ATTACHMENT A
PG&E ACTIONS RELATING TO NSTB SAFETY RECOMMENDATIONS

I. Records, Maximum Allowable Operation Pressure (MAOP) Validation, and Strength Testing (NTSB P-10-2, P-10-3, and P-10-4)

Summary of Safety Recommendation: (1) Diligently search for traceable, verifiable and complete records for transmission pipelines in class 3 and 4, and class 1 and 2 high-consequence area (HCA) locations for which the MAOP has not been established by a pressure test; (2) calculate valid MAOP for such transmission pipelines based on those traceable, verifiable and complete records; and (3) establish a valid MAOP by hydrostatic pressure test for any transmission pipelines for which the MAOP cannot be validated by steps (1) and (2).

PG&E Actions Related to Safety Recommendations:

- MAOP Validation Project: Validated the MAOP for more than 750 miles of high priority pipelines in HCAs without prior strength tests. MAOP validation work will continue on all remaining HCA pipelines in 2011 and the first part of 2012 with work commencing on all non-HCA pipelines thereafter.
- Strength Tests: Strength testing between 144 and 160 miles of pipeline in 2011. As of September 30, more than 85 transmission pipeline miles have been hydrostatically tested or replaced.
- Video Inspections: Video inspected approximately six miles of pipe in various locations throughout the transmission system.
- Specialized In-Line Inspection (ILI) Tools: PG&E will have retrofit nearly 1,000 miles of pipe to accommodate ILI tools through 2011. By the end of 2014, PG&E expects to have a total of approximately 1,480 miles of the gas transmission pipe retrofitted to accommodate ILI tools.
- Pipeline Safety Enhancement Plan: Ultimately PG&E will pressure test all transmission lines not previously tested, including strength testing on 783 miles of pipe in Phase 1 of the program and replacing 186 miles of pre-1970 pipe (single-submerged arc welded ("SSAW"), low frequency electric resistance welded ("LF-ERW), joint efficiency ("JE") < 1.0) in High Consequence Areas in Phase 1 of the program.
- Interim Safety Measures: Reducing pressure in some pipelines to ensure an adequate margin of safety until MAOP is validated through on-going and future corrective action, such as records validation, pressure tests or pipe replacement. Currently, pressure has been reduced on 29 primary pipelines totaling approximately 1,600 miles.

II. 911 Notification by Gas Control (NTSB P-11-3)

Summary of Safety Recommendation: Requires gas control room operators to notify immediately and directly 911 emergency call center(s) for affected communities when a possible rupture of any pipeline is indicated.

PG&E Actions Related to Safety Recommendations:

- Gas Control Room: As addressed in PG&E's August 26, 2011 response to Safety Recommendation P-11-3, PG&E has established and implemented a Gas Control Room Process (911 Notification Process) in response to this

NTSB recommendation. The new 911 notification process provides guidance to Gas Control and requires that the responsible 911 Emergency Response Center(s) be notified during any emergency incident that may affect the safety of the public, property or the environment.

- Related and continuing actions include:
  - Gas System Operators: Gas System Operators to take the lead to further assess best practices for emergency response and 911 contacts in connection with pipeline events.
  - Outreach and Partnering: Outreach to and partner with 911 agencies to determine best practices to give and receive information to establish situational awareness so that all first responders, utility and agencies are in unified command; ultimate goal to reduce response time and thereby improve opportunity to safeguard the public.
  - Gas Dispatch and Gas Control: Evaluate possible co-location of Gas Dispatch and Gas Control to facilitate information sharing; consider establishing collaborative process whereby Gas Control determines need to call 911 and Dispatch initiates communications at Gas Control's direction.
  - GPS Locators: Evaluate GPS locators on every PG&E first responder vehicle with real-time visibility to Dispatch and Gas Control.
  - Distribution Gas Control and Transmission Gas Control: Establish a Distribution Gas Control center separate from Transmission Gas Control.

III. Work Clearance Procedures and Supervisory Control (NTSB: P-11-24, P-11-26)

Summary of Safety Recommendations: (1) Include requirements for identifying the likelihood and consequence of failure associated with the planned work and for developing contingency plans; (2) Equip supervisory control and data acquisition (SCADA) 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.

PG&E Actions Related to Safety Recommendations:

- Comprehensive Controls Framework: Developing and implementing a comprehensive controls framework consisting of industry best practices. This framework will focus on proactive practices to assess, prevent, detect and respond to potential threats (e.g. physical, logical, and personnel) to PG&E's system. Areas of focus include access control for both the Industrial Control Systems (ICS) and underlying infrastructure; training of operators on proper use of controls and reporting; enhanced monitoring of controls and system configuration; independent assessments; and business continuity and disaster recovery capabilities.
  - Subject Matter Experts: Identified subject matter experts knowledgeable in ICS, Geographic Information System (GIS), Information Technology (IT), and related security controls and incorporated their expertise

- Standardized Procedures: Establishing standardized procedures to effectively deal with abnormal and emergency operating situations. Examples include: station start-up, operational protocols, electrical maintenance, controls construction, and the retention and accessibility of critical station documentation.

- Quality and Accessibility of Information: Improving the quality of information available to operators by providing increased pipeline pressure and flow information.
- Alarm Management Systems: Upgrading alarm management software systems to improve alarm analysis.

IV. Emergency Response (NTSB: P-11-25)

Summary of Safety Recommendation: Establish a comprehensive emergency response procedure for responding to large-scale emergencies on transmission lines.

PG&E Actions Related to Safety Recommendations:

- Increased SCADA Capability: Updating and expanding SCADA system by installing more pressure and flow monitoring points; deploying real-time and situational SCADA viewing tools to improve gas control monitoring and response abilities; developing new shut-down protocols for emergency response.
- Benchmarking: Incorporating information gained from benchmarking with 25 other utilities and first responders to identify best practices and industry standards.
- Enhanced Emergency Response Capability: Organizational changes to support emergency planning and response and implementation of mobile command centers.
- Training and Outreach:
    - Developed contact list for all local first responders to facilitate future communications and notifications
    - Launched PG&E first responder password-protected website
    - Provided maps, GIS data and other information to first responders
    - PG&E completed in-house Incident Command System training and regionally-based training for fire departments and other agencies in coordination with PG&E employees
    - PG&E is conducting Gas Controller training regarding the use of automated isolation valves in emergency response
    - PG&E also plans to improve processes for dispatching first responders to the scene of a natural gas emergency (See actions taken in response to NTSB P-11-3 above)

V. Installation of Automated Valves (NTSB: P-11-27)

Summary of Safety Recommendation: Expedite the installation of automatic shutoff valves and remote control valves on gas transmission lines in HCAs, 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).

PG&E Actions Related to Safety Recommendations:

- Isolate or Shutdown Pipe Segments: Install automated and remotely operated pipeline safety valves to enable PG&E's to isolate or shutdown pipeline segments in an emergency.
- Automated Valves and SCADA: Installed automated valves and SCADA capability at Line 132/109 cross-ties.
    - Automating 29 valves in 2011 on the San Francisco Peninsula.

- Planning to install a total of 228 automated valves over the next three years as part of PG&E's proposed Pipeline Safety Enhancement Plan.

VI. Post Accident Toxicological Testing (NTSB: P-11-28)

Summary of Safety Recommendation: Revise PG&E's post accident toxicological testing program to ensure that testing is timely and complete.

PG&E Actions Related to Safety Recommendations:

- Post-Accident Training: Conducted Department of Transportation (DOT) Gas Post-Accident training to all PG&E'S Gas Maintenance & Construction management team and first-line supervisors.
- Procedures, Controls and Training: Clarified procedures, established controls and ongoing training of the on-call procedure binder, procedural checklist and DOT contact; conducted DOT training on July 18, 2011 for all supervisors and on-call engineers.

VII. Integrity Management Program (NTSB: P-11-29, P-11-30, P-11-31)

Summary of Safety Recommendations: (1) Assess every aspect of Integrity Management program and implement a revised program; (2) conduct assessments using revised risk analysis methodology incorporated in (1) and report results to the CPUC; (3) develop and incorporate into public awareness program written performance measurements and guidelines for evaluating the plan and for continuous program improvement.

PG&E Actions Related to Safety Recommendations:

- Review and Modify Integrity Management Program:
  - Conducting a comprehensive review of Gas Transmission Integrity Management Program
  - Benchmarking Integrity Management Program against industry leaders
  - Updating prioritization methods to incorporate structured risk assessment across facilities and functions.
- Improving Integrity Management Program Through Records Management: Establishing a technology infrastructure to ensure data reliability, improve risk and integrity management, strengthen record and data analysis, and aid in decision-making.
- Training: Providing additional training to ensure employees can execute and meet highest standards related to PG&E's Integrity Management Program.
- Quality Assurance: Established clear audit and review procedures to ensure work is:
  - Performed according to established standards
  - Improvement actions identified through audits are effectively implemented and tracked