, PG&E needs to do the following:

- Establish 911 notification criteria based on the SCADA alarms received, such as loss of pressure, the magnitude and time rate of pressure loss, and changes in flow rates.
- Whenever the parameters exceed designated thresholds, gas control room operators should first contact 911, then focus on handling the event (a rupture, valve failure, venting gas, etc.), and, finally, contact corporate management.

The NTSB awaits a further response to Safety Recommendation P-11-3 regarding 911 notifications. However, because PG&E has initiated action to address the other issues identified in Safety Recommendation P-11-25, it is classified "Open—Acceptable Response."

P-11-27

> Expedite the installation of automatic shutoff valves and remote control valves on transmission lines in high consequence areas and in class 3 and 4 locations, and space them at intervals that consider the factors listed in Title 49 *Code of Federal Regulations* 192.935(c).

The NTSB understands that PG&E is in the process of modernizing its system and is using technology to help identify and respond to potential issues. PG&E's automation of 11 shutoff valves in 2011, its plans to automate another 228 shutoff valves by the end of 2014, and its plans to enhance the SCADA information system are all positive actions. Pending completion of these efforts, Safety Recommendation P-11-27 is classified "Open—Acceptable Response."

P-11-28

> Revise your postaccident toxicological testing program to ensure that testing is timely and complete.

The NTSB is aware that PG&E has conducted U.S. Department of Transportation postaccident training for gas maintenance and construction team supervisors and has created a cross-department team to enhance the accident reporting process. The NTSB would appreciate learning of the specific details of these programs and evidence to support the implementation and effectiveness of these programs. Pending receipt of this amplifying information, Safety Recommendation P-11-28 is classified "Open—Acceptable Response."

P-11-29

> Assess every aspect of your integrity management program, paying particular attention to the areas identified in this investigation, and implement a revised program that includes, at a minimum, (1) a revised risk model to reflect the Pacific Gas and Electric Company's actual recent experience data on leaks, failures, and incidents; (2) consideration of all defect and leak data for the life of each pipeline, including its construction, in risk analysis for similar or related segments to ensure that all applicable threats are adequately addressed; (3) a revised risk analysis methodology to ensure that assessment methods are selected for each pipeline segment that address all applicable integrity threats, with particular emphasis on design/material and construction threats; and (4) an improved self-assessment that adequately measures whether the program is effectively assessing and evaluating the integrity of each covered pipeline segment.

We note that PG&E has initiated the requested review of its integrity management program. Accordingly, Safety Recommendation P-11-29 is classified "Open—Acceptable Response," pending completion of these efforts and implementation of the revised program.

P-11-30

Conduct threat assessments using the revised risk analysis methodology incorporated in your integrity management program, as recommended in Safety Recommendation P-11-29, and report the results of those assessments to the California Public Utilities Commission and the Pipeline and Hazardous Materials Safety Administration.

The NTSB notes that PG&E has initiated action to address this recommendation. Accordingly, Safety Recommendation P-11-30 is classified "Open—Acceptable Response," pending completion of these efforts.

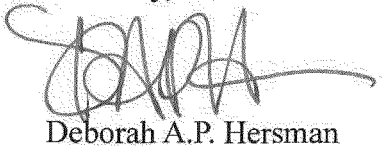
P-11-31

Develop, and incorporate into your public awareness program, written performance measurements and guidelines for evaluating the plan and for continuous program improvement.

The NTSB notes that PG&E has developed written public awareness performance measurements and guidelines for evaluating the plan and for continuous improvement, along with performance measures in cooperation with CPUC. However, PG&E has not provided NTSB with these measurements and guidelines or provided evidence to support the program implementation or effectiveness. Pending our review of these details, Safety Recommendation P-11-31 is classified "Open—Acceptable Action."

Thank you for this comprehensive update. The NTSB would appreciate receiving periodic updates as action continues to address Safety Recommendations P-10-3 and -4, P-11-3, and P-11-24 through -27, -29, and -30. We encourage you to submit updates electronically at the following e-mail address: correspondence@ntsb.gov. If a response includes attachments that exceed 5 megabytes, please e-mail us at the same address for instructions. To avoid confusion, please do not submit both an electronic copy and a hard copy of the same response.

Sincerely,



Deborah A.P. Hersman
Chairman

Enclosures

1. NTSB letter dated December 16, 2011
2. PG&E letter dated August 26, 2011