

# Maintaining and Enhancing Pipeline Integrity

## About the El Paso Pipeline Group's Integrity Programs

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**Because so much is riding on the safety of the El Paso Pipeline Group's gas transmission system, we take extensive measures to ensure our pipeline's integrity. Our integrity program starts before the pipeline is ever laid in the ground and continues long after it is in operation. Here's a look at our pipeline integrity efforts.**

### **How does the El Paso Pipeline Group prepare its pipelines for installation?**

We use only high-strength steel pipe that meets or exceeds standards set by the natural gas industry and the federal government. Our pipe is coated with a special material that helps prevent corrosion. During construction, we x-ray pipe welds to ensure that they meet exacting standards. After installation and prior to initial operation, we perform hydrostatic testing, which involves filling the pipe with water and pressurizing it well beyond the pipe's normal operating pressure to identify weaknesses in the pipe.

### **How often is the El Paso Pipeline Group's system monitored?**

The pipeline is monitored 24 hours a day, seven days a week, from our gas control centers using computer and telecommunications equipment that is located throughout the system. These centers continuously monitor flow, pressure and other data about the pipeline system. Readings are taken every four minutes at receipt locations, compressor stations, and delivery locations all over the system to control the flow of gas. Where the gas entering the system is known to be capable of significantly violating the El Paso Pipeline Group's tariff limits, gas quality data is recorded and transmitted to the gas control facility. The El Paso Pipelines Group can refuse to accept gas from operators if it does not meet the El Paso Pipeline Group's tariff requirements. If there is a significant potential for receipt of poor quality gas, local gas control monitoring equipment is installed, which will automatically block flow from the receipt point in the event poor quality gas is tendered. Locations where the potential for quality violations is small or where the nature of the potential quality violation is less severe are monitored on a less frequent basis.

Our gas control centers are also key locations for our emergency response program. If a significant pressure drop occurs anywhere along the pipeline, our control centers are alerted immediately, and either automatic shut-down devices are tripped or valves are turned off manually to isolate the affected section of pipe.

## **Does the El Paso Pipeline Group inspect its pipelines?**

Yes. The El Paso Pipeline Group follows an extensive safety program to inspect and test its pipeline system on an ongoing basis.

- Above-ground piping is inspected visually for damage.
- The pipeline rights of way are inspected for spots of brown vegetation that might indicate a gas leak.
- The pipeline is inspected aurally to identify activity such as digging that might endanger the pipeline.
- Our gas control facility continuously monitors pipeline status.
- The pipeline is tested to ensure proper cathodic protection. We use cathodic protection to prevent external corrosion, and we test, inspect, and monitor the protection system.
- In areas of the pipeline where small amounts of liquids could accumulate, the El Paso Pipeline Group uses cleaning pigs and separators to remove any liquids and impurities.
- Direct assessment of the pipeline using technologies such as x-ray and ultrasonography have been used in areas where internal corrosion may pose a concern, and smart pigs have been used in areas where the configuration permits.
- All valves are inspected, lubricated, and tested.
- When pipe is dug up for any reason, its condition is inspected, recorded, and repaired if necessary.

## **What other methods do you use to detect potential corrosion in the pipeline?**

First, it's important to note that internal corrosion is rare on transmission systems that transport pipeline-quality gas. Internal corrosion should develop only if gas that contains a corrosive combination of gas, liquid water and/or other contaminants is transported. The first line of defense against internal corrosion is the removal of corrosive diluents and water (dehydration) from the gas. As noted above, this purification process must produce gas that meets a pipeline's gas quality standards or the production is at risk of being refused transport. Liquid and gas sampling is conducted at least twice a year and hourly at our larger receipt points in order to monitor and maintain the gas quality.

In addition to hydrostatic testing, there are other inspection methods that can be used if internal corrosion is suspected. One method is smart pigging. Smart pigs are electronic devices that can measure or detect numerous properties of pipelines. This includes sizing, wall thickness, hard spots in pipe, internal and external corrosion, anomalies and voids or defects in pipe coatings. Each pig has a different function, so one pig will not look for all problems in a single run, requiring multiple runs with different pigs to get a better picture of the pipeline integrity. This method is only possible where the physical pipeline configuration is conducive to the use of the pig.

Bell holing is another method used to detect internal corrosion. This method involves digging up sections of pipeline that might be suspect and then x-raying and/or using ultrasonic inspection tools to detect any thinning of the pipeline walls.

Another method is the use of coupons, weighed strips of metal made of the same material as the pipeline. This method involves insertion of the coupons into the pipeline. These coupons are removed and weighed to determine loss due to corrosion. From this data, an extrapolation of the estimated wall loss can be made for the pipeline system. Once this rate has been determined, chemical inhibitors can be used to limit further corrosion. This procedure is usually used only on gas systems that transport field or unprocessed gas that contains corrosive compounds or water.