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September 20, 2010

Paul Clanon, Executive Director  
California Public Utilities Commission  
505 Van Ness  
San Francisco, CA 94102-3298

Re: Questions regarding San Bruno Pipeline Explosion

Dear Mr. Clanon:

This is a partial response to your information request of Friday. We want to be fully responsive to your entire request; however, some of the information will take time to assemble. We will provide the remaining information as soon as possible. You have my word that our team is moving as quickly as possible to provide the information you have requested.

- 1) ***Please provide a list of PG&E's top 100 list of high priority pipeline projects, by segment, from 2007 to the present, that PG&E has identified as priority candidates for replacement or upgrade for reasons of public safety, including the current version of such list.***

#### PG&E's Response

At the outset, I want to point out that PG&E's "Top 100" list is not a list of projects PG&E has identified as "priority candidates for replacement or upgrade for reasons of public safety." Any issue identified as a threat to public safety is always addressed right away. We do not delay or defer work that is necessary for public safety.

The "Top 100" list is part of our ongoing risk management program, and is one of the tools used to prioritize our engineering analyses and future work on our transmission pipelines. We use it to evaluate potential future risks in the system so that we can assure that we have adequate resources and can plan our activities several years in advance. In many cases this results solely in monitoring; in other cases, it results in planned repair or replacement.

As part of our federally mandated integrity management program, we continually reevaluate the risk factors applicable to pipeline segments and alter priorities based on the most up-to-date information. PG&E updates its risk assessment at least annually based on engineering evaluations, inspections and work performed. This update looks at all 20,000 transmission pipeline segments and is continually re-evaluated.



There will always be a “Top 100” list because it is a relative ranking of our pipeline segments compared to one another: the segments that score highest in each of the factors make up the “Top 100.”<sup>1</sup> As a result of our continual reevaluation of the applicable risk factors, the “Top 100” list is never cast in concrete; while it is one tool used to help us plan our engineering analyses and future work, it is not our only tool or a complete list of the work we are performing or intend to do. Because we are continually collecting and assessing data on our system, decisions about what work to perform when are made based on the most up-to-date information available to our engineers.

The factors used in the risk management process for our pipeline segments include the following:<sup>2</sup>

- Potential for third parties to damage our pipelines through construction work. This is the most significant risk to our pipelines and the most heavily weighted risk in the algorithm PG&E uses to rank its pipeline segments.
- Potential for corrosion: ongoing monitoring and assessment of the potential for corrosion.
- Potential for ground movement: the risks associated with ground movement, such as landslides and earthquakes.
- Physical design and characteristics such as age, diameter, type of material and depth of pipe.

These factors are overlaid with location-related information that assesses the potential impact on the environment or reliability as well as the proximity of the pipeline to high density areas.

PG&E’s “Top 100” list is prepared each year. The current list, based on 2009 data, is contained in the enclosure responsive to request number 2.<sup>3</sup> We will provide the 2007 and 2008 “Top 100” lists as soon as possible.

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<sup>1</sup> Because a segment sometimes ranks high in more than one category or there may be tie scores in one or more categories, the “Top 100” list at any time may contain more or less than 100 segments. In fact, the current “Top 100” list contains only 94 segments.

<sup>2</sup> There are many more detailed factors that go into the evaluation of our pipeline segments, as described in the response to your request number 4.

<sup>3</sup> Because the current list only contains 94 segments, we are also including the next six highest scored segments, for a total of 100.



- 2) *For each proposed project on the foregoing list, please describe the status of the replacement or upgrade project (e.g., work completed, in construction, or work not yet commenced).*

PG&E's Response

Not every pipeline segment on the list is or results in a "project." Many entail only monitoring and engineering analysis that may or may not lead to a project at a future date. The enclosed table describes each segment on the list and its current status.

- 3) *Please provide maps showing the location of each pipeline segment on the foregoing list of projects that has not yet been replaced or upgraded.*

PG&E's Response

Later today, we will be posting maps of our current "Top 100" segments as well as PG&E's entire gas transmission system on our website and will provide you with a CD this afternoon that contains all that information.

- 4) *Please provide a detailed description of the criteria PG&E uses in deciding which pipeline segments to characterize as high priority projects, including any mathematical formulas used to rank such segments in terms of priority. Please also provide any related workpapers in PG&E's possession.*

PG&E's Response

The variables considered under each of the four principal factors are as follows:

**Potential for Third Party Damage (45% Weighting):**

- A) Potential Ground Break Frequency
- B) 3<sup>rd</sup> Party Damage Prevention
- C) Ground Cover Protection
- D) Pipe Diameter
- E) Wall Thickness
- F) Line Marking
- G) Maximum Operating Pressure (MOP) vs. Pipe Strength
- H) Third Party Leak Rate
- I) Public Education Program Efforts

**Potential for Corrosion (25% Weighting):**

- A) Soil Resistivity
- B) Corrosion Survey Criteria
- C) Coating Visual Inspection



- D) Casing Survey
- E) In-Line Inspection
- F) External Corrosion Leak Rate
- G) Coating Design
- H) DC/AC Interference
- I) Coating Age
- J) MOP vs. Pipe Strength
- K) Pipe Visual Inspection
- L) Test Pressure
- M) External Corrosion Direct Assessment (ECDA)

**Potential for Ground Movement (20% Weighting):**

- A) Water/Earthquake fault crossings/Levee Crossings
- B) Soil Stability
- B) Seismic Area
- C) Erosion Area
- D) Ground Movement Mitigation Efforts
- E) Girth Weld Consideration

**Physical Design and Characteristics (10% Weighting):**

- A) Pipe Seam Design
- B) Girth Weld Condition
- C) Material Flaws or Unique Joints
- D) Pipe Age
- E) MOP vs. Pipe Strength
- F) Design/Materials Leak Rate
- G) Test Pressure vs. Pipe Strength

In assessing potential consequences, the following are the principal factors:

**Impact on Population:**

- A) Population density in proximity to pipeline
- B) Pipeline proximity to a potential area of population concentration
- C) Potential impact radius

**Impact on Environment:**

- A) Presence of a water crossing
- B) Passing through or adjacent to an environmentally sensitive area

**Impact on Reliability:**

- A) Reliability impact on customers in the event of a pipe failure
- B) Number of customers to experience a gas service outage
- C) Proximity of critical facilities

Enclosed are PG&E's procedures for its gas transmission risk management program and the algorithms for External Corrosion, Third Party, Ground Movement, and Design/Materials. RMP-01 describes the process for developing the total score for a pipeline segment. RMP-02



to RMP-05 contain the process and algorithms for the four factors making up the total risk score transmission pipeline segments. The portions relating to distribution only have been removed to avoid confusion.

- 5) *Please identify the exact milepost at which the rupture occurred on September 9, 2010.*

PG&E's Response

Mile Post 39.28.

- 6) *For any segment of Line 132 currently or previously listed on the high priority projects list described above, please provide a description of such segment(s) (including location by mileposts), a detailed explanation of the factors PG&E took into account in deciding to include such segment(s) on the list, and a detailed explanation as to why any replacements or upgrades have not yet been completed. Please also provide a complete set of PG&E's risk analysis workpapers in response to this question.*

PG&E's Response

**Line 132, MP 42.13 - 43.55:** This segment is 2.8 miles from the Line 132 segment that ruptured. It appeared on PG&E's "Top 100" list and was identified in a 2006 work paper submitted in connection with the pre-filing settlement of PG&E's 2008 GT&S rate case. The replacement of this segment initially had been planned for 2009. Reanalysis by PG&E's pipeline engineers in early 2008 showed that the segment was in acceptable condition and did not need replacement sooner than 2013.

Based on a preliminary review of the 2006 "Top 100" list, PG&E included the Line 132 segment project in its 2008 rate case forecast. The thought at the time was that PG&E's engineers would do more research and analysis of the condition of the pipe and field conditions before making a final decision which projects to proceed with.

In early 2008, the pipeline engineer responsible for this area reanalyzed all available information on this segment. The information he reviewed included all of the data from the External Corrosion Direct Assessment (ECDA) conducted on segments of Line 132.<sup>4</sup> As part of the ECDA on this segment of Line 132, PG&E had excavated three 10-foot long sections of the pipe to physically inspect the quality and condition of the pipeline, depth of cover, coating

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<sup>4</sup> ECDA is one of three federally approved methods to assess transmission pipeline integrity. ECDA involves a four-step process that combines (1) pre-assessment, (2) indirect inspection, (3) direct examination, and (4) post assessment to evaluate the threat of external corrosion to the integrity of a pipeline segment.



type and condition, pipe wall thickness, pipe type/grade, evidence of internal/external corrosion, cathodic protection levels and other conditions. For each 10-foot section, the coating was removed and the condition of the pipe itself evaluated. The excavations showed the coating was in fair condition and the pipe in good condition.

In addition to reviewing the available data, the responsible engineer personally conducted a field investigation of the segment. This involved driving the entire section, observing that a portion of it was contained within a well-marked right of way and a portion under a public cul-de-sac. After this, in consultation with other pipeline integrity engineers, the responsible pipeline engineer determined that third party dig-in risk did not warrant immediate replacement of the segment (a third-party dig had caused a leak at MP 43 in November 2001) and the segment had not experienced any leaks due to corrosion. Based upon his review of information from the prior ECDA, his own observations, and his engineering judgment, and knowing that PG&E was going to be performing another ECDA later that year or the next year, he determined that the work did not need to be done as previously scheduled.

The 2006 work paper forecast \$5 million for the replacement of this segment of Line 132. When the pipeline projects were reprioritized, that forecast money was spent on other priority projects instead. In fact, in 2008 and 2009, PG&E spent a total of \$254 million on gas transmission capital projects, \$10 million more than authorized.

**Line 132, MP 1.27 - 1.34:** This segment near Milpitas was on the 2007 list due to the potential for ground movement. PG&E added new seismic data to the system, resulting in this segment not being on the 2008 or 2009 "Top 100" list.

**Line 132, MP 3.05 - 3.07 and MP 3.07 - 3.3:** Both segments were on the 2007 and 2008 lists for "overall" risk (i.e., no single factor was high enough to put on the list). When PG&E corrected a data input error, the segments dropped out of the "Top 100" for 2009.

**Line 132, MP 1.350 – 1.870:** This project to replace approximately 2,138 feet of pipe and install other facilities to internally inspect L132 between Milpitas and Crystal Springs reservoir is on the current "Top 100" list because of the potential for ground movement. Construction is currently scheduled for 2012-13. The segment was also on the 2007 "Top 100" list, but was displaced by projects with higher scores in 2008.



- 7) *Please describe and provide justification for how long it will take PG&E to develop (i) a list of locations on its gas transmission system at which manual valves could be replaced by remotely-operated or automatic valves, giving priority to locations with highest population density, and (ii) an estimate of the capital cost and any increased O&M costs of such replacement valves.*

PG&E's Response

We will provide the list and estimates on October 12, 2010.

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As I stated above, we will comply fully with your request. We have teams working literally day and night to gather the information you have requested.

Please contact Brian Cherry or me if you have any questions.

Sincerely,

Christopher P. Johns

cc: President, Michael R. Peevey  
Commissioner, Timothy A. Simon  
Commissioner, Dian M. Grueneich  
Commissioner, John A. Bohn  
Commissioner, Nancy Ryan  
Julie Fitch, Director, Energy Division  
Richard Clark, Consumer Protection Safety Division