

PIPELINE INTEGRITY AND SAFETY

FACT SHEET



From building and testing to monitoring and maintaining - pipelines are one of the safest and most efficient energy transport systems. To protect the public and the environment, safety is built into every step of the Northern Gateway pipeline construction and operations. All applicable industry standards and government regulations will be met or exceeded. The Northern Gateway Project will maintain an aggressive pipeline integrity maintenance program and continual pipeline monitoring to ensure the environmentally responsible and safe operation of all its pipelines.

Monitoring Pipelines

The pipelines are carefully and continuously monitored and controlled 24/7 from Enbridge's control centre:

- Every hour of every day the integrity of our pipelines is electronically monitored using our Supervisory Control and Data Acquisition (SCADA) computer systems and our Material Balance System (MBS) that can detect even small releases.
- Systems collect data from strategically located meters and sensors and calculate the volume of liquid hydrocarbons in the pipelines systems. If irregularities are detected, the MBS sounds an alarm.

Pipeline Integrity Program

We monitor the strength of the pipelines through our pipeline integrity management program. This program encompasses the tools, technologies and strategies needed to ensure that our pipelines have the operating fitness to perform safely, reliably and in an environmentally responsible manner. Our pipeline integrity management program involves:

- expert field technicians
- a robust corrosion prevention program (including protective coatings and cathodic protection for all of our pipelines)
- the best in-line inspection tools on the market which allow us to detect frequency and location of even minute changes in the walls of the pipeline
- patrolling the line using aircrafts, land vehicles or foot patrols
- a line pressure monitor alarm system
- pipeline depth monitoring program
- investigative excavations
- slope stability monitoring
- annual soil surveys
- using inline devices known as "pigs" to clean and inspect pipelines from the inside
- using high quality pipeline materials

Through these various means, data is collected to determine which section of the pipeline may need to be repaired. When a pipeline needs to be repaired, the damaged section of the pipeline is excavated, evaluated and repaired, replacing its protective coating at the same time. A full pipe replacement is seldom necessary.

PIPELINE INTEGRITY AND SAFETY

FACT SHEET



Prevention

Pipeline safety and reliability begins with prevention. This means recognizing conditions that have been known to cause failures in the past – then working to minimize the risk. It means adopting ‘the most’ advanced leak prevention technologies available, following environmentally sound construction practices, taking a proactive approach to pipeline testing and repair and reporting leaks or spills in accordance with requirements of regulatory authorities in Canada and the U.S.

Enbridge’s constant monitoring and inspections check for corrosion, cracks or other defects. If an inspection alerts us to a serious defect, Enbridge follows up by carrying out the necessary inspections or integrity digs in the field. Each dig involves digging up a section of buried line to verify a problem and, if needed, repairing the defect, recoating the pipe and reburying the line.