

CASE STUDY

FROM VISUAL PATROLS TO AI-POWERED INSIGHT

Case Study

How a Pipeline Operator Transformed
Integrity Management with Flyscan



33%

of pipeline threats go undetected until it's too late*.

A pipeline operator with vast network of pipelines spanning multiple states is committed to maintaining the highest standards of safety, environmental stewardship, and operational efficiency. They successfully implemented Flyscan's advanced aerial inspection technology to transform its pipeline integrity management practices.



A man with short grey hair and black-rimmed glasses, wearing a white dress shirt and a dark tie, is looking down at a document held by another person. The background is slightly blurred, showing what appears to be an office setting with large windows.

THE CHALLENGE

Limitations of Traditional Aerial Patrol

For decades, the pipeline industry relied on visual inspections conducted by pilots flying small aircraft to monitor pipeline ROW (rights-of-way). While this method served its purpose there can be limitations:

▼ **Human Error**

Pilots were tasked with both flying the aircraft and visually inspecting the pipeline corridor, leading to potential oversights.

▼ **Limited Visibility**

Vegetation, terrain, and weather conditions could obscure threats or leaks from visual detection.

▼ **Inaccurate Positioning**

While GPS coordinates for detected issues were directionally correct, even the slightest inaccuracies could result in time-consuming field investigations.

▼ **Detecting Small Leaks**

It can be challenging to identify small hydrocarbon leaks that are below typical leak detection monitoring thresholds using visual inspection only.

▼ **Lack of Comprehensive Data**

Traditional methods did not provide all data for analysis and decision-making that Flyscan offers.

▼ **Lack of Imaging Capabilities**

Traditional ROW patrols relied solely on visual observation, with limited or no photographic or digital imaging of the ROW captured during flights. This meant there was no permanent record of patrols for reference, analysis, or comparison over time—limiting situational awareness, post-incident reviews, and proactive threat identification.



THE SOLUTION

The makings of this innovative solution

- ▼ **Hyperspectral Imaging**
Mounted on aircraft, these sensors capture detailed data about the pipeline corridor.
- ▼ **AI-Powered Threat Detection**
Advanced algorithms analyze sensor data in real-time to identify potential threats and anomalies.
- ▼ **Real-Time Notifications**
Immediate alerts are sent to ground teams when issues are detected.
- ▼ **High-Resolution Imagery**
A detailed mosaic of the pipeline right-of-way is produced during initial deployment, providing a clear visual baseline of the corridor.
- ▼ **Integration with Existing Systems**
The solution seamlessly integrates with company GIS and other operational systems.

IMPLEMENTATION PROCESS

Pilot Project	Controlled Testing	Evaluation of Alternatives	Integration and Training
The company participated in a multi-operator pilot project to test Flyscan's capabilities across a large geographic area.	The company conducted its own experiments, including placing controlled leak simulations along their ROW to test detection capabilities.	The team thoroughly assessed other options, including satellite imagery and drone-based solutions, before deciding on Flyscan.	The company integrated Flyscan's system with their existing processes and trained relevant personnel.



OUTCOMES & BENEFITS

ENHANCED THREAT DETECTION & GPS ACCURACY

- ▼ More reliable identification of equipment and activities on the ROW
- ▼ Precise GPS coordinates for detected issues, dramatically improving investigation efficiency

IMPROVED LEAK DETECTION CAPABILITIES

- ▼ Ability to detect small surface leaks potentially undetectable by other systems
- ▼ Faster response times to address environmental and safety risks

OPERATIONAL SAVINGS

Reduced site investigations by 200 visits annually for threat and leak detection by approximately ~40%

- AVG annualized site investigation cost savings ~\$180,000/year saved

VALUABLE ROW IMAGERY

- ▼ A high-resolution mosaic is generated at the outset of implementation, creating a detailed visual benchmark of the entire ROW. This foundational view supports change detection, vegetation tracking, and long-term planning.
- ▼ The imagery supports more informed landowner engagement, One Call ticket screening processes, development oversight, Operational project planning, and ROW encroachment prevention by providing objective, up-to-date timestamped visuals.

AUTOMATION & REAL-TIME THREAT NOTIFICATIONS

- ▼ Immediate alerts about potential threats or unauthorized activities
- ▼ Allows for rapid response to protect pipeline integrity

OPERATIONAL EFFICIENCY

- ▼ Reduces time spent on false alarms and unnecessary field investigations
- ▼ Streamlines decision-making processes with data-rich insights

ENVIRONMENTAL STEWARDSHIP

- ▼ Enhances ability to detect and respond to potential environmental issues reducing impacts and costs
- ▼ Supports pipeline operators' commitment to responsible operations



FUTURE OUTLOOK

By implementing Flyscan's advanced aerial inspection technology, the pipeline operator has significantly enhanced its pipeline integrity management capabilities. This innovative solution has not only addressed the limitations of traditional aerial patrols but has also opened new possibilities for improving safety, efficiency, and environmental stewardship across their operations.

LOOKING AHEAD, THE COMPANY PLANS TO:

▼ Accelerate Enterprise-Wide Rollout

Continue expanding Flyscan's deployment across additional pipeline assets and teams, enabling broader access to insights and standardizing patrol practices across departments.

▼ Enhance Data Analytics:

Develop more sophisticated analysis techniques to extract additional value from the collected data.

▼ Explore New Applications

Investigate using the technology for other aspects of pipeline operations and asset management.

▼ Geohazard awareness and monitoring, utilizing photogrammetry change detection

Assess the accuracy of change detection capabilities and determine how the company can utilize this technology to monitor the ROW for potential geohazards and depth of cover changes



