BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Investigation on the Commission's Own Motion into the Operations and Practices of Pacific Gas and Electric Company with Respect to Facilities Records for its Natural Gas Transmission System Pipelines.	**I.11-02-016** **(Filed February 24, 2011)**

PREPARED DIRECT TESTIMONY OF MIKE MIKICH ON BEHALF OF THE UNITED ASSOCIATION OF PLUMBERS, PIPE FITTERS AND STEAMFITTERS LOCAL UNION NOS. 246 AND 342, AND THEIR INDIVIDUAL MEMBERS

(from R. 11-02-019)

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TESTIMONY OF MIKE MIKICH

1. My name is Mike Mikich. I have 25 years' experience as a welder and pipe fitter. I have served as a welder, welding foreman, pipe fitting foreman and general foreman. I have spent approximately seventy percent of my career on gas pipeline work: pipeline construction, testing, restoration and repair, and on gas-storage facilities, in California, Oregon and Alaska. I have also worked on piping projects for pharmaceutical facilities, laboratories, refineries and boilers in commercial buildings. I am a member of the United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada, AFL-CIO, the Plumbers and Steamfitters Union ("U.A." for short). Since November 2011, I have served as a Business Representative for Plumbers and Steamfitters Local 342. Much of my work involves representing and advising welders and pipe fitters employed on gas pipeline work.

2. From March 2011 to November 2011, I worked as a welder on PG&E's gas-transmission pipelines for U.A.-signatory contractors. Most of the work involved welding in connection with pipeline hydro-testing.

3. This testimony collects observations I made while working on PG&E's gas-transmission pipelines along with the observations of my fellow U.A. pipeline welders and another Local 342 Business Representative.

U.A. Training

4. U.A. Local Unions and their signatory employers co-sponsor joint apprenticeship and training programs that train pipe fitters, welders, plumbers, refrigeration fitters and other piping workers. United Association training programs are among the best in the world. U.A. Local 342 operates a Training Center that is especially well regarded for the high quality of its pipeline training. We continually expand and improve our training program to keep up with new developments in our industry's codes, standards and applications.

5. Each time they start work on a project, pipeline welders are required to prove their welding skills in order to qualify for pipeline work. Local 342's Training Center is an independent testing facility that provides rigorous testing of pipeline welding skills in accordance with the American Petroleum Institute's Standard 1104 ("API 1104"). The tests are administered by experienced, highly

qualified welding professionals who are employed full-time by the Training Center. Neither they nor Local 342 have any incentive to certify welders who do not meet API 1104's standards of quality and speed in welding. We must compete in the open market – if we don't provide the most productive, highly skilled pipeline welders, we won't get that work.

6. In early August 2011, PG&E Vice President Randy Livingston visited Local 342 and was given a tour of our Training Center. Mr. Livingston was so impressed that he told a Local 342 representative that he wanted Local 342's Training Center to train PG&E personnel. The next day, a Mr. Yee from PG&E's training operations called Local 342 and asked that our Training Center train PG&E's welders, who are represented by I.B.E.W. Local 1245. We are only able to train workers employed by our signatory contractors and other Local 342 members.

Poor Condition of PG&E's Existing Pipelines.

7. In the course of our work in testing PG&E's pipelines over the past year, my fellow Local 342 welders and I have had many opportunities to examine PG&E's existing pipelines, inside and out. After the ends of a test section had been uncovered, we would cut a segment out of the pipeline. For hydro-static testing, the spool was usually about 30 feet long. In other instances, we cut out shorter spools that allowed the insertion of small tracked vehicles that carried cameras inside the pipeline. Where the pipeline was to be hydro-tested, we would weld a cap onto the end of the pipeline that was not being tested. Then we welded a manifold onto the end of the pipe section that was going to be tested.[1] Onto the manifold we welded pipe that carried water into or out of the test section. Foam pigs were used to push air out of the pipe, but they did not completely seal the pipe and sometimes came out badly damaged. We did not see any high-point vents in the pipeline, which would have allowed air to be removed from the lines as the hydro-test water flowed in.

8. When pipe sections had been uncovered and opened, we had many opportunities to examine the pipe and its conditions, both inside and out. What we saw were defective welds and corroded pipe that appear to be extremely hazardous.

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1 A manifold is a fitting that connects the existing pipeline to the pipe that carries the hydro-test water into or out of the pipeline.

Defective welds.

9. When two segments of pipeline are welded together, whether they are straight or curved, multiple welding passes are required. The first pass, on the inside of the pipe, is called the "root" pass. The two segments are carefully aligned approximately one-eighth inch apart. The welder inserts a welding rod into the gap and welds the two ends of pipe together. The root pass joins the edges inside the pipe. The root pass is the most important – it's the foundation for joining the two pipe segments. Soon after the root pass is completed, a second weld is made, called the "hot" pass, on top of the root pass. Depending on the pipe, a second hot pass (or "filler" pass) may be made. Finally, the weld is finished at the outer surface of the pipe junction with a "cap" pass.

10. The vast majority of the welds we saw on Line 132, in several parts of the Bay Area, were defective. Here are some examples:

a. On Junipero Serra Boulevard in South San Francisco, we had cut a 6- or 7-foot piece out of the 30-inch transmission line so it could be inspected with a small camera vehicle. We looked into the existing pipe that was still in the ground, and we saw a 90-degree turn that had no root pass joining the straight piece of pipe and the bend. There was a little gap between the straight piece and the bend. Instead of being welded together properly, a "wedding band" had been welded to the outside of the joint to bridge the gap. It had no root pass. One of my co-workers crawled into the pipeline to look at the other end of the bend. He reported that it didn't have a root pass, either. 2

We pointed-out the situation to a CANUS inspector, and he photographed it. Then some PG&E people came to look at it. We were told to go sit in the truck, which we did, but we could hear someone say, "This could open up a Pandora's box." But we were instructed to just replace the 6- or 7-foot segment, which we did.

b. We also saw "arc marks" all along the San Bruno area of the existing pipeline. An arc mark is a burn inside a pipe, away from the welding joint. It is made by careless welding, when

2 PG&E welders are well known for using wedding bands instead of the required root passes, hot passes and caps.

the welder lets the tip of his welding rod get outside the joint, and it burns a gouge inside the pipe. Some of the arc marks were quite deep, as much as one-sixteenth of an inch, and some were a foot long. We saw too many arc marks to count – they were in almost every piece of pipe we took out.

c. We also saw a number of "stub-ins" in PG&E's pipelines. A stub-in is an unworkmanlike way to connect a branch of pipeline or a valve to the main line. The correct method is to cut a hole in the main line and weld a "saddle" to it, using the multi-pass welding method described above. The saddle has an outlet attached to it (called an "olet"), and the branch of pipe connects to the olet. With a stub-in, a round opening the size of the branch or valve fitting is cut in the main pipeline. The end of the branch pipe or valve stem is inserted into the main pipeline. Then they are joined by welding around the outside of the branch where it enters the opening. Not only are stub-ins uncraftsmanlike, they usually go far enough into the main pipeline to prevent a pig (smart or otherwise) from being run through the pipeline.

d. On a gas-transmission pipeline in the East Bay, we found an unusual, and unusually defective patching practice. In a number of places, 8-inch by 8-inch openings had been cut in the pipeline in order to run electrical cable through the line. Then metal plates were welded on to cover the openings. The plates were just "seal" welded on the outside of the openings, meaning that the plates were larger than the openings, and the edges had been welded to the surface of the pipeline. There were no root-passes, hot passes or other penetrations. That is not an accepted practice anywhere. The situation is potentially dangerous, because a pressure spike on the line might blow the plates off of the pipe and result in a rupture.

e. The overwhelming majority of the welds we saw on Line 132 and elsewhere on the San Francisco peninsula, the South Bay and the southern part of the East Bay showed extraordinarily poor workmanship. If a Local 342 welder made welds like the ones we saw, we'd expect him to be fired for cause.

Corroded pipelines.

11. We also saw extensive corrosion on the outer surfaces of the old pipe that had been uncovered. Pipeline pipe is covered on the outer surface by corrosion-protection coating. On the old

pipe that we worked on, it was a tar-based coating. We saw lots of corrosion on four pipeline segments in Palo Alto and several more in Redwood City. We saw cracked coating on pipeline everywhere we went.

12. In preparing for a hydro-test in Palo Alto, the outer surface of the pipe segment that had been uncovered was so corroded that more than 50% of the pipe's thickness was corroded away. Instead of replacing it, PG&E told us to put a six-foot-long wedding band on it, which we did. The same test section failed a hydro-test. Using a helium test to locate the leak, a technician found a pinhole in the pipeline under the sidewalk in front of Hewlett-Packard's building. We were instructed to put a wedding band on that, too, which we did. The line was re-tested and passed, but the question is how much corrosion and how many other defects it has, and how long the pipeline will last.

13. After the camera work was completed on the section described in Paragraph 10.a. above, we replaced the 6- or 7-foot segment. The longitudinal seam next to our girth weld failed an X-ray examination. X-ray film is usually 3 inches wide (the lengths vary). The length goes across the pipe horizontally, and the width goes along the pipe longitudinally, which means that only 3 inches along a pipe can be covered by each shot. A PG&E engineer came by and instructed the X-ray technician to shoot images until he found a clean spot, meaning a spot that didn't show seam defects for 3 inches. At that point, the engineer said, the X-raying was to stop and we should replace the pipe only to that point. We were amazed, because there was no way to know whether the seam a few inches or feet or miles farther along might have defects, too.

Photographs Illustrating Defects in Existing PG&E Pipelines.

14. The following are photographs we took while working on PG&E pipelines in the Bay Area during 2011.

Illustration A, called "Stenciled Weld," is a photograph of an old pipe joint in PG&E's existing Line 132 in Redwood City. It shows several unacceptable welding practices. First, the letter "M" was welded into the pipe. Welding outside the pipe joint is prohibited by PG&E's (and all other) standards. Further, the weld in the joint itself is defective. It has undercuts, arc strikes and asymmetrical welds. We saw many similar defects in the work we did on Line 132 and elsewhere.

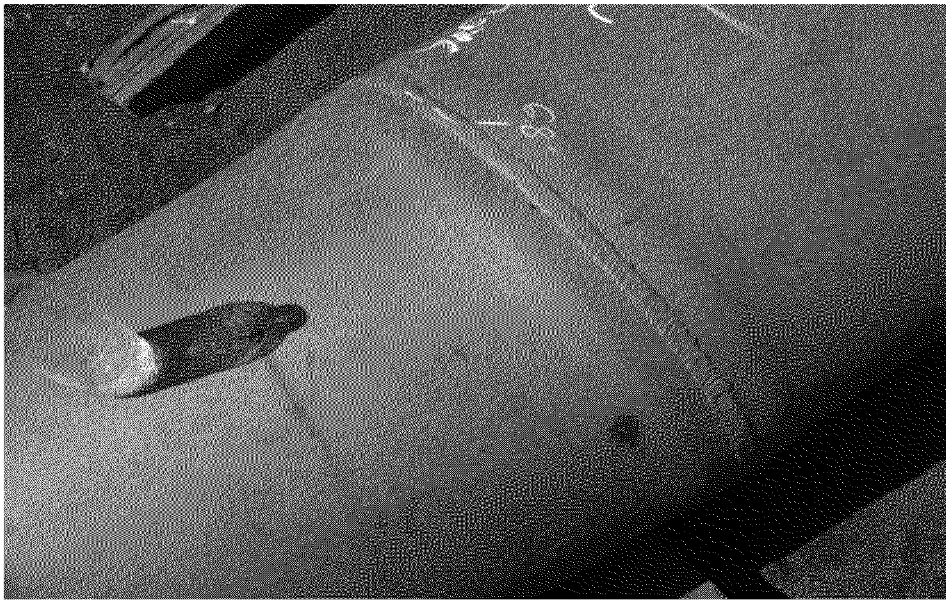

Illustration A: Stenciled Weld

Illustration B, called "Arc Strikes," also shows an old pipe joint on Line 132. It shows unrepaired gouges that were burned into the pipe through careless welding (see Para. 10.b. above). It reflects the same defective welding practices (except for the letter "M") as does Illustration A. That pipe section should have been cut out and replaced.

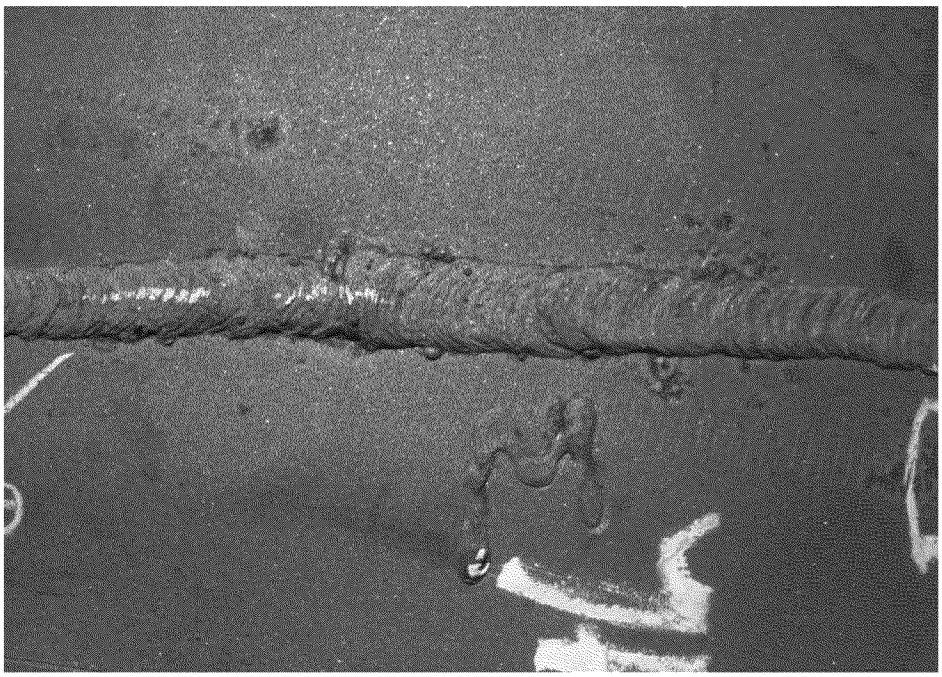

Illustration B: Arc Strikes

Illustration C, called "Coating Deficiencies," is a photograph of a PG&E pipeline segment in Antioch. The pipe had been cut for hydro-static testing. The photo shows that between the worker's shoulder and the open end of the pipeline, there is extensive pitting in the pipe coating on the pipe, and the coating is cracked and not bonded well.

Illustration C: Coating Deficiencies

CANUS Corporation's inspection.

15. CANUS Corporation provides the inspectors at the sites where we have worked. Many CANUS inspectors are former PG&E employees; the saying on-site was that the CANUS inspectors were "PG&E to the bone." We are informed that many CANUS executives and higher-level inspectors are former PG&E employees.

16. CANUS' inspection practices suggested an undesirably close relationship with PG&E. For

example, PG&E welders made most of the “tie-in” welds after hydro-tests. Tie-ins involve welding in the replacement of pipeline segments that have been cut out to perform the hydro-test. The tie-in is just as important to pipeline integrity as any other girth welds. But CANUS’ inspectors did not observe the PG&E employees’ tie-ins. We asked several CANUS inspectors about it, and they said that they had been instructed not to inspect the PG&E welders’ tie-ins.

17. CANUS’ inspectors held us to PG&E’s welding specifications, but they were lenient with PG&E’s welders. For example, under PG&E’s specifications a girth weld must be X-rayed after all 3 or 4 of the welding passes have been completed. If the weld does not pass the X-ray examination, the welder has one opportunity to repair it. If the weld does not pass the second X-ray, the whole joint must be cut out and a new pipe segment must be cut, fit and welded in. But for PG&E employees, CANUS would instruct the X-ray technician to take an “informational” shot after each welding pass. If the weld did not pass the X-ray exam, as was the case in many instances, the PG&E welder would be given repeated opportunities to re-weld it.

18. CANUS’ practice of allowing informational shots for PG&E welders was not only lenient, it was harmful to the pipe. When pipe is heated and cooled several times, the heating and cooling damages the metal molecules of the pipe in the zone 2 to 3 inches on either side of the weld. Nevertheless, we saw one girth weld be re-welded 3 or 4 times by the PG&E employee. Lenient practices like that should not be permitted.

MIKE MIKICH