



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



# High Profile Accidents and the Effect on the Industry



**2014 ND/SD TQ Pipeline Safety**  
***April 2, 2014***

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# Topics for Today

- **High Profile Accidents**
- **San Bruno**
- **What Went Wrong**
- **What Caused the Accident**
- **Recommendations by NTSB**
- **Rules Developed or being Developed**
- **Be Involved - Calendar**



# High Profile Accidents

- **Marshall, Michigan (Federally Regulated)**
  - Major Crude Oil Spill Dramatically Impacted Several Communities in Michigan
- **Allentown, Pennsylvania (State Regulated)**
  - Cast Iron, low pressure
- **Excavation Damage Fatalities (State Regulated)**
  - Texas, North Dakota, Georgia – to name a few
- **Yellowstone River; Billings, Montana (Federally Regulated)**
  - Significant Oil Spill near Billings, MT
- **Bison Pipeline; Rural Wyoming (Federally Regulated)**
  - Newly constructed natural gas pipeline



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# Sissonville, West Virginia





# San Bruno, CA





# Executive Summary

- **On September 9, 2010, 6:11 p.m. a 30-inch-diameter segment of an intrastate natural gas transmission pipeline, ruptured.**
- **The rupture produced a crater about 72 feet long by 26 feet wide.**
- **The section 28 feet long and weighed 3,000 pounds, was found 100 feet south of the crater.**
- **Estimated 47.6 million standard cubic feet of natural gas was released.**
- **Natural gas ignited, fire that destroyed 38 homes and damaged 70.**
- **Eight people were killed, many were injured, and many more were evacuated from the area.**



## Probable Cause

### **(1) Inadequate Quality Assurance and Quality Control**

- In 1956 during its Line 132 relocation project, allowed the installation of a substandard and poorly welded pipe section with a visible seam weld flaw**
- That over time grew to a critical size,**
- During a pressure increase stemming from poorly planned electrical work at the Milpitas Terminal**
- Causing the pipeline to rupture**

**(2) Inadequate pipeline integrity management program, which failed to detect and repair or remove the defective pipe section.**



## Contributing to the accident

- **Exemptions of existing pipelines from the regulatory requirement for pressure testing, which likely would have detected the installation defects.**
- **CPUC's failure to detect the inadequacies of PG&E's pipeline integrity management program.**
- **Contributing to the severity of the accident were**
  - **Lack of either automatic shutoff valves or remote control valves on the line and**
  - **Flawed emergency response procedures and delay in isolating the rupture to stop the flow of gas.**





# Previously Issued Recommendations

- **To the Pipeline and Hazardous Materials Safety Administration:**
  - **Three 10-1, 11-1, 11-2**
- **To the California Public Utilities Commission:**
  - **Three**
- **To the Pacific Gas and Electric Company:**
  - **Four**



## Number One:

- **Immediately inform the pipeline industry of the circumstances leading up to and the consequences of the September 9, 2010, pipeline rupture in San Bruno, California, of**
- **National Transportation Safety Board's urgent safety recommendations to Pacific Gas and Electric Company, so**
- **Pipeline operators can proactively implement corrective measures as appropriate for their pipeline systems. (P-10-1) (Urgent)**



## Number Two

- **Issue guidance to operators of natural gas transmission and distribution pipelines and hazardous liquid pipelines**
- **Importance of sharing system-specific information**
  - **pipe diameter, operating pressure, product transported, and potential impact radius**
- **Emergency response agencies of the communities and jurisdictions in which those pipelines are located. (P-11-1)**



## Number Three

- **Issue guidance to operators of natural gas transmission and distribution pipelines and hazardous liquid pipelines**
- **Importance of control room operators(P-11-2)**
  - **When a possible rupture of any pipeline is indicated.**
  - **immediately and directly notifying the 911 emergency call center(s).**
  - **Communities and jurisdictions in which those pipelines are located**



## **ADB 11-01 (P10-1, P11-01)**

- **Establishing MAOP or MOP using Record Evidence**
  - Confirm records are reliable, Diligently Search, review and scrutinize ALL documents, records shall be traceable, verifiable, and complete
  - If such a document and records search, review, and verification cannot be satisfactorily completed, the operator cannot rely on this method for calculating MAOP or MOP.
- **Performing Risk Identification, Assessment, Data Accuracy, Prevention, and Mitigation**
  - Risk and Threat Identification
  - Risk Assessment
  - Data Accuracy
  - Risk Mitigation and Prevention



## **ADB 2012-09**

- **Notify the PSAP(s), 9-1-1 emergency call centers, or the local equivalent, of indications of a pipeline facility emergency.**
- **Such indications may include an unexpected drop in pressure, unanticipated loss of supervisory control and data acquisition communications, or reports from field personnel.**
- **Pipeline facility operators immediately contact the PSAP for the communities and jurisdictions in which those indications occur, to notify local responders and implement a coordinated emergency response.**
  - **Pipeline facility operators promptly call the appropriate PSAP, to as many jurisdictions as is necessary.**
  - **Direct-inbound ten-digit number must be used PSAP, call to 9-1-1 would be routed to caller's location.**



## **New Recommendations**

- **U. S. Secretary of Transportation – 4**
- **PHMSA – 13**
- **Governor of the State of California – 1**
- **CPUC -- 2**
- **Operator – 8**
- **AGA -- 1**



## **NTSB P-11-8**

- **Require operators to provide system-specific information about their pipeline systems to the emergency response agencies of the communities and jurisdictions in which those pipelines are located. [Supersedes Recommendation P-11-1] Previous Number 2**
- **ADB 10-8 issued 11-3-2010**
- **Operators must make their pipeline emergency response plans available to local emergency response officials.**
- **PHMSA recommends that operators provide their emergency response plans to officials through their required liaison and public awareness activities.**





## **NTSB P-11-9**

- **Require operators to ensure that their control room operators immediately and directly notify the 911 emergency call center(s) where those pipelines are located when a possible rupture of any pipeline is indicated. [Supersedes Recommendation P-11-2]**
- **ADB 12-09 issued 10-11-12**
- **Operators should immediately and directly notify the Public Safety Access Point (PSAP) that serves the communities and jurisdictions in which those pipelines are located when there are indications of a pipeline facility emergency.**



## **NTSB P-11-10**

- **Require that all operators of natural gas transmission and distribution pipelines**
- **Equip their supervisory control and data acquisition systems with tools to assist in recognizing and pinpointing the location of leaks, including line breaks**
- **tools could include (real-time leak detection system and appropriately spaced flow and pressure transmitters along covered transmission lines)**
- **PHMSA accelerated the new Control Room Management rule effective date from February 1, 2013 to October 1, 2011. This rule covers:**



## NTSB P-11-11

- **Amend Title 49 Code of Federal Regulations 192.935(c) to directly require that automatic shutoff valves or remote control valves in high consequence areas and in class 3 and 4 locations be installed and spaced at intervals that consider the factors listed in that regulation.**
- **Advance Notice of Proposed Rulemaking August 25, 2011 for 49 CFR Part 192, This notice included:**
- **Non-Integrity Management (non-IM) requirements, PHMSA is considering: The need for revised mainline valve (MLV) regulations for new or existing pipelines to include MLV spacing, and remote operated or automatically-operated MLVs**
- **Under Review**



## **NTSB P-11-12**

- **Amend 49 CFR 199.105 and 49 CFR 199.225 to eliminate operator discretion with regard to testing of covered employees. Require drug & alcohol testing of each employee whose performance cannot be completely discounted as a contributing factor.**
- **Post-accident testing regulations for drug & alcohol already contain the language recommended**
- **§ 199.105 Drug tests required - Each operator shall conduct the following drug tests for the presence of a prohibited drug:**
- **§ 199.225 Alcohol tests required - Each operator shall conduct the following types of alcohol tests for the presence of alcohol:**



## **NTSB P-11-13**

- **Issue immediate guidance clarifying the need to conduct post-accident drug and alcohol testing of all potentially involved personnel despite uncertainty about the circumstances of the accident.**
- **Publish Advisory Bulletin reminding operators of the requirement for post-accident testing and encouraging them to apply the “could not have contributed to the accident” determination sparingly. Include in the Advisory Bulletin a comparison of the CY 2010 incident/accident report data to DAMIS data to assess consistency of operator post-accident testing reporting to PHMSA.**



## **P-11-14 / P-11-15 / P11-17**

- **Amend 192.619 to delete the grandfather clause and require that all gas transmission pipelines constructed before 1970 be subjected to a hydrostatic pressure test that incorporates a spike test.**
- **Amend Part 192 so that manufacturing- and construction-related defects can only be considered stable if a gas pipeline has been subjected to a post-construction hydrostatic pressure test of at least 1.25 times the MAOP**
- **Require that all natural gas transmission pipelines be configured so as to accommodate in-line inspection tools, with priority given to older pipelines.**



## “Grandfathered” Pipe & Related Issues

- **PSA of 2011 - §23(a) 60139(d) mandate “Testing Regulations”** - pressure testing or alternative equivalent means such as ILI program for all Gas Transmission pipe (Class 3, 4 and all HCAs) not previously tested;
- **NTSB P-11-14 “Delete Grandfather Clause”** - recommends all grandfathered pipe be pressured tested, including a “spike” test;
- **NTSB P-11-15 “Seam Stability”** - recommends pressure test to 1.25 x MAOP before treated latent manufacturing and construction defects as “stable.”
- **NTSB P-11-17 “Piggable Lines”** - Configure all lines to accommodate smart pigs, with priority given to older lines



## Regulatory Happenings

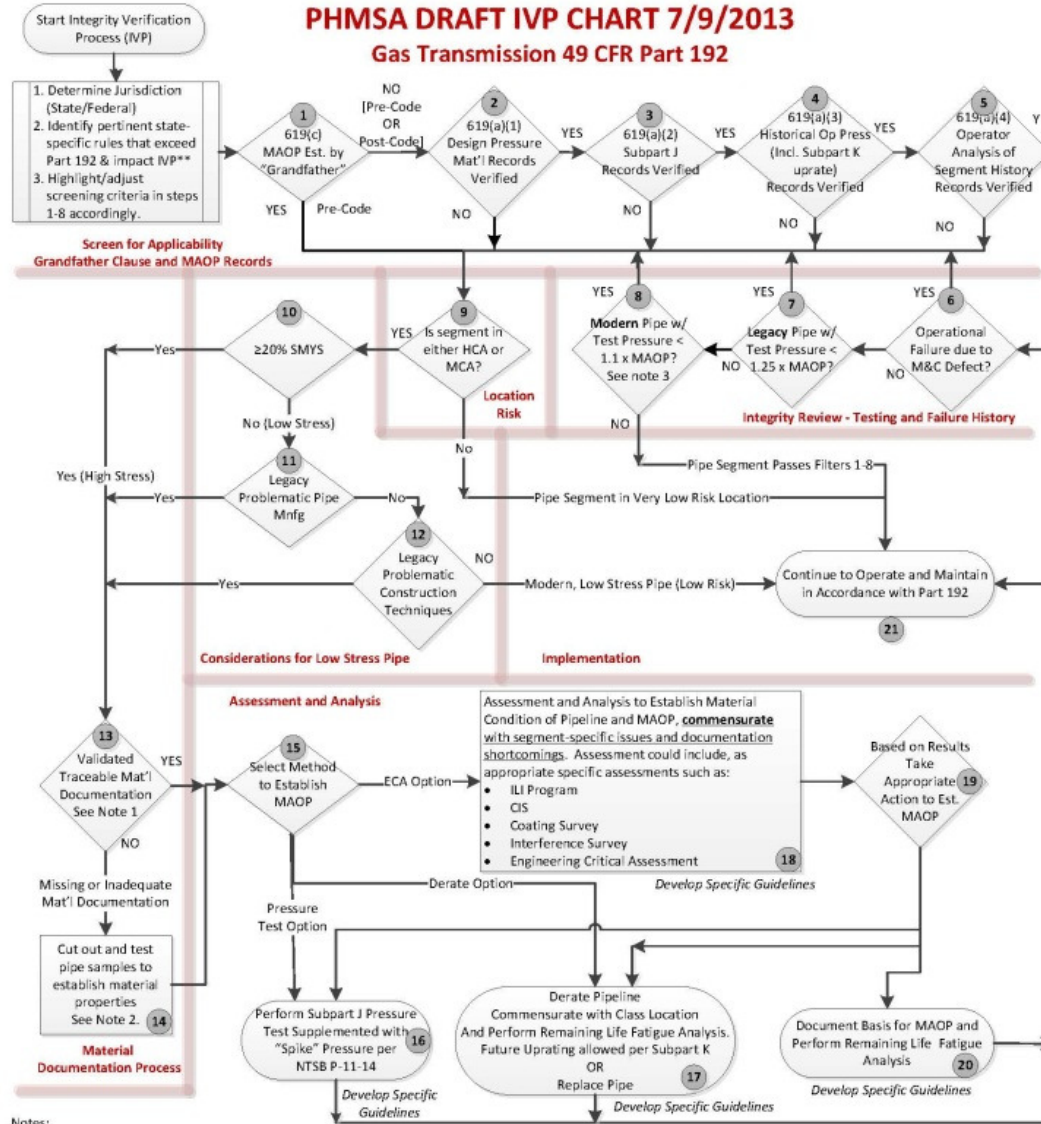
- **In November of 2010, with the publication of the “One Rule”, we revised or created the following forms: GT Annual; HL Annual; LNG Annual; LNG Incident**
- **In December 2012 we revised the Gas Transmission Annual Report to collect additional information to facilitate our evaluation of recent congressional mandates and NTSB recommendations related to:**
  - **Grandfather clause**
  - **Piggability of lines**
  - **MAOP Verification**





# Integrity Verification Process

- **Similar to Fitness for Service - “Quantitative engineering evaluation to determine if equipment is safe and reliable to operate at specific conditions during a determined time frame”**
- **May be useful in determining material strength of previously untested gas transmission pipelines (Act mandate).**
- **OPS Workshop August 7, 2013**



PROPOSED DEADLINES FOR COMPLETING INTEGRITY VERIFICATION								
Location	≥ 50% SMYS		20 – 50% SMYS		< 20% SMYS		Modern	na
	Legacy	Modern	Legacy	Modern	Legacy	Modern		
HCA	TBD	TBD	TBD	TBD	TBD	TBD	TBD	na
MCA Class 4	TBD	TBD	TBD	TBD	TBD	TBD	TBD	na
MCA Class 3	TBD	TBD	TBD	TBD	TBD	TBD	TBD	na
MCA Class 2	TBD	TBD	TBD	TBD	TBD	TBD	TBD	na
MCA Class 1	TBD	TBD	TBD	TBD	TBD	TBD	TBD	na

\*\*Some state requirements exceed Part 192. For example:

- Pressure test at 150% MAOP to establish MAOP, or
- All gas transmission (GT) to be classified and constructed to Class 4 requirements, or
- Define as GT if MAOP>125 psig, etc.





## **NTSB P-11-16**

- **Assist the California Public Utilities Commission in conducting the comprehensive audit recommended in Safety Recommendation [19].**
- **PHMSA participated with the CPUC in April of 2011 for the review of the Risk Assessment and Threat Identification portion of their Gas Integrity Management Audit of PG&E.**
- **PHMSA provides support in the application of the integrity management regulations.**
- **PHMSA is also supporting upcoming Public Awareness evaluation of PG&E.**
- **PHMSA will support the CPUC's conduct of the safety audits mentioned in the NTSB recommendation.**



## NTSB P-11-18

- **Revise your integrity management inspection protocol**
  - (1) Incorporate a review of meaningful metrics;
  - (2) require auditors to verify that the operator has a procedure in place for ensuring the completeness and accuracy of underlying information;
  - (3) require auditors to review all integrity management performance measures reported to the Pipeline and Hazardous Materials Safety Administration and compare the leak, failure, and incident measures to the operator's risk model; and
  - (4) require setting performance goals for pipeline operators at each audit and follow up on those goals at subsequent audits.
- **PHMSA evaluate integrity management program, refine integrity management inspection protocols, and revise our training to address the NTSB concerns.**
- **Develop an ANPRM for setting performance goals for operators based on previous integrity management inspections.**



## **IMP 1.0 -> IMP 2.0**

- **IMP 1.0 – good progress, but plenty of work undone**
- **Records and data gaps, incomplete knowledge of “environment” around pipe, inadequate assessments, interacting threats, etc.**
- **IMP 2.0 – Multi-day workshops Fall/Winter 2013**
- **Lessons learned from the first decade of IMP 1.0**
- **Leak detection, valves, metrics, missing Safety Management Systems elements: employee involvement; near miss/voluntary reporting; audits; contractor alignment, flowdown, and oversight, etc.**
- **What should be done to take IMP to the next level of safety?**



## NTSB P-11-19

- **Develop and implement standards for integrity management and other performance-based safety programs that require operators of all types of pipeline systems to regularly assess the effectiveness of their programs using clear and meaningful metrics, and to identify and then correct deficiencies; and (2) make those metrics available in a centralized database.**



## Response P-11-19

- **Identify clear and meaningful metrics that Liquid and Gas Operators should utilize to regularly assess effectiveness of their programs. Require regular effectiveness of their programs using metrics, and to identify and then correct deficiencies,**
- **Prescriptive language that identifies specific performance measures to be reported on an annual basis in the operator's annual report 191.17**
- **Current performance-based safety program regulations will be updated, to ensure that Operators are required to regularly assess the effectiveness of their programs using these metrics and to identify and then correct deficiencies.**
- **Updates and revisions will be implemented to the PHMSA PRIMIS websites for improved information distribution:**



## **NTSB P-11-20**

- **Work with state public utility commissions to**
- **(1) Implement oversight programs that employ meaningful metrics to assess the effectiveness of their oversight programs and make those metrics available in a centralized database,**
- **(2) Identify and then correct deficiencies in those programs.**





## Response P-11-20

- **PHMSA continues to evaluate and improve its State Pipeline Safety oversight program.**
- **Added an evaluation question to address the concern of state's not making use of civil penalties as a compliance tool for repeat violations or violations resulting in incidents.**
- **Increased its scoring criteria to encourage states to have penalty levels the same as PHMSA.**
- **Believes its current oversight program is meaningful and does reduce a state's grant funding when it determines a state is not making progress toward accomplishing safety goals.**
- **Will consult with NAPSR and NARUC regarding identifying additional metrics and/or develop long-term trending of existing metrics as performance indicators and include them in our central database.**



# The Key Information From Presentation



## Advisory Bulletins

- **Over the past couple of years we have published Advisory Bulletins covering the following topics:**
  - **MAOP Verification & Record Validation**
  - **Reporting of MAOP Exceedances**
  - **Accident/Incident Notifications**
  - **911 notifications**
  - **Post Accident drug testing**



# Current Rulemakings in Process

## Safety of Gas Transmission Lines (NPRM stage)

- Draft Under Review by Legal
- ANPRM Published
- Major Topics under consideration:

**Expand assessments beyond HCAs**

**Repair criteria \***

**Assessment methods \* \*\***

**Corrosion control**

**Expand gas gathering reporting requirements**

**Management of change**

**Seismicity rqts \***

**MAOP exceedance reporting \***

\*Congressional Mandate  
\*\*NTSB Recommendation



# Upcoming Events



Major 2013 OPS Events	
January 7-8	Data Workshop (Washington)
March 13	Damage Prevention/Exemption Workshop (Florida)
April 9	<a href="#">Land Planning Near Transmission Pipelines in Texas</a> (webinar)
April 24	<a href="#">Land Planning Near Transmission Pipelines in Ohio</a> (webinar)
May 1	<a href="#">Land Planning Near Transmission Pipelines in Pennsylvania</a> (webinar)
June 19-20	Public Awareness Workshop (Dallas)
July 11	SMS Webinar (tentative)
August 7 (tent)	Integrity Verification Process Workshop
August 8-9	Liquid and Gas Pipeline Advisory Committee Mtg (Washington)
Feb 27, 2014	SMS Workshop (follows NTSB Safety Culture workshop) (Washington)
FALL	IMP 2.0 multi-day workshop (Washington – tentative)
Feb. 25 & 26, 2014	Liquid and Gas Pipeline Advisory Committee Mtg
December 5	DIMP Webinar





# Questions?

