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Puget Sound Energy

Gas Safety Audit

Section 4 - Safety Compliance Culture

June 2009

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4.1 Introduction

4.1.1 Objective and Scope

The objective of this task is twofold. The first is to assess, whether Puget Sound Energy (PSE) has for its employees and its service providers (SPs), the programs, structures and incentives in place to maintain a culture of safety and compliance. The second is to examine the extent to which PSE is responsive to employees or service providers when system safety issues are brought to the Company's attention.

The first part of this task focuses on safety at PSE - its culture and philosophy toward the individual worker, its interactions with the general public, and, in particular, it's care of the gas distribution system. Worker safety is directly related to public and system safety. Consequently, this review of PSE's safety culture examines PSE and their SPs' individual worker safety records, policies and procedures, as well as system safety. Additionally, this section discusses the UTC-initiated enforcement actions and how management has responded.

The second part of this task reviews the processes instituted to aid both PSE workers and SP employees in addressing system safety issues and concerns. This review incorporates an assessment of the mechanisms that have been created, what the Company does with certain system safety information once received, and how or what is communicated back to the employee.

The Company's culture of safety and compliance is directly or indirectly discussed throughout the other sections of the report as well, and it should be noted that this is but one section of an entire Safety audit. To complete our assessment of this task the following headings are covered:

System and Safety Compliance Goals and Accountabilities

- Corporate and Operational Goals
- Operational Accountabilities
- Service Provider Accountabilities

Organizational Safety Compliance Support

- Gas Operating Standards
- Standards Training
- Mechanisms for Reporting System Safety

Organizational Safety

Enforcement Response and System Safety

- Response to UTC – Initiated Enforcement Actions
- System Safety

4.1.2 Background

System safety culture starts with both the company and employee mindsets. Ideally for the company that mindset would be reflected in its mission statement and translated into objectives, goals and measurable actions. These actions would include developing coherent operating standards reinforced with training. The ideal employee mindset would be: “I try to be safe and promote safety in all that I do.” This safety mindset would apply to the individual employee and fellow workers, the public the employee has contact with, and the gas distribution system the employee constructs and maintains. Mindsets result in beliefs which eventually translate into actions. For these reasons, worker safety is unequivocally tied into public and system safety. Consequently, although this review focuses on the system safety we also briefly examine PSE and their SPs’ individual worker safety records, policies and procedures.

Safety Culture: The Definition Used in this Report

For the purpose of this report, “safety culture” is defined as the attitude, behavior, and practices toward matters of safety by the people involved when managing and operating the utility system to provide gas service to the general public. A safety culture includes a work environment where personnel feel free to raise safety concerns without fearing retaliation, as well as prompt identification, evaluation and resolution of those concerns.

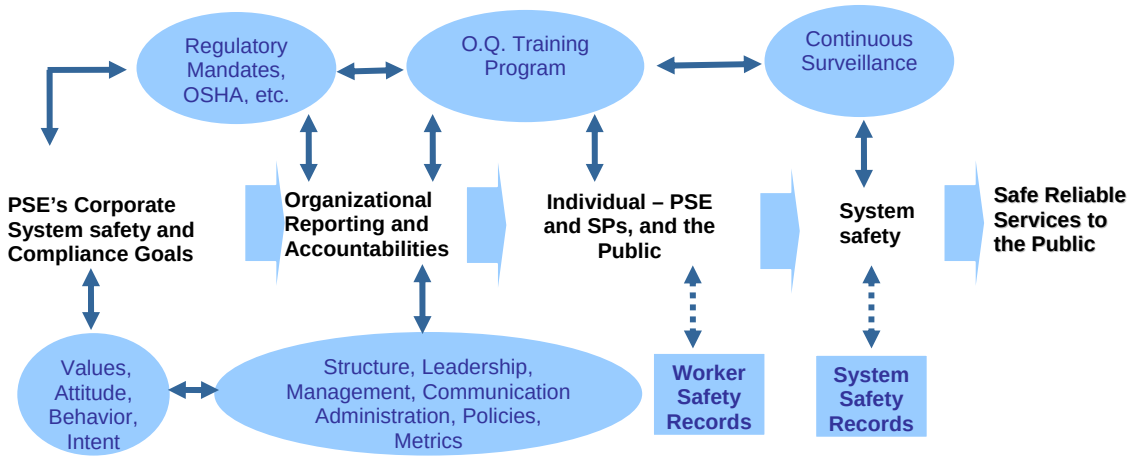
Gas Safety Compliance: The Definition Used in this Report

For purposes of this report, "gas safety compliance" is defined as a natural gas pipeline system’s operations and facilities conformance with Washington State regulations and with Federal pipeline safety standards.

These terms are defined also so as to apply a consistent understanding or establish the context within which the collected information was to be assessed. Resulting from the information collected and analyzed is the safety program flow diagram. This flow diagram graphically depicts and identifies four primary elements that influence, impact and/or enable PSE and its SPs to provide a safe reliable gas utility service to the public. Referring to Figure 1 Safety Program Flow Diagram, the four primary elements of the safety compliance program flow diagram are:

- Corporate and Operations System Safety Goals
- Organizational Reporting and Accountabilities
- Individual Safety
- System Safety

Figure 1 - Safety Compliance Program Flow Diagram



Aligned with the four primary elements are several secondary elements that define and support safety at PSE. These secondary elements include: intent, values, policies, structure, leadership, worker and system safety records, OQ training, and continuing surveillance. Each of these elements is discussed in the following sections.

4.2 System Safety Compliance Goals and Accountabilities

4.2.1 Corporate and Operations Goals

Two of PSE's 2009 Corporate Goals somewhat focus on system safety and compliance[1]. These are:

> **Optimize generation and delivery** — Secure and maintain reliable resources, build or replace infrastructure in a way that meets our customers' needs, promotes environmental stewardship and provides a fair return to investors.
>
> **Own it** — Conduct ourselves and our business in a manner that is ethical, responsible and meets or exceeds any internal or external compliance obligation. Take personal responsibility for meeting customer needs while using company resources and facilities wisely.

Interviews with senior management confirm a desire to maintain a natural gas distribution system in a manner that conforms to sate regulations and federal standards. These interviews also identify a number of competing objectives that senior management needs to balance in order for the company to be successful.

We further reviewed gas operations goals to determine the extent of which Corporate Goals were reflected at the senior and middle management levels in PSE's organization. In total, there are 57 line items that make up the gas operations goals. Line items are assembled into four categories: Accountable the Customers, Accountable to Regulators, Accountable to Our People, and Accountable to Our Owners. A complete list of gas operations goals is captured in Figure 2 2008 Gas Operations Goals[2].

[1] www.pse.com/insidePSE/corporateinfo/Pages/CorporateGoals.aspx

[2] Document Request 8

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Figure 2 – 2008 Gas Operation Goals

	Behind On Track (within x%) Ahead	**2008 YE Target**
1)	**Accountable to Customers** *(A safe, reliable gas and electric system is essential for meeting customer expectations and needs. Top quality customer service, including visible community involvement is important to our business success. We will aggressively measure our performance in these areas.)*	
1.1)	Meet Service Quality Indices (SQIs)	9 of 10 *
1.2)	Meet SQI for gas field service satisfaction	>90%
1.3)	Meet SQI for Call Answer Time	75%/30 seconds
1.4)	Meet SQI for Access Center Satisfaction	>90%
1.5)	Meet SQI for UTC Complaint Ratio	<.5/1,000 Customer
1.6)	Disconnect ratio threshold	3%/cust base
1.8	Meet Combined Customer Satisfaction Scores	7 of 9 *
1.8.a)	Improve Bourke Public Works Directors Satisfaction. Implement construction responsiveness initiative for major municipal projects.	>7.5 Bourke Survey Scores
1.9)	Reduce Enterprise-wide meter work backlog	Reduce by 10%
1.10)	Meet NCC Satisfaction	>77%
1.11)	Improve NCC Complex Cycle Time	Improve by 8.5 days to 76 days(Elec) & Improve by 9.8 days to 88 days (Gas)
1.12)	Implement construction responsiveness initiative for Major Accounts	Gap reduced by 30% (.02)
1.14)	Improve Exception Billing Timeliness	95%/60 day
1.15)	Improve exception billing accuracy (forecast of potential meter related billing issues)	.3% unbilled accounts, finalizing
1.16)	Develop metric for closing bill size	Reduce by x$, available May 08
1.17)	Improve first call resolution/reduce call volumes	analyze/set targets by Sep 30
1.18)	Replace gas meter batteries	200,000
1.23)	Enhance community visibility and prominence - Improve communications to customers and regulators by developing relationships, conducting periodic focus meetings with UTC Staff and providing timely responses to audit findings, regulatory reports and Staff inquiries	UTC "Trusts" PSE
1.29.b)	Work Execution -- Service Provider Carryover Project Completion	140
1.29.c)	Work Execution -- PSE	29
1.29.e)	Work Execution -- Materials & Equipment	No delays
1.29.g)	Work Execution -- Service Provider Metrics	90% favorable 10 of 12 mo
1.29.i)	Work Execution -- Resource Plan	5
1.29.l)	Work Execution -- Bare Steel	21
1.31)	Provide Corp Affairs support for successful CWA roll-out	complete & positive
2)	**Accountable to Regulators** *(A safe, reliable gas and electric system is essential for meeting customer expectations and needs. Top quality customer service, including visible community involvement is important to our business success. We will aggressively measure our performance in these areas.)*	
2.1)	Operations	95%/100%/100%
2.2)	Gas Compliance	95%/100%/100%

2.2.a)	Gas Compliance -- Pilchuck/Potelco	95%/100%/100%
2.2.b)	PSE/Service Provider QA/QC plans	Mar & Jun 08
2.2.c)	Assure completion of leak record keeping complaint settlement agreement and commitments	Remainder of settlement agreement items completed by agreed dates
2.2.d)	Achieve satisfactory outcome to all pipeline safety audit findings and complaints.	Audits closed with no significant findings.
3)	**Accountable to our People** *(Safety is a priority, is the responsibility of every employee and is emphasized in every element of our work. We value our employees and will make on-going investments through continuing education and training to build career opportunities and a safe work environment.)*	
3.1)	Improve Safety -- Overall	4 of 4
3.1.b)	Improve Safety -- Gas Operations	4 of 4
3.1.c)	Improve Safety -- Customer Construction Services	4 of 4
3.1.e)	Improve Safety -- Customer Service	4 of 4
3.2.a)	Succession & Development -- Leadership	
3.2.b)	Succession & Development -- Technical	20%/rotate staff
3.2.d)	Succession & Development -- Gas Craft	1) 35 GW's in Program 2) 75% successful completion of phases
3.2.e)	Staff & Supervisor succession and development	20%/rotate staff
3.3)	Increase cross functional work & integration within Ops Managers	3 of 3
3.4)	People Management	8 of 10
4)	**Accountable to our Owners** *(Our goals and objectives will be set to achieve the financial expectation of our owners)*	
4.1)	Budget -- Capital -- COO	within 3% and ave quarterly forecast within 5%
4.1.a)	Responding to customers' needs	trended
4.1.b)	Being part of a vibrant region	
4.1.c)	* Adding new customers	trended
4.1.d)	* Building/upgrading backbone system	within 3% and ave quarterly forecast within 5%
4.1.e)	* Jurisdiction-driven	trended
4.1.f)	* Customer-driven (large projects; customer reimbursed)	within 3% and ave quarterly forecast within 5%
4.1.g)	Regulatory driven activities (gas & electric)	within 3% and ave quarterly forecast within 5%
4.1.h)	Reliability programs & initiatives	within 3% and ave quarterly forecast within 5%
4.2)	Budget -- O&M -- COO	within 3% and ave quarterly forecast within 5%
4.2.a)	Responding to customers' needs O&M	trended
4.2.b)	Being part of a vibrant region O&M	trended
4.2.c)	Regulatory driven activities (gas & electric O&M)	within 3% and ave quarterly forecast within 5%
4.2.d)	Reliability programs & initiatives O&M	within 3% and ave quarterly forecast within 5%
4.2.j)	* Field Ops +MJB O&M	within 3% and ave quarterly forecast within 5%
4.3)	Successful Rate Case Outcome	yes
4.5)	Benchmark/Metrics/Manage & Measure Excellence	4 of 5

To further describe gas operation goals achievement are a number of measures to indicate goal attainment. Figure 3 Accountable to Regulators Measures shows the metrics and definitions used to signify goal attainment in connection with Accountable to Regulator actions[3].

Interviews with middle management revealed a strong interest to maintaining a safe gas distribution system along with balancing other company objectives. It was also noted by several interviewees that aggregating facility data in a format where high level predictive analysis could be carried out was difficult and very time consuming.

Figure 3 – Accountable to Regulators Measures

2)	**Accountable to Regulators**			
	(Our goal is to achieve 100% of our compliance obligations as efficiently as possible.)			
2.1)	Operations	95%/100%/100%	95%/100%/100%	95% compliance with appropriate local, state, or federal authority (non electric or gas), 100% self-reporting to applicable regulator, 100% completion of commitments to come into compliance. No excessive fines.
2.2)	Gas Compliance	95%/100%/100%	95%/100%/100%	95% compliance pipeline safety requirements, 100% self-reporting to applicable regulator, 100% completion of commitments to come into compliance. No excessive fines.
2.2.a)	Gas Compliance -- Pilchuck/Potelco	95%/100%/100%		95% compliance, 100% self-reporting to applicable regulator, 100% completion of commitments to come into compliance. No excessive fines.
2.2.b)	PSE/Service Provider QA/QC plans	Mar & Jun 08		QA/QC Plans in place by agreed dates
2.2.c)	Assure completion of leak record keeping complaint settlement agreement and commitments	Remainder of settlement agreement items completed by agreed dates		95% compliance, 100% self-reporting to applicable regulator, 100% completion of commitments to come into compliance. No excessive fines.
2.2.d)	Achieve satisfactory outcome to all pipeline safety audit findings and complaints.	Audits closed with no significant findings		

Jacobs also explored which gas safety compliance metrics get reported back to the COO. Starting in 2008 PSE's Performance Excellence group instituted the operations metrics report. Prior to 2008, no consolidated metrics report existed. When we reviewed the contents of the 2008 report, the only item related to gas system safety compliance was gas response time (SQI #7). Gas safety compliance metrics have since been expanded in the 2009 operations metrics report and now include the following:

[3] Document Request 15

- Gas response time minutes (SQI # 7), % Response to gas emergency within 60 minutes.
- Gas compliance, - 95% compliance with appropriate local, state, or federal authority (non electric or gas), 100% self-reporting to applicable regulator, 100% completion of commitments to come into compliance. No excessive fines.
- Gas compliance-Pilchuck and Potelco - 95% compliance with appropriate local, state, or federal authority (non electric or gas), 100% self-reporting to applicable regulator, and 100% completion of commitments to come into compliance. No excessive fines[4].

4.2.2 Organization Accountabilities

To further understand how gas compliance responsibilities are cascaded through the organization we asked for position descriptions which had the responsibility to review records, identify trends, initiate follow-up work, or observe and report the condition of gas facilities during construction, operations and maintenance activities[5]. In addition, we requested for each position how those responsibilities were measured.

- PSE provided position descriptions that were primarily generic in nature and in some instances not available. No reasons were given why two of the position descriptions were not available. In total, 11 management positions were cited as having the responsibilities requested. These positions were:
    - Manager Contractor Management
    - Manager Engineering
    - Manager Gas Compliance & Regulatory Audits
    - Manager Gas First Response
    - Manager Gas system Operations
    - Manager Maps, Records and Technology
    - Manager Project Management
    - Manager Quality Assurance and Inspection
    - Manager Standards
    - Manager System Control and Protection
    - Manager System Planning

[4] Document Request 170
[5] Document Request 187

- Jacobs was also provided a file titled “Job Title Cross Reference”, which listed job titles alphabetically and corresponding standards in which that job title is mentioned. The job title cross-reference is 14 pages long and standards responsibilities vary greatly. For example, the CAD System Support Administrator has one standard in which their job title is mentioned, while the Manager of Construction Management has as many as 85 standards in which his job title is mentioned.
- PSE further advised that the performance of the management positions provided are measured against the Company’s overall performance relative to these goals and individual contribution to the goal’s success is evaluated through the annual performance appraisal and goal process[6].

4.2.3 Service Provider Accountabilities

- The Contract Management team is responsible for all non-pricing related matters and all field facing matters, such as dealing with performance-related matters arising out of the actual metric measurement. The team, based in Bellevue, deals with everything except the New Customer Construction (NCC) work, which is managed by a team based in Tacoma.
- PSE’s contractor management staff views the SP as responsible and liable for the contract and its performance. While PSE does agree that ultimately it is responsible for all work performed on its system, it does not necessarily agree it must approve sub-contractors not working directly on affecting the safe operation of the Gas system. Examples provided include: landscaping restoration contractors, paving contractors and gravel hauling contractors.
- The metrics used to measure contractor performance play a significant role in defining contractor performance, resulting in SP’s focusing effort closely on what is required to meet the metric, especially in areas such as the quality control process.
- The New Customer Construction Contractor Safety-Related Metrics[7] deal with: compliance with standards measured by reference to deviations; records completion and data integrity measured by reference to document completeness; the numbers of damage claims and the results of UTC inspections measured by number of notices of non-compliance. The remaining metrics are mostly customer/stakeholder facing or deal with matters such as inventory control.

[6] Document Request 187 (Word File)
[7] Documents #035

- The O&M Contractor Safety Metrics[8] are, for the most part, the same as the NCC contractor except that a metric for data integrity had not initially been developed and does not appear expressly in any later metric, and there is an emphasis on gas outages and over/under pressure incidents.
- Changes to work requirements, standards and documentation are appropriately imposed as a matter of policy and do not involve or require the agreement of the SP.
- The SP managers report they believe the managers at PSE with whom they interacted do not understand their (the SPs) business and the frequency of personnel changes at senior level in contract management at PSE that negatively impacts the operation of the contract. The SP managers also noted there has been, from time-to-time, little or no gas knowledge or experience at the PSE contract manager level.
- The Contractor Management interviewees express frustration that the SP management does not always seem to understand what is required. They see their role has developed into one where they have to lay out for the SP the precise deliverables they are looking for.
- The SP managers report PSE creates initiatives and demands on them, and changes standards and work process requirements often. For example, the requirement of Pilchuck that errors on paperwork be corrected in the field, with little or no appreciation of the impact on the SP. A complete discussion of the service provider accountability findings including incentives is contained in Section 6 – Contracts.

4.2.4 Conclusions

Corporate and Operational Goals

Jacobs examined PSE's Corporate Goals to determine if gas safety compliance was reflective of the Company's settlement experience[9]. The only two 2009 Corporate Goals that somewhat relates are the goal dealing with Optimized Generation and Delivery, which states "... build or replace infrastructure in a way that meets our customer's needs…" and the goal dealing with Own It, which states "… meets or exceeds any internal or external compliance obligation.' In light of PSE's settlement agreement history, we find these goals inadequate. PSE needs to develop a goal with supporting objectives, actions and measures to fully communicate senior management's intentions. This goal will help set the tone and cascade throughout the organization PSE's system safety intent, as well as the Company's desire to become more proactive with regard to system safety compliance issues. (See Recommendation 4.2.5.1)

[8] Documents #035
[9] Document Request 84

PSE's Corporate Goals, as they move through the organization, become gas operation goals and activities. When we reviewed the 2008 operation goals we found a large variety of measurable activities. In total, 57 activities were identified of which the following 7 directly relate to gas system safety compliance:

1. Safety quality indices of gas safety response time.
2. Gas Compliance - 95% compliance with appropriate local, state, or federal authority (non electric or gas), 100% self-reporting to applicable regulator, 100% completion of commitments to come into compliance. No excessive fines.
3. Gas Compliance -- Pilchuck/Potelco- 95% compliance with appropriate local, state, or federal authority (non electric or gas), 100% self-reporting to applicable regulator, 100% completion of commitments to come into compliance. No excessive fines.
4. PSE/Service Provider QA/QC plans - QA/QC plans in place by agreed dates.
5. Assure completion of leak recordkeeping complaint settlement agreement and commitments – Remainder of settlement agreement items completed by agreed dates - 95% compliance with appropriate local, state, or federal authority (non electric or gas), 100% self-reporting to applicable regulator, 100% completion of commitments to come into compliance. No excessive fines.
6. Achieve satisfactory outcome to all pipeline safety audit findings and complaints - Audits closed with no significant findings.
7. Regulatory driven activities (gas & electric O&M) - within 3% and average quarterly forecast within 5%.

We find it interesting that a Company with PSE's settlement history only seeks 95% compliance with the regulator and only seeks to avoid excessive fines. In Jacobs' experience the only appropriate goals are 100% compliance and no fines. PSE needs to set its targets higher to help demonstrate it wants to achieve full gas safety compliance. (See Recommendation 4.2.5.2)

With regard to the gas safety compliance metrics that gets reported back to the COO. In reviewing the 2008 PSE's Performance Excellence the operations metrics report under the category, compliance and safety, in addition to the gas response time (SQI #7), there are several safety measures including near-miss ratio, recordable injuries and loss-time injuries. Similarly, when reviewing the 2009 operations metrics report we find the same category, compliance and safety, with an expanded number of compliance metrics as well as safety metrics. Based on the Company's history, with settlement agreements, it needs to create a higher profile and visibility for compliance related metrics. (See Recommendation 4.2.5.3)

Organizational Accountabilities

The position descriptions PSE provided indicated those that had the responsibility to review records, identify trends, initiate follow-up work, or observe and report the condition of gas facilities during construction, operations and maintenance activities were primarily generic in nature. In addition, 2 out of the 11 management positions cited position descriptions were not available.

Jacobs was also provided with a file titled “Job Title Cross Reference” which listed job titles alphabetically and corresponding standards in which that job title is mentioned. The job title cross-reference is 14 pages long and standards responsibilities vary greatly. We find this at best a cumbersome way to communicate gas safety system compliance responsibilities. This approach leaves too much to chance as to what the job titled individual will absorb and understand when reviewing his or her role in the standards.

In order to clearly convey compliance-related responsibilities as well as other organizational accountabilities each position in the organization should have a complete and up-to-date position description. (See Recommendation 4.2.4)

Service Provider Accountabilities

Section 6 – Contracts contains numerous conclusions and recommendations on service provider accountabilities. These accountabilities include: the contract design and the limitations it creates in the outsourcing relationship, quality control/quality assurance process and its limitations as to how it is currently being performed, the metrics currently employed and how they drive behaviors as well as incentives that currently exist or are under consideration.

4.2.5 Recommendations

4.2.5.1 Develop and implement a Corporate Goal concerning gas system safety. Goal should include supporting objectives, actions and measures to fully communicate and demonstrate senior management’s gas system safety intent. Implementation of this goal should result in cascading a gas system safety proactive approach throughout the organization.

4.2.5.2 Establish stretch goal targets seeking 100% compliance with the natural gas state and federal regulations and no fines. Setting high targets helps to demonstrate PSE wants to achieve full gas safety compliance.

4.2.5.3 Modify the operations metrics report developed by Performance Excellence by creating a separate category for gas safety compliance. This will help to create a higher profile and visibility for compliance related metrics.

4.2.5.4 Develop for each position with gas safety compliance responsibilities a complete and up-to-date position description. Position descriptions should clearly convey compliance-related responsibilities as well as other organizational accountabilities.

4.3 Organizational Safety Compliance Support

4.3.1 Gas Operating Standards

- PSE has developed a gas operating standards manual, which was updated in 2008. This manual contains the various inspections, testing, maintenance, repair and replacement programs, public education, ongoing employee evaluation and safety training, as well as service provider and contractor evaluation. In developing the 2008 gas operating standards manual, PSE indicated the Company follows the best management practices. Practices representing compliant methodologies and technologies used by other utilities.
- This gas operating standards manual directs PSE employees, service providers, and contractors to follow the standards necessary to operate PSE's natural gas system safely and reliably. PSE further indicates compliance with this manual is mandatory to ensure reliability and to protect the safety of the communities it serves.
- PSE's standards manual contains the following sections:
    - Introduction
    - Safety
    - General Reference
    - Reports and Programs, Tools, Instruments and Materials
    - Customer Service
    - Maps, Designs, and Drawings
    - Designing Construction
    - Services, Meters, and Regulators
    - Operations and Maintenance
    - Corrosion Control
    - Leakage Reduction
    - Motorization
    - Propane Gas Systems
    - Tapping, Welding, and Joining Systems
    - Index and Suggestion Form

- Within the standards manual there are a number of standards that specifically pertain to all company personnel and service providers:

- 2425.1000 Operations and Maintenance Plan
- 2425.1200 Reporting Requirements for Safety‐Related Conditions
- 2425.1400 Investigating Emergency Calls and Reports
- 2500.1600 Gas Map Distribution
- 2575.2000 Preventing Accidental Ignition
- 2575.2700 Continuing Surveillance
- 2575.2800 Examining Buried Pipelines
- 2600.1700 Monitoring and Remedial Measures for Internal Corrosion

- The reporting requirements for safety-related conditions standard clearly establishes:
  - The reporting requirements in the event that PSE determines the existence of a safety-related condition involving company-owned pipeline facilities.
  - The requirements for continuing surveillance of PSE's pipelines through periodic examination of records and through visual examination of facilities during construction, operation, and maintenance activities.
  - The requirements for examining the condition of buried pipelines and inspecting the surrounding environmental conditions when pipelines are exposed.

4.3.2 Gas System Safety Compliance Training

- PSE has a quality training program in place. It contributes to informing and preparing individuals to deliver utility service to the public in a safe and reliable manner.
- The Gas Operations Training Department consists of staff of eleven (11) from both PSE and the PSE/UA Local 32 Training Trust. Together they provide training in four areas: Operator Qualifications (OQ), Gas Worker Program, Mobile Workforce, and Operator Training[10].
- The Gas Operations Training Department supports gas operations units including: Standards, Commodities, Energy Efficiency, Contractors and Service Providers, Customer Service and Access Centers; Emergency First Responder-type of training includes: review and development of standards, new tools and material evaluation or testing, products, special projects, “Gas 101” and Gas Storm training, Safety Days, Emergency Responder Training[11].

[10] Document Request 84
[11] Document Request 23

- System safety compliance is stressed and re-enforced in OQ training classroom sessions, field procedures, and demonstrations. Refer to Section 5-Training for details.

4.3.3 Mechanisms for Reporting System Safety

- As noted in Section 8 - Continuing Surveillance, there are a multitude of organizational units within PSE that are involved in continuing surveillance activities, potentially posing hierarchical barriers to communication. Some of the coordination problems are rooted in the fact that the primary organizations involved, System Maintenance Planning, and System Control and Protection, are situated in two different organizational hierarchies. Other communication problems appear to be caused by the lack of a unified automated record system (Reference Section 7 - Audibility of Records).
- An integral part of reporting and observing system safety is communications with supervisors. Section 9 - Sufficiency of Resources describes a lack of supervisory time in the field with crews, and makes recommendations which could improve this method of communicating suspected safety compliance problems. For example, PSE supervisors will generally only a visit a work site to assist in an emergency, and SP supervisors tend to only visit a site to pre-plan the work activities. Communication is less effective with limited site visits.
- Employees and SPs have a variety of forms available for reporting suspected system safety problems. These include Blue Cards, work requests, safety-related condition reports, and Yellow Tags. Section 8 - Continuous Surveillance describes in-depth areas of improvement that could be instituted regarding the variety of reporting forms and PSE's disposition of them. For example, as PSE believes that the majority of Blue Cards or work requests filed do not comprise conditions that would affect system safety, therefore PSE must enhance and better communicate the reasons for the low prioritization of the work back to the employees who submitted the cards.

- There is a relationship between system safety and the number of damages related to Third-Party Dig-ups. A regular PSE report summarizes all the Third-Party Dig-ups on a monthly basis. This report is sent to the UTC as a means of tracking damage prevention from all dig-ups to the system.
- Up-to-date maps and as-built drawings have an important role in maintaining safe system conditions. However, as noted in Section 6 – Service Provider Contracts, and Section 7 – Auditability of Records, organizational improvements are recommended so that SP's in particular will have up to date information that is not unnecessarily hampered by contractual and billing issues. Also, as described in Section 7, problems exist with communication of miss-mapped facilities discovered through the leak survey process.

4.3.4 Conclusions

Gas Operation Standards

PSE has recently updated it's a gas operating standards manual. Jacobs found the manual to be thorough and relatively straightforward. The standards manual accomplishes the Company's goal of being an authoritative guide to PSE employees and service providers in how to properly operate and maintain the natural gas system.

Specific comments concerning the use, updating and care of the operating standards manual are contained in sections 7 - Audibility of Records.

Gas System Compliance Training

PSE's service providers each have training programs in place that involve OQ and Non-OQ training. In some areas, the programs parallel PSE OQ training, while in other areas such as Customer Service, the training differs. PSE's programs are more robust while the service providers seem less so. In looking at PSE and the services providers' training programs side-by-side there is an obvious distinction yet common goal. It appears technical content is there, though the communication style in delivering the training is different. This communication style tends to lead one to suspect information is not always reaching the service provider crews effectively.

Mechanisms for Reporting System Safety

The second half of Section 4 later addresses system safety and finds that PSE's overall incidents per mile of main compares well with other utilities. However, in order to maintain or improve that general indicator of system safety, we have found in other sections of the report a lacking of proactive measures to prevent possible system safety degradation.

We have also observed throughout this audit that PSE's employees and SPs are not reluctant to point out observed areas where they believe safety corrections are needed. However, we have also witnessed communication problems where PSE has not relayed significant information to the observers regarding whether actions are needed, or the outcomes of their observations. Section 8 of this audit regarding continuing surveillance contains a number of recommendations for improving the mechanisms for reporting and responding to safety concerns voiced by employees and SPs. This is not to say, that PSE has been unresponsive to items identified by the UTC which need direction. As shown elsewhere in this safety audit, PSE devotes considerable effort into remedying enforcement actions.

A consistent theme noted throughout this report is that a more proactive approach to system safety would benefit PSE, and reduce what we believe is an unusually large amount of mandated settlements. The specific individual findings fall within other sections of this audit, as do recommendations that are made in the context of the detailed findings and conclusions presented in each of the other sections.

In summary, we refer to Section 9 – Sufficiency of Resources, and note that PSE has no Corporate–level Goal that specifically addresses system safety, and Section 8 – Continuing Surveillance, to conclude that system safety operations at PSE may be characterized as follows: each corrective action or settlement is responded to, but not prevented.

4.3.5 Recommendations

Recommendations related to this subsection on Organizational Safety Compliance Support appear in Sections 5, 6, 7, 8 and 9.

4.4 Organizational Safety

4.4.1 PSE Worker Safety Programs

- The genesis of PSE's organizational safety program and its culture can be found in the safety and operations training mission statement as noted in the *PSE Employee Safety & Health Program – "The Yellow Book" 5th Edition.*

  VISION Statement: Achieve a total safety culture.

  MISSION Statement: Integrate safety into every aspect of our business to protect the employee, the Company, and the community consistent with our core values.

- The Safety & Operations Training Department's mission statement addresses "…the employee, the Company and the community…" in its commitment toward being safe or maintaining safety-oriented culture[12].

- However, system safety does not appear prominently in PSE's overriding Corporate Goals, an issue that is discussed in Section 9 – Sufficiency of Resources, with a recommendation for improvement[13].

Organizational Structure of Safety Division

- There is an operational organizational structure in place comprised of a team of trained safety professionals who are responsible for and oversee the safety program at PSE. The team is dedicated with sound, effective leadership and management expertise. These men and women of the safety unit are very much aware of the attributes of a safety program[14]**.**

- The operational organizational structure of the safety unit is aligned under the office of the Executive Vice President for Operations down to the Director of Compliance & Safety and the Manager of Safety & Operations. The Manager of Safety Operations has five internal PSE safety consultants, one industrial hygienist and two support staff[15].

- Several overseeing bodies focused on safety issues are in place at PSE and regularly engage safety-related issues and decisions. They include: the Executive System Integrity Committee (ESIC), the Safety Performance Committee (SPC), and multiple Safety Committees throughout the organization. These committees are comprised of key

[12] Document Request 23
[13] Document Request 84
[14] Document Request 153
[15] Document Request 153

PSE executives, managers and staff. SPC meetings are held regularly where information is exchanged and decisions are made and implemented related to PSE safety. Committee members are limited to PSE staff only. There are at times involvement by subject matter experts (SMEs) and service providers external to the PSE organization in these committee meetings[16].

Operational Leadership, Communication and Culture

- The leadership takes an active role in assessing and formulating safety-related issues throughout the PSE organization[17].
- Leadership fosters a safety-oriented culture by contributing and communicating information on matters of safety through the organizational structure established by PSE. The organizational structure currently in place enables those in various leadership positions to become active in safety areas by developing policies and procedures, making decisions, promoting activities and addressing matters of criticality and importance to PSE (albeit at times in a reactionary mode). As was noted in one interview, "There have been some growing pains in collecting data to make sure it was correct, accurate and timely; adjustments have been made to deal with filters or incomplete information"[18].

Functional Management and Administration

- PSE management is focused on implementing matters of safety and dedicated toward enabling a positive and proactive safety-oriented environment to exist within the work force at PSE and toward the general public. From the executive level down through middle management and into the field crews a regular and consistent message that "safety is a priority" is conveyed. For the most part, actions and words align though a proactive approach was not immediately evident. As for system safety, information is provided through various PSE corporate outreach events and information programs, specifically Safety Days[19].
- Various typical or familiar safety activities have been designed, developed, implemented and shared throughout the organization. Safety-related information is communicated to office and field staff through websites, newsletters, safety activity-based events, recognition and awards and other similar activities[20].

16 Document Request 23
17 Interview 24
18 Interview 24
19 Document Request 23
20 Interview 63

- PSE provides an acceptable approach in communicating various safety policy and procedures, activities, etc. to both office staff and field crews. Yet, there is a differing focus on the matters of safety. Field crews demand and require a safe work environment given their increased level of risk in the type of work performed. This is not to diminish the safety commitment of the office staff worker. On the contrary, it is to recognize that the office worker is confronted with a different set of needs to be safe. The focus seems to be on the field crews more so than the office staff. Facts surrounding this can be seen in the various procedures and policies that have been published and distributed[21].
- PSE's Gas Operations coordinates internally with the safety unit to address issues of worker safety. Gas Operations does not have a safety unit directly aligned organizationally within its division. Functionally, however, Gas Operations utilizes internal PSE safety consultants on a regular and consistent basis. Gas operations safety procedures are specific to the regulations and standards inherent in the gas system itself. This decentralized approach in having a safety unit outside the Gas Operations division enhances safety and enables greater effectiveness in a more open and objective decision-making environment[22].

Safety Manuals, Training, and Policies and Procedures

- Various safety manuals including: PSE's Employee Safety & Health Program manual or "Yellow Book", policies and procedures are appropriately in place. The enforcement of these policies and procedures focus on the safety of PSE staff, the general public and system safety[23].
- Safety methods or documents are not directly linked with other quality control or operating manuals. However, this direct linkage is not essential, as safety methods are stressed and re-enforced in OQ training classroom sessions, field procedures, and demonstrations[24].
- Safety training of PSE office staff and field crews differ given the type of work involved. A more consistent approach to overall safety training, in addition to specific task-oriented training, is being re-evaluated by PSE and will require greater commitment and involvement. It has been noted by PSE that with greater attention and focus to safety there usually is a better record of safety. This can be seen over the last several years, specifically in 2006, 2007 and 2008, where PSE's safety record improved[25], and as shown in Figures 2 through 6**.**

[21] Document Request 23
[22] Interview 64
[23] Document Request 23, 162
[24] Document Request 8, 126
[25] Document Request 23

- Safety plans are required to be prepared, presented and implemented when a project requires multiple contractors on site, or is of a scale large enough to warrant a Safety Plan. Typically, a safety plan is executed on a large scale new project. Smaller projects do not require an overall safety plan per se, but do require safety policy, procedure and protocol to be followed as prescribed by PSE, the SP or the contractors involved[26].

Metrics and Measures

Figure 4 - Gas Operations Near-Miss Rate Performance

	2006	2007	2008	YTD 9/2009
PSE Goal	-	2:1	3:1	3:1
Count	26	64	132	139
Actual Performance	1.18:1	6.4:1	6.9:1	15.4:1

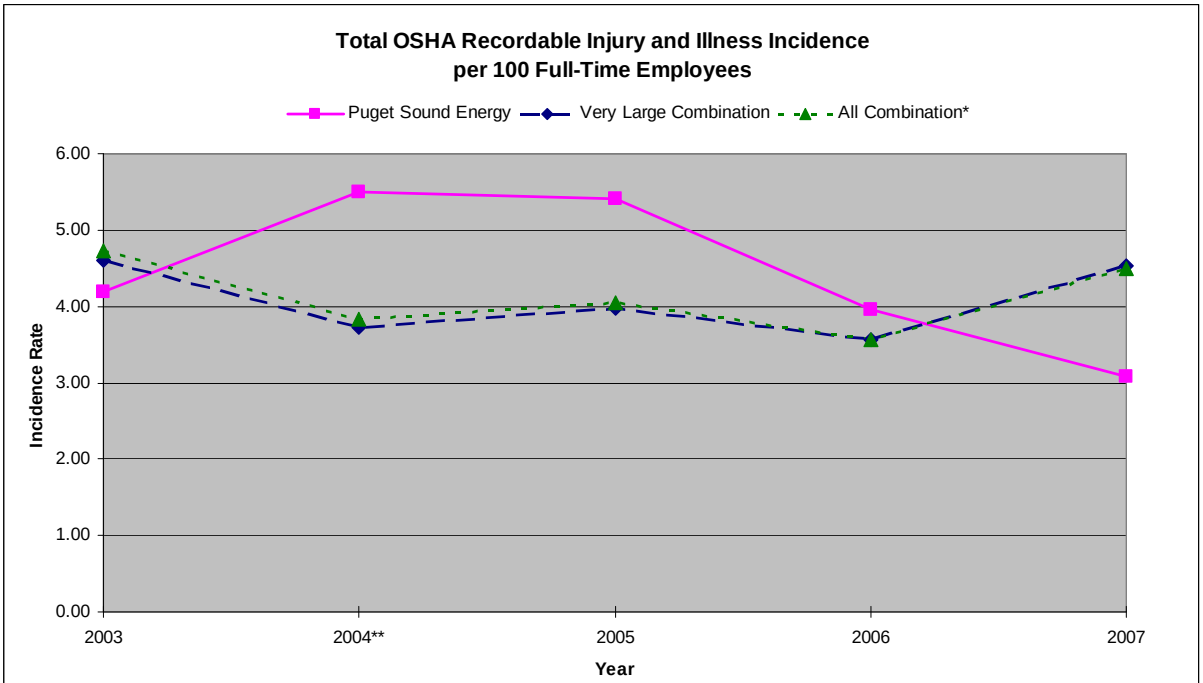
- The tracking of the near-miss metric started in 2006 and became part of PSE Corporate Safety Goals in 2007. The statistics reported in Figure 4 Gas Operations Near-Miss Rate Performance represents the ratio of reported near accidents to actual injury accidents. The fact that the near-miss rate ratio is increasing is positive insofar as more near-misses are occurring before there is an actual injury accident. Consequently, the near-miss rate is considered a leading indicator metric. The near-miss rate performance shown demonstrates progress, as ratio of near-misses to injury accidents is increasing. However, the reduction in number of near-misses alone is also a safety goal. As it is an indicator of potential problems, detecting near-misses early and addressing them correctly is a measure to protect employees[27].
- Another interesting aspect of the near-miss accident rate is that the data must be volunteered by employees, who are often reluctant to report such information. Consequently, it also reflects the employee's openness and willingness to communicate a near-accident experience.
- PSE tracks actual damages to the system but no near-miss data is collected on damages (Reference Section 8).
- PSE's goal attainment does not identify rationale for the goal itself. It was unclear as to how the goal level is established as well as how the length of time to achieve the goal is set.

[26] Document Request 4, 164

[27] Risk Management and Decision Processes Center of the Wharton School of the University of Pennsylvania – http://opim.wharton.upenn.edu/risk/downloads/03-03-UO.pdf

- PSE participates in the American Gas Association's (AGA) annual survey for Natural Gas Utility and Transmission Industry Occupational Injury and Illness Statistics. However, according to PSE, the total incident case rate is the only comparable rate as AGA uses Days Away, Restricted or Transferred (DART) which includes restricted time and job transfer cases[28].

Figure 5 - AGA OSHA Incidence Rate

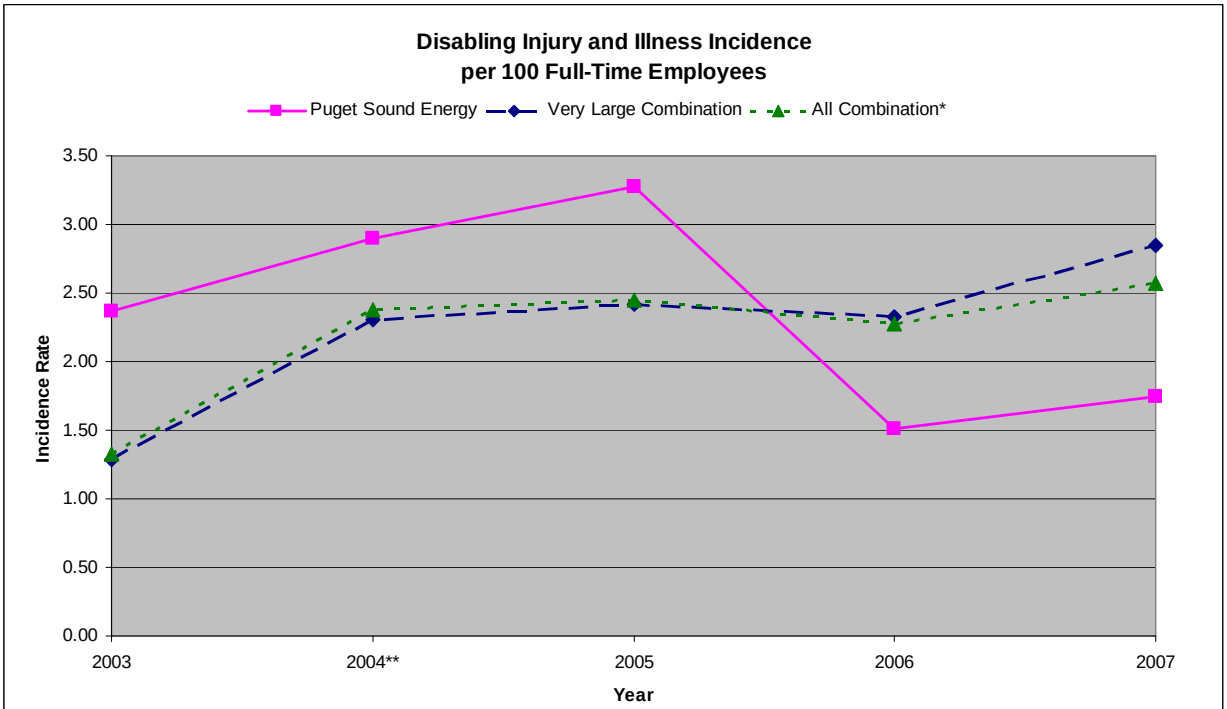


* Based on all combination companies that participated in the AGA Safety and Occupational Health Committee surveys that year
** PSE did not participate in the in AGA survey in 2004 so data is based on the PSE 2009 Corporate Safety Metric Plan, which does not include restricted time and job transfer cases
Source: AGA Natural Gas Utility and Transmission Industry Occupational Injury and Illness Statistics

Reference Figure 5 AGA OSHA Incidence Rate is based on the number of OSHA recordable cases for every 100 fulltime workers per annual hours worked per year. These are data given to AGA from all natural gas utilities who are AGA members. The significance of Figure 5 is how PSE compares to similar very large combination and all-combination companies in the industry. For three years (2004-2006), PSE had a higher rate (worse) compared to their peers and a lower rate (better) their peers in 2003 and again in 2007. The fluctuation showed directly stems from PSE's incidence rates reported compared to the other companies.

[28] Document Request 74

Figure 6 - AGA DART Incidence Rate

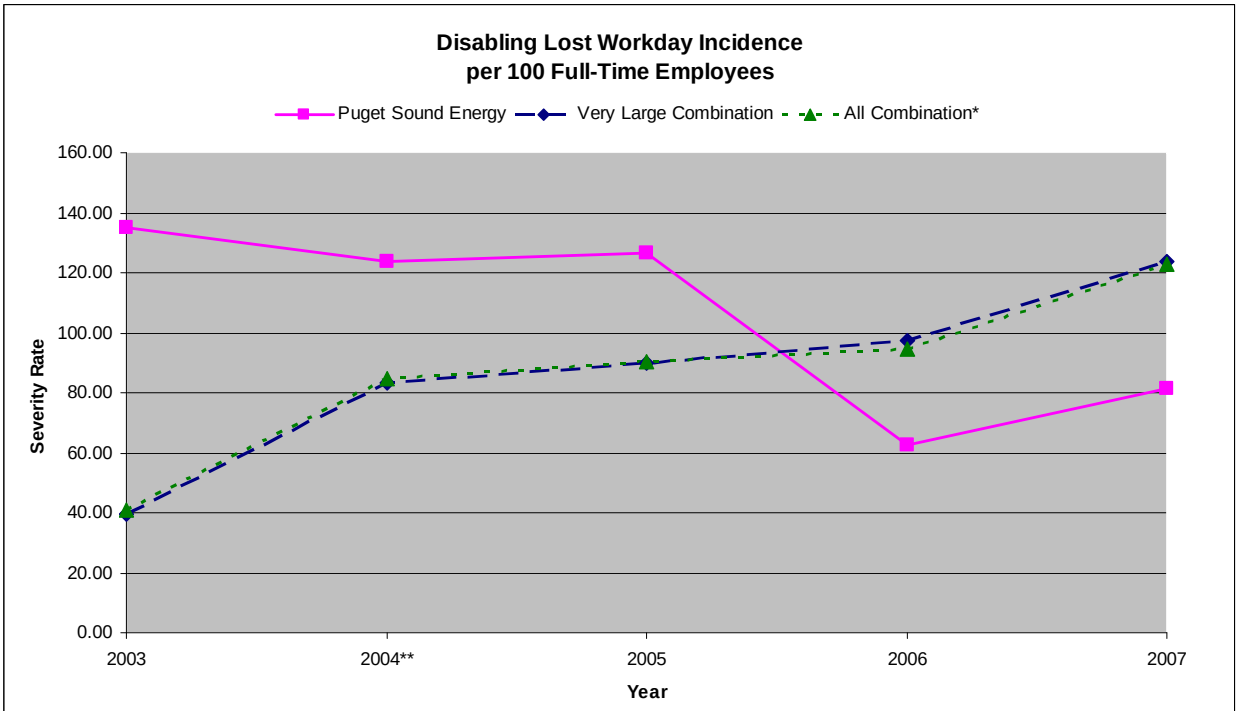


* Based on all combination companies that participated in the AGA Safety and Occupational Health Committee surveys that year
** PSE did not participate in the in AGA survey in 2004 so data is based on the PSE 2009 Corporate Safety Metric Plan, which does not include restricted time and job transfer cases
Source: AGA Natural Gas Utility and Transmission Industry Occupational Injury and Illness Statistics

- The rate is based on the number of incident cases for every 100 fulltime workers per annual hours worked per year. The significance of Figure 6 AGA DART Incidence Rate for all-combination companies is that the incidence rate increases each year from 2003 to 2007 with the exception of year 2006 where the rate drops. PSE follows a similar pattern increasing each year except for 2006 and 2007. This graph is obviously different from the incident rate graph in Figure 5 AGA OSHA incidence rate. The number of cases reported to DART are different from what OSHA recorded. According to DART statistics, PSE is well below average for years 2006 and 2007. This signifies there were fewer injuries and illnesses reported those years, compared to the other utilities[29].

[29] Document Request 74

Figure 7 - AGA Severity Rate



* Based on all combination companies that participated in the AGA Safety and Occupational Health Committee surveys that year
** PSE did not participate in the in AGA survey in 2004 so data is based on the PSE 2009 Corporate Safety Metric Plan, which does not include restricted time and job transfer cases
Source: AGA Natural Gas Utility and Transmission Industry Occupational Injury and Illness Statistics

- Figure 7 AGA Severity Rate is the rate based on the number of lost work days for every 100 fulltime workers per annual hours worked per year. All-combination companies have reported an increase every year between 2003 and 2007. The biggest jump was in 2004 over a 100% increase. As for PSE, the rate decreases significantly between years 2005 and 2006 with a gradual increase from 2006 to 2007. The two years with the greatest change were in 2006 and 2007. The significance of this data is that the number of lost work days was very high in year 2003 compared to the other utilities. It remained high in 2004 and 2005, but decreased in 2006. While the number of lost work days increased since years 2006 and 2007, the rate of lost work days still remained below average[30].

[30] Document Request 74

4.4.2 Conclusions

PSE's approach toward workforce safety is sound and continues to progress with a constancy of purpose. Safety is very important at PSE and is effectively nested in the culture of the organization. The Company maintains a solid safety program as noted by observed behavior and review of document requests and interviews toward providing safe reliable utility service. Most comparisons seen here with other AGA peer utilities show an increase in workforce safety performance from 2005 through 2007.

However, even a good safety program can be improved and PSE's is no exception. PSE's gas workforce safety program can be made better in several ways: track and report near-misses separately for gas operations, conduct various benchmarking/best practice studies, design and develop enhanced metrics-measures and implement a more refined, measurable strategic/tactical goal setting process. A discussion of each one of these improvement opportunities follows:

Near-Misses Tracking

- The gas operations near-miss rate performance indicator metric demonstrates an ongoing relationship between near-misses and actual accidents. The fact that the near-miss rate ratio is increasing is positive insofar as more near-misses are occurring before there is an actual injury accident. Also, another positive aspect of the near-miss rate is that it indicates employee willingness to communicate a near-accident experience.

Benchmark/Best Practices

Benchmark/best practices studies are informally considered by PSE. PSE has not incorporated a true benchmarking/best practice methodology to enhance or improve its systems or processes in the area of safety. Although PSE has noted that the Company does participate in some benchmarking and best practice studies, no clear evidence of an accepted methodology or the results of such practices can be seen as part of PSE's standard work procedures or within the work environment itself.

PHMSA Office of Pipeline Safety has been trying to collect various benchmarking data and many other utilities have been actively collecting this data and providing it to PHMSA. The Common Ground Alliance, which was formed by the Department of Transportation as a damage prevention forum, is a potential source for such information. No indication that PSE has tapped these sources was evident in any information provide for this section of the report.

This is a limiting factor that prevents the organization from growing into and becoming a knowledge-based or learning organization. While becoming a learning organization may or may not be the intent of the Company per se, benchmarking/best practice studies offer new and perhaps better ways to enhance and improve performance. Such studies would at least validate what is or what is not being done by these organizations. Incorporating in the work place any lessons learned from other companies or associations will in the long run enable and benefit PSE and its SPs. The initial investment to learn other ways of conducting business may deter a benchmarking/best practice study in the beginning but this investment must be weighed against inaction or recreating a system or practice without prior knowledge or experience of others externally having gone through a similar situation.

Even from an internal standpoint, there were no benchmarking/best practices studies conducted from division-to-division. There were potential systems and practices that were observed which could be used internally by others but were not. This again prevents the genesis of a new and better learning generation to develop. (See Recommendation 4.4.3.1)

Metrics-Measures

Metrics-measures are tracked at PSE and the SPs. While safety metrics are tracked by PSE and the SPs, all metrics are lagging (post-performance) measures. This type of metric-measurement has its place and provides valuable information to the managers and crew members alike, but the information is historic. It has been noted that when poor performance has been documented PSE has responded to correct the situation. Whether it could have been prevented or modified to change the course of events in a proactive and not a reactive manner is the question. Leading metric indicators would enable managers to anticipate safety issues before they occur and help enable root-cause analysis. Knowing that a leading indicator is not a preverbal crystal ball and safety violations may still occur, leading metric-measures indicators would allow for a proactive approach to be applied. Searching out potential areas of safety violations or issues that would compromise and contribute to a poor safety compliance record could be alleviated.

- While leading indicators and related root-cause analysis do not guarantee safety compliance, they do aid in continuing and improving the safety environment. An example would be to track leaks repaired on mains by pipe material, cause, pressure and location. By observing trends and conducting a root-cause analysis, future leaks may be prevented and incidents avoided. Similarly, if repaired leaks on services could be tracked and trended by pipe material, cause, pressure and location, analysis of patterns may result in a targeted replacement program. A last example could be for material failures, by categorized a material failure by specific pipe type, age, or manufacturer to focus on the root cause of such failures.

Tracking trends and patterns for a given series of metrics would allow analysts to identify the direction and impact of a given series of events. Determining which metric and measures would be best served as leading indicators is the initial step, followed then by the frequency and unit of measure. Once these are established, a series of proactive steps could be recognized to modify behavior or adjust processes and not wait for annual or even quarterly lagging performance statistics. (See Recommendation 4.4.3.3)

Strategic & Tactical Safety Goal Setting Process

Another aspect of metrics which should be considered is the re-basing of a metric-measure at the start of a new cycle. Several instances of company target goals for a given metric were far higher than the actual achieved number. This difference leads one to interpret the change as being greater than expected. Actually, however, it poses a question of accurate or reasonable interpretation. A good example of this can be seen when reviewing PSE's total incidence rate goal. Each year from 2004 to 2008 the goal level decreases on average in increments of 0.13. PSE's actual levels reported are lower than their goal levels, except for the year of 2005. A significant drop in actual data tracked from 2005 onward is evident in Figures 3, 4 and 5 above. This drop seems to be related to a greater amount of attention given to safety over that period of time. The causes and responsible actions for the measures to drop should be studied further by PSE.

Establishing specific goals that are strategic and aggressive, yet attainable against the industry averages would enhance PSE's position, making the utility more aware of their metric results and more proactive. Determining what the specific goal range should be, including a rationale for that goal level, identifying the ways and means in which the Company intends to reach these goals, and establishing the necessary timeframes, budgets and a quality level for each goal in managing the effort will contribute to a more proactive strategic and tactical program. PSE's objective is to improve their current position in the AGA survey to the first quartile performance over the next 5 years. In order to achieve that objective, they will need to improve performance with a 4.5% reduction per year. However, PSE sets performance goals based on about a 2.5% improvement rate each year. (See Recommendation 4.4.3.4)

The continuing surveillance discussion in Section 8 also tracks a number of performance trends and indicators of system safety, including leaks, damages, and reportable incidents. It finds that system safety trends vary among the years tracked, and could be improved by proactive measures and the separate tracking of gas system near-miss data.

4.4.3. Recommendations

4.4.3.1 Identify safety systems or processes that would benefit from a benchmarking/best practice study. Develop and implement a plan to conduct a specific number of Benchmarking/best practice studies over a given period of time.

4.4.3.2 Introduce a series of gas system metrics-measures that are leading indicators and permit root-cause analysis. Rigorous use of these metrics will help to anticipate and prevent safety incidents or the degradation of safety performance.

4.4.3.3 Review the safety goal setting process and where appropriate introduce more aggressive goal-setting practices.

4.5 Enforcement, Response and System Safety

4.5.1 UTC Enforcement Directives

PSE has been served with thirteen UTC-initiated enforcement directives that directly relate to safety of the system[31]. These enforcement directives are summarized in Figure 8. Additional related information is covered in other sections of this safety audit Report: 7 – Auditability of Records; 8 – Continuing Surveillance; and 9 - Sufficiency of Resources.

Figure 8 - Enforcement Directives

Directive #	Directive Scope	Date
UG-920487	Measures to ensure compliance with state and federal regulations concerning the handling of escaping gas.	June 5, 1992
UG-000576 NCC	Violations of Commission statues and rules regarding installation, construction and inspection of polyethylene natural gas lines by PSE.	May 10, 2005
UG-00576	Requirements for continuing surveillance of PSE's pipelines through periodic examination of records and through visual examination of facilities during construction, operation, and maintenance activities.	May 10, 2005
PG-030080 Settlement Agreement	PSE to resolve violations by agreeing to implement the SAP Process Improvements Program, Isolated Facilities Program and Bare Steel Replacement Program.	January 31, 2005
PG-030080 Appendix A	SAP process improvements in response to audit findings which point to repeated violations caused by missed inspection intervals.	January 31, 2005
PG-030080 Appendix B-1	The requirements for the Isolated Facilities Identification Program.	January 31, 2005
PG-030080 Appendix B-2	The guiding principles for the work required to identify non-continuous sections of metallic pipe within cathodic protection systems and to establish test sites for monitoring them.	January 31, 2005
PG-030080 Appendix C	The guiding principles for the replacement of unprotected metallic pipelines. (Cast Iron Replacement Program.)	January 31, 2005
PG-040211	Findings of UTC Audit Inspections needing correction.	April 25, 2005
PG-041209	Incident that resulted from Pilchuck's failure to follow PSE's standard for purging pipeline facilities into and out if service, causing an employee of Pilchuck to be burned and hospitalized.	September 6, 2005
PG-041624	PSE agreed to gather pipeline data for certain service due to a fatal explosion that occurred at the residence of a PSE natural gas customer.	May 4, 2007
PG-050516	Agreement to close dockets between PSE and Commission Staff regarding Staff's non-compliance report after the Standard Natural Gas Pipeline Inspection of PSE's pipeline facilities.	September 21, 2007
PG-060215	Falsification of PSE gas safety records by certain employees of a PSE contractor names Pilchuck Contractors.	March 3, 2008

[31] Document Request 5

- Twelve of the thirteen directives were issued or agreed-to between 2005 and 2008. The previous directive was thirteen years earlier in 1992.
- PSE has identified 25 specific gas safety compliance programs. Of the 25 identified programs 18 are active, 4 are in various stages of development and 3 are complete. Ten are a direct result of various UTC findings and settlement agreements and the remaining 15 stem from requirements in state and federal code and/or PSE gas operating standards. Refer to Section 9 Sufficiency of Resources for a more in-depth discussion of these programs.
- In addition, PSE has a number of other system-condition programs under development and in some instances with certain remediation work currently taking place.

4.5.2 Enforcement Response

- As noted in Section 8 - Continuing Surveillance, there are a multitude of organizational units within PSE that are involved in continuing surveillance activities, potentially posing hierarchical barriers to communication. Some of the coordination problems are rooted in the fact that the primary organizations involved, System Maintenance Planning, and System Control and Protection, are situated in two different organizational hierarchies. Other communication problems appear to be caused by the lack of a unified automated record system (Reference Section 7 - Audibility of Records).
- An integral part of reporting and observing system safety is through communications with supervisors. Section 9 - Sufficiency of Resources describes a lack of supervisory time in the field with crews, and makes recommendations which could improve this method of communicating suspected safety compliance problems. For example, PSE supervisors will generally only visit a work site to assist in an emergency and SP supervisors tend to only visit a site to pre-plan the work activities. Communication is less effective with limited site visits.
- Employees and SPs have a variety of forms available for reporting suspected system safety problems. These include Blue Cards, work requests, safety-related condition reports, and Yellow Tags. The Blue Card was directly instituted as a result of Settlement UG-00576 in 2005. Section 8 - Continuous Surveillance describes in-depth areas of improvement that could be instituted regarding the variety of reporting forms and PSE's disposition of them. For example, as PSE believes that the majority of Blue Cards or work requests filed do not comprise conditions that would affect system safety, therefore, PSE must enhance and better communicate the reasons for the low prioritization of the work back to the employees who submitted the cards.

- There is a relationship between system safety and the number of damages related to Third-Party Dig-ups. A regular PSE report summarizes all the Third-Party Dig-ups on a monthly basis. This report is a means of tracking damage prevention from all dig-ups to the system.

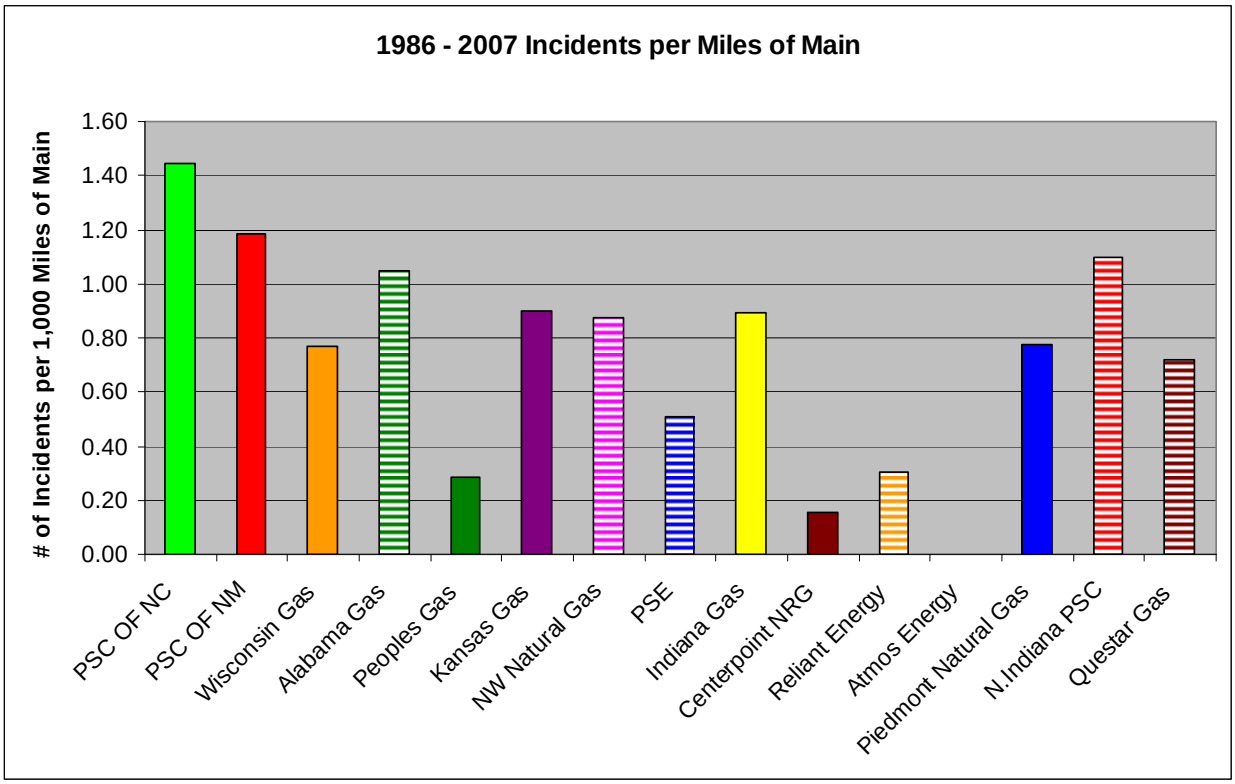
4.5.3 Addressing System Safety at PSE

As noted in the Introduction, the second part of this section reviews the processes instituted by PSE to aid both its workers and SP employees in addressing system safety issues and concerns. A discussion of the system safety mechanisms that have been created and the communication of related information will be the focus here, with a strong emphasis on the relationship between worker safety and system safety.

- Promoting safety to the general public regarding individual and system safety was evident through various public safety education programs, as well as other hard and soft copy general information about PSE safety activities involving information on "what to do when detecting a gas odor", "call before you dig", simple customer maintenance tips for gas appliances, grounding requirements and safety, maintenance of buried fuel lines, characteristics of CO gas and how to prevent CO in the home, etc.[32]
- PSE's system safety was compared to other comparable utilities. The lower number of comparable incidents would indicate a safer system. Figure 9 Number of Incidents per Miles of Main compares PSE's number of incidents per miles of main to 14 other companies that have similar total miles of main – approximately 12,000 miles.

[32] Document Request 92

Figure 9 - Number of Incidents per Miles of Main



- Along the left line (Y-axis) is the total number of incidents reported to the US PHMSA Office of Pipeline Safety from Year 1986 to 2007 for every 1,000 miles main per total miles of main. In this period, PSE reported 6 incidents while there are 4 other companies with fewer incidents and 10 companies with a greater number of incidents than PSE.

Below is a list of the complete names of the companies plotted above[33]:

- Public Service Company Of North Carolina
- Public Service Company Of New Mexico - Gas Services
- Wisconsin Gas Company
- Alabama Gas Corporation
- Peoples Gas system Inc.
- Kansas Gas Service
- Northwest Natural Gas Company
- Puget Sound Energy

[33] US PHMSA Office of Pipeline Safety 1986-2007 Incident Report, and US PHMSA Office of Pipeline Safety 2007 Gas Distribution Annual Report

- Indiana Gas Company Inc.
- CenterPoint Energy Resources Corp., DBA CenterPoint Energy Minnesota Gas
- Reliant Energy Arkla, Div. Of Reliant Energy Resource
- Atmos Energy - West Texas Division
- Piedmont Natural Gas Company Inc.
- Northern Indiana Public Service Company
- Questar Gas Company

- Many additional measures of system safety are discussed in Section 8 – Continuing Surveillance, particularly part 8.3.3 – Continuing Surveillance Trends.

4.5.4 Conclusions

This second half of Section 4 has looked at system safety and found that PSE's overall incidents per mile of main compares well with other utilities. However, in order to maintain or improve that general indicator of system safety, we have found in other sections of the report a lacking of proactive measures to prevent possible system safety degradation.

UTC Enforcement Actions

We find the high number of mandated settlement agreements between PSE and UTC staff to be unusual and not typical of the relationship that exists between the regulator and the utility in other states and jurisdictions. In addition, we note that the trend in number of directives has been greater in recent years of the studied time period.

The historical frequency of needed settlement agreements is an indication that PSE should examine its strategic perspective, goals and objectives directed at maintaining the safety compliance of its gas distribution system.

Enforcement Response

We have also observed throughout this audit that PSE's employees and SPs are not reluctant to point out observed areas where they believe safety corrections are needed. However, we have also witnessed communication problems where PSE has not relayed significant information to the observers regarding whether actions are needed, or the outcomes of their observations. Section 8 of this audit regarding continuing surveillance contains a number of recommendations for improving the mechanisms for reporting and responding to safety concerns voiced by employees and SPs. This is not to say that PSE has been unresponsive to items identified by

the UTC which need direction. As shown elsewhere in this safety audit, PSE devotes considerable effort into remedying enforcement actions.

A consistent theme noted throughout this report, is that a more proactive approach to system safety would benefit PSE, and reduce what we believe is an unusually large amount of mandated settlements. The specific individual findings fall within other sections of this audit, as do recommendations that are made in the context of the detailed Findings and Conclusions presented in each of the other sections.

Addressing System Safety at PSE

In summary, we refer to section 9 – Sufficiency of Resources and note that PSE has no Corporate–level Goal that specifically addresses system safety, and section 8 – Continuing Surveillance, to conclude that system safety operations at PSE may be characterized as follows: each corrective action or settlement is responded to, but not prevented.

We have noted here and elsewhere the large number of system safety-related programs, many of which have been undertaken in response to UTC directives. In our experience, utilities want to be proactive and take the lead in maintaining the safety of its gas distribution system – not just follow the regulator's mandates. Although this section of the study shows evidence of a commitment and culture of worker and system safety, findings in the following sections indicate a need for improvements to make PSE a more proactive company on system safety compliance issues:

- Section 6 – Service provider contracts includes findings related to monitoring service provider safety activities, and improvement of contract language to enhance PSE's system safety responsibility.
- Section 7 - Auditability of Records indicate technological solutions which would help PSE keep track of system safety - related needs.
- Section 8 – Continuing Surveillance indicate that coordination and communication problems, and a lack of a continuing surveillance report are interfering with an effective proactive approach to system safety.
- Section 9 - Sufficiency of Resources describes the need to develop a goal with supporting objectives, actions and measures to fully communicate senior management's intentions.

Recommendations in these various sections, if successfully enacted, will help to make PSE a more proactive company on system safety compliance issues.