



Permian-Based Operator Becomes  
Top Performer on Methane Emissions  
Intensity with 28x ROI

# SUMMARY

In the first quarter of 2022, an independent E&P operator commissioned Kairos Aerospace (Kairos) to survey some of its upstream assets to detect possible methane leaks and to provide an emissions assessment.

The aerial survey performed in early January 2022 identified a number of verified emissions sources, which were promptly repaired by the operator's repair and maintenance crews. The reported payback period of the survey for the customer, which was calculated based on actual repair costs and the value of additional captured gas, was 13 days with a return on investment (ROI) of 2,845%.

Kairos also produced a benchmarking Methane Assessment Report that showed that the customer was among the best of similarly sized oil and gas operators in the Permian Basin, in terms of controlling their methane emissions.

\* ROI is calculated by dividing the revenue from re-captured gas by the total cost incurred by the customer, which consists of the cost of the survey itself plus any required repairs

## PROJECT PERFORMANCE METRICS

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ROI: **2,845%**  
Payback period: **13 days**

# CHALLENGES

## Methane Measurements vs. Emissions Factors

One significant challenge for oil and gas operators in the United States in their methane mitigation efforts is the lack of data on actual methane emissions. For decades, the industry standard was to use emissions factors, which are engineering calculations of emissions, instead of actual measurements. Although a favorite of regulators, these estimates can vary quite widely compared to actual emissions measured using state-of-the-art methane detection technologies. As real field data have shown, a small number of sources accounts for most emissions, and emissions factors based on small samples often miss these large sources.

### What is methane emissions intensity?

Methane emissions intensity is a measure of methane emissions relative to natural gas throughput, according to the Natural Gas Sustainability Initiative (NGSI) protocol.

### What are emissions factors?

Emissions factors are a way to quantify “typical” emissions from a site or piece of equipment. They are calculated by measuring emissions from a small sample of equipment in question, and then extrapolating that number as “average” across a population. Natural Gas Sustainability Initiative (NGSI) protocol

# SOLUTIONS

## Midland Basin

The Midland Basin of West Texas constitutes the eastern portion of the Greater Permian Basin (GPB). The Delaware Basin, which forms the western portion of GPB, extends into southeastern New Mexico. The Greater Permian Basin accounts for almost 40% of total U.S. production of oil and 15% of natural gas.

Kairos Aerospace completed an aerial survey of the customer's upstream assets, in early January of 2022. The flights originated out of Kairos's operational base in Odessa, Texas.

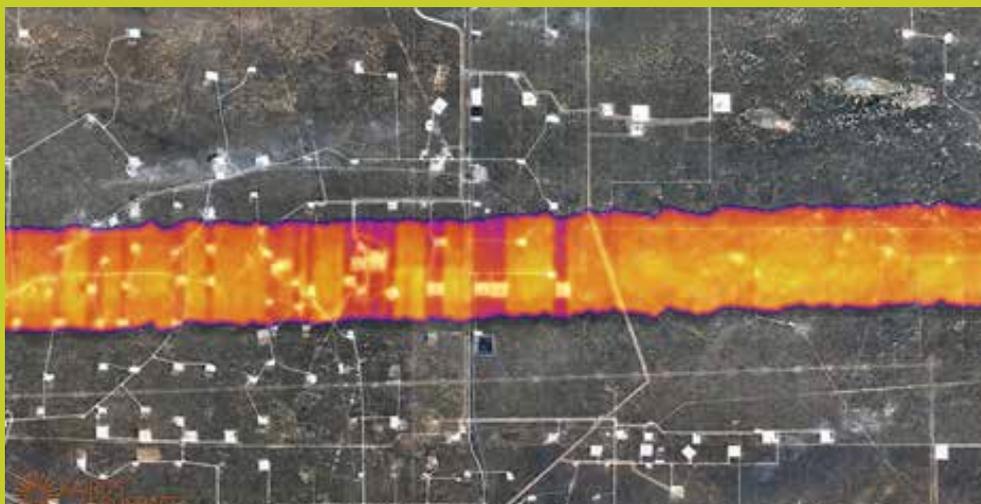


Figure 1. Example of aerial visualization of sensor tracks as the plane flies over the target area collecting data

# DELIVERABLES

**Over the course of the survey, Kairos provided to the customer three reports with critical data: a Weekly Inspection Report, a Final Summary report, and a Methane Assessment Report.**

- 1.** The Weekly Inspection Report contained a list of the detected emissions, their locations, visualizations of methane plumes, and emissions rates at the moment of detection. This report provided actionable data for the customer's operations to prioritize the emissions sources and to deploy repair and maintenance crews in the most effective way.
- 2.** The Final Summary Report presented an analysis of total methane emissions, taking into account ground inspection feedback provided by the customer's team. This report was delivered in conjunction with a debrief presentation, which included additional data such as gas and financial savings, ROI, payback period, and root-cause analysis.
- 3.** The Methane Assessment Report benchmarked customer's performance in methane reduction efforts against other peer companies operating in the same region. Over the years, Kairos has built up the most comprehensive basin-wide database on methane emissions, giving it a unique benchmarking capability.

# RESULTS

The survey found a methane emissions intensity of less than 0.1% for the surveyed area. Low methane emissions intensity, published in the Methane Assessment Report, put the customer among the best performing upstream operators in the Permian Basin and demonstrated its robust methane mitigation measures and high operational standards.

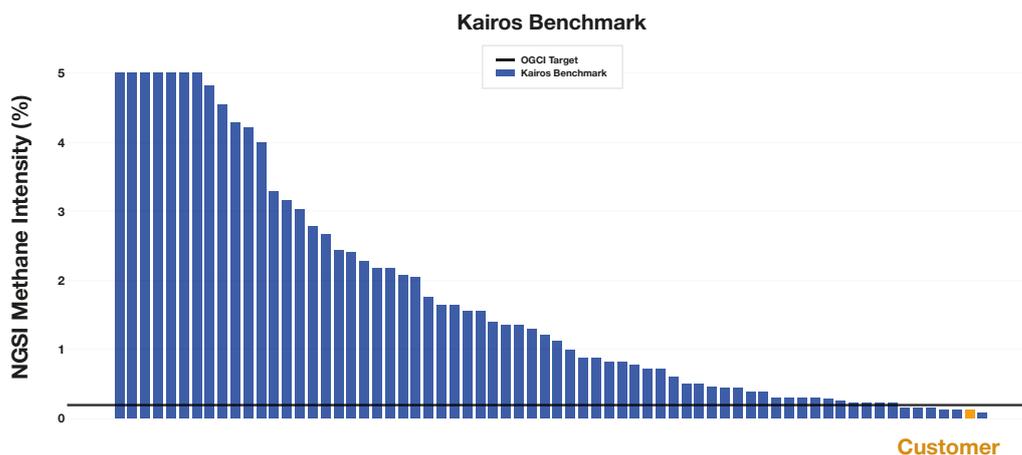


Fig. 2 Methane emissions intensity of customer's surveyed assets in Q1 2022

The methane emissions intensity of 0.1% was also far below the target set by the Oil and Gas Climate Initiative (OGCI), a global coalition of major oil and gas producers, to bring methane intensity below 0.20% by 2025.

The business performance metrics reported for this survey – a 13-day payback period and ROI of 2,845% – demonstrated that Kairos's aerial methane detection technology brings tangible benefits even to the best-in-class oil and gas operators. By quickly identifying and prioritizing methane emissions sources, this operator and other Kairos customers can swiftly deploy repair and maintenance crews to stop leaks in the most efficient and cost-effective manner.