GEMCOM

CUSTOMER CASE STUDY

Northland Resources improves efficiency and optimises project economics with Gemcom solution

Engineering staff uses Gemcom Surpac, Whittle and MineSched to reduce consulting costs and defer CAPEX spending

Countries: Finland, Sweden

Objective:
Obtain a solution to aid engineering studies and metallurgical testing and accelerate mineral ore production.

Approach:
Adopt Surpac, Whittle and MineSched software to gain efficiencies and lower costs.

IT Improvements:
- Synergistic tools merging block modelling, pit optimisation and scheduling results.
- Interfaces with third-party software, eliminating file conversions and saving a workday.
- Automated workflows, saving several weeks of manual input.
- Faster estimation of multiple block modelling routines (15 minutes vs 2 hours).
- Quick report generation in standard formats.

Business Benefits:
- Cost savings by hiring fewer consultants.
- Up to $1 million deferred in upfront capital expenditures.
- Greater ability to address skills shortage.
- More time spent on geological interpretations.
- Higher staff productivity.

NORTHLAND RESOURCES INC.

"We deferred a bulk sampling expenditure of $500,000 to $1 million by applying drillhole data and conducting statistical analysis using the Surpac database. We obtained much of the same information as if we had completed a bulk sample, so there was no immediate need to excavate, build a dike or obtain environmental permits."

— Matt Blattman, Senior Manager of Engineering, Northland Resources Inc.

Portal of the bulk sample drift at Stora Sahavaara, Sweden.

GEMCOM

Fast-tracking mine production

In Sweden and Finland, Northland Resources Inc. (TSX: NAU; Oslo: NAUR) controls one of the continent's last major undeveloped iron ore provinces, where it is advancing its goal to become Europe's largest independent, domestic iron ore producer. In northern Sweden, Northland Resources (www.northlandresourcesinc.com) is implementing a staged development of its Tapuli iron ore project.

The company began detailed engineering studies to generate technical data and accelerate the key property to production. Tapuli has the potential to produce up to 3 million tonnes per annum of high-grade iron concentrate and fuel other key company projects.

Along with the Tapuli studies, Northland completed basic exploration on two other magnetite projects – Stora Sahavaraa in Pajala, Sweden, and Hannukainen in Kolari, Finland – and is performing preliminary engineering to acquire environmental permits for all three mines. One mine contains mainly iron; another has iron and gold; and a third comprises iron, gold and copper. Northland relies on the Surpac, Whittle and MineSched software to support these efforts and future mineral production.

The company selected Gemcom's software over MineSight, which it had purchased sometime ago for geological modelling because few staff members were skilled in using MineSight. When the main user left the company, management decided to evaluate other solutions. They wanted the software to fit certain criteria: outstanding functionality, superior interfaces with third-party software, strong technical support and an extensive global user network. The company also required access to support personnel in the same time zone.

"Gemcom met all of the company's requirements and provided a Finnish distributor. I am delighted that we chose Gemcom because I have used Surpac for nearly 15 years," says Matt Blattman, Senior Manager of Engineering, who recently joined the company and conducted the software implementation.

Gemcom distributor WSP Finland provided training for Northland geologists. "We were pleased with the on-site Surpac training, and our staff found the software easy to learn," Blattman says. "We believe that software with widespread usage helps our company overcome skill shortages. It reduces our dependence on consultants and enables us to compete for skilled mining professionals in a tight labour market."

Portal preparations for the bulk sample drift at Stora Sahavaara, Sweden.

Bulk sample development drilling at Stora Sahavaara, Sweden.

Strong justification for decisions

The geology department primarily uses Surpac for block modelling, geological interpretations and plotting drillhole maps. Blattman finds Surpac helpful for initial resource calculations and for viewing data from various sources. Surpac is powerful in these areas, because it interfaces with third-party software and communicates across systems. This is key during engineering planning whereby outside consultants are handling the bulk of Northland's work. Although they provide reports and maps in various GIS and AutoCAD formats, the Northland staff encounters no file conversion issues.

"Being able to read almost any data format the consultants generate makes my job a lot easier," Blattman affirms.

If the company decides to pursue another option, the staff uses the consultants' data integrated into Surpac for more analyses – omitting the need for another consultant. "Being able to process other people's data quickly and make my own assumptions, greatly improves our efficiency," Blattman says.

Logging Northland's drill core at facilities in Finland.

"For each project I work on, Surpac probably saves a full day of work in being able to immediately work with the consultant's data."

— Matt Blattman, Senior Manager of Engineering, Northland Resources Inc.

Image created in Surpac showing historic workings at Hannukainen, Finland using laser scanned DTM and orthophotos.

Excellent visualisation tools clarify assumptions

The software helps to crystallise facts and assumptions that may be unclear to others in the organisation. An example is when the staff was determining the right place to test a bulk sample at Hannukainen and process the material. The company hired one consultant to identify the sample area and a second consultant to figure out the best way to excavate it. Both consultants delivered their reports in different formats, which made it difficult to understand how the reports interfaced. As a result, there were questions about the sample environment and excavation.

Blattman tells how he resolved the issue. "In 30 minutes I combined the photos of the surface with the digital terrain model from another consultant and the mine designs from a third consultant to get a comprehensive 3-D picture. We obtained consensus within an hour because management could visualise and understand the excavation method. There were no more competing ideas because the facts were visible in Surpac," he says.

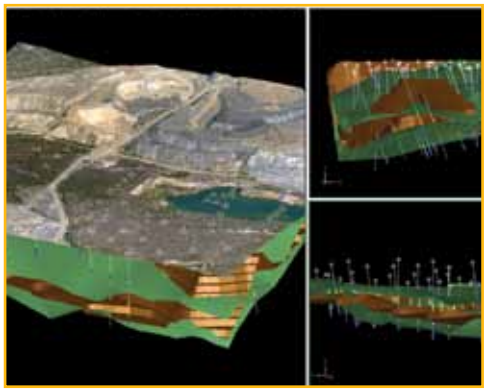

Image shows exploration drilling, surface topography and orthophotos, and generalised mineralised zones for the deposit in Hannukainen, Finland.

Lower operational costs and CAPEX requirements

When access to capital is difficult or limited, companies must seek ways to lower their upfront capital expenditures (CAPEX). Publicly traded Northland Resources is reducing initial CAPEX outlays through improved engineering design and prudent planning. For example, after a consultant drilled underneath a swamp in the Tapuli mine to collect samples and determine water quality, Blattman found a cost-effective use for the same data.

"I turned the consultant's report into 3-D renderings in Surpac to determine the groundwater impact, created a feasible mine design and calculated the amount of material to be removed during mining. By using the same data in a different way, we didn't need to hire another consultant," he states.

On another occasion, the team deferred a large bulk sampling expenditure of up to $1 million by applying Surpac drillhole data to determine there was no immediate need to excavate, build a dike or obtain permits.

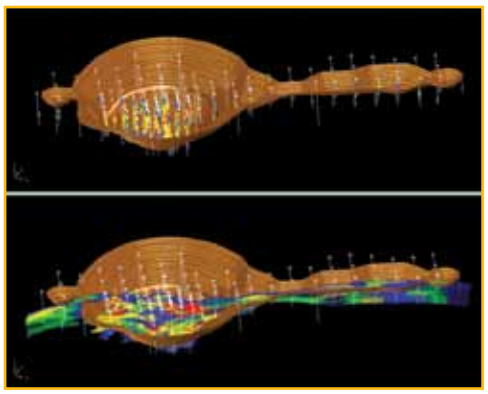

Image showing the Tapuli, Sweden drillholes, grade domains and conceptual pit design.

Streamlined, automated workflows

Automation capabilities in Surpac drive higher staff productivity, freeing Northland Resources personnel to concentrate more on their interpretations and less on keying in repetitive data. For example, Blattman created macros that ease the plotting of drillhole cross-section maps and organise them into standard report formats. Advanced scripts accelerate multiple estimation routines in block modelling and eliminate the need to enter each command manually. "By writing a Surpac script, I've turned a two-hour process into a 15-minute exercise," Blattman says.

One of the customised macros enables block models to be coded according to geology types. This script helps geologists modify, change or reinterpret complex polygons and allows them to be reproduced almost instantaneously in a standard reporting format.

GEMCOM

CUSTOMER CASE STUDY

"We have drawn approximately 2,000 polygons and to create a lot of detail manually would bring logic issues into play and cause confusion. One misstep or typing error along the way and we wouldn't know about it until it's too late. Through automation, we can manipulate the data the way we want to handle it. This macro saves several weeks' worth of work," Blattman says.

Merging operations through a comprehensive software suite

Northland pairs Surpac with the Whittle pit optimisation system to understand and verify the consultants' results. "We make decisions from the Whittle optimisations and incorporate the data into reserve statements to inform shareholders of the potential value of the company's mines," Blattman explains.

When mining ramps up and data accumulates, the planning team will merge the Surpac and Whittle results into Gemcom's MineSched scheduling software. MineSched will afford proven tools to achieve precise blending targets on multiple elements and to meet processing specifications. The planning staff will be able to schedule from the models that originated in Surpac, thus saving time and preventing data input errors.

"Our idea was to bring in MineSched to automate some of the target blending, perform alternative 'what-ifs' to achieve a specific goal, and easily validate the schedules," Blattman says.

As Northland prepares to supply iron, gold and copper to Europe's demanding metal markets, it has comprehensive Gemcom tools that work together optimally and promote high productivity. "We implemented a superior suite of Gemcom solutions at the very start, which will take us from engineering planning to mining. Based on their performance to date, we are confident the software will deliver even greater value during production," Blattman concludes.

Northland Resources Inc. Solutions at a Glance

Primary Applications:

- Gemcom Surpac
- Gemcom Whittle
- Gemcom MineSched

Gemcom Services:

- Training
- Technical support

For more information email info@gemcomsoftware.com or visit www.gemcomsoftware.com.

C.11.1