SkyX

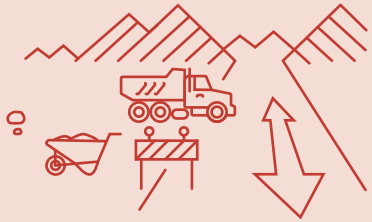
See Beyond.

SkyX in Alberta:

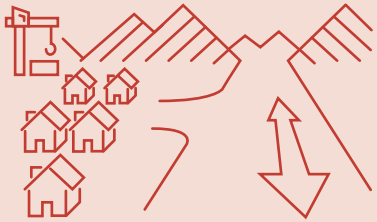
A Case Study

The Ask

The client, a natural gas pipeline operator in Alberta, was in need of quality aerial data of their right of way. SkyX was invited to participate in the trial and look for anomalies on or near the right-of-way, such as:

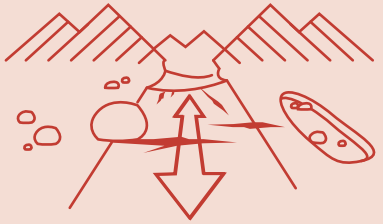


Construction activities

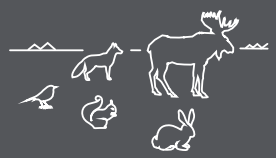


Residential and commercial development

Excavation activities



Cracks and ground depressions

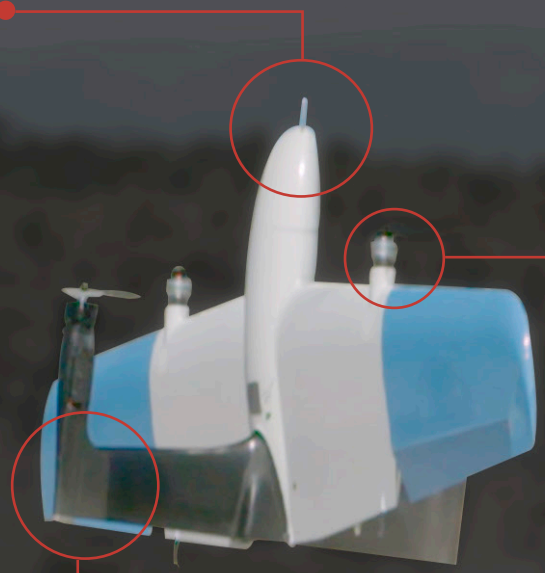


An additional requirement by the client was that the operation should not disturb the wildlife in the area.

Segment size: SkyX flew a total of 33 km, operating under clear skies and ambient temperatures of -20°C.

The Technology: SkyOne

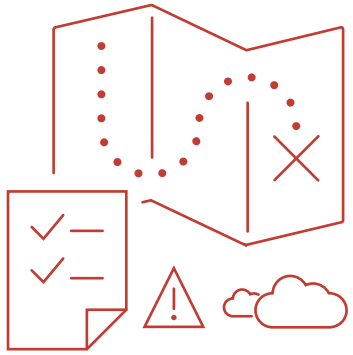
A high-resolution RGB camera to capture high-quality images of the pipeline right of way and surrounding areas.



Quiet electric motors.

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

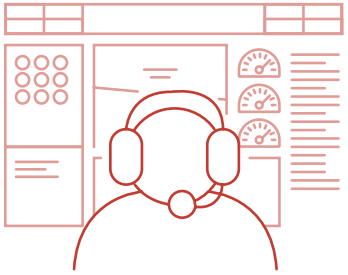
Concept of Operations



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 was 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 could have interfered with the flight path that may interfere with the flight path.

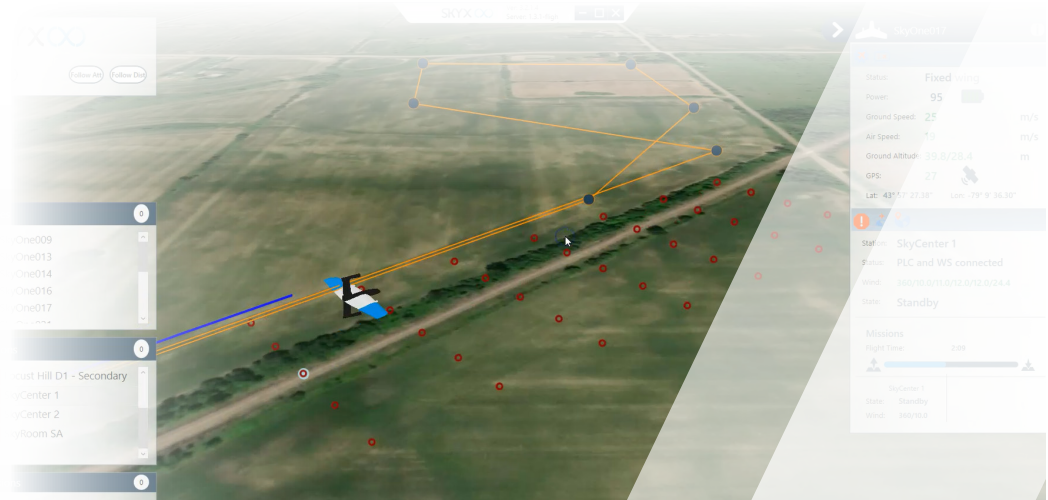


Piloting

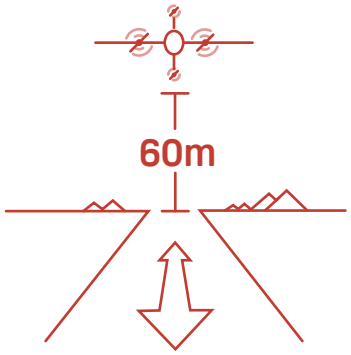
SkyX flew the entire mission via Extended Line of Sight (ELOS), remotely piloted by our team in Toronto with a backup-team on the ground in a chase car.

Telemetry

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

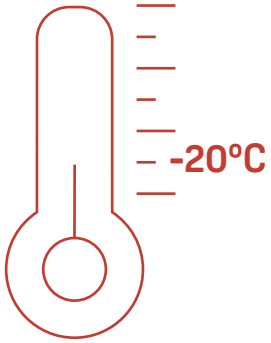


Concept of Operations (Cont'd)



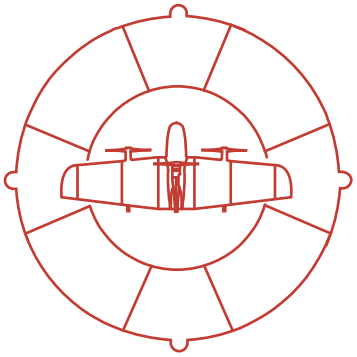
Flight Altitude

SkyX set the flight height to be 60 m (200 ft) above the right-of-way to capture the area in greater detail.



Temperature

SkyX successfully flew the mission in -20°C and did not experience any system failures despite the cold temperatures.



Failsafes

SkyOne was equipped with a number of failsafes in order to ensure continued safe operations in the event of a system failure. These include several automated responses 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 mode, and land safely if the vehicle experiences a dramatic loss in battery.
- Geofences to prevent inadvertent deviation from the planned route.

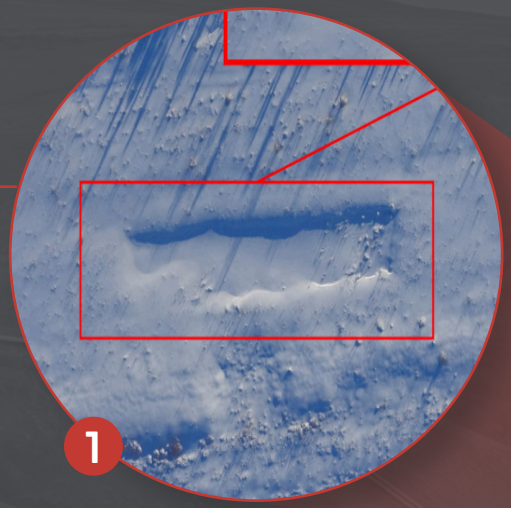
The Result

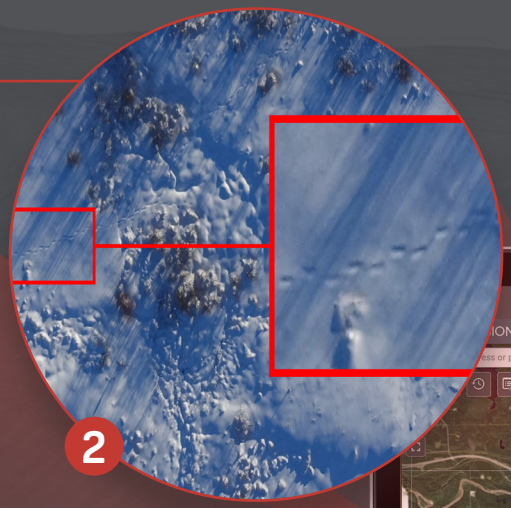
Using a combination of machine learning algorithms and human verification, SkyX analyzed the images accumulated during flight. From the 5060 images collected during the 27 minute flight, 33 sample features of interest were identified, such as:

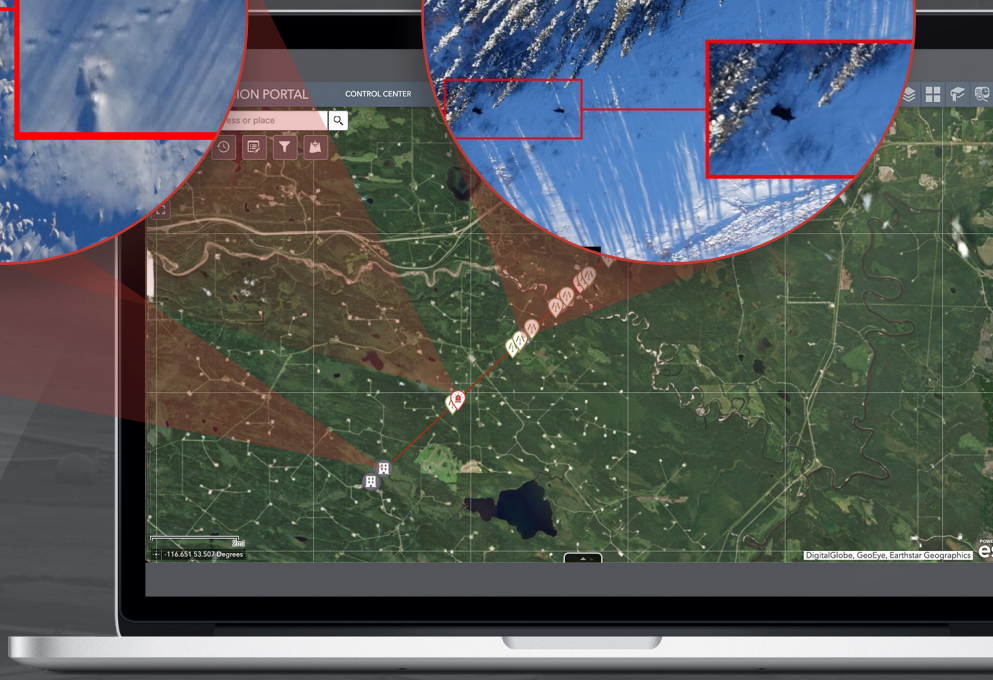
SkyX identified improper construction backfill from the previous summer.

Evidence of unauthorized human activity on the right of way.

Wildlife, such as moose, was observed and did not appear to be disturbed by the drone flying overhead, a key requirement of the operation.



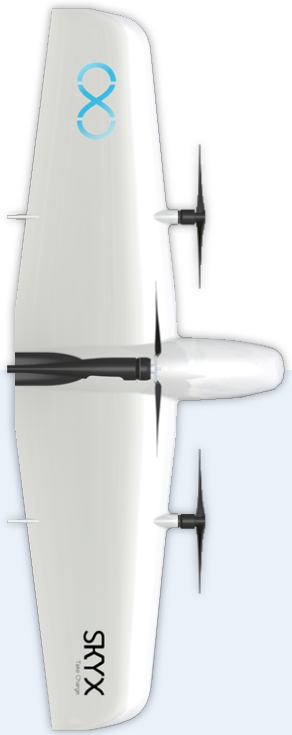




When presented to the client, they took the following actions:

1. The client was able to get in touch with the construction company and have the issue rectified.
2. The client added more security around their right-of-way perimeters, to limit unauthorized access to the property.

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**

SKYX See Beyond.

SkyX Limited
www.skyx.com | info@skyx.com