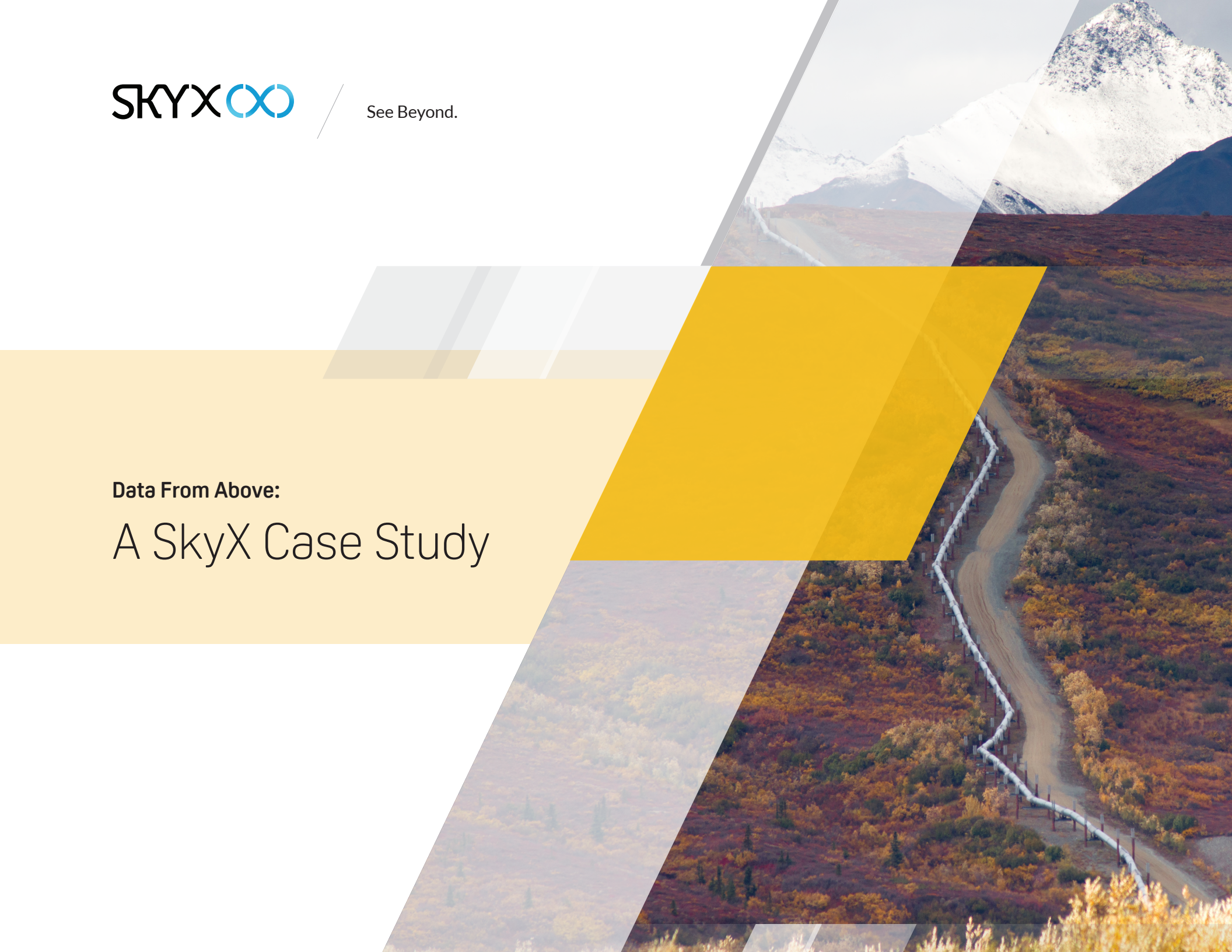




See Beyond.

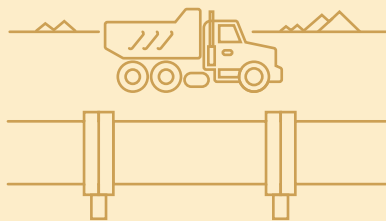
**Data From Above:**

# A SkyX Case Study

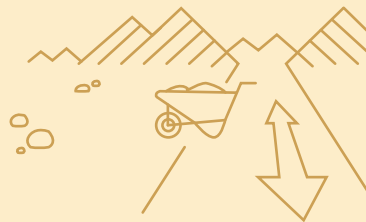


# The Ask

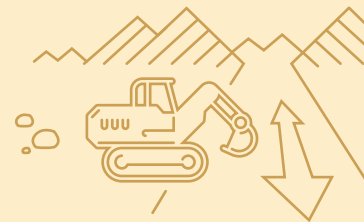
The client, a major pipeline operator in Mexico, had a problem detecting unauthorized third-party activity on their pipeline right of way. The client relied primarily on ground teams to walk the length of the pipeline and find evidence of illegal activity, such as:



**Evidence of unauthorized vehicle activity in the areas surrounding the pipeline**



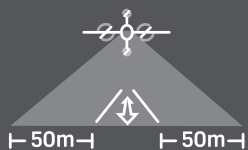
**Equipment left on or near the right of way**



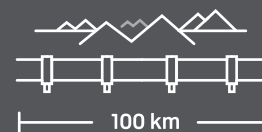
**Unauthorized construction on the asset and the right of way**



**Ground abnormalities on or near the right of way**



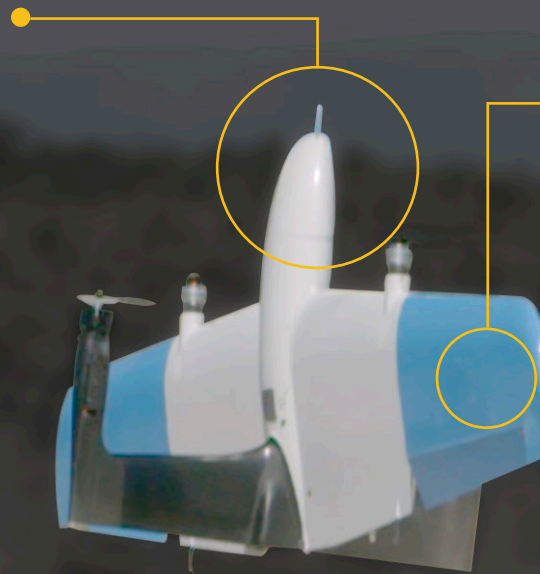
Given the nature of the problem they were trying to solve, the client requested the field of view to include the right of way and 50 m (160 ft) on either side.



Segment size: 100 km stretch of pipeline in a remote mountainous location in Mexico.

# The Technology: SkyOne

A high-resolution RGB camera to capture high-quality images of the pipeline right of way and surrounding areas.



Redundant industrial lithium ion power system to sustain the 100 km flight.

Autonomous Vertical Takeoff and Landing (VTOL) negating the need for runways or catapults.



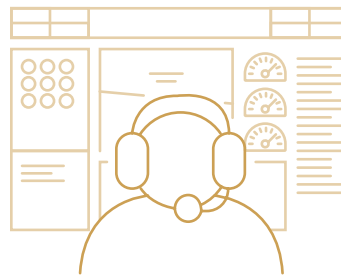
# Concept of Operations



## Mission Planning

SkyX conducted a thorough site assessment of the flight path and the surrounding area which included:

- Defining the take-off and landing locations for the segment.
- Conducting a cellular survey to ensure that there is adequate coverage along the route.
- Assessing the local weather conditions.
- Completing an airspace assessment to ensure no conflict with controlled airspace.
- Identifying other hazards and obstacles that may interfere with the flight path.



## Piloting

SkyX flew the entire mission Beyond Visual Line of Sight (BVLOS), remotely piloted by our team in Toronto with a backup-team on the ground.

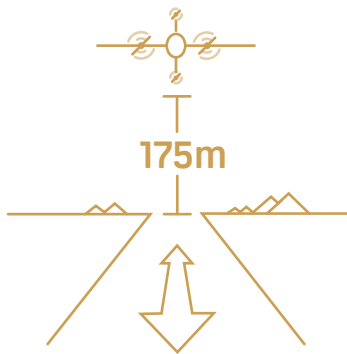


## Telemetry

Given the remote nature of the mission, SkyX primarily relied on cellular communications when available and switched to satellite communication as a back-up.

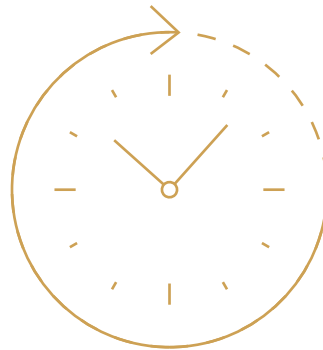


# Concept of Operations (Cont'd)



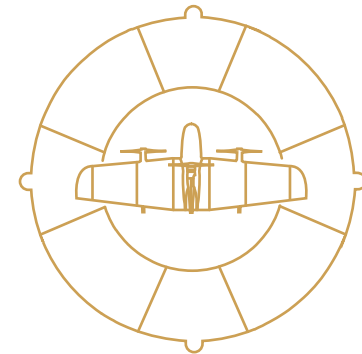
## Flight Height

SkyX set the flight height to be 175 m (575 ft) above the right of way to meet client requirements.



## Flight Duration

Flying at 100 km/hr (65 miles/hr), SkyX covered the entire 100 km segment in 1 hour.



## Failsafes

SkyOne was equipped with a number of failsafe actions in order to ensure continued safe operations in the event of a system failure. These include several automated responses which are designed to act without the need for pilot intervention:

- Return to home and loiter or land upon mission failure.
- Automated departure from fixed-wing flight and landing in position if the vehicle experiences a dramatic loss in battery.
- Geofences to prevent inadvertent deviation from the planned route.

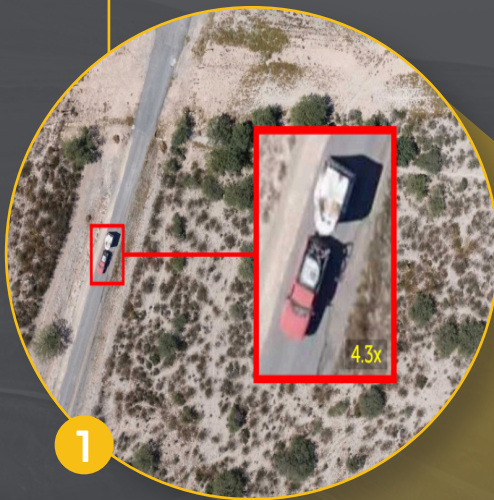




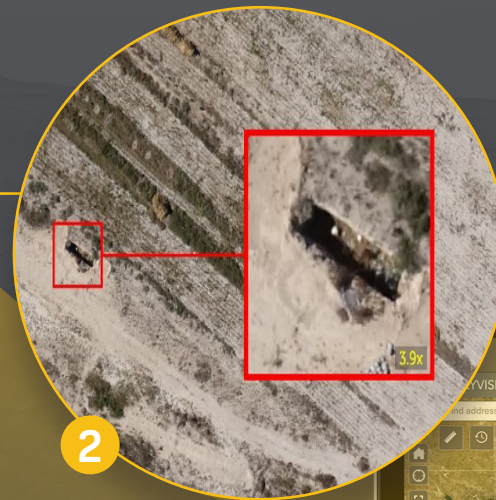
# The Result

Using a combination of machine learning algorithms and human verification, SkyX analyzed the images accumulated during flight and detected the following types of anomalies:

Unauthorized vehicle in a restricted area.



A large excavated site about 100 m away from a facility that wasn't reported by their ground crews.

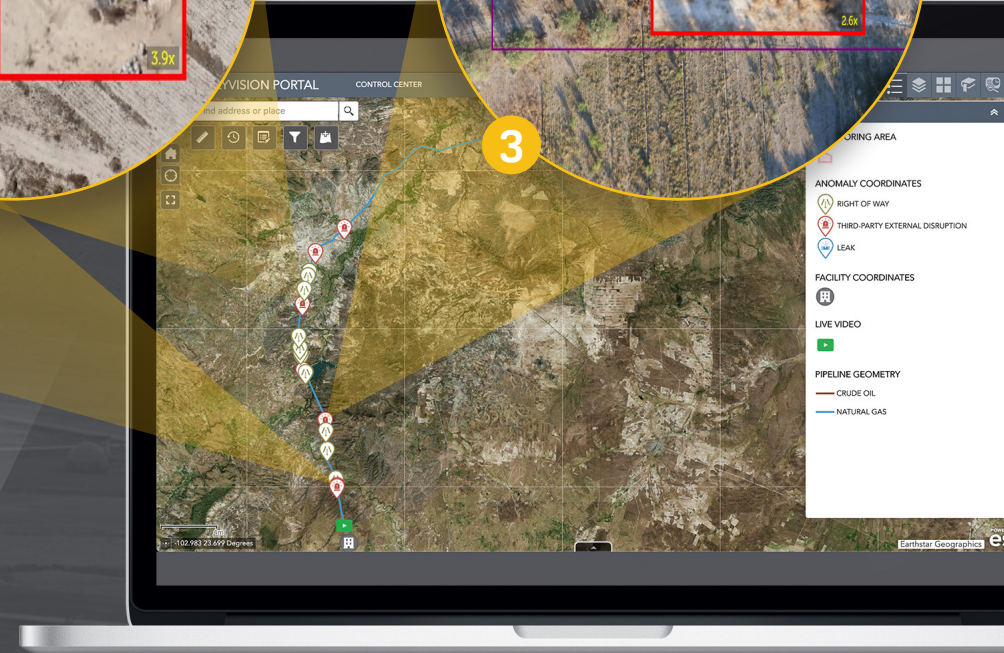


Cracks along the right of way in the seismically active ground.



When presented to the client, they took the following actions:

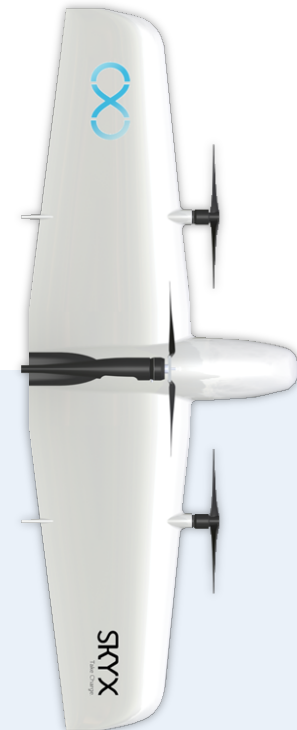
- 1 Ensured that the road was not easily accessible to the public.
- 2 Inspected the excavated site, filled-in the hole and produced a formal report recording the instance for continued monitoring.
- 3 Sent a crew to inspect the cracks on the ground and make fixes accordingly.



# About SkyX

SkyX is the global leader for long-range asset inspection and monitoring. We deliver actionable data and high-impact reports for mission critical assets, using a combination of machine learning algorithms and human verification to analyze high-quality images accumulated by best-in-class aerial systems. Armed with the visual verification data, organizations can make intelligent and informed decisions with regards to the health of their infrastructure, and mitigate risks associated with having remote assets.

For more information visit [www.skyx.com](http://www.skyx.com)



See Beyond.

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