

## Albian Sands uses 3D laser scanning for oil sands mining

**Albian Sands Energy Inc. is a joint venture that operates the Muskeg River Mine on behalf of the owners of the Athabasca Oil Sands Project.** The Muskeg River Mine, located 75 km northeast of Fort McMurray, Alberta, Canada contains more than 6.5 billion barrels of mineable bitumen.



*Albian Sands geologist operates the I-Site 4400LR at Muskeg River Mine*

### HIGHLIGHTS

- I-Site systems designed to optimise management of surveying, engineering and geological tasks
- Cold weather package includes a scanner jacket and heated batteries
- I-Site photos and scans are a valuable real-time option

Operating at design capacity, the mine produces 155,000 barrels of bitumen a day.

In oil sands mining, a mix of oil and sand is removed from just below the surface using shovels and trucks. This material is mixed with warm water to separate the oil from the sand. Since the oil sand mined at Albian is a very dark and organic material, determining different ore grades and mapping of ore-waste splits was a challenge for the geologists.

Data from drillholes and traditional surveys was not available in a timely fashion to support short-range adjustment to the geology models or mine plans. In addition, the dynamic nature of the short face oil sand pit made shovel face design a challenge. Many times, data was not available before the face changed.

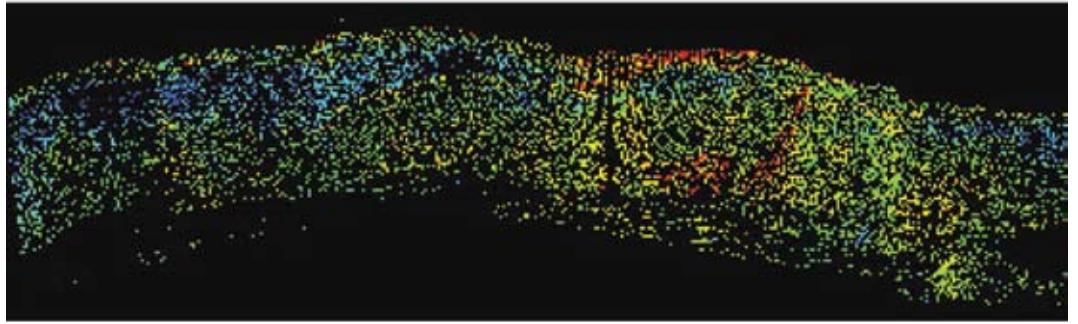
Albian already uses Maptek Vulcan™ software and two geologists were introduced to the Maptek I-Site system at a Users Conference. Albian later arranged a field trial of the equipment at the Muskeg River Mine, with the primary objective of testing the functionality of the I-Site system in cold weather.

The I-Site 4400 cold weather accessories, including a scanner jacket and heated batteries, proved successful in the sub-zero Celsius temperatures typical of northern Canada winters.

Convinced of the functionality of the I-Site system, Albian rented a scanner for 4 weeks to evaluate data derived in its pit. The benefit of viewing scan data coloured by intensity of laser returns quickly became evident. This colour scheme made the ore layers clearly visible.

Digitised ore faces were easily loaded into Vulcan and used in conjunction with drillhole data to map and design working shovel faces. The geology department found an additional benefit in the digital photo-rendering feature when doing geological mapping.

The soft shovel faces are unsafe and are very rarely mapped geologically due to highwall instability. Albian Sands geologists found measurements from the I-Site photos and scans to be a valuable, real-time alternative to having no data.



*Scan points of a shovel face at the Muskeg River Mine*

## TESTIMONIAL

Studies proved that I-Site scans and photographs are a valuable option for collecting mapping data, with speed of data acquisition the main advantage.

It is now a key element of the Muskeg River Mine's efforts to improve geological modelling accuracy, survey control, and general support of pit operations.

Analysis of one scenario during the evaluation period yielded a nearly \$500,000 CDN revenue stream that would have been missed without the benefit of I-Site.

Using the traditional process, a band of waste had been defined. During mining, it was noted there was ore above the waste contact. The same face was scanned using the I-Site 4400LR.

With the additional drillhole data in the surrounding area, a volume for the ore was calculated, and was determined to be economic to pursue. The ore was then

mined instead of being sent to the waste dump with the underlying waste, a key factor used to justify Albion's purchase of the I-Site 4400LR.

The primary intended uses of the system will be determining pit volume changes and geological mapping.

The speed of data acquisition has made the I-Site 4400LR very popular at the mine. The geology department has received multiple requests for scanning dump piles, ramps and limestone collapse structures from other groups on site.