



Pipeline Safety Program

Center for Transportation Analysis (CTA) Research Capabilities

Asset Management
Economic Modeling
Geographic Information Systems
Program Performance Metrics
Remote Sensing
Simulation Analysis
Statistical Analysis
Supply Chain Analysis
Transportation Decision Support Systems
Transportation Network Routing Models

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The Oak Ridge National Laboratory (ORNL) provides specialized engineering and technical support to the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA). As a federal regulatory authority with jurisdiction over pipeline safety, PHMSA is responsible for ensuring the safe, reliable, and environmentally sound operation of the nation's 2.3 million miles of natural gas and hazardous liquid pipelines. To assist PHMSA accomplish this mission, ORNL Subject Matter Experts (SMEs) who are qualified, unbiased, and experienced in dealing with specific pipeline safety issues and concerns provide support on an as needed basis. ORNL SMEs have the ability to:

- understand technical details about pipeline integrity management and regulatory compliance topics
- have knowledge about pipeline construction technology, inspection procedures, and operating practices
- recognize potential pipeline safety and regulatory concerns
- alert PHMSA staff about noncompliance issues
- recommend corrective actions based on appropriate state-of-the-art technology

Support is provided in the following areas.

Pipeline Incident Evaluations

ORNL SMEs evaluate pipeline incidents such as leaks and failures.



Natural gas pipeline failure.



Cause of Failure — Stress-corrosion cracking.

Pipeline Inspections

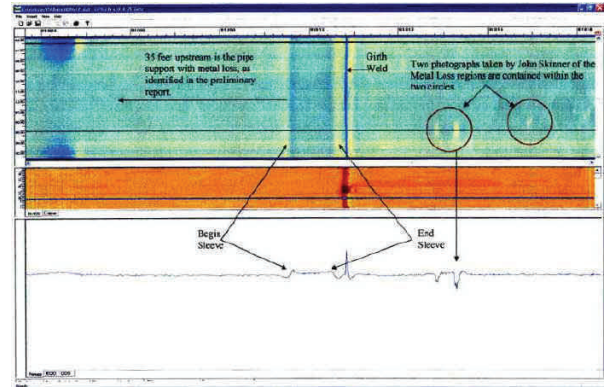
ORNL SMEs inspect new pipeline construction, verify repair methods, and review pipeline inspection data.



New pipeline construction.



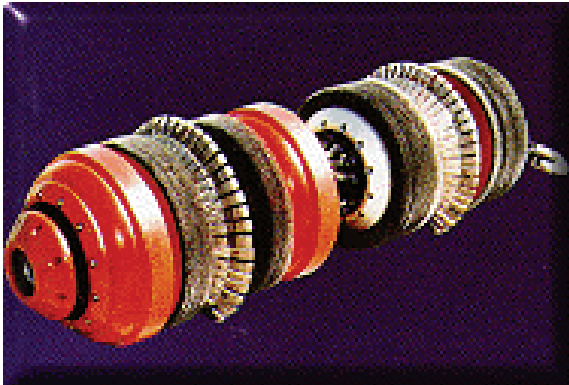
Pipeline repair methods.



Pipeline inspection data.

Pipeline Integrity Management

ORNL SMEs provide assistance in reviewing integrity management programs prepared by pipeline operators in accordance with the following Federal pipeline safety regulations 49 CFR 192 - Gas Pipelines and 49 CFR 195 - Liquid Pipelines.



In-line inspection tool.

Instrumentation and Control Technology

ORNL SMEs review, troubleshoot, and advise PHMSA on new and existing measurement, sensor, inspection, and diagnostic systems. Work involves data interpretation from instrumentation systems and verification of the specified precision and accuracy of sensors.

Non-metallic Pipeline Technology

ORNL SMEs provide PHMSA with technical information about non-metallic materials for pipeline construction.

Technical Services

ORNL SMEs provide specialized technical services to assist PHMSA obtain laboratory data needed to

evaluate pipeline incidents, determine causation, and resolve pipeline integrity management and regulatory compliance issues. A particular task may require the specialized services of SMEs who are knowledgeable and skilled in one or more of the following areas:

- cathodic protection,
- coating materials and application techniques,
- concrete technology,
- consensus code and standard requirements,
- corrosion engineering,
- data collection, integration, and analysis,
- environmentally sensitive areas,
- federal pipeline safety regulations,
- fracture mechanics and metallurgy,
- hydrogen pipeline safety,
- in-line inspection methods and interpretations,
- instrumentation and control,
- laboratory testing,
- land use planning,
- liquefied natural gas (LNG) facilities,
- loss of gas or liquid containment,
- material science,
- natural phenomenon events,
- nondestructive examination,
- pipeline construction and repair,
- pipeline hydraulics and fluid handling equipment,
- population density,
- pressure vessel technology,
- quality assurance,
- risk assessments and management,
- sensor technology and data acquisition,
- soil mechanics,
- stress analysis,
- tank construction and inspection, and
- welding procedures and welder qualification requirements.

For more information regarding this research contact Bill Knee, Center for Transportation Analysis, Oak Ridge National Laboratory, phone (865) 946-1300 or email kneehe@ornl.gov.