

The petroleum pipeline industry has undertaken a voluntary environmental performance tracking initiative, recording detailed information about spills and releases, their causes and consequences.

The pipeline members of the American Petroleum Institute and the Association of Oil Pipe Lines believe that tracking and learning from spills will improve performance, thus demonstrating the industry's firm commitment to safety and environmental protection by its results.

This is one of a series of fact sheets about the Pipeline Performance Tracking System, "PPTS," its evolution and its lessons.

PPTS ADVISORY FOR OPERATORS: GENERAL OVERVIEW OF THIRD PARTY DAMAGE

Third Party Damage has Strong Potential for High Consequence Events

Between 1999 and 2001, there were 1,882 pipeline spills reported to PPTS. Third Party Damage accounted for 7% of these spills, but:

- Accounted for 100% of the incidents involving a death
- Accounted for 52% of the incidents involving an injury
- Accounted for 28% of all incidents involving fire or explosion
- Accounted for 35% of all incidents impacting public safety
- Accounted for 56% of all volumes released from onshore pipe
- Accounted for 54% of the largest 2% of spills (>5,575 bbls)

For PPTS a "third party" is considered a person or persons not involved with operating or maintaining the pipeline. Examples of third parties

would be farmers, homeowners, construction crews and excavators, people who in the course of their normal activities may come in contact with a pipeline and, by damaging the pipe, could cause a spill or worse. PPTS classifies Third Party Damage into three groupings. "Third party excavation, construction, or other work activity occurring *at the time* of the failure," "Third party excavation, construction, or other work activity occurring at some time *prior* to the failure," and "*Other* [types of damage], including vandalism, third party vehicle contact with facility, and other intentional or unintentional acts." Damage at the time of the failure accounts for the greatest share of incidents, by far, at 75% of all Third Party incidents; prior damage accounts for 17% and "other" damage accounts for 8% of all Third Party Damage incidents.

Third Party Incidents Involving Damage At the Time, 1999-2001

Onshore Pipe incidents completely dominated this most important category, with 97% of the incidents and 97% of the volume released. Hence, this section on Third Party Damage At the Time will focus on Onshore Pipe incidents, using the detailed information available for releases of 5 barrels or more, or involving a death, injury, fire or explosion.

Participants in PPTS provide information on the type of activity or party that caused the damage. This information is important for assessing hazards and targeting prevention efforts. The table below consolidates some of the categories to enhance understanding and to simplify presentation.

- Farming activities account for the largest share of the incidents. Taken together with Homeowner activities, they form a "landowner" category which accounts for 37% of the incidents, and 44% of the volume released. Furthermore, there was a death associated with one of the homeowner incidents, and injuries associated with two of the homeowner incidents and one of the farming incidents. These public safety impacts underscore the importance of the category.
- The next largest category is presented here as "One-Call Partners." The category combines damage caused by Other Pipeline Operators and by Other Underground Operators

(telecommunications, energy utilities, etc.), entities familiar with the One-Call notification program. They fund the programs and receive requests to mark their own facilities, putting these entities in a unique position to understand the problem of mechanical and/or excavation damage and its prevention. Mechanical/excavation damage incidents caused by the operator (the PPTS respondent) or its contractor are classified as Operator Error rather than Third Party Damage and thus, are not listed in this advisory’s tables.

- “Additional Industrial/Commercial Activities” includes Residential/Commercial Development, Onshore Waterway Activity, and Rail Construction. It also includes the miscellaneous incidents reported as “other” damaging parties by PPTS respondents. Further examination of these incidents confirms that they are various types of industrial/commercial activity.

Third Party Incidents Involving Onshore Pipe Failure at the Time, PPTS 1999-2001										
Damaging Party Group	Number of Incidents					Barrels Released				
	Crude	HVL	Ref. Prod.	Total #	%	Crude	HVL	Ref. Prod.	Total bbls	%
Farming	6	4	9	19	28%	1,450	11,547	5,720	18,717	22%
Homeowner	1	2	3	6	9%	70	17,540	1,384	18,994	22%
Landowner Subtotal	7	6	12	25	37%	1,520	29,087	7,104	39,711	44%
One-Call Partners	8	3	7	18	26%	11,573	5,975	1,460	19,008	22%
Add'l Indus'l/Comm'l Activities	8	3	6	17	25%	3,679	17,918	2,715	24,312	28%
Road construction/maintenance	5		4	9	13%	3,435		2,099	5,534	6%
Total	28	12	29	69	100%	20,207	52,980	13,378	86,565	100%

Includes only incidents where the failure occurred at the time of the damage. Include releases of 5 barrels or more, or that involved a death, injury, fire or explosion. Excludes incidents caused by the operator or its contractor. “One-Call Partners” are parties that receive One-Call notifications: Other Pipeline Operators and Other Underground Operators. “Additional Industrial/Commercial Activities” include those not specified in the table: Residential/Commercial Development, Onshore Waterway Activity, Rail Construction, and Other Damaging Party.

The Primary Cause of Third Party Incidents

As shown in the next table, the operator’s assessment of the incident shows that “failure to utilize One-Call system” was the apparent primary cause of the incident in more than half of the incidents. The incidents involving farming activities had an even higher share attributable to the failure to utilize One-Call

After the “failure to utilize One-Call systems,” the next largest primary cause of failure for these incidents is “failure to take reasonable care to protect facilities.” This includes instances where, in spite of the excavator’s knowledge of the pipeline’s presence and the operator’s marking in response to a One-Call notification, the excavator still damaged the line.

Apparent Primary Cause of Damage by Damaging Party Group, Damage at the Time, Onshore Pipe, 1999-2001								
Damaging Party Group	Failure to utilize One-Call system [see Memo]	Failure to wait the proper time	Failure to respect pipeline co. directions/ procedures	Failure to take care to protect facilities	Failure of operator to respond or to properly mark pipeline	Other	Total	Memo
								% Failure to utilize
Farming	13		1	2		3	19	68%
One-Call Partners	7	3		4		4	18	39%
Add'l Indus'l/Comm'l Activities	7	1	2	5	1	1	17	41%
Road construction	5	1		1	1	1	9	56%
Homeowner	3			1	1	1	6	50%
Total	35	5	3	13	3	10	69	51%

Includes only releases of 5 barrels or more, or that involve a death, injury, fire or explosion

Prior Damage from Third Parties

The number of Prior Damage failures that led to a release in the 1999-2001 period are relatively few. However, the importance of discovering the damage before it leads to failure was underscored in the 1999 incident in Bellingham, WA; the National Transportation Safety Board found that prior damage was the first primary cause of the tragic incident. The new regimes for inspecting pipelines with inline inspection tools are aimed at discovering this prior damage in the pipeline before it leads to failure.

As shown in the next table, a gouge or metal loss was the evidence in 50% of the incidents, primarily in products systems. Dent or buckle contributed 3 additional incidents but was responsible for the greatest lost volume, primarily driven by a single HVL release of 27,660 barrels. While the prior damage was not necessarily the result of excavation or other mechanical damage, the position of the damage strongly suggests that they are: in 15 out of the 16 incidents, the damage was at the top of the pipeline, between 10 and 2 o'clock. In the 16th incident, the damage position was the side of the pipe; the evidence was coating damage.

Evidence of Third Party Prior Damage Incidents, 1999-2001						
	Coating	Dent or buckle	Gouge or metal loss	None Listed	Other	Grand Total
Crude	1		2	2	1	6
HVL's+		1			1	2
Refined Products		2	6			8
Total # of incidents	1	3	8	2	2	16
Crude	4,000		25	80	20	4,125
HVL's+		27,660			8	27,668
Refined Products		1,349	6,465			7,814
Total volume, bbls	4,000	29,009	6,490	80	28	39,607

“Other” Third Party Incidents

There are relatively few failures caused by third parties that do not also involve excavation or mechanical damage. These “Other” Third Party incidents accounted for just 8 incidents of 5 barrels or more (or that involved a death, injury, fire or explosion) over the 1999-2001 period. Examples of “Other” Third Party damage include vandalism/theft/mischief, sabotage, a vehicle impact, fire that results in a release but is not caused by it. Some of these incidents become notorious, such as a gunshot to the Trans-Alaska Pipeline. Another kind of “Other” third party damage that sometimes makes the evening news is the theft of anhydrous ammonia for the suspected manufacture of methamphetamine. While historically these incidents are few, in the post-9/11 era pipeline operators are under increased public and government expectation to reduce pipeline system vulnerabilities and improve pipeline security against potential acts of vandalism, sabotage or terrorism.

Operator Considerations

- ❖ Operators should continue support for the development and use of One Call systems. PPTS operators have reported that failure to use One-Call was the primary cause of failure in more than half of the Third Party Damage incidents.
- ❖ Operators should continue educating the public regarding safety around pipeline facilities. Farming activities were the largest single activity responsible for Third Party Damage that resulted in a release at the time the damage was inflicted.
- ❖ Operators should continue educating and communicating with contractors and others involved in construction, excavation and similar activities.
- ❖ Operators should have a strong right-of-way maintenance and surveillance program in place that deals with issues such as vegetation control, signage, depth of cover, encroachment, etc., and follow it diligently.
- ❖ Operators’ efforts to improve Integrity Management Programs should help reduce the number of “Prior Damage” incidents. Inline inspection tool runs should identify many dents and gouges that could fail in the future. Furthermore, analysis techniques might include comparing metal loss tool runs with deformation tool runs and comparing a current tool run with a previous one.
- ❖ Due to the nature of HVL, Third Party Damage incidents have a history of releasing large volumes when they occur. HVL systems experienced 17% of incidents but contributed 61% of the volume lost. In addition, the two “damage at the time” incidents that involved deaths were HVL incidents. Operators should factor this into risk analysis when evaluating system integrity, and when developing training and education initiatives.
- ❖ Operators should consider adopting the public awareness and communication protocols contained in API Recommended Practice 1162 and the best practices recommendations for damage prevention published by the Common Ground Alliance.



For further data related to Third Party Damage incidents see PPTS Advisory 2003-9, “Landowner Activity Impact on Third Party Damage,” and PPTS Advisory 2003-10, “Impact of Commercial and Industrial Activities on Third Party Damage.”