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April 11, 2011

The Honorable Cynthia Quarterman
Administrator
Pipeline and Hazardous Materials Safety Administration
East Building, 2nd Floor
1200 New Jersey Avenue, SE
Washington, DC 20590

RE: Information about hazardous liquids pipeline infrastructure and safety

Dear Administrator Quarterman,

By this letter we are responding to your letter of March 18, 2011, in which you asked pipeline industry representatives to provide information about pipelines made of bare steel, cast iron, copper, polyethylene, or plastic; pipelines with unknown or uncertain material specifications or long seams; or pipelines with questionable or unconfirmed integrity. The Association of Oil Pipe Lines (AOPL) and the American Petroleum Institute (API) together represent operators of approximately 90% of the hazardous liquids pipeline miles operated in the United States.

Hazardous Liquids Pipeline Infrastructure

Hazardous Liquids Pipe Material

At this time the most complete source of systematic information about the total miles of hazardous liquid pipe in the United States is PHMSA's own annual report data. Based on 2009 operator filings to PHMSA we find the following for offshore and onshore hazardous liquids pipelines:

Pipe Material	Miles
Bare Steel	3,081
Coated Steel	172,174
Cast Iron	0
Copper	0
Polyethylene	0

Plastic	0

Bare steel represents about 2% of all hazardous liquids pipeline miles. Bare steel does not, in and of itself, pose any particular risk; the most important aspect of ensuring the safe operation of bare steel is doing what is necessary to maintain its integrity.

Operators use a variety of strategies to manage and maintain their underground bare pipe. Some examples include:

- Know the soil and the operating environment;
- Increase cathodic protection and monitor it carefully;
    - Use impressed current rather than sacrificial anodes for cathodic protection;
    - Conduct more frequent close interval surveys;
- Evaluate metal loss by internal inspection at an appropriate frequency

AOPL and API agree with PHMSA that operators must know their pipelines in order to manage them effectively. To that end, hazardous liquids operators carefully evaluate their assets to understand the materials from which they are made, the manufacturing method and the conditions under which they operate.

Coatings

Coatings are applied to pipe to help mitigate external corrosion from environmental exposure. Coating is generally viewed as a secondary defense against external corrosion and under certain circumstances can create shielding of cathodic protection (CP), the primary defense, that is detrimental to pipeline integrity (e.g., disbonding of coating). Certain coatings have been identified as particularly problematic through hard experience (e.g., polyethylene tape). However, if operators understand the susceptibility of their pipe and coating types, they can take actions to protect and assess for problems that might develop. We have no systematic data on coating types across the industry; only data on whether pipe is coated or not is collected.

Cathodic Protection

As mentioned above, cathodic protection is a primary defense against external corrosion. The following shows where cathodic protection is employed in conjunction with whether the pipe is coated.

Cathodic Protection→ Pipe Material↓	Cathodically Protected	Not Cathodically Protected
Bare Steel	2,982	99
Coated Steel	171,579	595

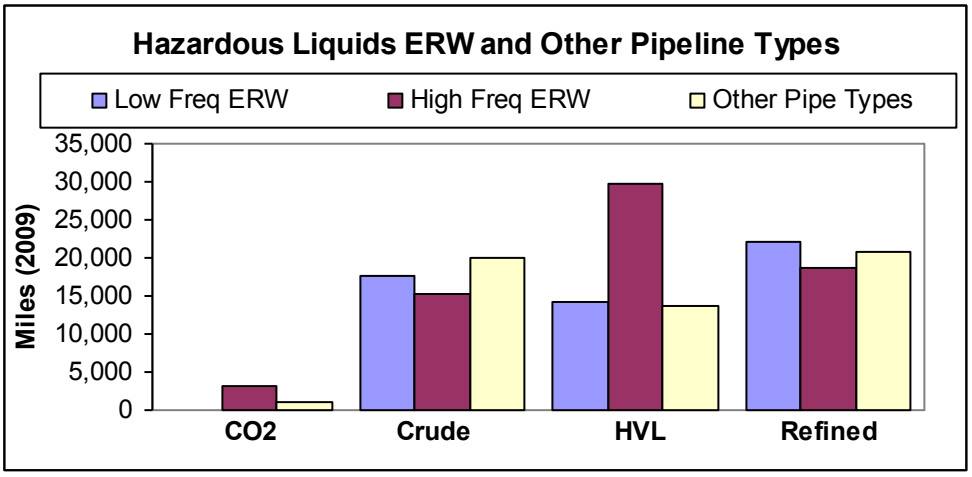
Of the 3,081 miles of pipe that are bare, all of it is onshore and 97% is cathodically protected. (The small amount of pipe that is bare and not cathodically protected appears to be

owned by production companies, a refiner, and a terminal company. It is likely aboveground where its condition is easily assessed.)

Unknown or Uncertain Material Specifications or Long Seams on Hazardous Liquids Pipelines

We have no all-inclusive information across the industry on material specifications, so we cannot comment at this time on what operators might or might not know about the pipe material of their specific lines. It is our belief that operators have a comprehensive understanding of their materials, including what grade, size and pipe manufacturing methods that have been used for their pipe. The industry also employs processes such as "validation digs" or "confirmation digs" to confirm the information on file. Years of experience with in-line inspection, confirmation digs, maintenance, and repair, have given operators many opportunities to directly observe and understand the condition of the pipe.

Long seams, like bare steel and other factors, are not an indication of a problem. Certain types of welding processes have been associated with seam issues. PHMSA data shows if pipe is low frequency electric resistance welded (LF ERW) or high frequency (HF) ERW. It does not show the breakdown of other pipe types; only the total of other types. The PHMSA data on low versus high frequency ERW is shown below:



Source: Form PHMSA F 7000-1.1

Several year ago, the hazardous liquids pipeline industry noted a reversal in the downward trend of releases from material, seam and weld failures[1]. The data seemed to be largely driven by seam failures. As a result, the Pipeline Integrity Work Group (PIWG) and industry Data Mining Team undertook a survey that started with PHMSA incident data for accidents with seam failure listed as the cause. The team working on the survey indentified additional data

[1] In reporting its accident data for hazardous liquids pipelines, PHMSA groups accidents involving material, seam, weld and equipment failures together. We believe this grouping obscures the distinction of the first three causes from equipment failures. The first three causes are all related to pipe while equipment failures have little to do with materials, seams, welds or pipe.

elements that it would need in order to understand some of the underlying cuases of those failures, including seam susceptibility category, pressure cycling category, failure mechanism, and the role of pressure cycling. The members of the PIWG were surveyed to obtain the additional data for 29 accidents involving seam failures from 2002-2008. Data was provided by 11 operators for 21 of the 29 target accident records. Some of the take-aways of the analysis of this data were:

- about half of the seam failures occurred on pipe not deemed to be "susceptible",
- failures occurred across the spectrum of cycling aggressiveness,
- lack of fusion accounted for 1/3 or 7 of the 21 failures,
- hook cracking accounted for 3 of the 21 failures,
- Only 4 of the 21 reports identified cycling as a contributing factor, and
- Of those 4:
    - 2 were associated with hook cracking,
    - 1 with burnt steel, and
    - 1 with railroad fatigue.

This led the team to conclude that for these accidents cycling did not contribute to lack of fusion, but did contribute to hook cracking. Other results from this work include:

- for 6 of the 21 accidents, the pipeline was operating above 60% SMYS, including 2 where cycling contributed;
- 13 of the 21 accidents involved pipe types considered "vulnerable": lap welded, butt welded, LF ERW, or flash welded; and
- none of the accidents occurred shortly after pressure tests.

A single dominant cause of seam failures was not identified by this analysis. In order to verify this, the team asked for additional data from metallurgical consultants who had information for failures not necessarily reportable to PHMSA (e.g., from pressure testing). We have obtained that data and the formatting and analysis of it proceeds.

We plan to share the results of this analysis broadly. We applaud PHMSA's recent broad agency announcement (BAA) seeking proposals to examine issues related to low frequency ERW and other seamed pipe. We will provide financial support for this R&D effort. We believe that better understanding is needed in the detection, assessment and repair of long seam defects and cracks and believe PHMSA's BAA will significantly advance the work we have begun.

Integrity of Pipe

There is no systematic data on pipelines with questionable or unconfirmed data. Hazardous liquids operators were required to conduct baseline assessments of their HCA could-affect segments and repair any identified anomalies on the regulatory repair schedule. Some companies have assessed their pipelines for a second or even a third time.

The API Operations & Technical Group conducted another survey of the joint API and AOPL membership to examine how much mileage beyond HCA could-affect miles was being assessed. The response rate was good and the results appear to be representative of the hazardous liquids industry at large. We found that 83% of non-HCA miles and 90% of total hazardous liquids pipeline miles are being assessed by some method overall. We also found that when anomalies are discovered that meet the HCA could-affect requirements for immediate repair, they are scheduled for immediate repair whether they are on HCA could-affect or non-HCA segments. In recent comments to PHMSA on its hazardous liquids pipeline safety ANPRM, we suggested that PHMSA require that any anomalies meeting immediate repair criteria be treated the same whether on an HCA could-affect or non-HCA segment. We believe the findings of our survey are a good indication that the integrity of hazardous liquids pipelines is generally well understood by operators and is being maintained.

Infrastructure Management; NOT Aging Pipe

Age is only one of many factors that pipeline operators and regulators must take into account when considering whether a pipeline is safe to operate. If pipelines are properly constructed, operated and maintained, they may be safely operated for an indefinite period of time. Operators engage in comprehensive infrastructure management that considers many factors to determine if a pipeline is safe. In a recent analysis of time-dependent causes of pipeline accidents (i.e., those causes that are associated with the length of time the pipeline has been in service), it was found that over the period from 2002 to 2009, such releases had been reduced by 37%. Importantly, over the same period of time, such releases showed an even greater decline — 83% -- from pipelines constructed before 1950.[2] This is a clear demonstration that operators can and are managing performance of their older assets and that applying modern integrity management practices to pipelines benefits pipelines of all ages. The data also demonstrate that age alone cannot be used as a measure for replacement of hazardous liquids pipeline segments.

Our members do replace segments of their pipelines when needed to ensure safety and reliability. In cases where many anomalies continue to occur that require repair, the decision is often made to replace large sections or entire segments. This decision would never be made solely on the basis of age or on the manufacturing processes used for a certain vintage of pipe, but rather on the assessed condition of the pipe.

Industry Record of Improving Pipeline Safety Performance

The hazardous liquids pipeline industry has collected data about pipeline releases since 1999 in its Pipeline Performance Tracking System. We started doing this under the premise that in order to learn and improve, we needed to accurately measure our performance. Actionable recommendations are distributed to industry members in the form of Advisory Bulletins. That effort has paid dividends to the hazardous liquids industry and to the cause of safer pipelines.

[2] See the attachment, "Pipeline Infrastructure Management – Managing Performance is More Important Than Age", March 2011.

We currently have data that covers operators of about 85% of the hazardous liquids mileage under PHMSA's jurisdiction. Reporting to PPTS is voluntary, but is carefully compared to assure that every release reported to PHMSA by a participating operator is also in PPTS. In fact, by 2009, some 25% of the releases reported to PPTS -- excluding those occurring on unregulated gathering assets -- were NOT required to be reported to PHMSA because they were from other non-jurisdictional assets, or met the PHMSA reporting exclusion for maintenance-related releases. Since the system's inception we have collected data on spills of 5 gallons or more and all spills to water. We also collect additional information to what PHMSA collects in its accident reports, although the two reporting systems have drawn closer together in what data is collected as time has progressed.

Our industry statistics tell us that the number of releases on the pipeline right-of-way – where pipelines come into contact with people, communities, and environmentally sensitive areas – has been reduced by 59% from 1999-2001 to 2007-2009[3]. Over the same period of time, volumes released have been reduced by 41%. Releases are down in all major failure cause categories. As noted above, while there were early improvements in the area of pipe material, seam, and weld failures, we have seen some reversal in the trends in recent years. Corrosion-related failures were and remain the largest number of failures on hazardous liquids pipelines, but they have been reduced by 73% from the 99-01 to 07-09 time period. Corrosion related releases are generally small in volume. They are also generally more prevalent on crude pipelines and that is the area in which the greatest improvement has been made. Excavation damage is an area of particular focus for the hazardous liquids pipeline industry. While it is not the most frequent cause of accidents, at about 7% of the total, it is the leading cause of injuries and fatalities and a large contributor to other significant consequences like fire, explosion, evacuation and large spills (50 barrels or more).[4] There are a number of figures attached that are derived from PPTS that demonstrate that we have a good, even excellent, record of improvement. Still, the hazardous liquids operators recognize that there is more to do before we can achieve our goals of zero releases, zero deaths, and zero injuries.

Performance Improvement Processes[5]

In 2001, the U.S. oil pipeline industry initiated an Environmental and Safety Initiative (ESI) to further improvements in spill and accident prevention. Led by pipeline executives, the ESI promotes achievement of operational excellence through sound risk management approaches, implementation of proven pipeline safety technologies, identification and sharing of industry "best practices" and investment in new technologies.

The industry, through the Initiative, conducts an ongoing review of environmental and safety issues in an attempt to identify opportunities for improvement in performance. The

[3] The industry displays trended data by three year averages to smooth the data and better understand the trends.
[4] See the attachment, "Executive Brief/Talking Points; Excavation Damage to Hazardous Liquids Pipelines", March 15, 2011.
[5] See attached paper, "Hazardous Liquid Pipeline Industry Performance Improvement Processes"

Environmental and Safety Initiative is the means by which the leadership of the hazardous liquids pipeline industry is actively addressing those areas identified. The ESI is improving, and will continue to improve, the industry's environmental and safety performance, while enabling the industry to participate constructively and effectively in pipeline safety and reliability discussions and debates.

Hazardous liquids pipeline operators work hard to share ideas for improvements and best practices, and learn from pipeline incidents. Under this initiative, the industry has formed standing teams and conducted workshops to discuss incidents and near misses, analyze data, share best practices, and make recommendations for action. The industry invests in research and development to develop new technologies and practices to confront pipeline challenges[6].

The major ongoing efforts and teams include:

- Pipeline Performance Tracking System, for reporting and analyzing industry spill and accident data and developing actionable recommendations, distributed in Advisory Bulletins (mentioned above)
- Environment and Safety Initiative, including the Performance Excellence Team
- API Committees and Teams
- API Pipeline Information eXchange
- Executive Level Safety Culture Forums
- Pipeline safety research and development
- Industry involvement in pipeline safety standards; API and other Standards Development Organizations

Conclusion

We have shown that hazardous liquids pipelines are made of steel and not other materials. We have pointed out some areas where we think action is needed and where we have taken action. That is not to say that more cannot or should not be done. We strongly believe that issues around seams and cracks, and reducing excavation damage must continue to be aggressively addressed. Much of the effort starts with better understanding – understanding the data we already have, filling in the gaps on what we know and don't know with research and development, and rolling both new technology and enhanced understanding into practice.

Sincerely,

Peter J. Lidiak Andrew J. Black

[6] Over the past five years PRCI, which receives its funding from operating and service companies, including AOPL, spent nearly 40 million dollars on pipeline-related research.

Excavation Damage to Hazardous Liquids Pipelines
Low Frequency; High Consequence

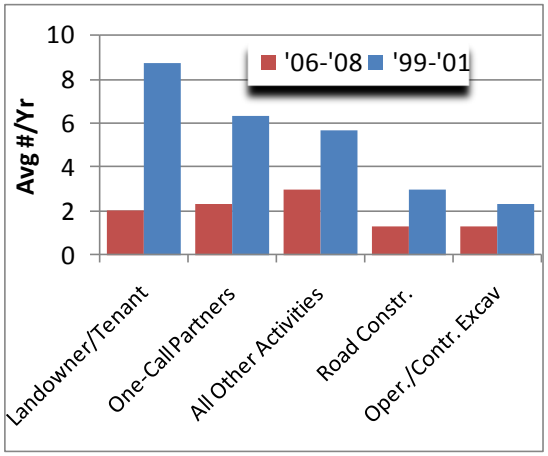
- **Impact the Public** - Ninety percent of excavation-related accidents occur along the right-of-way where they may impact public safety, not inside a fenced facility

- **Infrequent** -- From 1999-2008, excavation damage incidents made up about 7% of all accidents reported to PPTS. This does not account for damages that were unreported, undiscovered or near misses.

- **High Consequence** -- Over the same period, excavation damage accidents accounted for 31% of incidents involving safety impacts including fatalities, injuries, fires, explosions, and evacuations. **Excavation damage accidents were the leading cause of injury and death.**
  - 17% of all accidents on the ROW
  - 40% of all accidents of 50 barrels or more on the ROW
  - 61% of fatalities (5 accidents; 11 people)
  - 42% of injuries (9 accidents; 18 people)
  - 38% of incidents with explosion

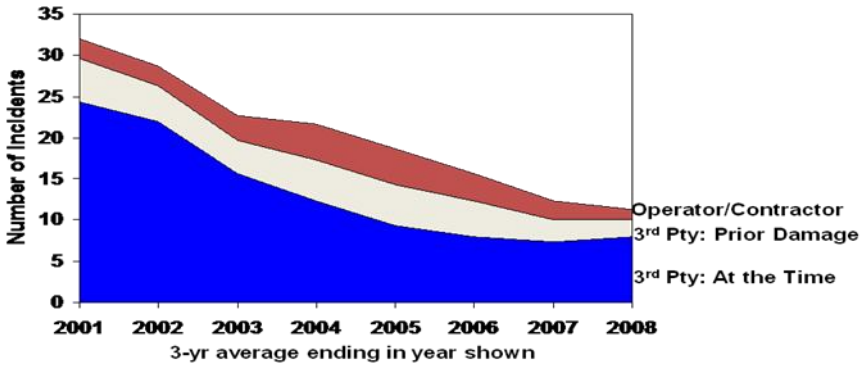
- **It's Not Just "Them"** – excavation damage results from three categories of excavator:
  - First Party – the operator's employee
  - Second Party – the operator's contractor
  - Third Party – an excavator not affiliated with the operator

- **Those Who Should Know Better** cause about 40 percent of hazardous liquids excavation-related accidents – they include:
  - The operator and the operator's contractor
  - Other pipeline operators and underground facility owners and operators or **One-Call Partners:** excavators that participate in local One-Call



Landowner/Tenant is Farming Activities + Homeowners; One-Call Partners are other pipelines and underground facilities operators; All Other Activities include res/comm development, railroad, waterway, "other"

- **Overall, Excavation Damage Has Gone Down** -- third party excavation damage that results in a release at the time of damage was down by two thirds from 1999-2008 (three year average of 24 incidents down to 8 incidents). Accidents that result from prior damage were down by 63 percent, but were already small in number (now about 3 per year). First and second party excavation damage was small and had not gone down as much, making it a bigger part of the problem.



* Includes onshore pipeline incidents >=5 barrels or death, injury, fire or explosion

3-15-2011

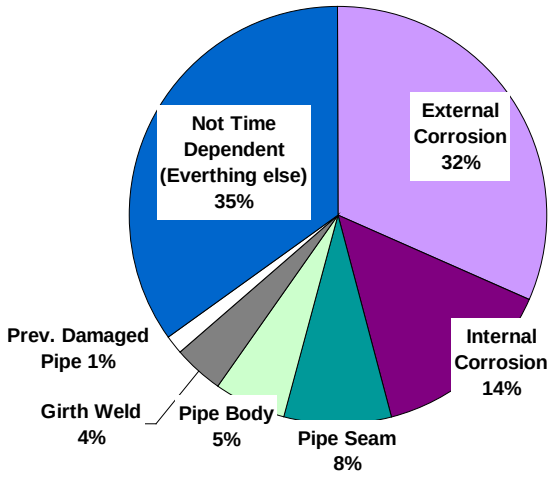
Pipeline Infrastructure Management –

Managing Performance is More Important Than Age

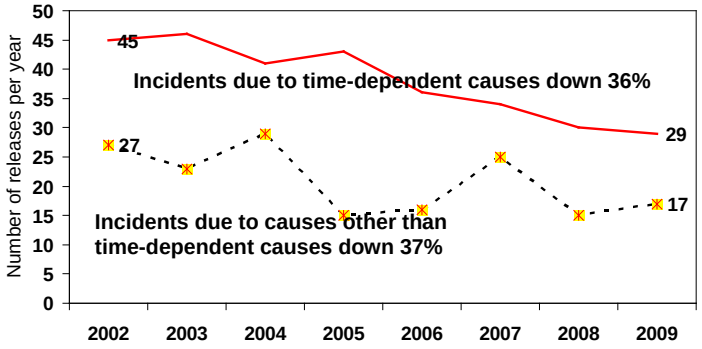
Like any long-lived asset, oil pipelines must be managed and maintained. The ultimate goal is zero accidents, so each operator's entire asset portfolio must be diligently managed to achieve this goal. A variety of factors go into an operator's choice of tools to use in inspecting and maintaining its pipeline, including the type of pipe, its construction and its service history. In the end, however, what the public, the regulators and the operators care about is performance: did the oil stay in the pipe? Over the last 10-12 years, the industry has improved its performance impressively across the board:

- Releases due to time-dependent causes (those that occur or worsen over time) **were reduced by 36%** between 2002 and 2009;
- Large releases (50 barrels or more) due to time-dependent causes **were reduced even faster --by 50%** -- between 2002 and 2009;
- Releases due to time-dependent causes and originating from pipe installed before 1950 **were reduced faster still -- by 83%** --between 2002 and 2009;
- Releases due to causes other than time-dependent causes **were reduced by 37%** between 2002 and 2009, demonstrating that operators are managing the full array of threats.

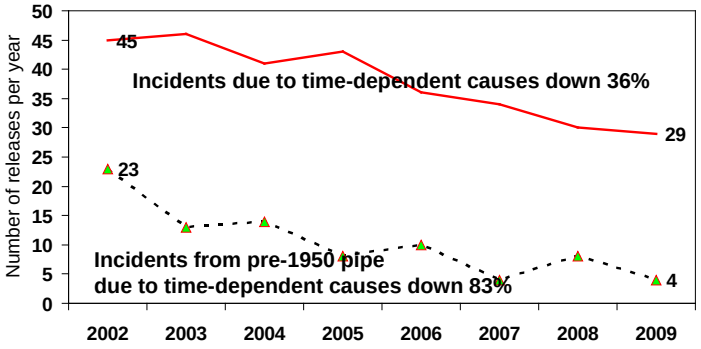
Causes of Liquid Pipeline Failures 2002-2009



See note on data set on page 4.



Time-dependent causes are corrosion, seam and girth weld failures, material failures (body of pipe), rupture of previously damaged pipe. Source: Form PHMSA F 7000-1 (2002-2009).



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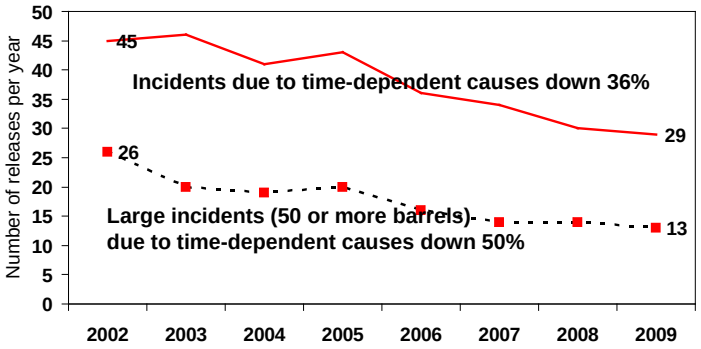

Time-dependent causes are corrosion, seam and girth weld failures, material failures (body of pipe), rupture of previously damaged pipe. Source: Form PHMSA F 7000-1 (2002-2009).

Integrity Management

Integrity management isn't one activity, but a discipline that involves a range of professional specialties and a series of protocols. A core goal of integrity management is to understand the assets in the ground, their specifications, and their service records and to manage the asset's performance based on those factors. The industry and its service providers have developed better diagnostic tools, techniques and materials over time. More importantly, the industry not only developed ways to maintain the assets' performance above acceptable levels, but have even IMPROVED the performance of the older assets. As shown on the previous page, the number of releases due to time-dependent causes from pipe installed before 1950 fell by 83% over the period from 2002 to 2009.

Operators have improved the performance of older assets

This improvement was made possible by the industry's multi-billion dollar integrity management investment.[1] Underpinned by regulation since 2001, the integrity management rules were aimed at "high consequence areas" (high population areas, an area of unusually sensitive ecology or drinking water supply or a commercially navigable waterway). Pipeline segments that are classified as ones that "could affect" a high consequence area constitute about 44% of the hazardous liquids mileage subject to the regulations of the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration. However, operators inspect and repair more segment miles than the regulations require. A recent (2010) industry survey showed that respondents, who operate 54% of the liquids pipeline miles subject to PHMSA regulation, had inspected nearly 90% of their total pipeline mileage, even though their required inspections would have covered only 56%.

Two primary methods are used to assess pipelines:

- In-line inspection - an instrumented tool is run through the pipeline to evaluate the condition of the pipe. These increasingly sophisticated tools can target corrosion, potential weld and seam issues, defects in the pipe material, as well as previous damage.

- Pressure test - the pipe is pressured above its normal operating limit to test the strength of the pipe and soundness of seams and welds. Water is usually used to pressure the pipe during the test.

Other methods, like Direct Assessment -- in which a structured, multi-step evaluation is conducted to identify, excavate and remediate, if needed, potential external corrosion problems -- are used to a lesser degree when these other techniques are impractical or not possible to employ.

[1] Liquid pipeline operators representing approximately 75% of federally regulated pipeline mileage reported spending approximately $2.7 billion on pipeline integrity management activities, and approximately $600 million on integrity management related to pipeline-owned tankage, from 2004 to 2009.

Based on the results of these assessment techniques, operators undertake maintenance to remediate detected defects that pose a threat to their pipelines. This type of maintenance is critical to continued safe operations, but also to the life-span of the pipeline.

Time-Dependent Failures. Certain failure causes might be classified as "time-dependent" because any imperfections or defects tend to worsen over time. The primary types of "time-dependent" failures are internal and external corrosion (including stress corrosion cracking), seam and weld failures, rupture of previously damaged pipe and pipe body material failures. Operators use a variety of strategies and tactics to keep them in check. This operator intervention is a core reason that there is no "sell by" date for pipeline assets. Operator actions to address these hazards are both good operating practice and required by regulation.

Other Failures. The rest of the failure causes or threats are generally not related to the vintage of the pipe, to time-in-service, or in fact to asset integrity. For example, excavation damage is largely unrelated to vintage, except that a pipeline may have been installed in a rural area and now be in a populated one due to encroachment on the pipeline right-of way. Most releases involving natural force damage are also not related to the vintage of the system. Operator error can lead to events that put stresses on pipelines that significantly exceed design parameters, but overpressure events are very rare and generally do not reflect a vulnerability intrinsic to the asset itself. More common operator errors such as leaving a valve in the wrong position are unrelated to the vintage of the pipe. Improvements have been made to reduce these types of failures, but they exist for all pipelines, regardless of vintage or time-in-service.

As shown in the pie chart on page 1, the time-dependent causes accounted for about 65% of the total releases from onshore pipe that involved pipe material, pipe seam, or girth welds over the 2002-2009 period. These specific asset types were chosen because they are the long-lived features of the system in the right-of-way. In the following pages, we outline some of the key characteristics and prevention strategies for each of the major time-dependent cause categories.

Addressing Time-Dependent Failures

By the 1950s, cathodic protection, a major tool in preventing *external corrosion*, was increasingly installed during pipeline construction. Cathodic protection significantly reduced the threat of this time-dependent cause, generally thought to be the leading one. Improved understanding of weaknesses in some historical coating types and improvements in coatings that can be applied at the pipe mill and in the field have also contributed to reducing this threat.

Operators manage the risk of *internal corrosion* with product specifications that are part of their tariffs, by adding chemical treatments that prevent corrosion, and, where needed, by using cleaning pigs that scrape the inside of the pipe sweeping away corrosive materials such as water.

Failures in pipe seams, girth welds and pipe body material in pipelines have been a major focus area for operators, vendors and regulators. The industry continues to seek and implement improved techniques to detect problems and avoid such failures before they occur. A major research and development effort is underway to address seam issues.

Factors External to Pipelines

As operators manage pipeline integrity, they must also focus on external factors that could damage a pipeline, such as excavation damage or natural forces. How long a pipeline may have been in service is largely irrelevant when it comes to external factors.

Federal pipeline safety regulations require pipeline operators to conduct public awareness programs to provide safety information to the affected public, emergency response officials, local public officials and excavators. Operators also work with organizations, such as the Common Ground Alliance (CGA) and State One-Call centers to promote initiatives such as the 811 – Call Before You Dig number which can be dialed from any state before excavating near a pipeline.

Excavation damage continues to be a leading cause of pipeline incidents involving deaths and injuries, according to PHMSA. However, the number of pipeline incidents caused by excavation damage is small and gradually dropping due to aggressive prevention efforts by operators and a public that is increasingly knowledgeable about digging around pipelines.

Summary

As demonstrated in the data presented here, oil pipeline operators are successfully managing the integrity of their assets no matter how long the asset has been in service or when it was constructed. Of particular note is that the performance of older assets has improved, not deteriorated, since 2002. Also important is that operators continue to strive to evaluate the condition of their pipeline systems with better tools and lessons learned from previous releases, thus increasing the chance for release prevention even further.

The Data Set

The data in the graphs on page 1 are drawn from the PHMSA database of releases reported on Form PHMSA F 7000-1 from "Onshore pipeline, including Valve Sites" over the 2002-2009 period, and involving pipe, pipe seam or girth weld. Only releases of 5 bbls or more, or involving death, injury, fire, explosion or damages exceeding $50K report this detail. Excludes incidents where information on date of installation was unavailable and incidents on assets installed since 1999.

American Petroleum Institute
Association of Oil Pipe Lines

Hazardous Liquid Pipeline Industry
Performance Improvement Processes

The safety record for every major release cause from hazardous liquid pipelines has improved over the last decade. Liquid pipeline operators strive for zero releases, zero injuries, zero damages to property and the environment, and continuous improvements in pipeline safety. Every spill is one too many.

Beyond investing millions of dollars annually to maintain their pipelines, members of the American Petroleum Institute (API) and the Association of Oil Pipe Lines (AOPL) also strive for continuous improvement in pipeline performance. API and AOPL created and conduct several performance improvement processes to learn from experience and build on the hazardous liquids pipeline industry's success in reducing pipeline accidents.

Pipeline operators work hard to share ideas for improvements and best practices, and learn from pipeline incidents. The industry has standing teams and workshops to discuss incidents and near misses, analyze data, share best practices, and make recommendations for action. The industry invests in research and development to develop new technologies and practices to confront pipeline challenges.

The major ongoing projects and teams include:

- Pipeline Performance Tracking System, for reporting and analyzing industry spill and accident data
- Environment and Safety Initiative, including the Performance Excellence Team
- API Committees and Teams
- API Pipeline Information eXchange
- Safety Culture Forums
- Pipeline safety research and development
- Industry involvement in pipeline safety standards; API and other Standards Development Organizations

Pipeline Performance Tracking System (PPTS)

Pipeline operators report to the U.S. Department of Transportation's Office of Pipeline Safety about every pipeline spill of at least five gallons to soil and any spill to water or involving an unintended fire or explosion, injury requiring hospitalization, death or property loss greater than

$50,000. In addition, since 1999, industry members have reported more detailed spill data to the industry's Pipeline Performance Tracking System (PPTS). The industry uses PHMSA and PPTS data to analyze and improve its performance. The stated philosophy of PPTS is to measure, learn, manage and improve. Through PPTS, the industry develops metrics for evaluating changes in pipeline performance, evaluates and sets leading performance measures for the pipeline industry, and identifies leading and lagging indicators that may predict future performance. PPTS data helps provide actionable recommendations to the pipeline industry targeting continuous performance improvement and solutions addressing today's and tomorrow's challenges.

Environment and Safety Initiative (ESI)

In 2001, the U.S. oil pipeline industry initiated an Environmental and Safety Initiative (ESI) to further improvements in spill and accident prevention. Led by pipeline executives, the ESI promotes achievement of operational excellence through sound risk management approaches, implementation of proven pipeline safety technologies, identification and sharing of industry "best practices" and investment in new technologies.

The industry, through the Initiative, conducts an ongoing review of environmental and safety issues in an attempt to identify opportunities for improvement in performance. The Environmental and Safety Initiative is the means by which the leadership of the hazardous liquids pipeline industry is actively addressing those areas identified. The ESI is improving, and will continue to improve, the industry's environmental and safety performance, while enabling the industry to participate constructively and effectively in pipeline safety and reliability discussions and debates.

Executives from pipeline operating companies oversee the ESI, suggesting areas for specific focus. In turn, executives participate in regular safety culture forums facilitated by operational, safety and regulatory compliance employees participating on ESI Teams.

Performance Excellence Team (PET)

The Performance Excellence Team (PET) pursues environmental and safety excellence in operations and system integrity. PET promotes inter-company learning and high quality, accurate and useful data analysis leading to actionable recommendations to the pipeline industry for continuous performance improvement. PET also develops metrics for evaluating changes in pipeline performance, including implementation of the integrity management rules. Finally, PET evaluates and sets leading performance measures for the pipeline industry. PET members with specialized knowledge of operations, engineering, regulatory compliance and environment, health and safety meet regularly to share information and capture and document good practices.

The Data Mining Team (DMT) oversees the Pipeline Performance Tracking System (PPTS). It identifies useful information to collect on infrastructure and incidents in order to characterize industry performance and identify operational areas in need of improvement. The DMT mines the data collected to identify learnings and produces advisories that include recommendations to operators for improvement.

The Control Room Team (CRT) promotes error free operations in hazardous liquid pipeline control rooms. The team is primarily responsible for tracking, analyzing and addressing issues related to control room operations on behalf of the hazardous liquids pipeline industry. The team organizes industry forums to allow control room personnel the opportunity to share information and practices to improve control room safety across the hazardous liquids pipeline industry.

API Committees and Teams

API also maintains committees and teams across areas of expertise, including safety, control systems, engineering, operations, integrity management, training, environment, and public awareness. Participation in these teams allows members to coordinate and share knowledge and challenges to improve safety and operations.

API Pipeline Information eXchange (PIX)

Hazardous liquids pipeline employees also participate in the annual Pipeline Information eXchange workshop (PIX), a confidential forum in which operators can share learning opportunities from specific pipeline incidents or near misses. Attendees include subject matter experts from all specialty areas and at all levels, including operations, control room, safety managers, engineering, right-of-way and senior technical personnel to executives. The objective is for participants to take these learnings back to their respective companies to help prevent similar situations from occurring. Ways to systematically capture learnings from this forum in guidelines, recommended practices and standards are under consideration.

Safety Culture Forums

A team of senior professionals from the PET identifies safety topics of concern across the industry and conduct safety culture forums for company executives at industry leadership meetings throughout the year. Through these discussions, executives can share the safety policies and programs that they have found more or less effective and help each other to boost industry safety through the leadership ranks.

Pipeline Safety research and development (R&D)

Pipeline operators invest in research to identify new technologies and practices to improve pipeline safety. In addition to company and association research, pipeline operators and associations fund research conducted by Pipeline Research Council International (PRCI), a global cooperative R&D organization for the energy pipeline industry.

PRCI members contribute technical and operations experts from their companies to work with expert consultants, maintain a research forum of ideas, and produce tangible solutions companies can implement. Over the last five years, liquid and natural gas pipelines and the federal government contributed more than $35 million toward PRCI pipeline research.

PPTS Lets Us Measure Our Progress Towards Industry Goals

- No deaths
- No injuries
- No releases to the environment
- No operating errors
- Reliable service to our shippers, customers and communities

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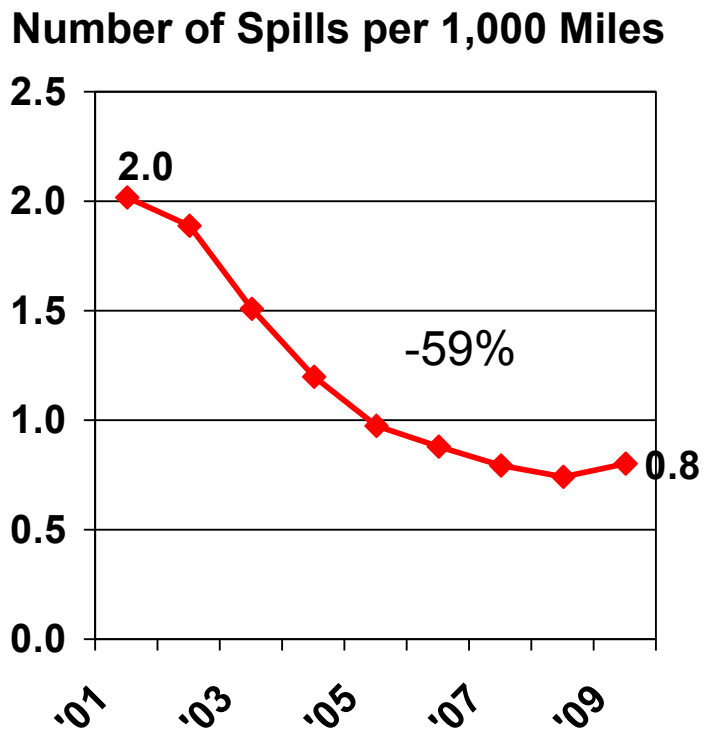
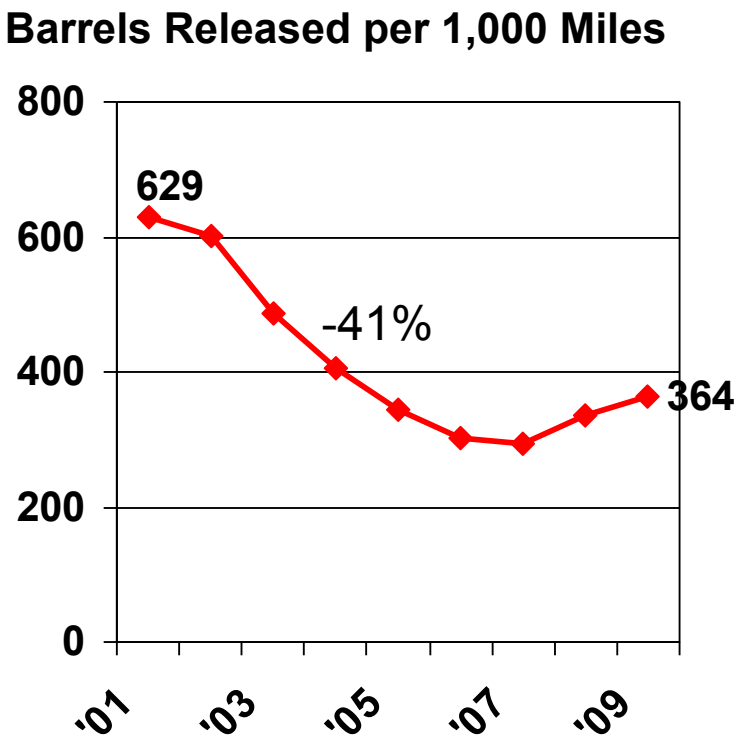
Dramatic Improvement:
Liquids Pipeline Industry Onshore Pipe Spill Record





3-Year Averages Ending in Year Shown

Source: Pipeline Performance Tracking System, a voluntary spill reporting system involving 85% of the U.S. liquids pipeline mileage. Percentage decline from 1999-2001 average to 2007-2009 average.

AOPL
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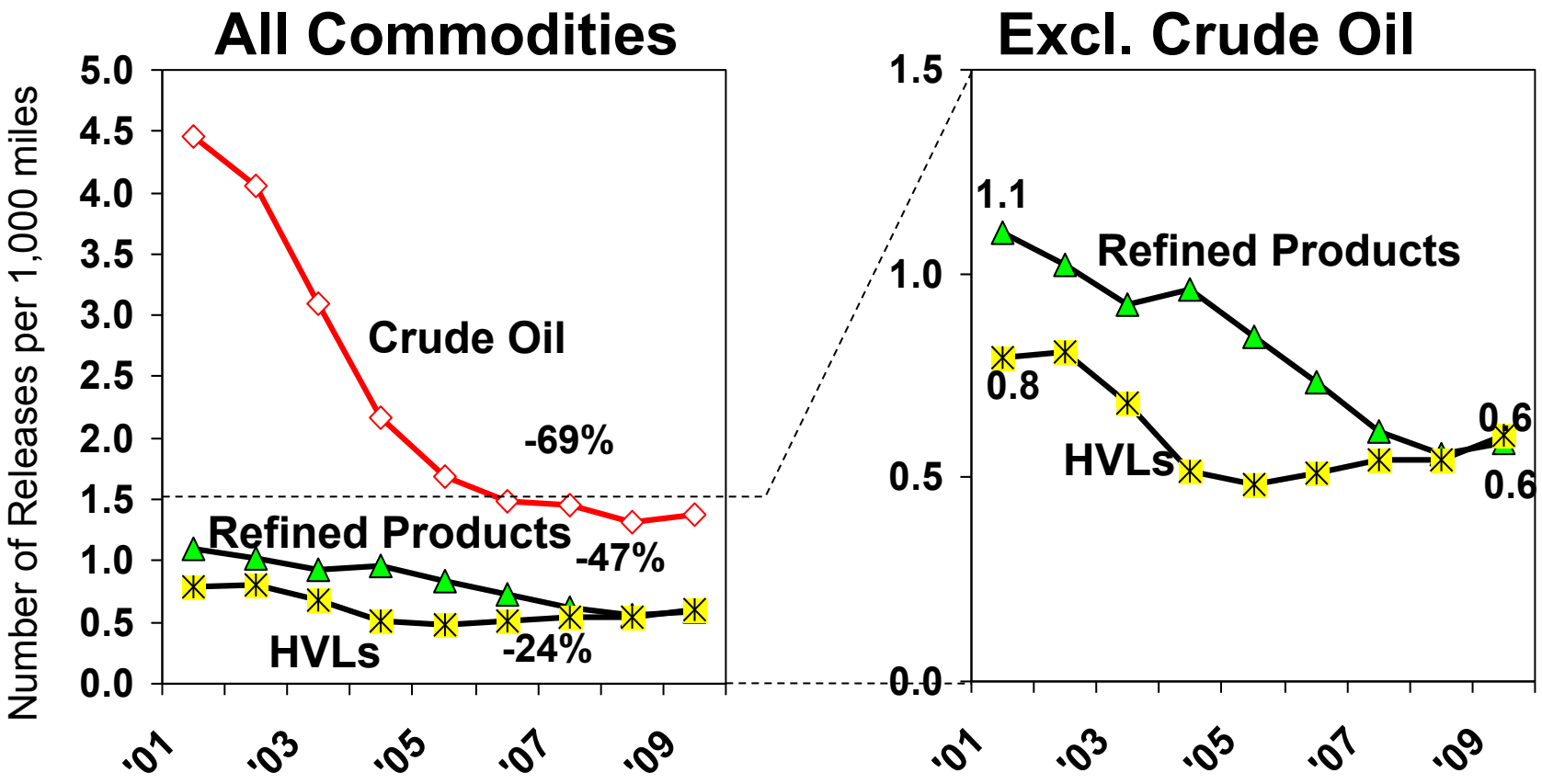
Releases along the Right-of-Way:
Crude Oil Most Frequent and Most Improved



3-Year Averages Ending in Year Shown; % Chg '99-'01 v '07-'09
Incidents occurring along the right-of-way

Source: Pipeline Performance Tracking System, 1999-2008

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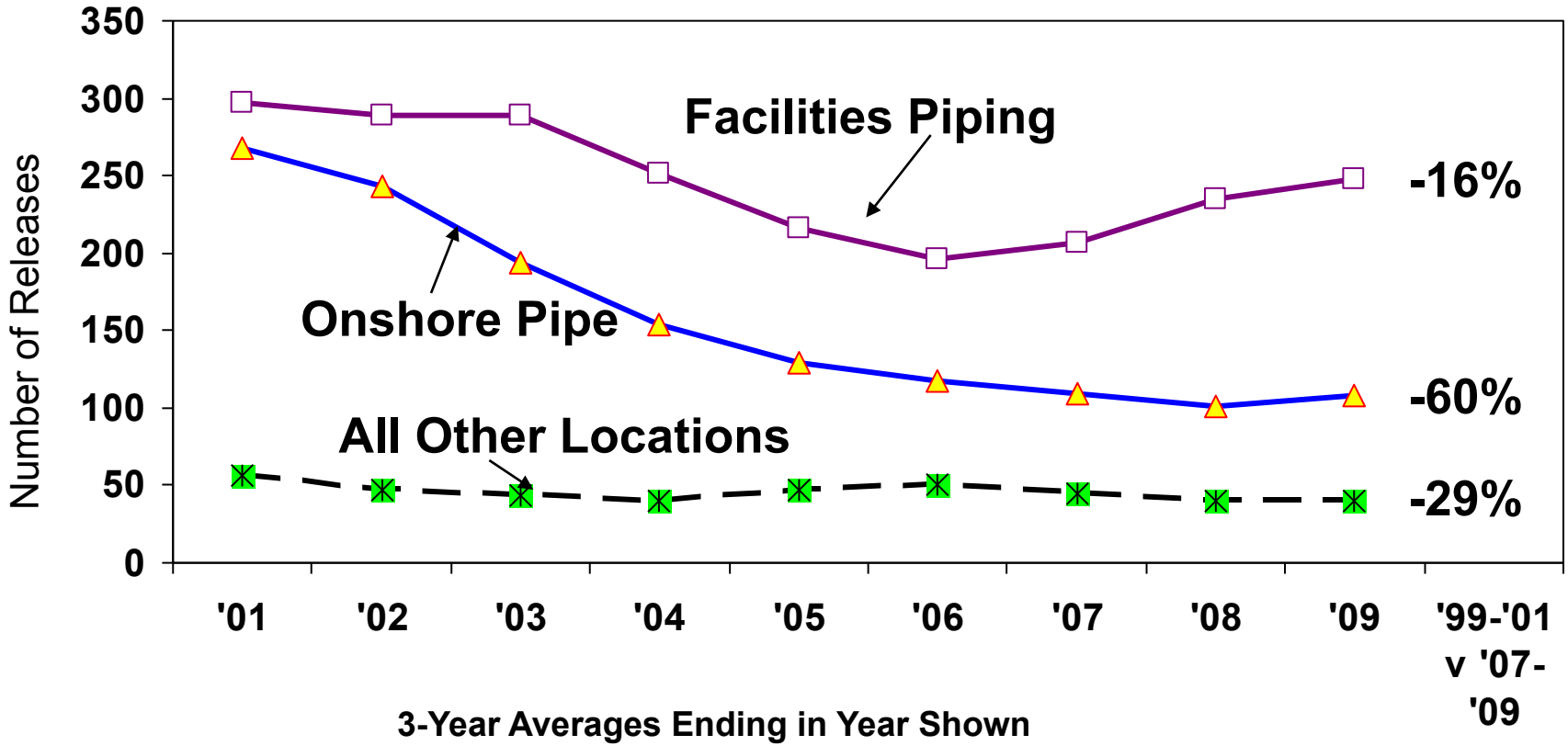
Releases along the right-of-way have fallen by 60%



All other locations: tanks, caverns, offshore pipe
Source: Pipeline Performance Tracking System, 1999-2009.

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System Location and Risk

Facilities piping: more of them, but small
Onshore pipe: fewer of them, but larger

Incidents by System Locations, 2007-2009		
	Number	Barrels
Total (annual average)	396	68,442
Share of Total		
Facilities Piping	63%	11%
Onshore Pipeline	27%	71%
Aboveground Storage Tank	7%	17%
Offshore Pipeline	3%	1%
Cavern	-%	-%

-% means non-zero value amounting to less than ½ of 1%
Source: Pipeline Performance Tracking System

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Where Are Safety Incidents Occurring? Deaths and Injuries by System Part

	System Part	Incidents (#, '99-'09)	Empl.	Contr.	Other	Total
			(# People)			
Fatalities	Facilities Piping	3	1	1	1	3
	Tanks	1	0	3	0	3
	Onshore Pipeline	8	2	2	12	16
	Grand Total	12	3	6	13	22
Injuries	Aboveground Storage Tank	1	1	0	0	1
	Cavern/belowground	1	1	0	0	1
	Facilities Piping	5	2	9	1	12
	Onshore Pipeline	16	2	1	30	33
	Grand Total	23	6	10	31	47

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Assessing Consequences: Deaths and Injuries by Cause

	Cause	Incidents (#, '99-'09)	Empl.	Contr.	Other	Total
			(# People)			
Fatalities	Third Party Damage	5	0	0	11	11
	Operator Error	3	0	3	0	3
	Other	4	3	3	2	8
	Total	12	3	6	13	22
Injuries	Third Party Damage	9	0	0	18	18
	Operator Error (incl. excav.)	6	4	9	0	13
	Pipe mat'l/seam	2	1	0	2	3
	Corrosion	2	0	0	3	3
	Equipment Malfunction	1	0	0	1	1
	"Other failure" in a Tank	1	1	0	0	1
	Other Cause	2	0	1	7	8
	Total	23	6	10	31	47

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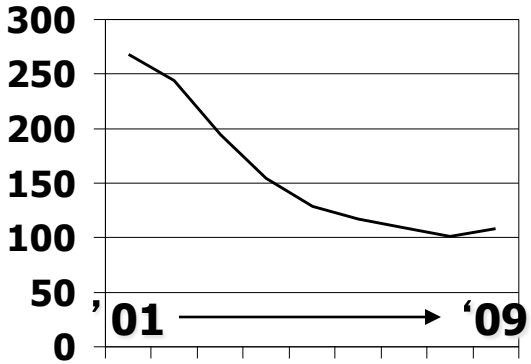
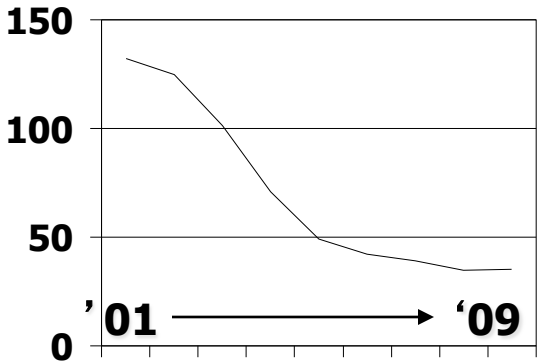
PPTS Onshore Pipe Incidents, '99-'09

3-Yr Average Ending Year Shown

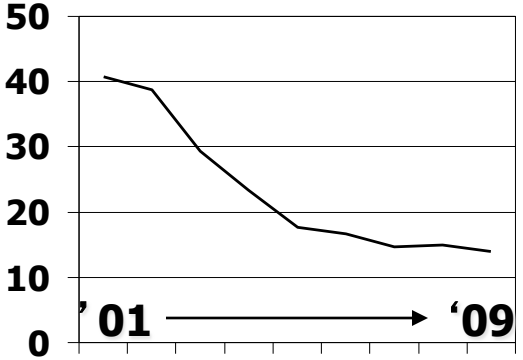
TOTAL, ALL CAUSES



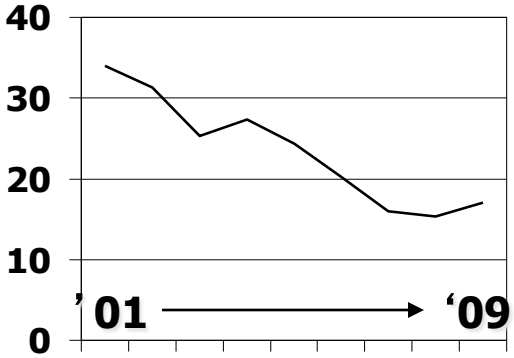
CORROSION



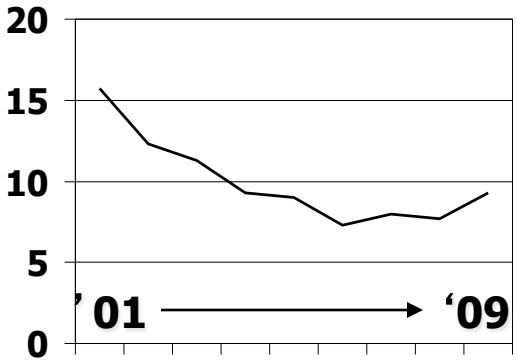
THIRD PARTY



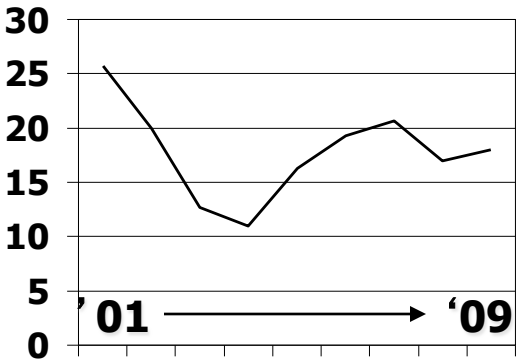
EQUIP./NON-PIPE



OPERATOR/OPER'N



MAT'L/SEAM/WELD



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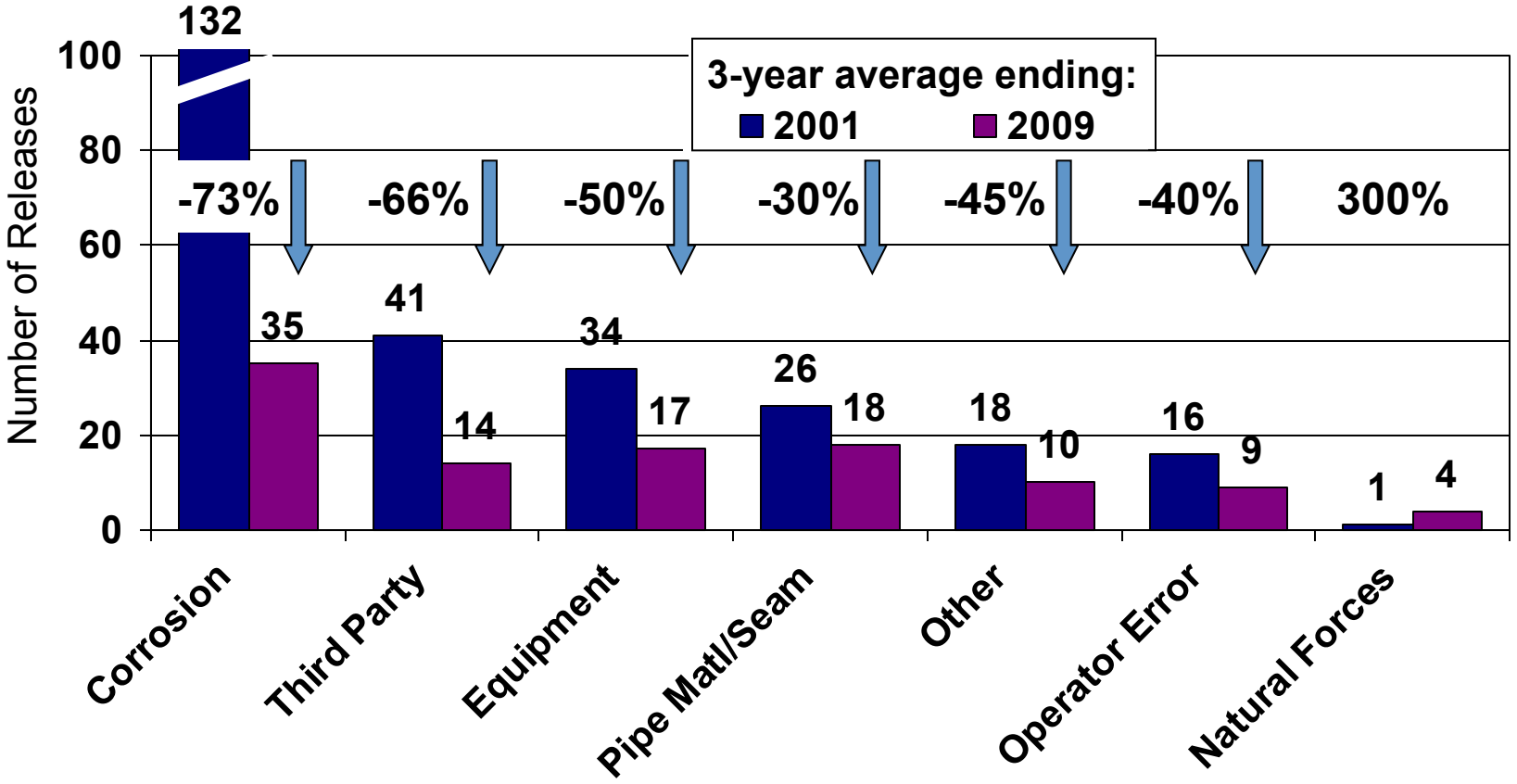
Reduction in releases along the ROW reflects diverse strategies



Source: Pipeline Performance Tracking System, a voluntary spill reporting system involving 85% of the U.S. liquids pipeline mileage

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Focus on Corrosion

- Largest cause of ROW spills (45%)
- Reduced by 73% between 1999 and 2009*, so recent share of ROW spills is 33%
- 56% are less than 5 barrels
- More important in crude oil systems than in refined product systems
- Billions $ of investment have reduced spills
  - Inspection and repair (req'd in HCAs, but elsewhere, too)
  - First 5-year cycle is completed
  - 2nd cycle now using improved technology

*3-year average 1999-2001 v 2006-2009

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Focus on Excavation Damage

- Excavation or other mechanical damage
- Diverse third parties ("them") but can't forget first and second parties ("us" – operator or its contractor)
- Not the greatest number, but the highest consequence
  - 90% occur along ROW
  - Only 7% of incidents overall, BUT
    - 15% of incidents on the ROW and 35% of incidents of 50 barrels or more on the ROW
    - 50% of fatalities; 38% of injuries
    - 38% of incidents with explosion

Source: PPTS, 1999-2009

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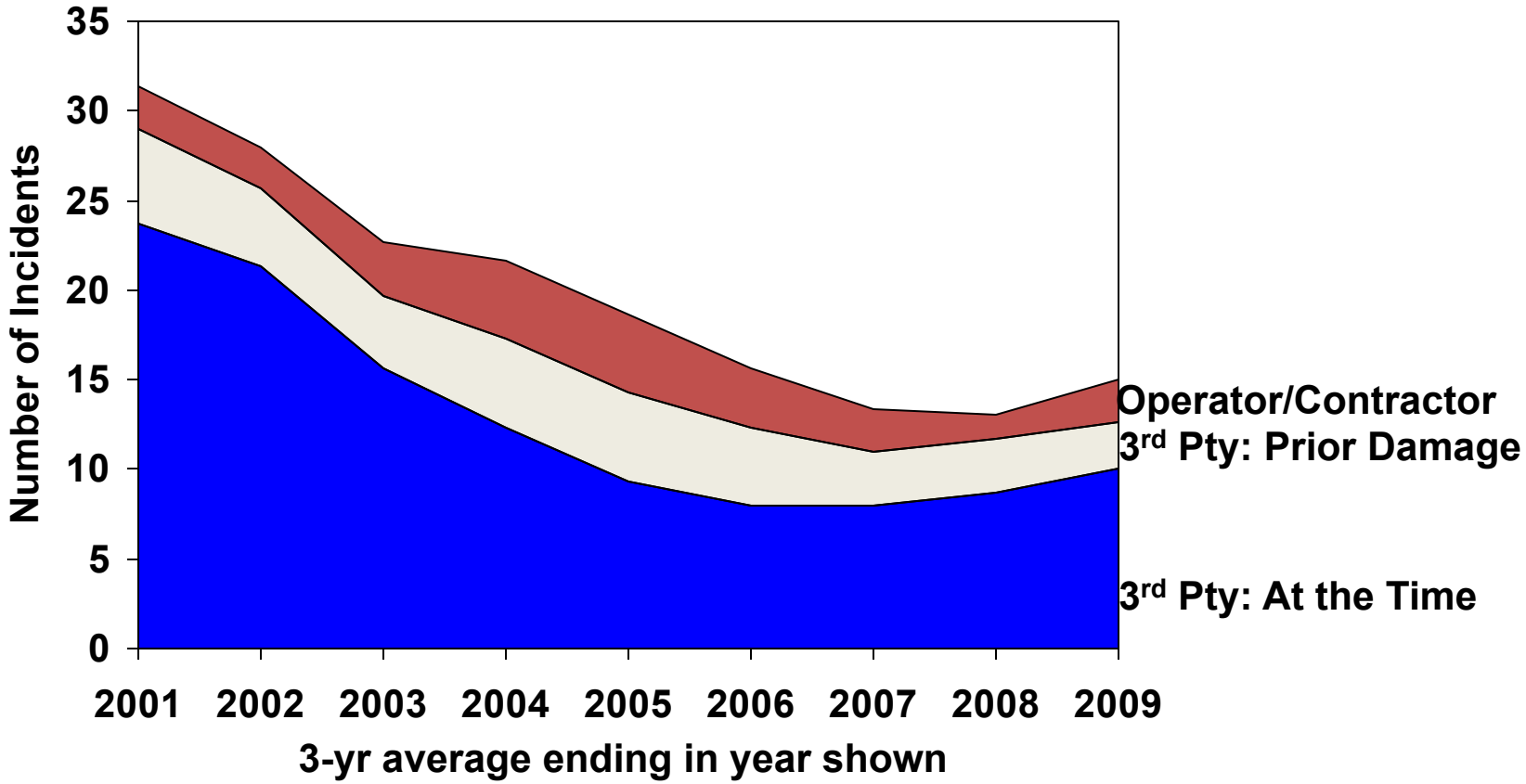
58% Decline in Third Party Hits Causing Immediate Failure



* Includes onshore pipeline incidents >=5 barrels or death, injury, fire or explosion

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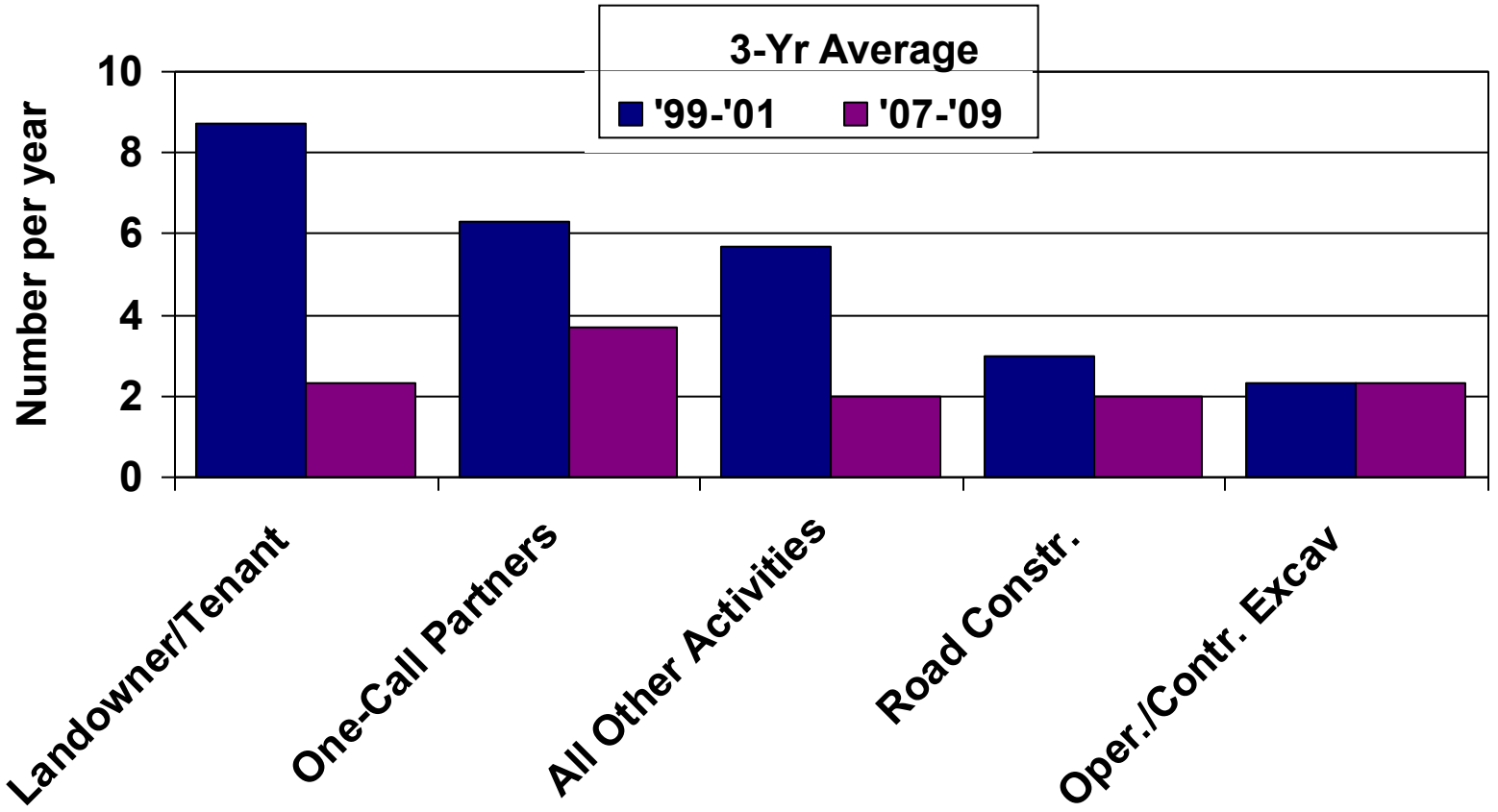
Diverse Sources of Excavation Damage; Diverse Strategies for Improvement



Landowner/Tenant is Farming Activities + Homeowners
One-Call Partners are other pipelines and underground facilities operators
All Other Activities include res/comm development, railroad, waterway, "other"

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