Optical Imaging to Detect Gas Leaks in Gas Gathering & Transmission Pipelines
Who is Enbridge?

- Canadian based company
- Longest Liquid Line in World
- Natural Gas Assets in Southern US
  - 13,000 Miles of Pipeline
  - 34 Processing and/or Treating Plants
  - 100 Compressor Stations
  - 500,000 hp of gas fired compression
EPA Natural Gas Star Program

- Enbridge joined in December 2003
- Environmental Stewardship in our US Operations
- Program benefits the Environment and Enbridge
- Enbridge wanted to immediately have an impact.
Aerial Optical Imaging Project

- Identified several pipelines in our North Texas Assets with high lost and unaccounted for gas
- Contracted Leak Surveys, Inc. to perform pilot project
- Pilot project was very successful
  - 160 miles of pipeline in two days
  - 22 leaks were found
  - 1.4 mmcf/day
- Conducted three more surveys for totals of:
  - 603 miles of pipeline
  - 30 leaks
  - 2.3 mmcf/day
Monthly Surveys

- Budgeted in 2005 to conduct monthly surveys
- Eight separate surveys
  - Flown 480 miles of gathering and transmissions lines
  - Detected and repaired 25 leaks
  - Estimated 2.74 mmcf/day of natural gas
  - Or 2.12 mmcf/day of methane
3.7 mcf/hr Leak Rate
7.0 mcf/hr Leak Rate
3.4 mcf/hr Leak Rate
7.7 mcf/hr Leak Rate
4.0 mcf/hr Leak Rate
4.0 mcf/hr Leak Rate
4.0 mcf/hr Leak Rate
Future Plans

• Continue monthly aerial surveys
• Pilot Project for leak detection and repair at a Plant and a Compressor Station
  – Scheduled for November 2005
  – Evaluate success of pilot project
  – Leak Measurement
Optical Imaging is a cost effective method of performing leak surveys which can supplement or replace traditional pipeline leak survey methods. Enbridge will continue to utilize this technology throughout our operations to locate sources of gas loss on pipeline systems.