Safety and Inspection of Natural Gas Pipelines in USA

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Regulation Pipeline Safety Consultant
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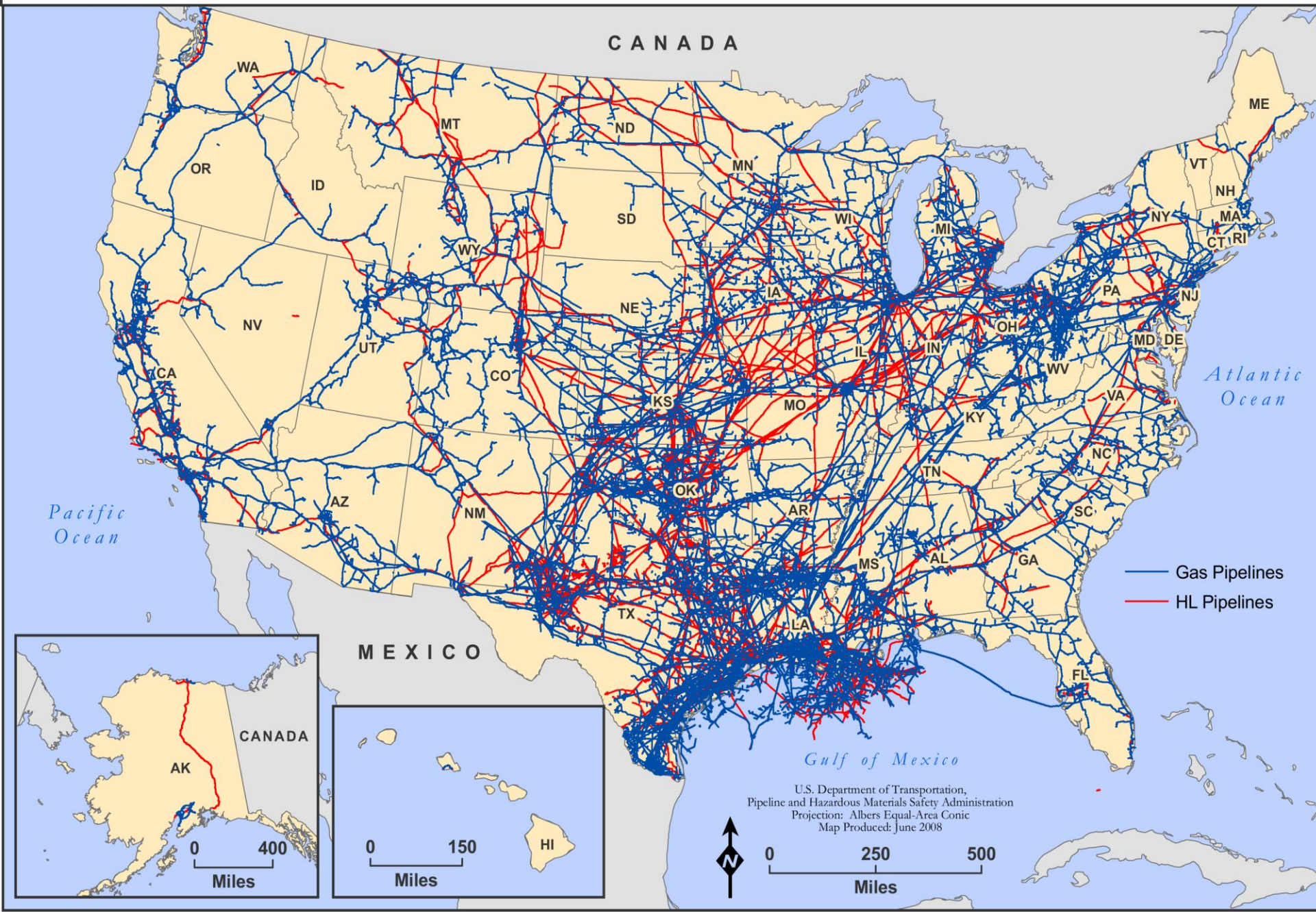
Pipeline and Hazardous Materials Safety Administration

Gas and Hazardous Liquid Transmission Pipelines

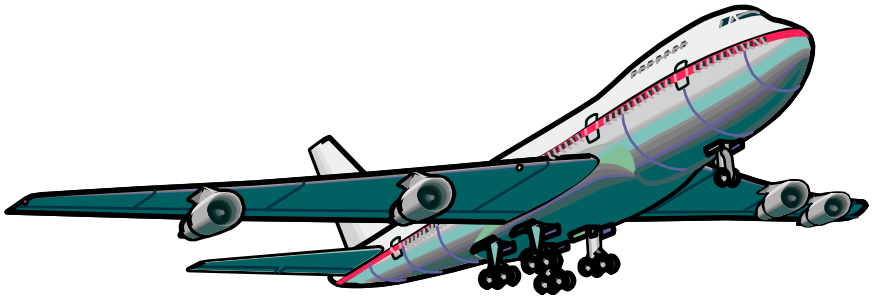


U.S. Department of Transportation,
Pipeline and Hazardous Materials Safety Administration
Projection: Albers Equal-Area Conic
Map Produced: June 2008

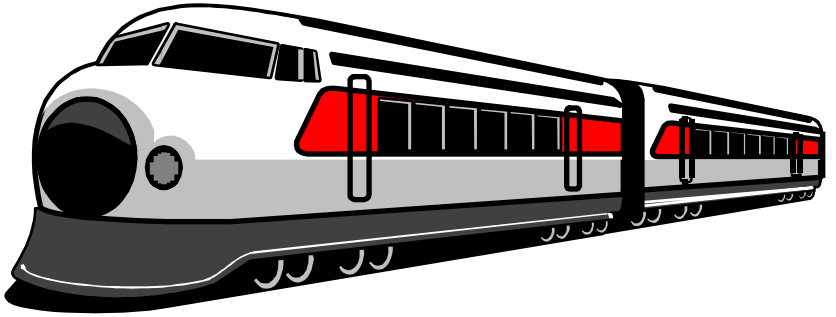
PIPELINE SAFETY ACT

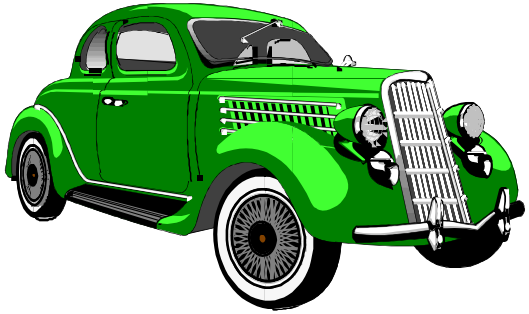
- The Natural Gas and Pipeline Safety Act of 1968 has provisions for the States to participate with the Federal Government under a Certification Agreement.
- This provision is for natural gas pipelines and hazardous liquid pipelines.

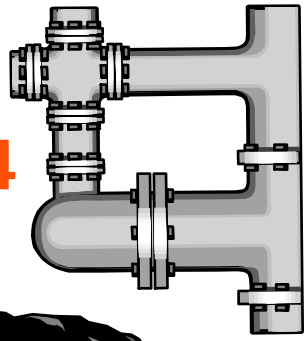
An Act
DOT



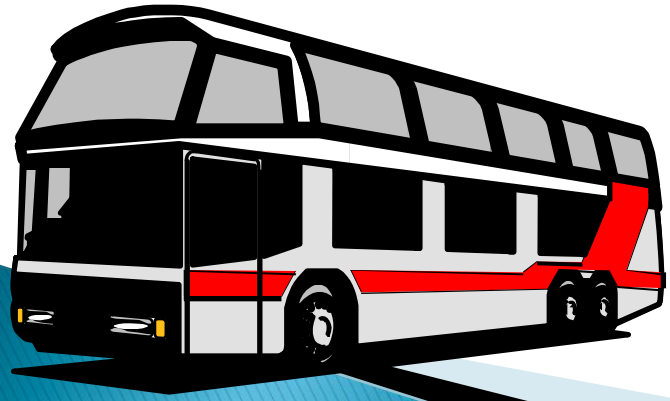
Combined all Transportation Acts into one Document



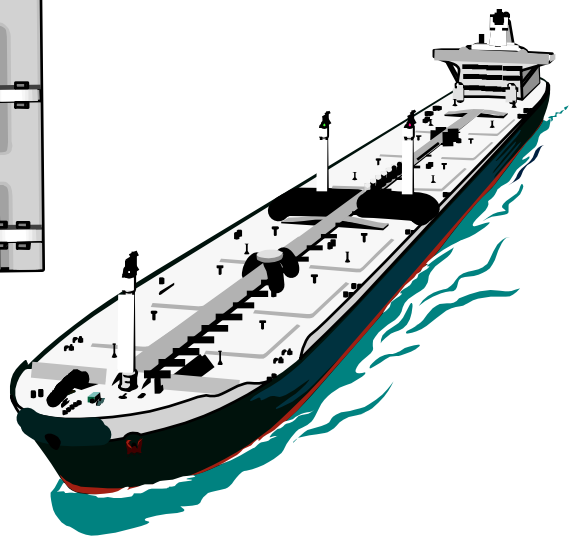




July 5, 1994



NTSB



PIPELINE HAZARDOUS MATERIAL SAFETY ADMINISTRATION (PHMSA)

- PHMSA's: **135 federal inspectors** and **375 state partners** are responsible for regulating nearly **3,000 companies** that operate **2.6 million miles of pipelines, 130 liquefied natural gas plants**, and **6,806 hazardous liquid breakout tanks**. Through PHMSA oversight programs, **serious pipeline incidents have decreased by 45.7% since 2009.**

General History of Pipeline Safety Regulations

- The first Federal Minimum Pipeline Safety Regulations evolved **from non-mandatory guidelines found in USASI B31.8 (Standards develop by the pipeline industry) (1968)**
- The Gas Pipeline Safety Regulations have been **amended over 110 times**.
- The Hazardous Liquid Safety Regulations have been **amended over 90 times.**

- 10% inspecting construction of new pipeline facilities;
- 6% investigating pipeline system failures;
- 47% inspecting pipeline facilities for compliance with PHMSA operation, maintenance, and **emergency** response safety regulations
- 17% communicating with stakeholders, especially on excavation damage prevention and land use planning;
- 11% working on internal teams to continuously improve inspection methodologies and business processes;
- 9% training;

TITLE 49 PIPELINE REGULATIONS

- Part 192 Gas Pipeline Regulation
- Part 193 LNG Pipeline Regulations
- Part 195 Liquid Pipeline Regulations
- Part 199/Part 40 Drug and Alcohol Standards are Referenced within the Regulations

"MININUM REQUIREMENTS"

U. S. Pipeline Regulations

- **Operation and Maintenance Manuals**

  (a) General. Each operator **shall** prepare and follow for **each pipeline**, a manual of written procedures for **conducting operations and maintenance activities** and for **emergency response**.

EMERGECY RESPONSE

- Operation and Maintenance manual requires **“emergency response” for each system.**
- Manual must be reviewed on an **annual basis.**
- **Operator Qualification (OQ) requires employee and contractor be qualified on plans.**

Regulation Amendments

- Part 199 Part 40 Drug and Alcohol Testing – 1988
- Gas Transmission Pipeline Integrity Management – 2004
- Operator Qualification – 1999
- **Natural Gas Integrity Management**
- **Gas Distribution Integrity Management**
- **Hazardous Liquid Integrity Management**
- **Pipeline Public Awareness**
- Gas Gathering Defined
- Control Room Management

Distribution Integrity Management

(DIMP)

- The regulation requires operators, natural gas distribution companies to develop, write, and implement a distribution management program with the following:

Distribution Integrity Management

- **DIMP**: Pipeline integrity, refers to a system that is in sound, unimpaired condition that can safely carry out its function under the conditions and parameters for which it was designed. An integrity management program is a documented set of policies, processes, and procedures that are implemented to ensure the integrity of a pipeline.

DIMP

- Knowledge
- Identify Threats
- Evaluate and Rank Risks
- Identify and Implement measures to Address Risks
- Measure Performance, Monitor Results, and Evaluate Effectiveness
- Periodically Evaluate and Improve Program
- Report Results

PHMSA Requires Public Awareness Programs for Pipeline Operators

- (1) Affected public in the vicinity of the pipeline and its associated rights-of-way and facilities;
- (2) State and local emergency response and planning officials and first responder organizations;
- (3) Local public officials and governing councils of affected municipalities and school districts;
- (4) Excavators.

Integrity Management Programs

- Gas Integrity Management Program

- Hazardous Liquid Integrity Management Program.

Evaluation of pipelines in high concentration of public or affecting waters using ILI (Smart Pig), pressure testing or Direct Assessment within a specified period of time. Usually 5 years.


IMP Direct Assessment
Discovery
CHECK-LINE
0.489
MODE
LAMP
SELECT
ZERO
TI-40N

Failure: Constructed in Mud / No CP


FORD


3 Puddle Weld MX
S 3.89 L 0.9
E 3.96 W 0.8
11:30 to 10:50
2 Puddle Weld MX
S 3.75 L 1.0
E 3.84 W 1.5
10:20 to 10:50
1 Puddle Weld MX
S 3.23 L 2.65
E 3.45 W 1.10
10:30 to 11:00
APR 19 2006