Attachment 1

4 Recommendations

4.1 New Recommendations

To the U.S. Secretary of Transportation:

Audit the Pipeline and Hazardous Materials Safety Administration's onshore pipeline facility response plan program's business practices, including reviews of response plans and drill programs, and take appropriate action to correct deficiencies. (P-12-1)

Allocate sufficient resources as necessary to ensure that the Pipeline and Hazardous Materials Safety Administration's onshore pipeline facility response plan program meets all of the requirements of the Oil Pollution Act of 1990. (P-12-2)

To the Pipeline and Hazardous Materials Safety Administration:

Revise Title 49 *Code of Federal Regulations* 195.452 to clearly state (1) when an engineering assessment of crack defects, including environmentally assisted cracks, must be performed; (2) the acceptable methods for performing these engineering assessments, including the assessment of cracks coinciding with corrosion with a safety factor that considers the uncertainties associated with sizing of crack defects; (3) criteria for determining when a probable crack defect in a pipeline segment must be excavated and time limits for completing those excavations; (4) pressure restriction limits for crack defects that are not excavated by the required date; and (5) acceptable methods for determining crack growth for any cracks allowed to remain in the pipe, including growth caused by fatigue, corrosion fatigue, or stress corrosion cracking as applicable. (P-12-3)

Revise Title 49 *Code of Federal Regulations* 195.452(h)(2), the "discovery of condition," to require, in cases where a determination about pipeline threats has not been obtained within 180 days following the date of inspection, that pipeline operators notify the Pipeline and Hazardous Materials Safety Administration and provide an expected date when adequate information will become available. (P-12-4)

Conduct a comprehensive inspection of Enbridge Incorporated's integrity management program after it is revised in accordance with Safety Recommendation P-12-11. (P-12-5)

Issue an advisory bulletin to all hazardous liquid and natural gas pipeline operators describing the circumstances of the accident in Marshall, Michigan—including the deficiencies observed in Enbridge Incorporated's integrity management program—and ask them to take appropriate action to eliminate similar deficiencies. (P-12-6)

Develop requirements for team training of control center staff involved in pipeline operations similar to those used in other transportation modes. (P-12-7)

Extend operator qualification requirements in Title 49 *Code of Federal Regulations* Part 195 Subpart G to all hazardous liquid and gas transmission control center staff involved in pipeline operational decisions. (P-12-8)

Amend Title 49 *Code of Federal Regulations* Part 194 to harmonize onshore oil pipeline response planning requirements with those of the U.S. Coast Guard and the U.S. Environmental Protection Agency for facilities that handle and transport oil and petroleum products to ensure that pipeline operators have adequate resources available to respond to worst-case discharges. (P-12-9)

Issue an advisory bulletin to notify pipeline operators (1) of the circumstances of the Marshall, Michigan, pipeline accident, and (2) of the need to identify deficiencies in facility response plans and to update these plans as necessary to conform with the nonmandatory guidance for determining and evaluating required response resources as provided in Appendix A of Title 49 *Code of Federal Regulations* Part 194, "Guidelines for the Preparation of Response Plans." (P-12-10)

To Enbridge Incorporated:

Revise your integrity management program to ensure the integrity of your hazardous liquid pipelines as follows: (1) implement, as part of the excavation selection process, a safety margin that conservatively takes into account the uncertainties associated with the sizing of crack defects from in-line inspections; (2) implement procedures that apply a continuous reassessment approach to immediately incorporate any new relevant information as it becomes available and reevaluate the integrity of all pipelines within the program; (3) develop and implement a methodology that includes local corrosion wall loss in addition to the crack depth when performing engineering assessments of crack defects coincident with areas of corrosion; and (4) develop and implement a corrosion fatigue model for pipelines under cyclic loading that estimates growth rates for cracks that coincide with areas of corrosion when determining reinspection intervals. (P-12-11)

Establish a program to train control center staff as teams, semiannually, in the recognition of and response to emergency and unexpected conditions that includes supervisory control and data acquisition system indications and Material Balance System software. (P-12-12)

Incorporate changes to your leak detection processes to ensure that accurate leak detection coverage is maintained during transient operations, including pipeline shutdown, pipeline startup, and column separation. (P-12-13)

Provide additional training to first responders to ensure that they (1) are aware of the best response practices and the potential consequences of oil releases and (2) receive practical training in the use of appropriate oil-containment and -recovery methods for all potential environmental conditions in the response zones. (P-12-14)

Review and update your oil pipeline emergency response procedures and equipment resources to ensure that appropriate containment equipment and methods are available to respond to all environments and at all locations along the pipeline to minimize the spread of oil from a pipeline rupture. (P-12-15)

Update your facility response plan to identify adequate resources to respond to and mitigate a worst-case discharge for all weather conditions and for all your pipeline locations before the required resubmittal in 2015. (P-12-16)

To the American Petroleum Institute:

Facilitate the development of a safety management system standard specific to the pipeline industry that is similar in scope to your Recommended Practice 750, *Management of Process Hazards*. The development should follow established American National Standards Institute requirements for standard development. (P-12-17)

To the Pipeline Research Council International:

Conduct a review of various in-line inspection tools and technologies—including, but not limited to, tool tolerance, the probability of detection, and the probability of identification—and provide a model with detailed step-by-step procedures to pipeline operators for evaluating the effect of interacting corrosion and crack threats on the integrity of pipelines. (P-12-18)

To the International Association of Fire Chiefs and the National Emergency Number Association:

Inform your members about the circumstances of the Marshall, Michigan, pipeline accident and urge your members to aggressively and diligently gather from pipeline operators system-specific information about the pipeline systems in their communities and jurisdictions. (P-12-19)

4.2 Reiterated Recommendation

As a result of this accident investigation, the National Transportation Safety Board reiterates the following previously issued safety recommendation:

Require operators of natural gas transmission and distribution pipelines and hazardous liquid pipelines to provide system-specific information about their pipeline systems to the emergency response agencies of the communities and

Attachment 2

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CHAIR, ASSEMBLY DEMOCRATIC CAUCUS

COMMITTEES
AGRICULTURE
APPROPRIATIONS
BUSINESS AND PROFESSIONS
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SELECT COMMITTEES
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GOVERNMENT EFFICIENCY,
TECHNOLOGY AND INNOVATION
HIGH SPEED RAIL FOR CALIFORNIA
IMPROVING STATE GOVERNMENT
RENEWABLE ENERGY

July 10, 2012

Christopher Johns, President
Pacific Gas and Electric Company
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RE: In-line inspection in NTSB's investigation of Marshall, MI pipeline rupture

Dear Mr. Johns:

This morning the National Transportation Safety Board (NTSB) issued findings and recommendations regarding the July 2010 crude oil pipeline rupture in Marshall, Michigan. This accident has required the most costly onshore cleanup of any pipeline spill in United States history, releasing over 120 tanker trucks worth of crude oil into the Michigan wetlands.

The NTSB has found a number of deficiencies in the Enbridge, the pipeline operator, that were similar to those found with your company in the NTSB's San Bruno investigation, but it also found problems with the operator's in-line inspections (ILI).

In particular, the pipeline operator had contracted the company PII Pipeline Solutions to perform ILI on the line in 2005. The contractor misclassified the crack that would cause the rupture 5 years later, treating it as a less serious threat than it was. Had the crack been correctly classified, the pipeline operator's procedures would have required its immediate examination, likely preventing the rupture. Yesterday a news story touting PG&E's ILI technology identified this same contractor as the provider of your company's ILI inspections and data analysis.

According to the NTSB, the problem was threefold:

1. The ILI tool tolerance was not understood by the contractor.
2. The contractor's analyst originally classified the crack correctly, but that person's supervisor disagreed and classified it incorrectly.
3. There did not appear to be a close interaction between the ILI contractor and the pipeline operator, resulting in the contractor's lack of understanding of how the operator would respond to different anomaly classifications.

When a contractor makes a mistake, it is the utility, its customers, and its shareholders that bear the consequences.

1. **What is PG&E doing to ensure that PII Pipeline Systems does not make similar errors in the evaluation of PG&E's pipelines?**

I ask that you require PII Pipeline systems to report to you and the California Public Utilities Commission on what factors led to their errors in Marshall and what they are doing to make sure these mistakes will not be repeated in California.

Less than two weeks ago, PG&E filed its Gas Safety Plan with the Commission. In it, PG&E describes the high standards to which it holds its contractors, but the description implies an arms-length arrangement and does not describe how the company intends to communicate with contractors that gather vital data to inform their risk management programs. Threat analysis in ILI data interpretation is not black and white. Judgment is involved, and it is important that, when PG&E outsources its inspections, the company is not outsourcing its judgment as well. Your company is not alone; in my cursory look at the safety plans of Southern California Gas Company and San Diego Gas and Electric, I did not see this discussion, either.

2. **What procedures does PG&E have to manage communication between utility employees and an ILI contractor? How does PG&E ensure that conservative judgment is used when conducting threat analysis with ILI data?**

One aspect of the Marshal, MI accident that the NTSB discussed today was the interacting threats of cracks and corrosion that lead to the rupture. I did not see any mention PG&E's treatment of interacting threats in either its Gas Safety Plan or its Risk Management Procedure (RMP-06), regarding integrity management. The NTSB had previously criticized the risk algorithms in RMP-01.

3. **How does PG&E address the synergistic effects of different threats? Would PG&E's updated risk algorithms have identified the interacting threats of crack and corrosion defects as concerns requiring special attention?**

ILI is becoming the preferred method of inspection in California's transmission pipelines. ILI is, however, just one more tool with its own set of limitations, and we must not use it as a substitute for a holistic risk analysis.

That so many of Enbridge's problems in Marshall were those identified in the wake of the San Bruno explosion should leave us hopeful that the actions that PG&E and the Public Utilities Commission are taking will go a long way toward making PG&E's system safe. One important lesson from today, however, has been that costly accidents can happen even to a company that, after a number of accidents, cleans up its act and believes itself to be safe. We must continue to be vigilant.

Sincerely,

Jerry Hill
Assemblymember, District 19th

cc: Nick Stavropoulos, Executive Vice President, Gas Operations, PG&E
Anthony Early, CEO, PG&E Corporation
Kent Kauss, Director, State Government Relations, PG&E
Michel Peter Florio, Commissioner, California Public Utilities Commission
Paul Clanon, Executive Director, California Public Utilities Commission

Attachment 3

Pacific Gas and Electric Company

Christopher P. Johns
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July 27, 2012

The Honorable Jerry Hill
Assembly member, 19th District
P.O Box 942849
Sacramento, CA 04249-0019

Re: In-Line inspection in NTSB's investigation of Marshall, MI pipeline rupture

Dear Assemblyman Hill:

Thank you for your continued attention to the critical issue of gas pipeline safety. We have closely reviewed the National Transportation Safety Board's (NTSB) findings and recommendations for the July 2010 crude oil pipeline rupture in Marshall, Michigan. Like you, we recognize the similarities between the NTSB findings in the Michigan incident and their findings relating to the tragic pipeline accident in San Bruno. We take them seriously as we do all NTSB recommendations that may help us make progress toward our goal of operating the safest gas system in the country. The information provided by NTSB in the Michigan pipeline rupture provides not only a learning opportunity for PG&E but also an additional lens through which to view our operations and identify other opportunities for continuous improvements.

In this case, we have already begun to take action regarding the issues identified by the NTSB. We are working with PII Pipeline Solutions to evaluate the NTSB's findings, and we intend to use this information to ensure appropriate controls are in place so that the same issues do not emerge in the work PII Pipeline Solutions or any other in-line-inspection contractor performs for our company. As you point out, PG&E's contractors are an extension of our company. As such, it is our responsibility to ensure the work performed by our contractors meets PG&E's internal performance standards, which require that all work be performed according to established, best-practice safety procedures.

We have and we will consider all relevant industry and regulatory insight and recommendations as we implement the safety recommendations outlined by the NTSB, improve our gas operations and regain PG&E's standing with our customers, communities and all of our stakeholders. Nothing is more important to PG&E than the safety of our customers and the public.

Each of your specific concerns is addressed in Attachment 1 to this letter. Additionally, as directed by the CPUC, PG&E is revising our Gas Safety Plan to address in greater detail your specific questions.

Thank you again for the opportunity to address your concerns and provide an update on the progress we have made in our gas operations. If you would like more information on these topics, please feel free to contact me.

Sincerely,

Chris Johns

cc: Nick Stavropoulos, Executive Vice President, Gas Operations, PG&E
Anthony Early, CEO, PG&E Corporation
Kent Kauss, Director, State Government Relations, PG&E
Michel Peter Florio, Commissioner, California Public Utilities Commission
Paul Clanon, Executive Director, California Public Utilities Commission

Attachment

PG&E RESPONSE TO QUESTIONS FROM ASSEMBLEYMAN JERRY HILL REGARDING THE NTSB FINDINGS IN THE MICHIGAN PIPE RUPTURE

What is PG&E doing to ensure that PII Pipeline Solutions does not make similar errors in the evaluation of PG&E's pipelines?

PG&E has requested that PII Pipeline Solutions respond to the findings and recommendations for the Michigan incident and provide us with specific actions they will take to ensure that they are not repeated. Once we receive this information from PII Pipeline Solutions, PG&E will review their plans, provide additional expectations, as warranted, and continue to work with PII Pipeline Solutions as well as our other in line inspection (ILI) contractors to ensure that their actions are appropriate and address any concerns that PG&E may have relating to the work being performed.

PG&E has a contract specification relating to ILI of pipelines and thoroughly reviews all draft ILI vendor reports prior to their acceptance to assure the vendor has met the specification. PG&E's contract specification has been modified and improved as we have gained additional experience and PG&E will continue to identify improvement opportunities.

PG&E project managers and engineers work in the field with our ILI vendors during the inspection process and have ongoing communication during the analysis phase to assure a complete and comprehensive report. Typically, the ILI vendor and PG&E project managers and engineers meet in person to review the results of the ILI and to address any questions or concerns regarding the inspection and the data analysis.

PG&E is committed to continuous improvement and will review its ILI vendor acceptance standards ensuring they are based on industry best practices and that they include periodic audits of our ILI vendors.

What procedures does PG&E have to manage communication between utility employees and an ILI contractor?

PG&E engineering staff plays an integral role in driving the contract phase as well as the ILI and analysis process. PG&E's engineering staff goes through a thorough pre-assessment of the work which defines the scope and tool selection. PG&E works side by side in the field with the ILI vendors during the inspection and communicates directly with the vendors during all phases of an ILI project.

PG&E Integrity Management procedures and contracts with ILI vendors require an evaluation of the ILI draft vendor report before acceptance. Additionally, PG&E engineers and the ILI vendor's analyst work collaboratively to understand the inspections and the analyst's evaluations. This ongoing interaction is key to ensuring full understanding of the work performed.

How does PG&E ensure that conservative judgment is used when conducting threat analysis with ILI data?

ILI vendors perform the inspections, analyze the data that comes from those inspections, and provide the reports containing sizing and classification for all anomalies detected. The successful performance of an in-line inspection begins with PG&E defining inspection goals, objectives and pipeline characteristics for ILI contractors. ILI tool tolerances are incorporated into the analysis of identified anomalies to ensure conservative results and findings. PG&E engineers review the reports and use the data to evaluate all categories of anomalies found and to develop plans to address the findings based on the nature of the anomalies. The Transmission Integrity Management Program (TIMP) considers all data points (ILI, operating pressures, cathodic protection history, etc.)for a specific pipe and then utilizes that information to determine a holistic view of the threats. Anomaly response plans, or "dig plans," are reviewed and approved by both the PG&E supervising engineer as well as the TIMP manager.

How does PG&E address the synergistic effects of different threats?

PG&E is engaged in a comprehensive evaluation of its Integrity Management procedures and we have employed two highly respected consultants to assist in identifying areas of improvement.

Det Norske Veritas (DNV) and Kiefner and Associates were used to help update the risk algorithms and threat identification processes. Currently, PG&E is in the midst of implementing an updated threat identification process for all nine threats[1] including the interactive threat of fatigue. Improvements are being made to existing procedures and PG&E is creating a new procedure for threat identification which is expected to be completed by August 2012.

These improvements will assure that we determine risk for all nine threat categories, evaluate fatigue interactions and use an additive approach for evaluating interactive risks.

The topic of interactive threats is a current area of discussion and debate within the Industry. There are several ongoing research projects currently underway to assist operators in developing better plans for addressing interactive threats. PG&E is currently a sponsor for the Gas Technology Institute's interactive threats research project. When results of this research are available, they will be incorporated into PG&E's risk assessment processes, as part of our ongoing continuous improvement effort.

Would PG&E's updated risk algorithms have identified the interacting threats of crack and corrosion defects as concerns requiring special attention?

Crack-like anomalies would be evaluated and subsequently those requiring action would be promptly remediated through repair or replacement. PG&E's new risk algorithms include an updated threat identification process that incorporates the interactive threat of fatigue.

PG&E continues to work with others in the industry to evaluate and better understand the impacts of interactive threats and to drive industry improvements and ensure alignment of our risk assessment program in the area of threat analysis and interactions.

[1] The nine threat categories include: external corrosion; internal corrosion; stress corrosion cracking; incorrect operations; third party damage; equipment failure; weather and outside force; manufacturing threat; and construction