SAFETY Every Step of the Way

Be Informed / Be Aware / Be Responsive

Important Information on Working Together to Keep Neighbors, Communities and Pipelines Safe

In Case of Emergency

Pipeline leaks are rare, but being able to recognize and respond to a suspected leak or rupture is an important part of living and working safely around underground pipelines. Your personal safety should be your first concern should you encounter any of these signs or conditions.

Signs of a natural gas pipeline **RUPTURE**:

- Loud roaring or explosive sound; OR
- Very large flames and loud roaring noise.

Follow these steps:

- *If there are no flames present:*
  - **Immediately evacuate the area**
  - **Do not start or turn off motor vehicles or electrical equipment** (such as cell phones, pagers, two-way radios, or lights) as **this could cause the gas to ignite**
  - Abandon any equipment being used in or near the area
  - Move far enough away from the noise until you can have a normal conversation
  - Discourage others from entering the area
  - From this safe location, **call 911** or contact the local fire department or law enforcement and
  - Notify the operator of the pipeline

- *If flames are present*
  - Move behind a structure that provides protection until there is a reduction in noise
  - Plan a route away from the fire that offers shelter
  - Driving away from the area is acceptable
  - Move far enough away from the flames until you feel comfortable
  - Discourage others from entering the area
  - From this safe location, **call 911** or contact the local fire department or law enforcement and
  - Notify the operator of the pipeline

Any one of these is a sign of a suspected natural gas pipeline **LEAK**:

- Whistling or hissing sound;
- Distinctive, strong odor, often compared to rotten eggs;
- Dense fog, mist or white cloud;
- Bubbling in water, ponds or creeks;
- Dust or dirt blowing up from the ground; or
- Discolored or dead vegetation above the pipeline right of way.

Follow these steps:

- **Carefully evacuate the immediate area** to where you can no longer hear, see or smell the gas
- Avoid introducing any sources of ignition in the area
- **Do not start or turn off motor vehicles or electrical equipment** (such as cell phones, pagers, two-way radios, or lights) as **this could cause a spark**
- Abandon any equipment being used in or near the area
- Avoid any open flames
- Discourage others from entering the area
- **Call 911** or contact the local fire department or law enforcement from a safe location
- Notify the operator of the pipeline

Two important things to remember:

- Do not attempt to extinguish a natural gas fire
- Do not attempt to operate any pipeline valves or equipment

SAFETY Every Step of the Way

Natural Gas Pipeline Safety – It's a Shared Responsibility

Serious accidents on interstate natural gas pipelines are rare. But when leaks or ruptures occur, they can cause significant harm to persons and property.

Pipeline safety is a responsibility that's shared among many people, including pipeline company personnel, the federal and state agencies that oversee natural gas pipelines, public safety officials and -- equally as important -- our neighbors who live and work near pipelines.

That's why YOU are an integral part of the safe operation of natural gas pipelines.

If there is a pipeline in your community, you need to: 1) be informed of where the pipeline facilities are located; 2) be aware of activities around these facilities, especially anything that appears to be out of the ordinary; and 3) be responsive by knowing what action to take in the unlikely event of an emergency or the presence of unusual or suspicious activity.

Here's how you can be informed, aware and responsive:

- ***Find out if a transmission pipeline is on or near your property***
  - Check the National Pipeline Mapping System Public Map Viewer at www.npms.phmsa.dot.gov
  - Look for pipeline markers -- these are signs, located at regular intervals, that include information about the transmission pipeline operator
  - Read any mailings you receive from pipeline companies -- if you get them, that means there's a pipeline in your area

- ***Use the One-Call System before you do any type of excavation***
  - Call 811 Before You Dig so underground pipes and utilities are properly identified and marked -- Section 5 provides more information on One-Call
  - Excavate carefully around any pipeline facilities
  - Inform the One-Call System and pipeline operator of possible unmarked excavation or pipeline damage that may have been caused by digging
- ***Familiarize yourself with pipeline events and how to respond***
  - Read the previous page -- In Case of Emergency
  - Post this page in your home or business
  - Report any unusual or suspicious activities in or around pipeline facilities by calling 911 and the pipeline operator, using the emergency number from a pipeline marker, brochure or other materials you have received

Our Commitment to the Safe Transportation of Natural Gas

Working together can keep our neighbors, communities and pipelines safe.

We, too, are concerned about any leak or rupture that could harm people or property. We work hard to prevent incidents from occurring.

We are the member companies of the Interstate Natural Gas Association of America (INGAA), and it is our responsibility to embrace pipeline safety by implementing stringent safety programs and practices every step of the way. Safety is our core value, and the following principles guide everything we do:

1. Our goal is zero incidents - a perfect record of safety and reliability for the national pipeline system. We will work every day toward this goal.
2. We are committed to safety culture as a critical dimension to continuously improve our industry's performance.
3. We will be relentless in our pursuit of improving by learning from the past and anticipating the future.
4. We are committed to applying integrity management principles on a system-wide basis.
5. We will engage our stakeholders—from the local community to the national level—so they understand and can participate in reducing risk.

The pages that follow provide information on how we are working to achieve our goals by monitoring and inspecting our systems, beginning with pipe manufacturing and continuing through design, construction and testing, and operations.

Pipelines are the Safest Way to Move Large Amounts of Energy Long Distance

One way to measure safety performance is to identify the number of accidents involving a fatality or injury. For natural gas pipelines, the U.S. Department of Transportation (DOT) classifies these as serious incidents.

According to U.S. DOT data, natural gas transmission operators averaged five serious incidents per year between 2000 and 2010 along the approximately 300,000-mile natural gas transmission network.

In its December 2010 report, "Building Safe Communities: Pipeline Risk and its Application to Local Development Decisions," the U.S. DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) noted that transmission pipelines had lower fatality and injury rates than railway and road transportation when hazardous materials are involved.

The Federal Energy Regulatory Commission (FERC) performs extensive safety studies in the environmental impact statements (EIS) it conducts prior to approving any new or expanded interstate pipeline. In a May 2009 EIS, FERC's nationwide analysis indicated there are far fewer deaths on average each year due to natural gas transmission and gathering pipeline accidents than all other categories of accidental deaths, including weather-related, poisonings and fires and burns. FERC concluded that "the available data show that natural gas pipelines continue to be a safe, reliable means of energy transportation."

Natural Gas is Vital

North America requires a varied mix of energy sources to serve a growing economy and population and to meet the demand for clean energy. Natural gas plays a vital role in that mix, providing about 25 percent of the daily energy that is consumed in the United States.

Natural gas is:

- Versatile...it fuels electric generators that produce about 20 percent of our electricity; heats and cools 70 million of our homes and businesses; is a vital component of products such as fertilizer; and powers manufacturing and transportation.
- Cleaner burning...it produces 45 percent less carbon dioxide than coal and 30 percent less carbon dioxide than fuel oil when it's burned; it produces no mercury and only trace amounts of sulfur dioxide; and it produces far less nitrogen oxide than other fossil fuels.

- Domestically abundant...nearly all the natural gas consumed in North America – 98 percent – is produced in the United States and Canada, with current estimates pointing to enough gas to meet 100 years' worth of demand.
- Reliable...it's available 24 hours a day, seven days a week, regardless of weather conditions.

For all these reasons, natural gas is a popular fuel choice. For example, the number of residential natural gas customers in North America has grown by 70 percent over the last 40 years to more than 65 million customers. Interstate pipeline systems provide reliable supplies to growing local distribution networks that heat millions of homes. The U.S. Energy Information Administration forecasts indicate consumption will increase even further over the next 25 years as demand escalates for clean, domestically produced energy.

Our own studies project that by 2030, natural gas use in North America will grow by 18 percent and, depending upon energy markets and public policies, could grow by as much as 34 percent or more. Given this anticipated growth, we must continue to build and maintain our interstate pipeline systems to access new domestic supplies in order to meet demand.

Properties of Natural Gas

Natural gas is a gaseous fossil fuel that has methane as its primary compound. It is derived from organic material that was deposited or buried under the earth millions of years ago. Natural gas is odorless and colorless and, when mixed with the requisite volume of air (a 5-15 percent gas-to-air mix is the flammable range) and ignited, it burns with a clean, blue flame that generates radiant heat. It is considered one of the cleanest-burning fuels, producing primarily carbon dioxide and water vapor. Before distribution to end-users, natural gas is odorized by adding mercaptan – a rotten-egg smell - that helps in detecting leaks.

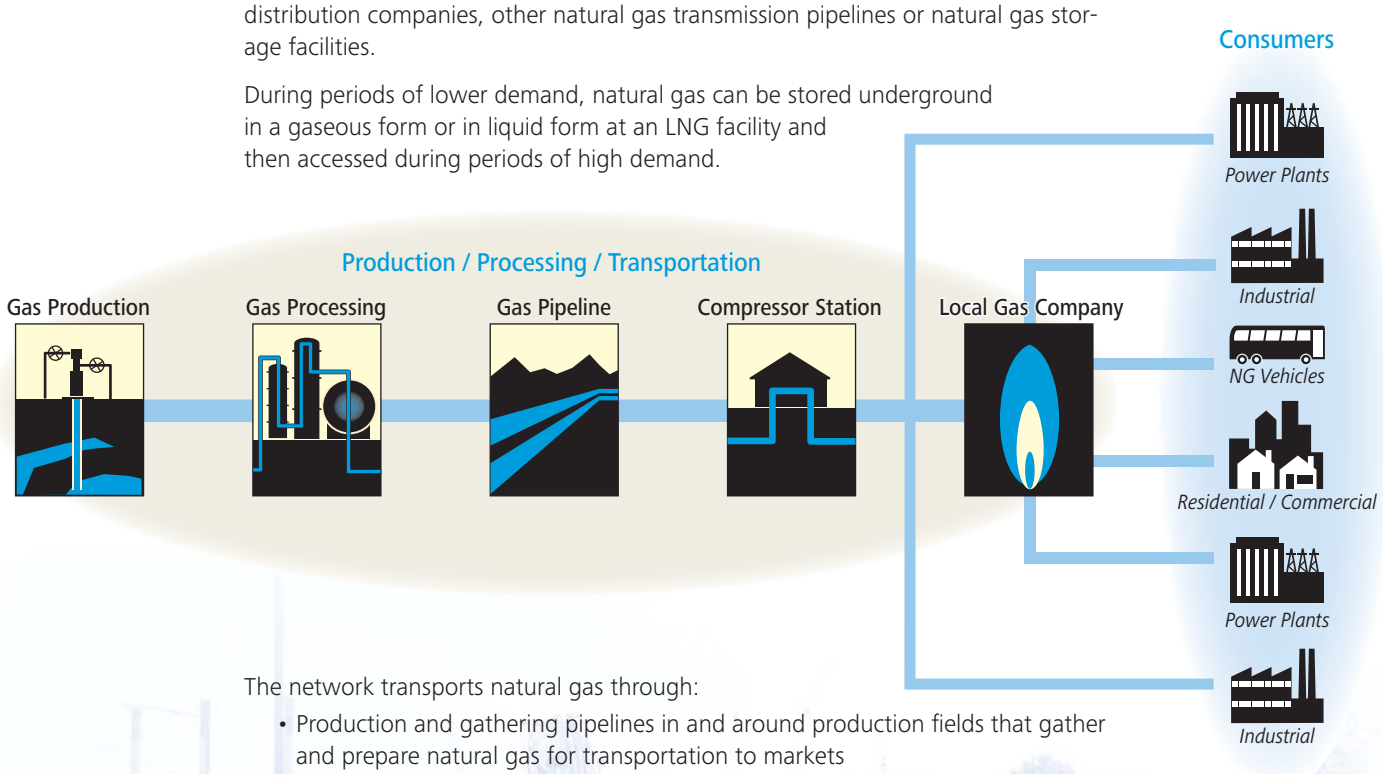
Natural gas is lighter than air and tends to disperse upward if released into the atmosphere. A natural gas pipeline rupture can be very dangerous to people and property because of the force of the gas release, debris from the rupture and the risk of fire from the escaping gas. If a leak is in a confined space, such as within a house, gas concentrations in the flammable range can be explosive.

The Natural Gas Delivery Network

In the United States, close to 2.4 million miles of underground pipelines form a network that moves natural gas from a variety of supply locations, called receipt points, to various demand locations, called delivery points.

Types of receipt points include treating or processing plants near natural gas production fields, liquefied natural gas (LNG) terminals, and interconnections with other natural gas transmission pipelines or natural gas storage facilities. Delivery points may connect to individual customers such as power plants, local natural gas distribution companies, other natural gas transmission pipelines or natural gas storage facilities.

During periods of lower demand, natural gas can be stored underground in a gaseous form or in liquid form at an LNG facility and then accessed during periods of high demand.



The network transports natural gas through:

- Production and gathering pipelines in and around production fields that gather and prepare natural gas for transportation to markets
- About 200,000 miles of interstate and 100,000 miles of intrastate transmission pipelines, which are typically higher-pressure pipelines larger than six inches in diameter that transport natural gas long distances from production areas to markets
- 2.1 million miles of smaller distribution pipes owned by local distribution companies that bring natural gas to end users such as homes and businesses

Interstate Natural Gas Pipelines

At INGAA, our focus is on the approximately 200,000 miles of transmission pipelines that cross state borders, delivering natural gas to fuel our economy and provide jobs. These are the interstate pipelines.

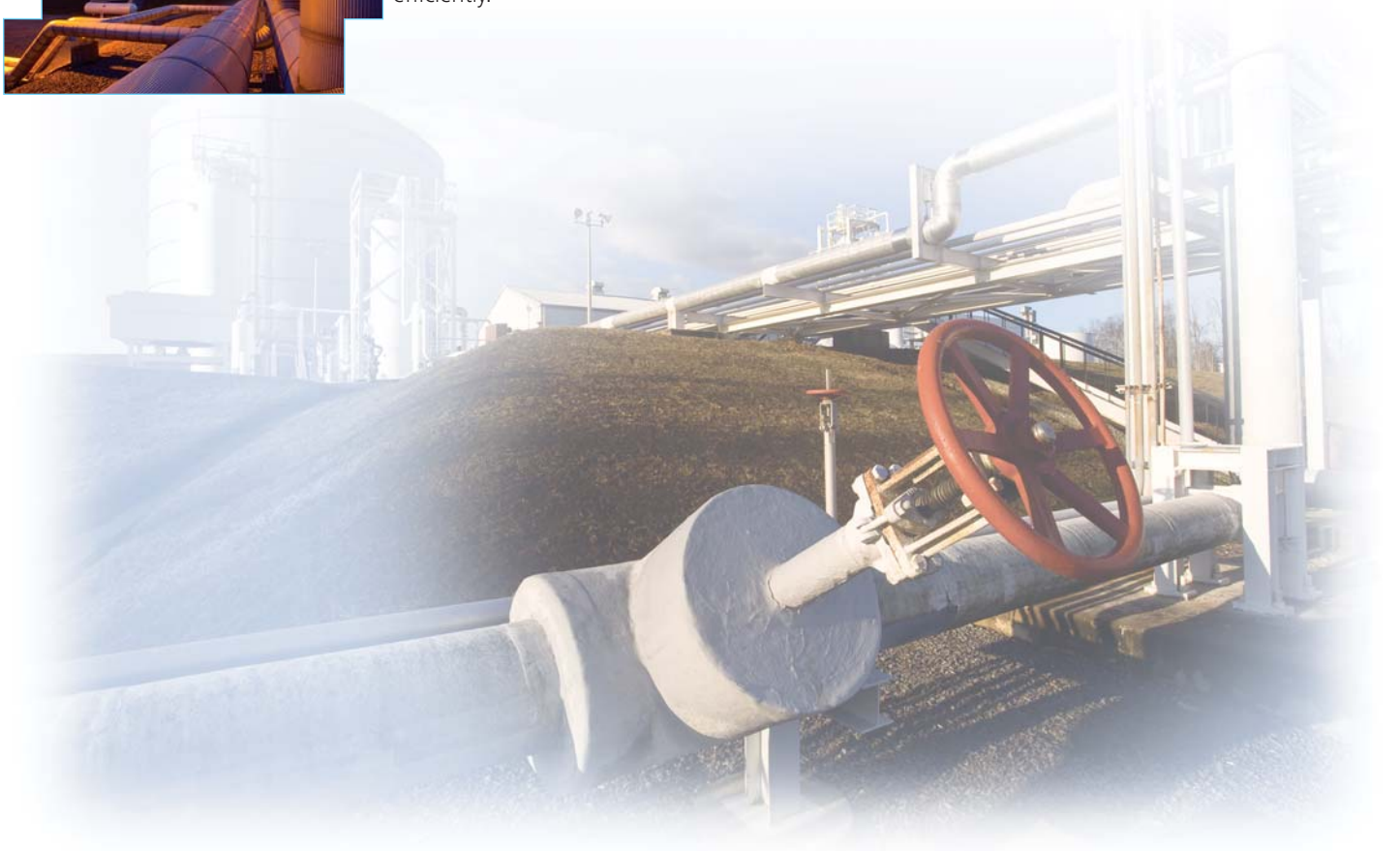
Operating around the clock, interstate pipelines reliably deliver this essential energy source to:

- Electric generation plants
- Local distribution companies that bring the natural gas directly to our homes and businesses
- Manufacturing plants and businesses

Interstate pipelines carry large amounts of natural gas over thousands of miles. Facilities located along an interstate pipeline system maintain and monitor the flow of natural gas.

For example, compressor stations, usually located every 50 to 60 miles, boost natural gas pressure to counteract the pressure lost due to friction as the gas travels through the pipelines. Other facilities include metering stations that measure natural gas volume, regulating stations that control gas pressure and valves that control gas flow through the pipelines.

From the time natural gas enters the system until it is delivered, interstate pipelines are controlled and monitored closely by professional technicians utilizing sophisticated control and communications systems to make sure they are running safely and efficiently.



Robust Standards and Comprehensive Regulations

Safety is our industry's top priority. We live and work in the communities where natural gas transmission pipelines are located. Moving natural gas through pipelines is our business, and protecting the people, environment and communities along these pipelines is our commitment. Safety is our core value. Our industry is guided by robust safety standards and operates under comprehensive federal regulations that govern all aspects of the pipeline life cycle, including design, construction, materials, testing, operations and maintenance of all natural gas transmission pipelines.

The Natural Gas Pipeline Safety Act codified and improved safety practices previously developed by engineering consensus standard organizations such as the American Society of Mechanical Engineers (ASME) and the American Petroleum Institute (API). These standards are routinely evaluated and revised to incorporate new technologies and improved safety practices.

The Natural Gas Pipeline Safety Act gives the Office of Pipeline Safety (OPS), a division within PHMSA, authority to regulate the safety of interstate natural gas and hazardous liquid pipelines.

PHMSA - Strengthening Safety Programs

As the primary safety regulator of energy pipeline systems, PHMSA administers the comprehensive federal regulations that address the entire life cycle of pipelines, providing oversight to keep the public safe.

Since the Pipeline Safety Act was passed in 1968, interstate pipeline operators have worked cooperatively with PHMSA to research technologies, update regulatory mandates and develop standards that have made pipeline infrastructure even safer. This effort has led to the enactment of laws, regulations and practices:

- All interstate pipeline operators must comply with comprehensive **PHMSA regulations**. **PHMSA conducts numerous inspections** annually to verify that regulatory requirements are met.
- All interstate pipeline companies must have in place **Integrity Management Programs (IMP)**, which require supplemental safety assessments and measures in more populated areas (defined in regulations as "high consequence areas" or HCAs) along a pipeline system. Many operators use in-line inspection (ILI) to assess the HCAs on their systems. ILI tools assess the entire length of the ILI run, not just the HCAs. So while the IMP regulations require assessments for only 7 percent of the natural gas transmission mileage, approximately 65 percent of the mileage will actually be assessed by the end of 2012. We respond to all indicators of anomalies -- whether inside or outside HCAs.

- Excavation damage is the predominant cause of serious natural gas transmission pipeline incidents that result in fatalities and injuries. All interstate pipeline companies promote damage prevention laws and state "Call Before You Dig" programs. The **One-Call** system requires anyone planning to dig to contact the local One-Call office **before any excavation** to locate underground pipes and utilities, excavate carefully around the pipe, and report any damage that may be caused to the pipeline or its coating. With the strong support of INGAA members, this law led to the creation of the national "**811 Call Before You Dig**" damage prevention program, a critically important public awareness initiative that provides a single, nationwide phone number to obtain detailed information about buried cables and pipelines in each state.
- Interstate pipeline operators support the **Pipelines and Informed Planning Alliance (PIPA)** report that includes recommended practices for local development around existing pipelines to protect pipelines and surrounding communities.
- Federal regulations require operators to use extensive **Operator Qualification** standards that require a formal, documented approach to ensuring that workers who perform safety-related operation and maintenance tasks on a pipeline system are qualified to undertake those tasks.
- Recently, the federal regulations were further enhanced with rules developed for **Control Room Management**.

Sharing in Oversight

Along with PHMSA, others play a significant role in regulating the construction and operation of interstate natural gas pipelines:

The **Federal Energy Regulatory Commission (FERC)** is responsible for the approval of new interstate natural gas transmission pipeline routing and siting. FERC must determine whether proposed pipeline projects are needed and in the public interest. FERC also requires pipeline companies to certify that projects will comply with all PHMSA safety regulations. The siting process includes input from many participating federal agencies, pipeline neighbors and citizens along the proposed route to ensure that FERC considers the full range of public interests.

The **Environmental Protection Agency (EPA)** is responsible for establishing and enforcing any environmental regulations, such as air and water quality, related to pipeline companies. Other federal agencies, such as the U.S. Army Corps of Engineers, as well as state and tribal agencies, often evaluate the environmental aspects of pipeline construction.

The **U.S. Department of Homeland Security's Transportation Security Administration (TSA)** Pipeline Security Division has issued guidelines that describe best practices for securing transmission pipeline facilities from malicious damage. We comply with these guidelines and work closely with TSA in monitoring and securing our facilities. For more information, see Security of Our Pipelines in Section 10.

The **National Transportation Safety Board (NTSB)** is an independent federal agency charged by Congress to determine the probable cause of extraordinary transportation accidents, including those that occur on interstate natural gas pipelines. Based on their findings, NTSB often recommends transportation safety improvements to PHMSA, pipeline operators and others.

Safety At Every Step During Design and Construction

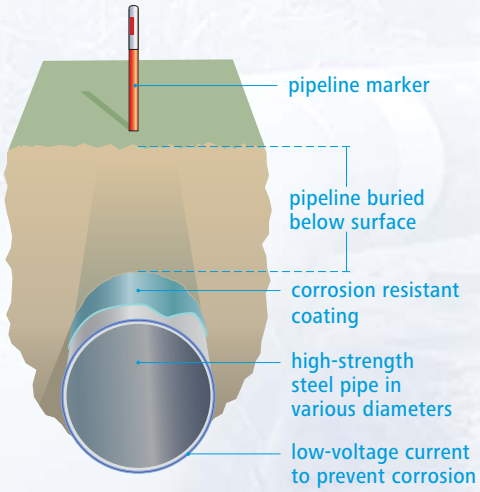
Long before the final route is developed and steel for the first pipe is purchased, continuing until long after the final connection is welded and the pipeline is placed into operation, safety dominates the life cycle of all interstate natural gas pipelines.

Pipelines are inspected, then re-inspected, during manufacturing and construction and again throughout operations to confirm and ensure their integrity. The following pages outline the multiple layers of pipeline testing, monitoring and protection that is standard in the interstate natural gas pipeline industry.

…During Design

As pipelines are in the planning phase, we are:

- Implementing engineering and consensus standards to develop safe and reliable designs
- Using pipe manufactured from high-strength alloyed steel with a designed wall thickness that fits the purposes, locations and pressures of the pipelines and meets stringent federal regulations
- Procuring the latest valves, compressors and control equipment
- Complying with all applicable regulations and standards
- Optimizing the routing to minimize public safety concerns and environmental impacts



...During Construction

As pipelines are built, we are:

- Inspecting welds both visually and with ultrasonic or radiographic equipment
- Sealing entire pipelines and all welds with tough, durable protective coatings engineered to resist abrasion and corrosion and to provide a waterproof barrier between the steel pipe and the external environment
- Installing cathodic protection equipment that further protects pipe from corrosion by applying a low voltage current to the surface of the pipe
- Testing the pipelines before putting them into service by pressurizing them to higher than the final maximum operating pressure
- Inspecting the pipelines visually or by other means to ensure no harmful damage occurred during installation
- Completing a careful start-up of the new pipelines with a check of monitoring and control systems - a process known as “commissioning”

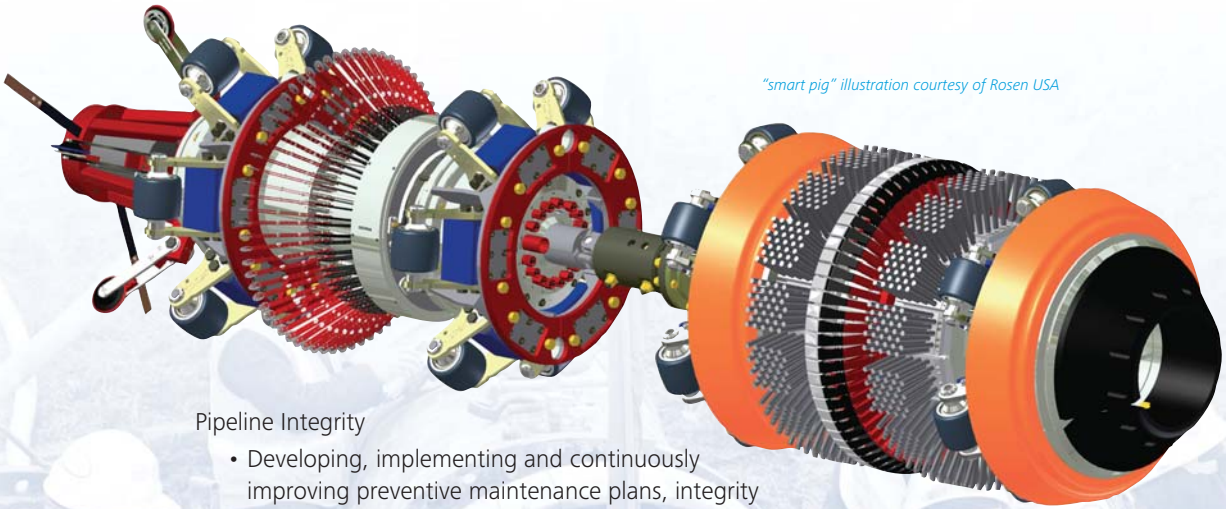
Safety At Every Step During Operations - *part 1*

…During Operations

Once the pipeline begins moving natural gas, we focus on safety through:

24-Hour Operations Monitoring and Control

- Constantly monitoring, analyzing and controlling natural gas flows, pressures, temperatures and quality to ensure that all parameters stay within engineering safety limits
- Using compressors, block valves and control valves located strategically along systems to safely satisfy customer needs and to control gas flow
- Monitoring and responding to system alarms and calls from the public and emergency responders that indicate possible problems
- Responding to One-Call notifications or reports of digging near pipelines to be sure that excavation around pipelines is conducted in a safe manner



"smart pig" illustration courtesy of Rosen USA

Pipeline Integrity

- Developing, implementing and continuously improving preventive maintenance plans, integrity management and safety programs
- Implementing safety improvements that have been identified by the industry and regulatory authorities
- Verifying that corrosion protection systems are functioning as designed
- Conducting assessments of the pipe for external corrosion, excavation damage or other harmful defects
- Preventing internal corrosion through natural gas quality control, pipeline cleaning and other practices
- Assessing pipelines utilizing "smart pigs" or other technologies that travel inside the pipe and check for corrosion and other anomalies that may need repair (see sketch above supplied by Rosen USA)
- Repairing or replacing sections of pipe, where needed, to correct any conditions that could affect the integrity of the pipeline

Field Surveys

- Walking and driving pipeline routes – referred to as "rights of way" – looking for potential threats to pipeline safety, such as earth movement and potential leaks
- Flying aerial patrols along pipeline corridors to monitor for activities such as unauthorized excavation and construction, or potential leaks from the pipelines
- Inspecting locations where pipelines cross navigable waterways, roads and other known encroachments

Safety At Every Step During Operations - *part 2*

Right of way Maintenance

- Clearly marking pipelines with signs at regular intervals to help identify the buried line(s)
- Posting a telephone number on all signs to report a suspected leak or excavation, abnormal or suspicious activity
- Clearing the rights of way to enable identification of the routes and improve the performance of ground and aerial patrols
- Maintaining the rights of way to provide access in the event of an emergency

Preparedness and Rapid Response

- Developing plans and notification protocols for prompt reporting and response to emergencies to ensure technicians along the pipelines can rapidly respond to those issues
- Communicating regularly with local public safety officials, including emergency responders
- Participating in emergency preparedness training and emergency drills with public safety agencies, including fire, police, highway patrol and emergency management centers
- Participating in monthly security briefings with the U.S. Department of Homeland Security (DHS) and with the Transportation Safety Administration's (TSA's) Pipeline Security Division
- Complying with the TSA's Pipeline Security Division's Security Guidelines
- Participating in TSA's 1-STEP Program through participation in extensive, robust crisis management drills

Public Awareness

- Providing pipeline awareness programs—routinely evaluated for effectiveness—that inform people who live and work near pipelines, excavators, emergency responders and public officials on:
  - The purpose, need and reliability of underground pipelines;
  - Pipeline safety and how to recognize, respond to and report abnormal conditions or leaks;
  - Potential hazards and prevention measures taken;
  – Emergency telephone number and notification;
  - Information about damage prevention, including 811 Call Before You Dig programs
  - Pipeline markers;
  - Right of way encroachments inhibiting an operator's ability to respond to potential emergencies, prevent third party damage, provide surveillance and perform routine maintenance;
  - An overview of Integrity Management Plan;
  - Information on Emergency Response Plans; and
  - NPMS, the National Pipeline Mapping System, for locations of facilities and names of operators.
- Promoting "811 Call Before You Dig" at every opportunity to remind excavators and the public that they should contact the local One-Call center before beginning any excavation

Investing in the Future: Research and Development

Investment in the development of new technologies is a key component to continuously improving pipeline safety.

We work with leading research and development organizations to plan and support their work to enhance the safety, efficiency and reliability of transmission pipelines.

These organizations include:

- **Common Ground Alliance (CGA)** – a member-driven association dedicated to ensuring public safety, environmental protection and the integrity of all underground facilities by promoting effective damage prevention best practices
- **Pipeline Research Council International (PRCI)** – a research cooperative that has been working for many decades to improve pipeline technologies
- **Gas Technology Institute (GTI)** – an organization that develops and deploys technology solutions to help promote the use of natural gas as a secure, abundant and affordable energy source to meet future needs.
- **Joint Industry Projects (JIP)** – research projects funded by groups of pipeline companies that focus on a specific issue

- **INGAA Foundation** – the research arm of INGAA that works to facilitate the efficient construction and safe, reliable operation of the North American natural gas pipeline system
- Participation and support of **federal research and development initiatives**

Security of Our Pipelines

In recent years, we have strengthened our industry's security, working closely with the TSA to coordinate these efforts.

INGAA established a Security Committee, composed of industry leaders, to evaluate security best practices for both physical and cyber security threats and help develop industry guidance for implementation of these best practices. The committee promotes enhancing our security programs by:

- Implementing TSA's Pipeline Security Division guidelines that describe best practices for securing our facilities
- Participating in TSA's crisis management drills
- Attending TSA's annual International Pipeline Security Forum
- Conducting our own major crisis management drills
- Reporting suspicious incidents to the Transportation Security Operations Center (TSOC), an arm of TSA
- Sharing information through DHS's internet-based Homeland Security Information Network (HSIN)

In Conclusion

The men and women working for the companies that build and operate North America's interstate natural gas pipeline systems have created a safe and efficient mode of energy transportation. We intend to keep it that way.

INGAA

The Interstate Natural Gas Association of America (INGAA) is a trade organization that advocates regulatory and legislative positions for the natural gas pipeline industry in North America and advocates action to improve pipeline system safety.

INGAA represents almost all the of the interstate natural gas transmission pipeline companies operating in the United States, as well as companies in Canada and Mexico. Its members transport the vast majority of the nation's natural gas through a network of about 185,000 miles of pipelines.

INGAA Foundation

The INGAA Foundation Inc. was formed in 1990 by INGAA to advance the use of natural gas for the benefit of the consuming public and the environment. The foundation sponsors research aimed at promoting natural gas use and safe, efficient pipeline construction and operation. It funds reports and studies, sponsors forums on technical and economic issues that are of interest to its members, and promotes natural gas infrastructure development worldwide.

Today, the foundation has more than 135 members representing natural gas pipeline companies, construction companies, engineering firms, pipe and compressor manufacturers, law and accounting firms, companies providing information technology and other suppliers of goods and services to the pipeline industry.

For more information

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