U.S. Department of Transportation

Pipeline and Hazardous Materials Safety Administration

Government/Industry Pipeline R&D Forum

Presentation to the Technical Track Session on Data Mining/Threat Assessment

A PHMSA Overview

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U.S. Department of Transportation

Pipeline and Hazardous Materials Safety Administration

Overview
Moving Towards PHMSA's Objective of a Data Driven Organization

- Information We Collect Currently
- Data Gaps We Identified
- PHMSA Initiatives to Improve Quantity and Quality of our Data

Information We collect

Operator Submission

U.S. Department of Transportation

Pipeline and Hazardous Materials Safety Administration

- Infrastructure Information:Annual Reports and National Pipeline Mapping Systems
- Leak Information via Annual Reports
- Accident Information via Accident Reports
- Safety Related Condition Reports
- Performance Reports in High Consequence Areas
  - HL information through Annual reports
  - Gas Transmission through biennial submission

Notice: This report is required by 49 CFR Part 191. Failure to report can result in a civil penalty not to exceed $1,000 for each violation for each day that such violation persists except that the maximum civil penalty shall not exceed $200,000 as provided in 49 USC 1678. Form Approved OMB No. 2137-0522

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

ANNUAL REPORT FOR CALENDAR YEAR 20
GAS TRANSMISSION & GATHERING SYSTEMS

INITIAL REPORT ☐
SUPPLEMENTAL REPORT ☐

INSTRUCTIONS

Important: Please read the separate instructions for completing this form before you begin. They clarify the information requested and provide specific examples. If you do not have a copy of the instructions, you can obtain one from the Office of Pipeline Safety Web Page at http://ops.dot.gov

PART A - OPERATOR INFORMATION | DOT USE ONLY

1. NAME AND COMPANY OR ESTABLISHMENT

2. LOCATION OF OFFICE WHERE ADDITIONAL INFORMATION MAY BE OBTAINED
   Number & Street
   City & County
   State & Zip Code

3. STATE IN WHICH SYSTEM OPERATES: ____ *(provide a separate report for each state in which system operates)*

4. OPERATOR'S 5 DIGIT IDENTIFICATION NUMBER

5. HEADQUARTERS NAME & ADDRESS, IF DIFFERENT
   Number & Street
   City & County
   State & Zip Code

PART B - SYSTEM DESCRIPTION — Report miles of pipeline in system at end of year.

1. GENERAL - MILES OF PIPELINE IN THE SYSTEM AT END OF YEAR THAT ARE JURISDICTIONAL TO OPS

	STEEL: CATHODICALLY PROTECTED BARE	STEEL: CATHODICALLY PROTECTED COATED	STEEL: UNPROTECTED BARE	STEEL: UNPROTECTED COATED	CAST IRON / WROUGHT IRON PIPE	PLASTIC PIPE	OTHER PIPE	TOTAL
TRANSMISSION ONSHORE								
OFFSHORE								
GATHERING ONSHORE								
OFFSHORE								
SYSTEM TOTALS								

2. MILES OF PIPE BY NOMINAL SIZE

	UNKNOWN	4" OR LESS	OVER 4" THRU 10"	OVER 10" THRU 20"	OVER 20" THRU 28"	OVER 28"	TOTAL
TRANSMISSION ONSHORE							
OFFSHORE							
GATHERING ONSHORE							
OFFSHORE							
SYSTEM TOTALS							

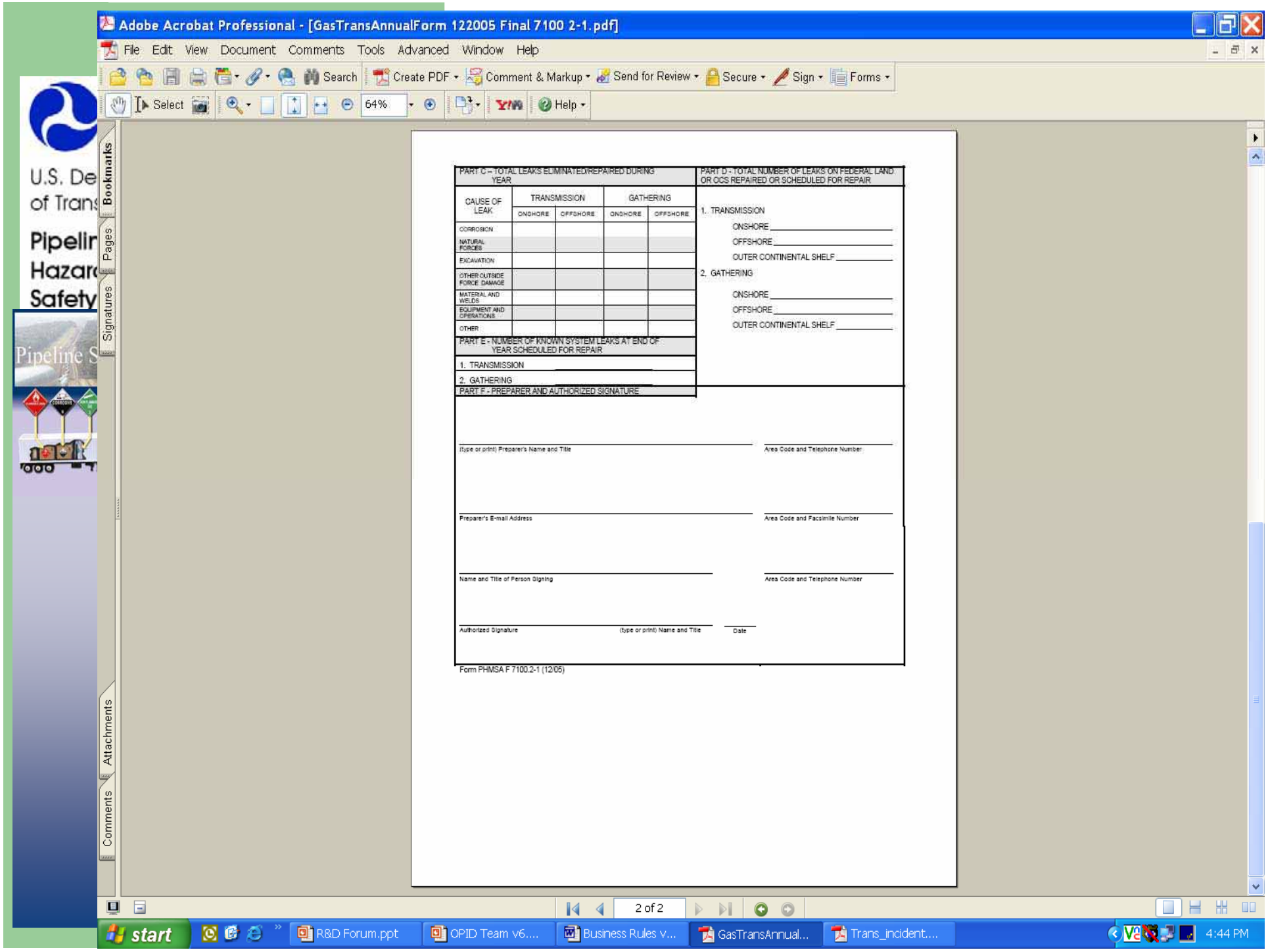
3. MILES OF PIPE BY DECADE OF INSTALLATION

	UNKNOWN	PRE-1940	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	TOTAL
TRANSMISSION ONSHORE										
OFFSHORE										
GATHERING ONSHORE										
OFFSHORE										
SYSTEM TOTALS										

4. MILES OF PIPE BY CLASS LOCATION

	CLASS 1	CLASS 2	CLASS 3	CLASS 4	TOTAL
TRANSMISSION ONSHORE					
OFFSHORE		N/A	N/A	N/A	
GATHERING ONSHORE					
OFFSHORE		N/A	N/A	N/A	
SYSTEM TOTALS					

Form PHMSA F 7100.2-1 (12/05) Continue on Next Page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PART C – TOTAL LEAKS ELIMINATED/REPAIRED DURING YEAR
CAUSE OF LEAK
TRANSMISSION ONSHORE OFFSHORE
GATHERING ONSHORE OFFSHORE
CORROSION
NATURAL FORCES
EXCAVATION
OTHER OUTSIDE FORCE DAMAGE
MATERIAL AND WELDS
EQUIPMENT AND OPERATIONS
OTHER
PART D - TOTAL NUMBER OF LEAKS ON FEDERAL LAND OR OCS REPAIRED OR SCHEDULED FOR REPAIR
1. TRANSMISSION
ONSHORE
OFFSHORE
OUTER CONTINENTAL SHELF
2. GATHERING
ONSHORE
OFFSHORE
OUTER CONTINENTAL SHELF
PART E - NUMBER OF KNOWN SYSTEM LEAKS AT END OF YEAR SCHEDULED FOR REPAIR
1. TRANSMISSION
2. GATHERING
PART F - PREPARER AND AUTHORIZED SIGNATURE
(type or print) Preparer's Name and Title
Area Code and Telephone Number
Preparer's E-mail Address
Area Code and Facsimile Number
Name and Title of Person Signing
Area Code and Telephone Number
Authorized Signature
(type or print) Name and Title
Date
Form PHMSA F 7100.2-1 (12/05)
2 of 2
start
R&D Forum.ppt
OPID Team v6....
Business Rules v...
GasTransAnnual...
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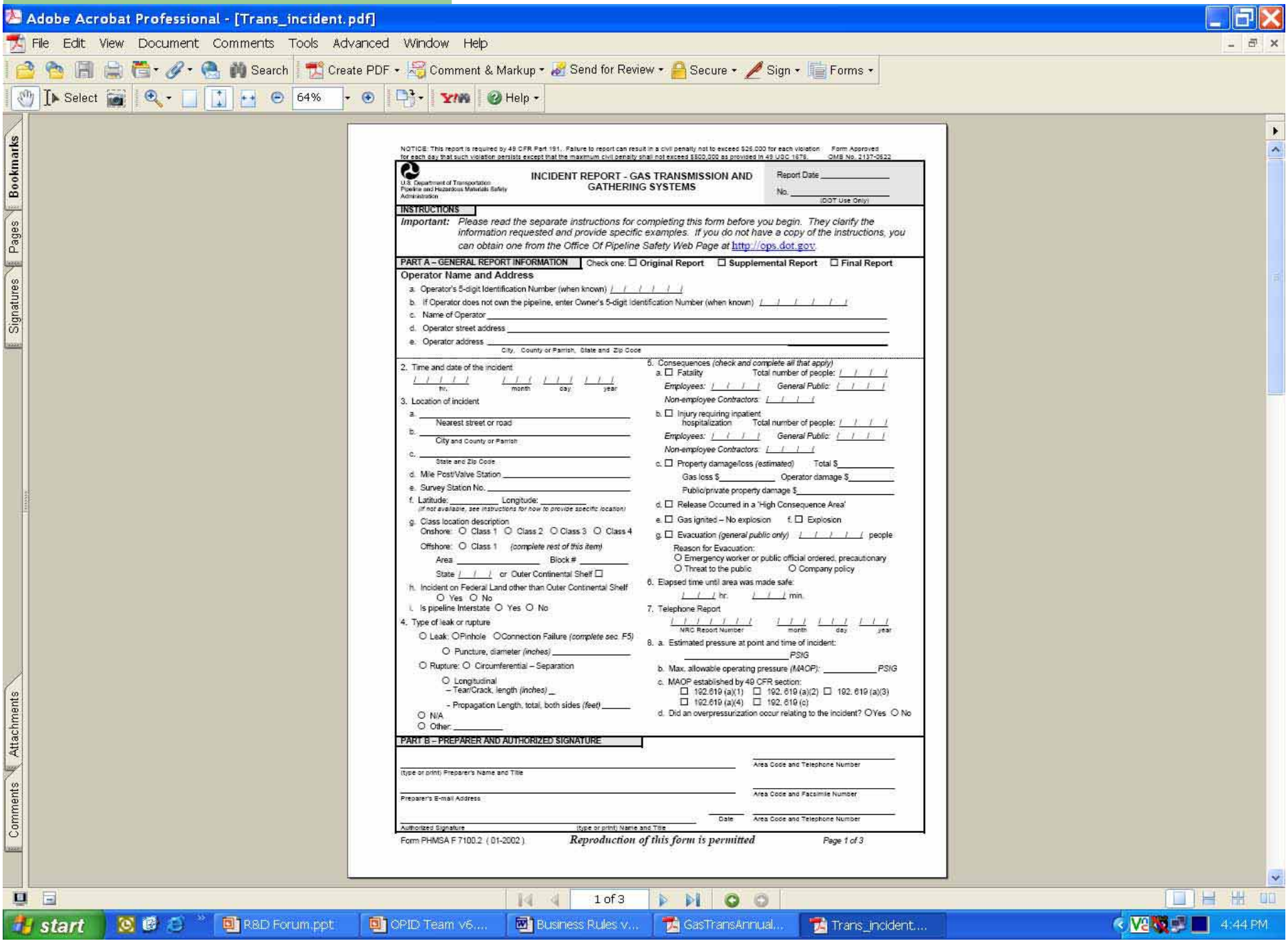
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Select 64% Help
Bookmarks Pages Signatures Attachments Comments
NOTICE: This report is required by 49 CFR Part 191. Failure to report can result in a civil penalty not to exceed $25,000 for each violation for each day that such violation persists except that the maximum civil penalty shall not exceed $500,000 as provided in 49 USC 1679.
Form Approved OMB No. 2137-0522
U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration
INCIDENT REPORT - GAS TRANSMISSION AND GATHERING SYSTEMS
Report Date
No. (DOT Use Only)
INSTRUCTIONS
Important: Please read the separate instructions for completing this form before you begin. They clarify the information requested and provide specific examples. If you do not have a copy of the instructions, you can obtain one from the Office Of Pipeline Safety Web Page at http://ops.dot.gov
PART A – GENERAL REPORT INFORMATION
Check one: ☐ Original Report ☐ Supplemental Report ☐ Final Report
Operator Name and Address
a. Operator's 5-digit Identification Number (when known)
b. If Operator does not own the pipeline, enter Owner's 5-digit identification Number (when known)
c. Name of Operator
d. Operator street address
e. Operator address
City, County or Parrish, State and Zip Code
2. Time and date of the incident
hr. month day year
3. Location of incident
a. Nearest street or road
b. City and County or Parrish
c. State and Zip Code
d. Mile Post/Valve Station
e. Survey Station No.
f. Latitude: Longitude:
(if not available, see instructions for how to provide specific location)
g. Class location description
Onshore: O Class 1 O Class 2 O Class 3 O Class 4
Offshore: O Class 1 (complete rest of this item)
Area Block #
State or Outer Continental Shelf ☐
h. Incident on Federal Land other than Outer Continental Shelf
O Yes O No
i. Is pipeline Interstate O Yes O No
4. Type of leak or rupture
O Leak: O Pinhole O Connection Failure (complete sec. F5)
O Puncture, diameter (inches)
O Rupture: O Circumferential – Separation
O Longitudinal
– Tear/Crack, length (inches)
– Propagation Length, total, both sides (feet)
O N/A
O Other:
5. Consequences (check and complete all that apply)
a. ☐ Fatality Total number of people:
Employees: General Public:
Non-employee Contractors:
b. ☐ Injury requiring inpatient hospitalization Total number of people:
Employees: General Public:
Non-employee Contractors:
c. ☐ Property damage/loss (estimated) Total $
Gas loss $ Operator damage $
Public/private property damage $
d. ☐ Release Occurred in a "High Consequence Area"
e. ☐ Gas ignited – No explosion f. ☐ Explosion
g. ☐ Evacuation (general public only) people
Reason for Evacuation:
O Emergency worker or public official ordered, precautionary
O Threat to the public O Company policy
6. Elapsed time until area was made safe:
hr. min.
7. Telephone Report
NRC Report Number month day year
8. a. Estimated pressure at point and time of incident:
PSIG
b. Max. allowable operating pressure (MAOP): PSIG
c. MAOP established by 49 CFR section:
☐ 192.619 (a)(1) ☐ 192. 619 (a)(2) ☐ 192. 619 (a)(3)
☐ 192.619 (a)(4) ☐ 192. 619 (c)
d. Did an overpressurization occur relating to the incident? OYes O No
PART B – PREPARER AND AUTHORIZED SIGNATURE
(type or print) Preparer's Name and Title
Area Code and Telephone Number
Preparer's E-mail Address
Area Code and Facsimile Number
Authorized Signature
(type or print) Name and Title
Date
Area Code and Telephone Number
Form PHMSA F 7100.2 (01-2002)
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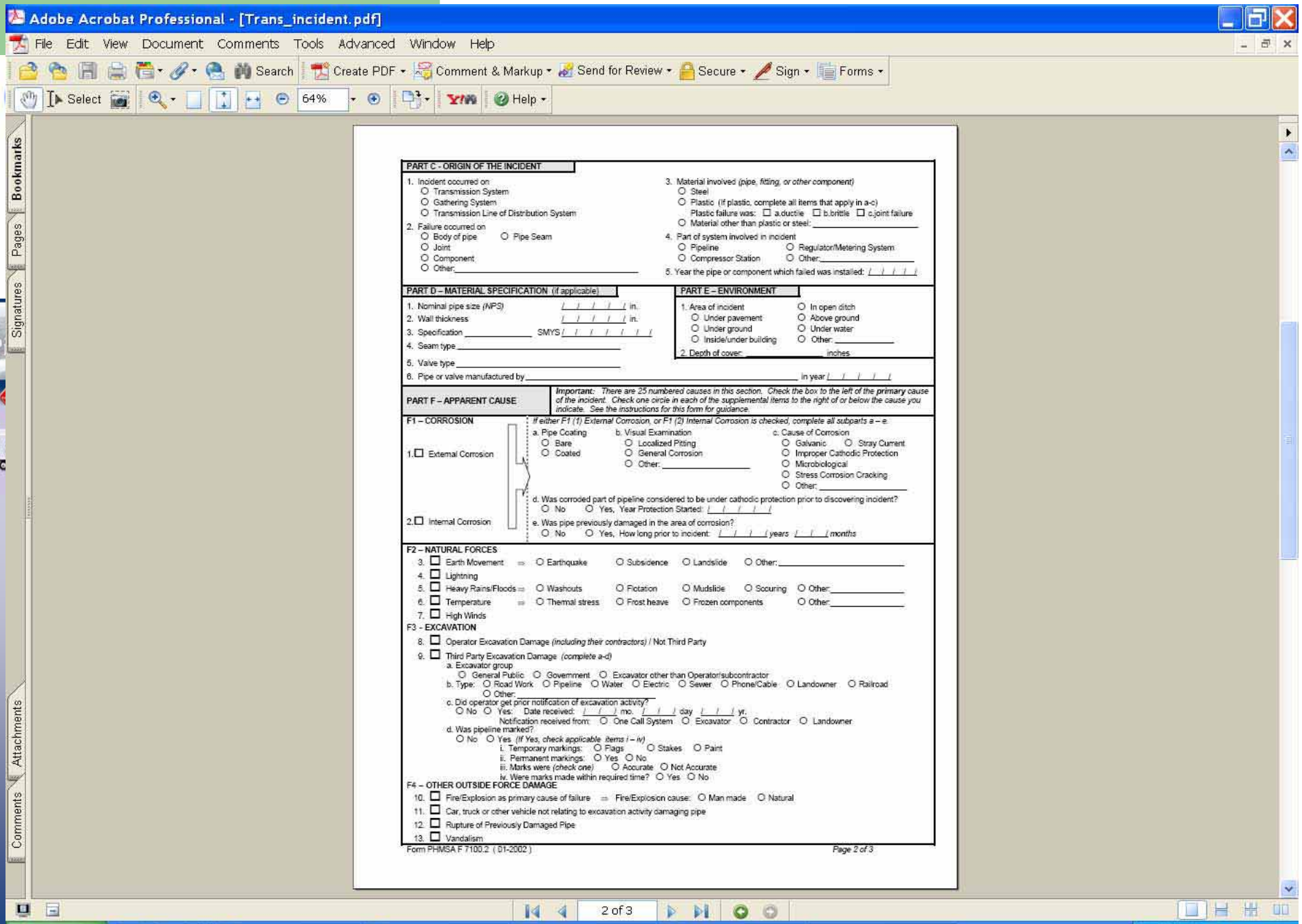
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PART C - ORIGIN OF THE INCIDENT
1. Incident occurred on
O Transmission System
O Gathering System
O Transmission Line of Distribution System
2. Failure occurred on
O Body of pipe O Pipe Seam
O Joint
O Component
O Other:
3. Material involved (pipe, fitting, or other component)
O Steel
O Plastic (If plastic, complete all items that apply in a-c)
Plastic failure was: ☐ a.ductile ☐ b.brittle ☐ c.joint failure
O Material other than plastic or steel:
4. Part of system involved in incident
O Pipeline O Regulator/Metering System
O Compressor Station O Other:
5. Year the pipe or component which failed was installed:
PART D – MATERIAL SPECIFICATION (if applicable)
1. Nominal pipe size (NPS) in.
2. Wall thickness in.
3. Specification SMYS
4. Seam type
5. Valve type
6. Pipe or valve manufactured by in year
PART E – ENVIRONMENT
1. Area of incident
O In open ditch
O Above ground
O Under water
O Under pavement
O Under ground
O Inside/under building
O Other:
2. Depth of cover: inches
PART F – APPARENT CAUSE
Important: There are 25 numbered causes in this section. Check the box to the left of the primary cause of the incident. Check one circle in each of the supplemental items to the right of or below the cause you indicate. See the instructions for this form for guidance.
F1 – CORROSION
If either F1 (1) External Corrosion, or F1 (2) Internal Corrosion is checked, complete all subparts a – e.
1. ☐ External Corrosion
2. ☐ Internal Corrosion
a. Pipe Coating
O Bare
O Coated
b. Visual Examination
O Localized Pitting
O General Corrosion
O Other:
c. Cause of Corrosion
O Galvanic O Stray Current
O Improper Cathodic Protection
O Microbiological
O Stress Corrosion Cracking
O Other:
d. Was corroded part of pipeline considered to be under cathodic protection prior to discovering incident?
O No O Yes, Year Protection Started:
e. Was pipe previously damaged in the area of corrosion?
O No O Yes, How long prior to incident: years months
F2 – NATURAL FORCES
3. ☐ Earth Movement ⇒ O Earthquake O Subsidence O Landslide O Other:
4. ☐ Lightning
5. ☐ Heavy Rains/Floods ⇒ O Washouts O Flotation O Mudslide O Scouring O Other:
6. ☐ Temperature ⇒ O Thermal stress O Frost heave O Frozen components O Other:
7. ☐ High Winds
F3 - EXCAVATION
8. ☐ Operator Excavation Damage (including their contractors) / Not Third Party
9. ☐ Third Party Excavation Damage (complete a-d)
a. Excavator group
O General Public O Government O Excavator other than Operator/subcontractor
b. Type: O Road Work O Pipeline O Water O Electric O Sewer O Phone/Cable O Landowner O Railroad
O Other:
c. Did operator get prior notification of excavation activity?
O No O Yes: Date received: mo. day yr.
Notification received from: O One Call System O Excavator O Contractor O Landowner
d. Was pipeline marked?
O No O Yes (If Yes, check applicable items i – iv)
i. Temporary markings: O Flags O Stakes O Paint
ii. Permanent markings: O Yes O No
iii. Marks were (check one) O Accurate O Not Accurate
iv. Were marks made within required time? O Yes O No
F4 – OTHER OUTSIDE FORCE DAMAGE
10. ☐ Fire/Explosion as primary cause of failure ⇒ Fire/Explosion cause: O Man made O Natural
11. ☐ Car, truck or other vehicle not relating to excavation activity damaging pipe
12. ☐ Rupture of Previously Damaged Pipe
13. ☐ Vandalism
Form PHMSA F 7100.2 (01-2002)
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OPID Team v6....
Business Rules v...
GasTransAnnual...
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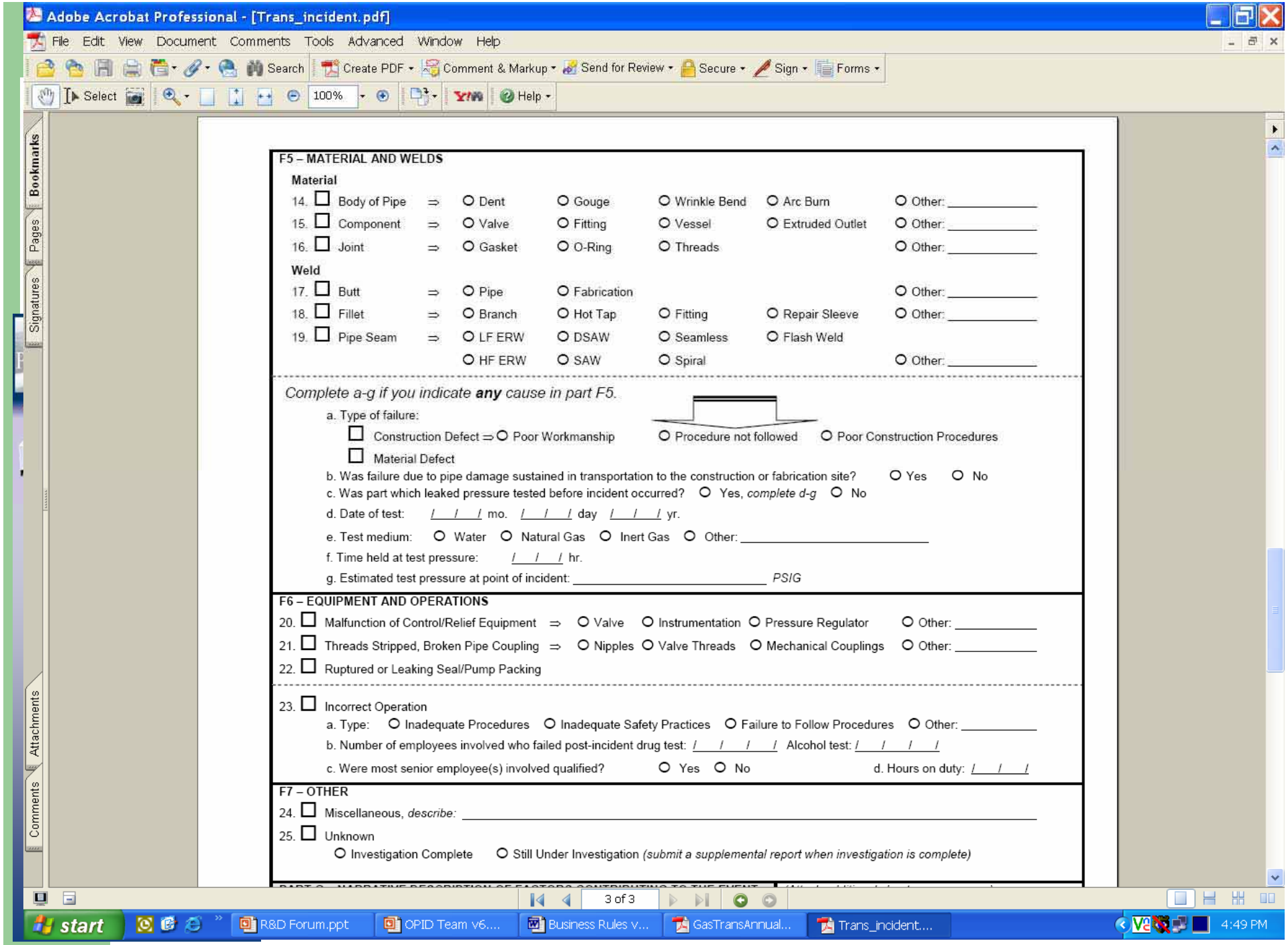
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F5 – MATERIAL AND WELDS
Material
14. Body of Pipe ⇒ Dent Gouge Wrinkle Bend Arc Burn Other:
15. Component ⇒ Valve Fitting Vessel Extruded Outlet Other:
16. Joint ⇒ Gasket O-Ring Threads Other:
Weld
17. Butt ⇒ Pipe Fabrication Other:
18. Fillet ⇒ Branch Hot Tap Fitting Repair Sleeve Other:
19. Pipe Seam ⇒ LF ERW DSAW Seamless Flash Weld
HF ERW SAW Spiral Other:
Complete a-g if you indicate any cause in part F5.
a. Type of failure:
Construction Defect ⇒ Poor Workmanship Procedure not followed Poor Construction Procedures
Material Defect
b. Was failure due to pipe damage sustained in transportation to the construction or fabrication site? Yes No
c. Was part which leaked pressure tested before incident occurred? Yes, complete d-g No
d. Date of test: / / / mo. / / / day / / / yr.
e. Test medium: Water Natural Gas Inert Gas Other:
f. Time held at test pressure: / / / hr.
g. Estimated test pressure at point of incident: PSIG
F6 – EQUIPMENT AND OPERATIONS
20. Malfunction of Control/Relief Equipment ⇒ Valve Instrumentation Pressure Regulator Other:
21. Threads Stripped, Broken Pipe Coupling ⇒ Nipples Valve Threads Mechanical Couplings Other:
22. Ruptured or Leaking Seal/Pump Packing
23. Incorrect Operation
a. Type: Inadequate Procedures Inadequate Safety Practices Failure to Follow Procedures Other:
b. Number of employees involved who failed post-incident drug test: / / / / Alcohol test: / / / /
c. Were most senior employee(s) involved qualified? Yes No d. Hours on duty: / / /
F7 – OTHER
24. Miscellaneous, describe:
25. Unknown
Investigation Complete Still Under Investigation (submit a supplemental report when investigation is complete)
3 of 3
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Business Rules v...
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Pipeline and Hazardous Materials Safety Administration

Information We Collect

PHMSA Internal Reports

- Through Inspections
- Through Accident Investigations
- Through Compliance

New View of Our Safety Statistics

http://primis.phmsa.dot.gov/comm/reports/psi.html

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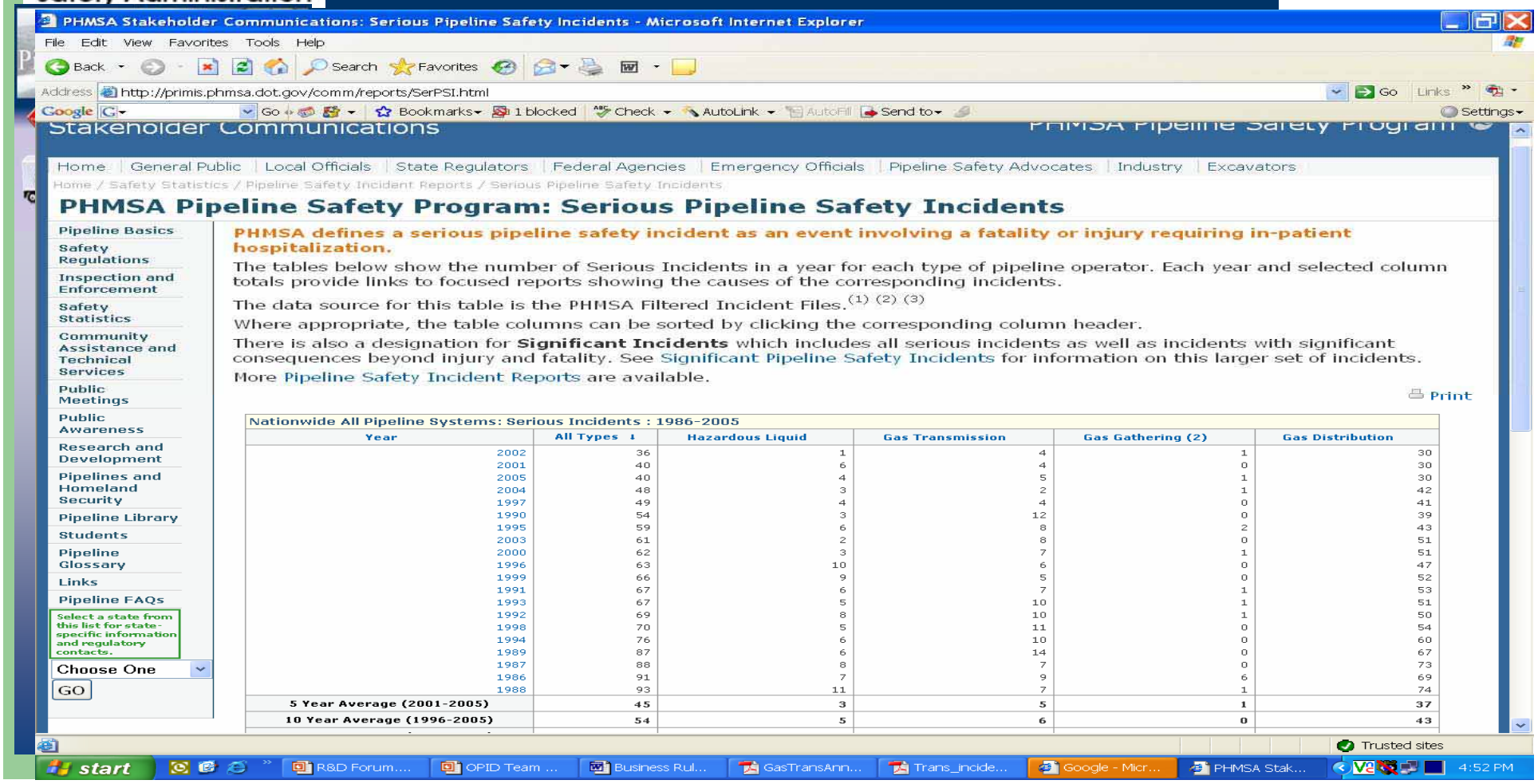
Pipeline and Hazardous Materials Safety Administration



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Analysis We would Like to Perform Risk Assessment By System (Pipe) and By Operator

- Assessing Risks at the State level;
  - Normalizing incident trend;
  - Resource planning by State and Federal pipeline safety program managers;
- Detecting Leading Indicators of safety issues;
  - Improved info on reported leaks on annual reports expanding to leaks by material, not just by cause;
- Identifying Human fatigue caused incidents;
- Anticipating/Minimizing Service Interruptions;
  - Anticipating emergency response to significant events like hurricanes or other large scale disasters;
  - Streamlining Pipeline Repair Permits;
  - Creating categorical exclusions where pre-approved processes can be used to help expedite permit approvals;

Steps We are Taking to Improve Data Quality

U.S. Department of Transportation

Pipeline and Hazardous Materials Safety Administration

- Cleaning up historical data
  - ✓ Minimizing the Occurrence of Duplicate Reports
  - ✓ Re-categorizing the Cause Codes
  - ✓ Coordinating with NTSB reports and Regional review Team to request supplemental reports when necessary
- Regional Review Team review the quality of the accident information and get in touch with State/Operator
- All PHMSA-OPS databases are now under one platform
- Operator Id – a work in progress
- Operator Registry
- One Rule

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Pipeline and Hazardous Materials Safety Administration

Government/Industry Pipeline R&D Forum

A Presentation to the Technical Track Session on Data Mining/Threat Assessment

Current Data Mining/Analysis Challenges

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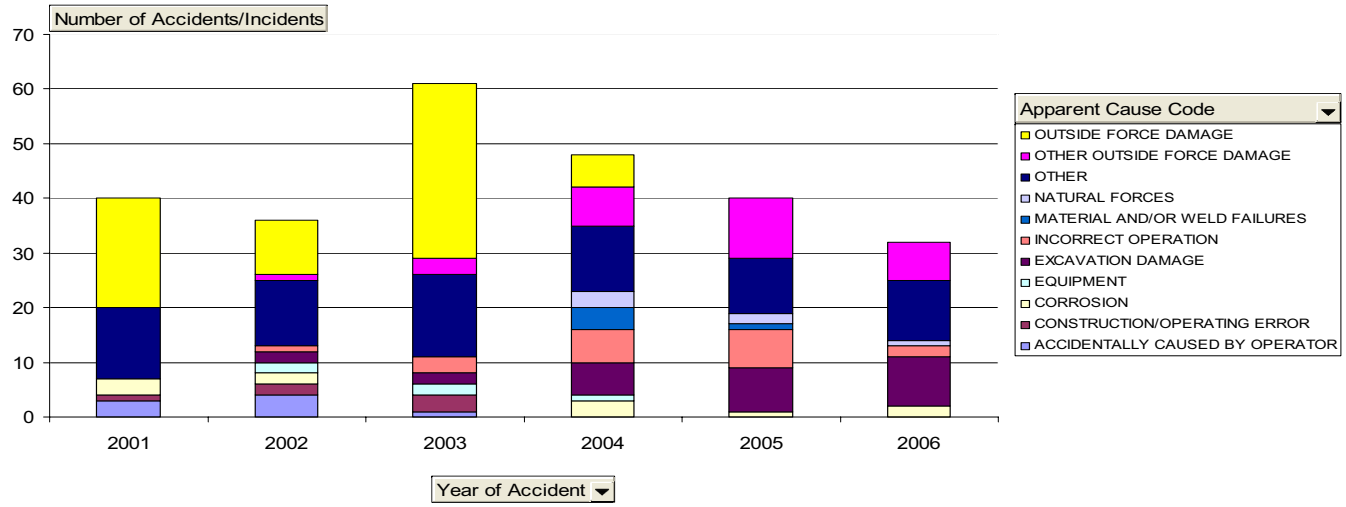
Pipeline and Hazardous Materials Safety Administration

Safety Performance Measure

System (All) | Name of Operator (All) | State of Accident (All) | Region (All) | Death or Injure? Yes

Safety Performance Goal
Number of Accidents/Incidents with Death and/or Injuries
2006 Target 43
2006 Actual 32
Data as of 01/17/2007



Source: PHMSA Gas Incident and Hazardous Liquid Accident Reports
Data as of January 2007

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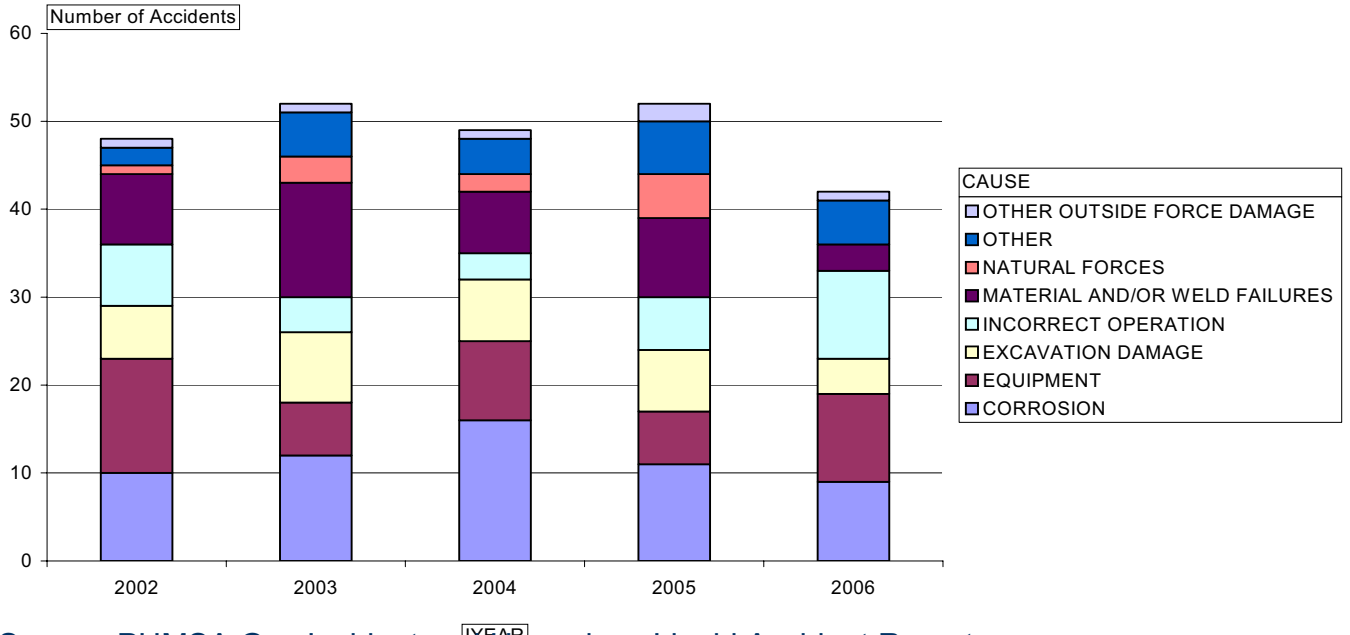
Environmental Performance Measure

Significant Accident? (All) | AdjDamages Significant Accident? (All) | HCA or Not 1 | Spill >= 5 1 | IREGION (All) | ACSTATE (All) | offshore? (All) | NAME (All)

Environmental Performance Measure
Number of Accidents (5 barrels or More) in HCAs
2006 Current - 42
Data as of 01/17/2007



Source: PHMSA Gas Incident and Hazardous Liquid Accident Reports
Data as of January 2007

Infrastructure Information From Annual Reports

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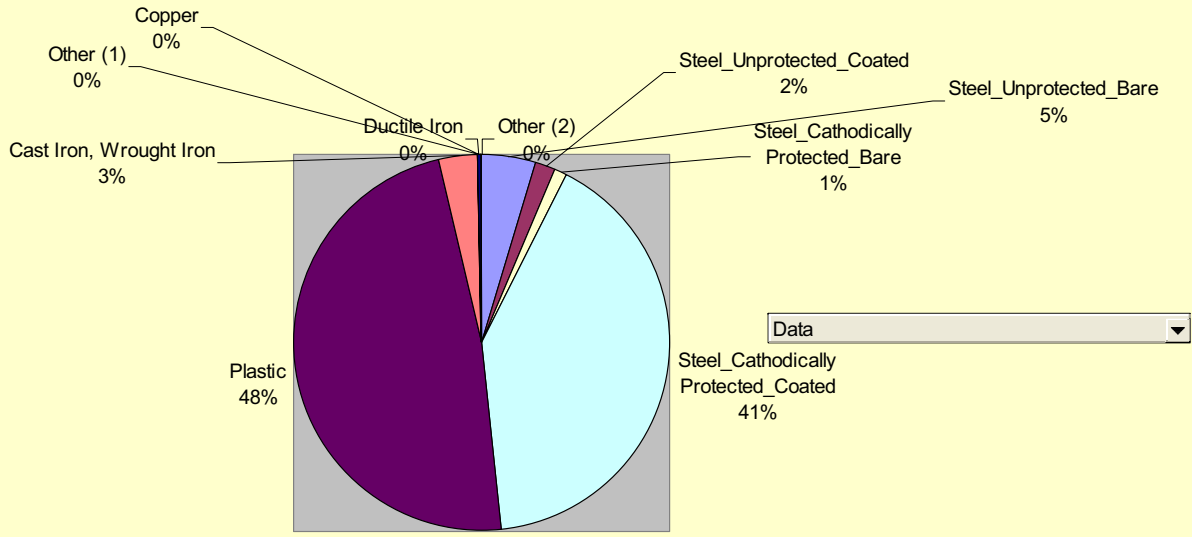
STOP (All)

Material Characteristics of Distribution Main Miles
2005 Distribution Annual Reports



Source: PHMSA Gas Distribution 2005 Annual Reports
Data as of January 2007

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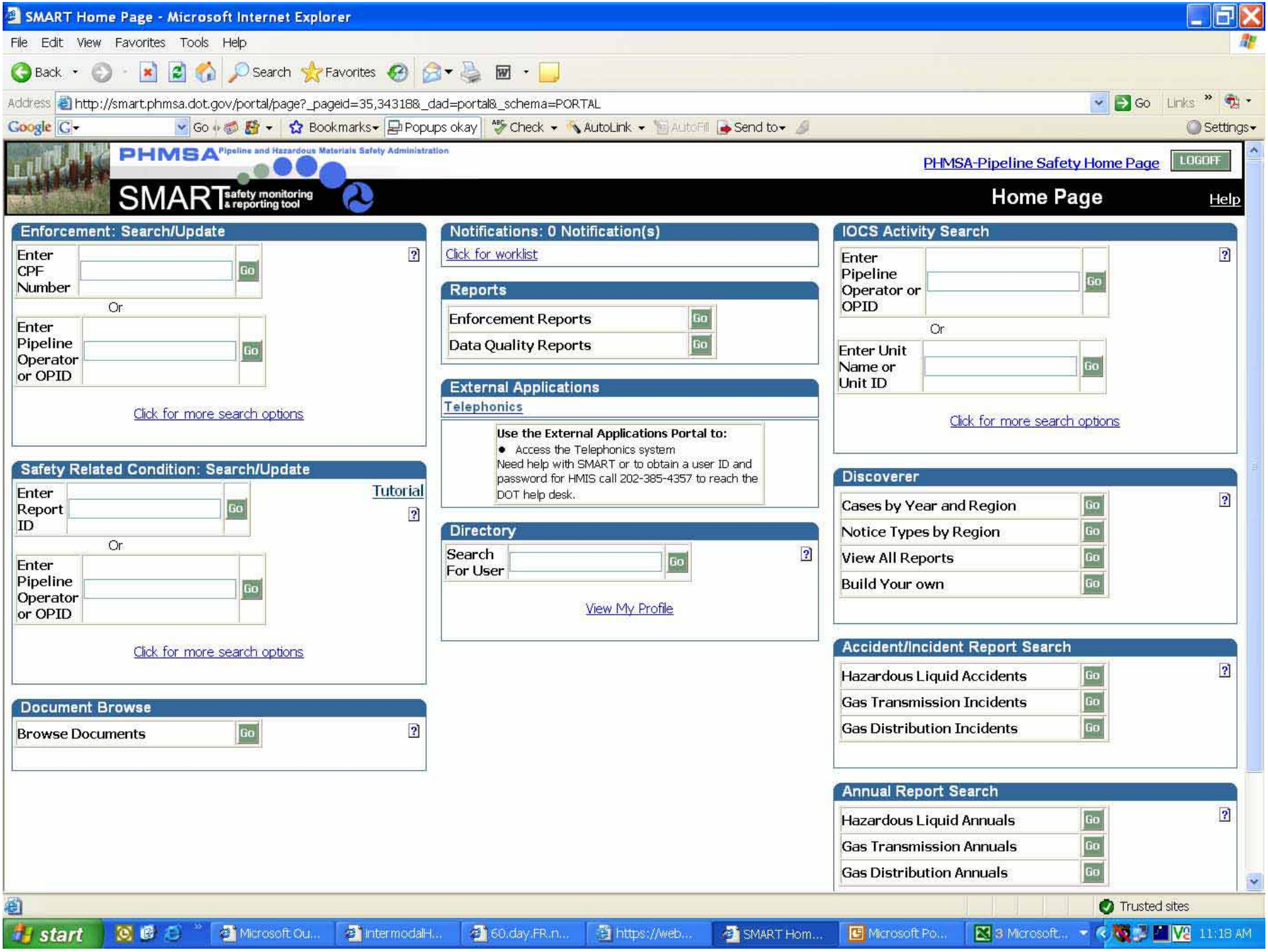
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Google Go Bookmarks Popups okay Check AutoLink AutoFill Send to Settings
PHMSA Pipeline and Hazardous Materials Safety Administration
SMART safety monitoring & reporting tool
PHMSA-Pipeline Safety Home Page
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Or
Enter Pipeline Operator or OPID
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Reports
Enforcement Reports
Go
Data Quality Reports
Go
External Applications
Telephonics
Use the External Applications Portal to:
• Access the Telephonics system
Need help with SMART or to obtain a user ID and password for HMIS call 202-385-4357 to reach the DOT help desk.
Directory
Search For User
Go
View My Profile
IOCS Activity Search
Enter Pipeline Operator or OPID
Go
Or
Enter Unit Name or Unit ID
Go
Click for more search options
Discoverer
Cases by Year and Region
Go
Notice Types by Region
Go
View All Reports
Go
Build Your own
Go
Accident/Incident Report Search
Hazardous Liquid Accidents
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Challenges to Track Operator's Performance or Pipeline System's Performance

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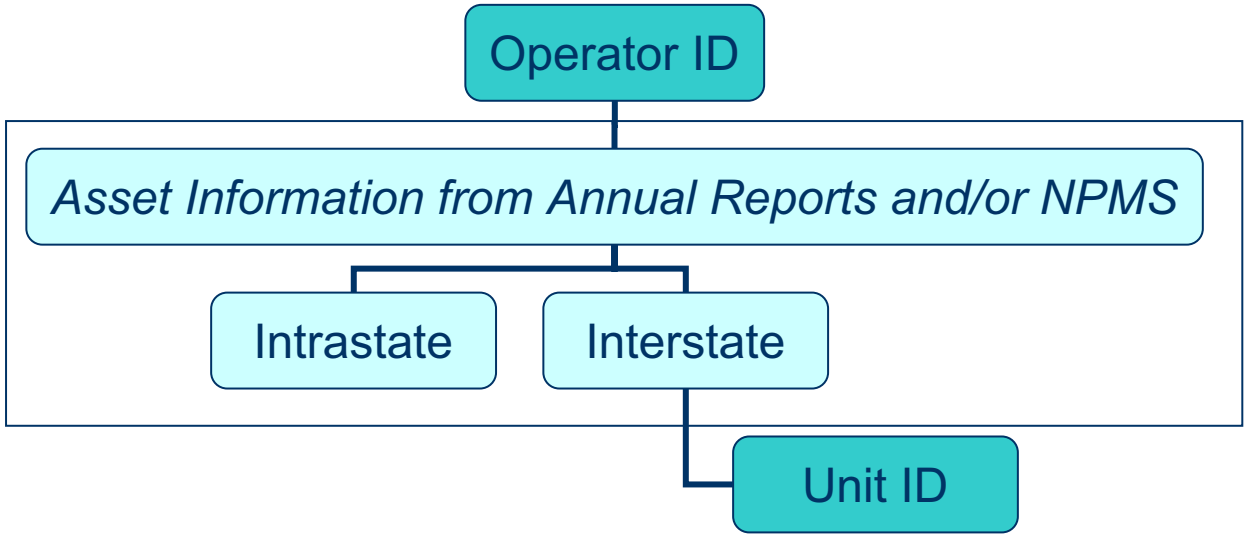

What is an OPID? Operator ID is an internal DOT number to identify and track operator activities over time and across PHMSA databases

What is an Unit ID? An internal DOT number to identify inspection on a particular pipe – Inspection Units

Data Visualization – A quick way to check for operator performance

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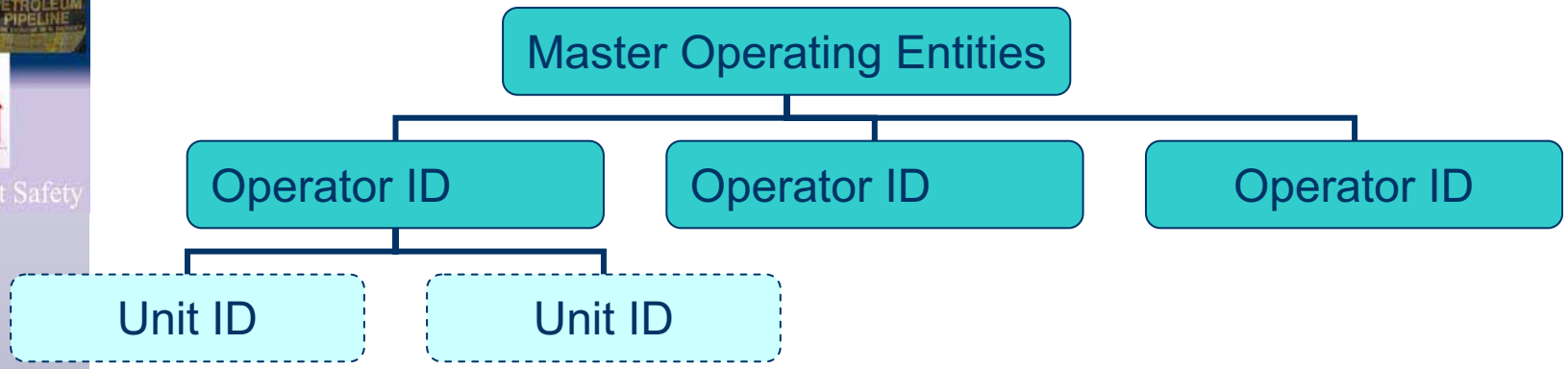

- Current database has 8,800 Operator ID
- We eliminated 2/3 – identified about 2,590 “active” operators
- We grouped 445 Operator IDs among 48 or less Master Operating Entities

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Findings that may be of use for future analysis…

- Liquid: 89% of the assets are operated by 27 Companies
  - 20 Large Companies (MOE) operate 73% of mileage another 7 companies (one OPID for each operator) operate another 16%
- Transmission: 84% of the assets are operated by 35 Companies
  - 18 Large Companies (MOE) operate 62% another 17 operate 22%
- Distribution: 80% of the assets are operated by 63 Companies

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We also found out that…

- 2,060 OPIDs submitted annual reports
- 133 OPIDs have Public Awareness but no annual reports
- 599 OPIDs have Annual reports but no Public Awareness
- 112 OPIDS have either NPMS or Annual reports
- 416 OPIDs are included in this round solely because they have either NPMS or Accident or IOCS inspection units

Leaks Repaired in Natural Gas Distribution Systems PHMSA Annual Reports Data 1985-2005

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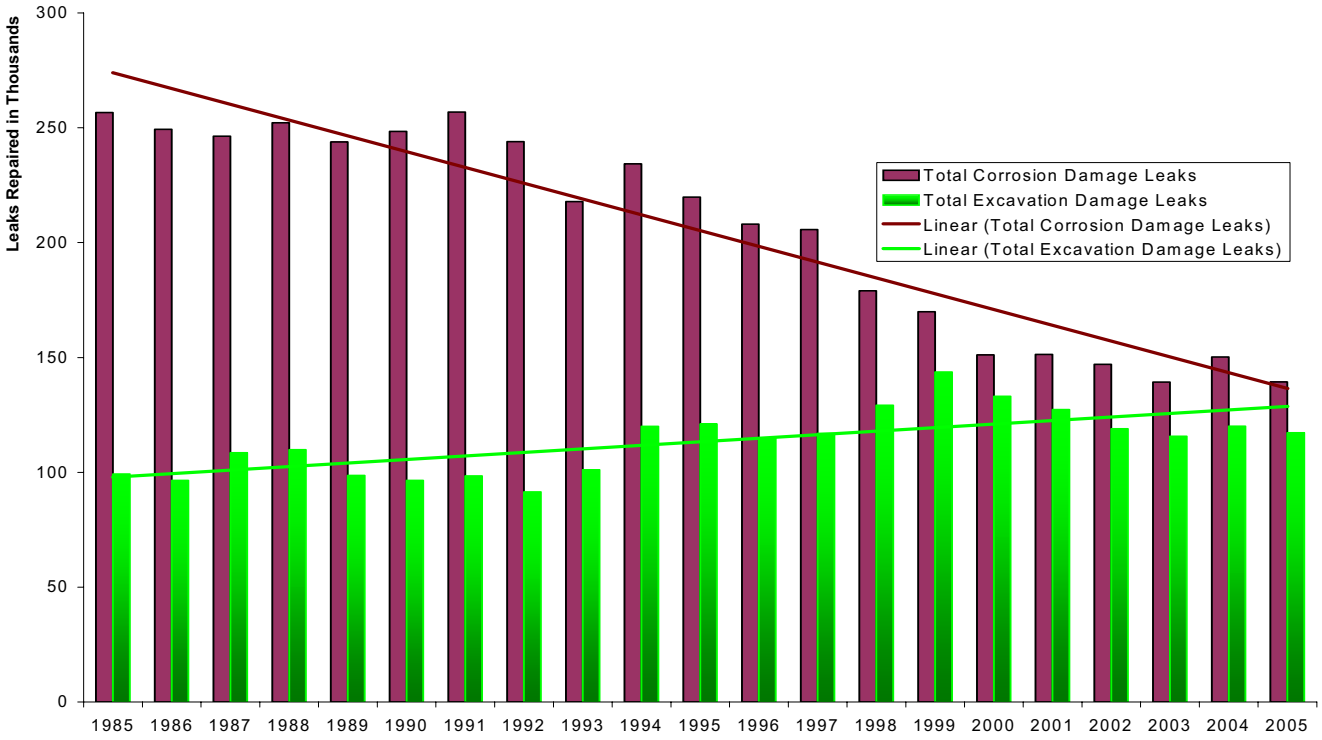
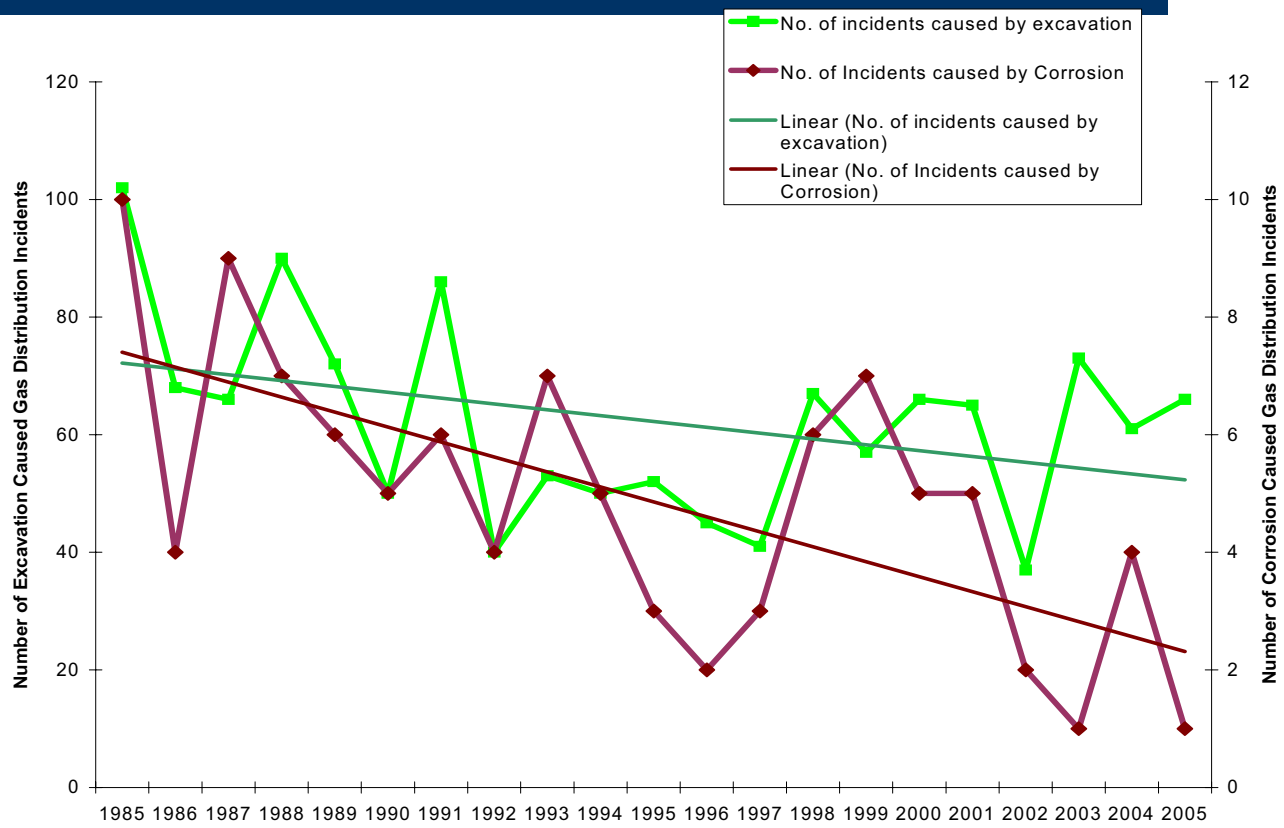


Source: PHMSA Gas Distribution Annual Reports
Data as of January 2007

Gas Distribution Systems
PHMSA Natural Gas Distribution Incident Data 1985-2005

U.S. Department of Transportation

Pipeline and Hazardous Materials Safety Administration



Source: PHMSA Gas Distribution Incident Reports – Chart based on all reported incidents
Data as of January 2007

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Next Steps on Data Mining

- Redesigning Annual and Incident Reports to consistently collect information across different systems
- Identifying new data sources/needs
- Using data for early warning