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**COMMENTS OF THE UTILITY WORKERS UNION OF AMERICA (UWUA)**

**On  
The Importance of Human Factors in Pipeline Safety  
and the Full Involvement of Workers in the  
Development and Implementation of a Work Culture that  
Places Safety First in Pipeline Safety Programs**

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On behalf of its more than 10,000 members working to deliver natural gas safely to America's homes, businesses, industrial facilities and power plants throughout the country, the Utility Workers Union of America (hereafter UWUA) is pleased to offer these Comments that emphasize the importance of developing a work culture that embodies a proactive approach to identifying and eliminating hazardous conditions in the gas delivery system before they result in explosions, fires and events that injure and kill people and damage and destroy property. We reject the old saw "If it ain't broke don't fix it" as an invitation to disaster in our industry.

Our approach to a safer industry depends to a great extent on active engagement of employees, both management and labor, acting as independent and fully equal partners in a culture that places safety first. This approach requires learning lessons from safety events through a thorough root cause analysis that identifies systemic risks and eliminates them. This approach entails full and adequate staffing of surveillance, patrol and assessment activities; and full and adequate staffing of operating and maintenance activities to eliminate (1) factors that affect judgment such as fatigue or pressure to reduce time spent on the task; (2) factors that induce inadequate compliance with procedures such as poor procedure description or corner-cutting.

This approach entails robust institutionalized systems of communications among managers, employees and regulators/enforcers. Official reporting to regulatory officials by pipeline operators should be supplemented by inspections,

both announced and unannounced, and regular meetings between regulators and employee representatives who have no incentive to minimize identification of risky conditions and hazards. The purpose of these regular communications is not to fix blame or trigger penalties; rather it is to foster an open and transparent approach to identifying and fixing the identified problems before they injure or kill.

UWUA's approach suggests strongly that PHMSA's decision to eliminate human factor considerations from the Distribution Integrity Management Program (DIMP) Final Rule must be revisited.<sup>1</sup> The silence of the TIMP Rule on human factors is deafening.<sup>2</sup> To the extent that PHMSA is playing a significant role in convening the gas pipeline community, providing leadership and facilitating dialogue about improving the safety and integrity of gas delivery service it should be prepared to address the industry's approach to human factor issues such as the aging workforce, the need to reverse the de-skilling of the workforce and the adequacy of staffing of safety-related operation and maintenance functions. In the aftermath of San Bruno and Allentown, the public deserves no less.

The detailed Comments on each of these three elements – work culture; fully engaging employees; robust communication among workers, managers and regulators – reflects in part the UWUA's experience in the nuclear industry and reflects in part its experience in the unique environment of California.<sup>3</sup>

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<sup>1</sup> 74 FR 63906 at 63908 (December 4, 2009).

<sup>2</sup> The TIMP Rule is curious in its treatment of human factors. 49 CFR 192.917(a)(4) identifies "human error" as a required category of threat to be addressed in a threat identification program; the rule then proceeds to drop the entire subject.

<sup>3</sup> It is not easy to generalize from California's experience due to (1) the extreme scale of California's gas distribution utilities – Pacific Gas and Electric Company and Southern California Gas Company each have over 5 million retail gas customers – and (2) the unique jurisdictional parameters stemming from the Hinshaw Amendment, Section 1(c) of the Natural Gas Act, 15 USC section 717(c), which places most California pipeline facilities and their operations under the jurisdiction of the California Public Utilities Commission (CPUC). However, the active response of the CPUC to the San Bruno explosion makes California a laboratory for finding improvements in both safety philosophy and safety practice. California has undertaken a comprehensive gas safety rulemaking -- R. 11-02-019, issued

## **SAFETY CULTURE: PHILOSOPHY AND PRACTICE**

For UWUA establishing the elements of an effective safety culture entails a recognition that gas pipelines are essential facilities providing a critical and essential good to the public. The gas business requires the safe transportation and delivery of a dangerous, combustible substance. Safety for the public and the workers is of paramount importance. From our perspective the safety culture in the gas business entails first a philosophy about workplace and public safety where:

- It is recognized explicitly that gas pipelines are essential facilities providing a critical and essential good to the public. The gas business requires the safe transportation and delivery of a dangerous, combustible substance. Safety for the public and the workers is of paramount importance.
- Unsafe conditions and practices are identified proactively and eliminated or minimized through implementation of a systems approach to safety that engages all employees of the utility including both management and labor. Protecting workers and the public involves every aspect of the Company's operations, not just pipelines.
- A systems approach to safety is not an abstract concept; identifying failed systems of safety is a first step in making real safety fixes. It requires worker empowerment and leadership in problem solving, identifying and addressing safety issues and proposing solutions. Integrating continuous opportunities for training, skill development and transmission, and collaborative problem solving is an essential feature of a systems approach to safety.
- Clearly written procedures, with periodic review and revision based on worker experience and feedback, and an expectation of procedure compliance are essential elements of a systems approach to safety.

- Safety events are addressed through root cause and incident analysis, not disciplinary action; the emphasis is on strengthening the system of safety, *not* blaming the individual.
- The safety culture should recognize the values of mutual respect, sharing of responsibility and power, and collective collaborative work among all employees of the gas business, both management and labor.
- In our industry safety and service levels are intimately intertwined. The goal is consistently utilizing our experience and knowledge, tools and training to create a safe, injury-free and event-free environment for workers and the public. This entails re-establishing performance levels and metrics that have historically prevailed in the industry.

This approach to developing a safety culture is consistent with best practices in the nuclear industry and with best practices at other gas utilities. The UWUA has provided leadership in safety culture development and offers programs at the national level for worker/management cooperation and worker empowerment in the safety area.<sup>4</sup> A successful systems approach to safety requires a high degree of commitment and involvement by utility senior management and the full engagement of both union and management at all levels in an atmosphere of mutual respect in order to empower employees to create and maintain a safe environment for the public. Articulating the expectation and describing the principles must be accompanied by concrete measures of implementation.

Institutionalizing a safety culture based on a systems approach to safety is best accomplished in practice by developing a forward-looking plan that is the basis

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<sup>4</sup> UWUA along with its union colleagues in the utility industry such as the IBEW and the Teamsters, works with the following companies among others in promoting the systems approach to safety approach to worker/management safety culture training: Entergy (New York, Massachusetts, Michigan, Vermont); First Energy (Ohio); Con Edison (New York); DTE (Michigan), Peoples Gas (Illinois); Bay State Gas (Massachusetts); Dominion Resources (Massachusetts, Ohio, Pennsylvania); Allegheny Power (Pennsylvania, West Virginia). Southern California Edison has recently instituted a comprehensive safety training program implementing Systems of Safety in cooperation with UWUA and its Local 246.

for holding the pipeline operator accountable and measuring progress in eliminating and mitigating identified hazards. The fundamental importance of a plan is that it moves the perspective from reactive response to the last disaster to forward looking anticipation and prevention of the next disaster. It embodies lessons learned, but puts them to work as part of an approach to prevention. It moves the line demarcating safety back away from the brink , before things break.

In order to have an effective planning process, that is both comprehensive and put into effect in practice, it is vital that employees be involved at each step of the plan development, implementation, review and enforcement process. Fully engaged employees in the field and on the job is the best assurance that a safety plan will be effective in practice in preventing injury and damage to the public as well as to the workers.

The elements of the plan should include at a minimum:

- identifying and eliminating hazards and systemic risks in order to prevent accidents, explosions, fires, and dangerous conditions and protect the public and its employees;
- identifying the safety-related systems that will be deployed to eliminate or mitigate hazards, including adequate documentation of gas plant history and capability;
- providing adequate storage and transportation capacity to safely deliver gas to all customers consistent with rules authorized by regulatory authorities governing core and noncore reliability and curtailment, including provisions for expansion, replacement, preventive maintenance and reactive maintenance including repair of gas plant;
- providing for effective patrol and inspection of the gas plant to detect leaks and other compromised facility conditions and to effect timely repairs;
- providing for appropriate and effective system controls, both equipment and personnel procedures, to limit the damage from accidents, explosions, fires and dangerous conditions;
- providing timely response to customer and employee reports of leaks and other hazardous conditions and emergency events, including disconnect/reconnect and pilot-lighting procedures;
- establishing appropriate protocols for determining maximum allowable operating pressures on relevant pipeline segments, including all necessary

documentation affecting calculation of maximum allowable operating pressures;

- preparing for, preventing or minimizing damage from, and responding to earthquakes, fires, storms and other major events;
- ensuring adequate numbers of properly trained gas corporation employees to carry out these activities;
- exceeding the minimum standards for safe design, construction, installation, operation and maintenance of gas transmission and distribution facilities prescribed by regulations issued by the US Department of Transportation in 49 CFR Part 192.

The safety plan would begin with the hazard mapping, a comprehensive and proactive approach to answering the existential questions underlying the concept of systemic risk assessment: *"...what else is out there?"* and *"what can we do to prevent another tragedy from unexpected sources?"*

The current national discussion appears to focus on aging transmission infrastructure and to prioritize hazards of large and potentially catastrophic magnitudes. In other words, are there other San Brunos. Rancho Cordovas and Allentowns ? Beginning to answer this question involves steps such as the National Transportation safety Board (NTSB) and the CPUC have undertaken with respect to PG&E in response to San Bruno – (1) review of documentation of the characteristics and capacities of existing physical infrastructure to establish solid baseline data as a foundation for operating procedures that permits a degree of confidence; (2) articulating improved patrol, inspection, testing (including internal inspections with remote devices) and documentation practices in the field – more frequent, more thorough and more completely documented – implementing them effectively and ensuring continuity over time. (3) Once the physical deficiencies and hazards are mapped, a program must be developed for eliminating the identified physical deficiencies and hazards and/or managing the risks associated with hazards that cannot be immediately eliminated.

Equally important to the development of a safety culture are the human factors that impact safety. The continued performance of potentially fatigued physical equipment and material often depends on the judgment and performance of the employees who operate and maintain it. The public benefits from a trained, skilled, motivated, and well-equipped force of workers, who are fully engaged in all of the issues involved in operating and maintaining the plant and equipment with which they are entrusted. Robust interaction among labor, management and regulators about the behavior of that system and the most efficient and effective ways to keep it safe is the best assurance that consumers will get the service they need at an affordable, just and reasonable rate.

In this respect safety practice can build on programs that already exist for addressing workplace safety, particularly the development of clear procedures for performing work safely and efficiently and the development of a culture of procedure compliance. Hazard mapping and hazard elimination should focus on factors that undermine procedure compliance, including scheduling of work orders, employee assignment completion and compliance with procedures in the field including documentation, and the use of independent contractors where direct observation of compliance may be attenuated and irregular, and where re-working may be necessary.

From the public safety standpoint, hazard mapping should begin at the customer level, with identifying and eliminating conditions and practices that may cause explosions, fires, illness or other forms of injury or damage due to defective equipment, facilities, procedures or other conditions including customer misuse or error. This might include improved leak detection and response, pilot lighting and other assistance with appliances, more timely connection and reconnection services (especially during the heating season), more effective and responsive customer service call handling. Focusing exclusively on the high pressure system such as the one that exploded in San Bruno may miss a ongoing problems at the distribution



and customer service levels – both actual events causing injury and damage and near misses, which may be most instructive in identifying and evaluating hazards and avoiding damage.

The important point is that hazard mapping and elimination is an ongoing, continuous and interactive approach of proactively identifying hazards. It is not a one-time snapshot, but an integral part of the safety culture that asks continuously “how can this hazard be eliminated before it causes injury or damage,” with full participation and input from the employees in the field.

The plan would be submitted to the appropriate regulatory authority for initial approval and would be regularly reviewed and subject to compliance audit. This is not inconsistent with federal pipeline integrity requirements, but would apply to both transmission and distribution including customer services beyond the reach of federal authority. This requirement would apply to all pipeline operators. In the California (Hinshaw) context the safety plan would be submitted to and approved by the CPUC, whose continuous oversight and review would be a significant form of accountability. In other cases, PHMSA should develop a Memorandum of Understanding (MOU) with state regulatory authorities that would delegate to the state authorities inspection, review and enforcement powers, along with funding (if necessary) to support an appropriately sized and skilled cadre of regulatory personnel.

## **TRANSPARENCY OF THE SAFETY COMMITMENT FOR GOVERNMENT AGENCIES**

A systems approach to safety requires removing obstacles to reporting of safety issues, both compliance and non-compliance, to regulators and enforcement agencies. The goal is a cooperative proactive approach to safety that avoids damage before it happens, replacing a reactive, blame-fixing approach to damage that might have been prevented. UWUA proposes a regular and consistent flow of

communication among utility managers, employees and government agencies, in accordance with the following principles:

- Gas pipelines are essential facilities providing a critical and essential good to the public. Safe operation is of paramount importance for employees of the utility and for the consuming public who live in proximity to gas transport and delivery facilities.
- There should be regular institutionalized channels of communications among the three sets of safety stakeholders with direct responsibility for operation – (1) utility managers with operational responsibilities including inspection, monitoring and remediation including repair and replacement; (2) utility employees performing transmission, distribution and field service functions; (3) government agency investigative and enforcement personnel – to enable them to carry out their respective roles in assuring that gas pipeline facilities are operated and maintained in a safe and effective manner for the benefit of the public and consumers of gas service.
- Utility employees through their bargaining representatives should participate fully and equally in development, implementation, interpretation and modification of programs for protecting the safety of the public and of employees, recognizing that in the gas industry all operation and maintenance programs have implications for safety. They should participate in presentations to agencies having approval authority and should be present when enforcement authorities come on the property to inspect or observe utility operation, maintenance, construction or other activities.
- Utility employees through their bargaining representatives should have established channels of communication at regular intervals independent of management with public agencies having regulatory and enforcement responsibility.

Applying these transparency principles, all safety-related conditions should be reported, including those corrected by repair or replacement and those that constitute “near misses.” This would accomplish three things. (1) It would advance the understanding that safe operation of the gas system is a process that entails constant vigilance and proactive intervention and thus increase public confidence in its safety; (2) it would improve regulators’ knowledge and understanding of the

condition of particular pipe segments; (3) it would enhance the ability of regulators to account for safety-related utility expenditures.

For example, PHMSA should require at least quarterly notification of any incident where pressures exceed MAOP. The transparency principles would suggest that these incidents – near misses where risk increased but damage did not ensue – should be reported, should be subjected to root cause analysis and should result in actions to eliminate or mitigate the hazards identified. Quarterly (or perhaps more frequent) reporting of near misses involving excessive pressures is essential in the hazard mapping and mitigation process. We can learn from the accidents *that did not happen* in order to identify how to prevent future damage and deaths.

Thank you for the opportunity to present these Comments.