

BLAST RIGHT FIRST TIME

Drill and blast is fundamental to the cost effectiveness of a mining operation, given its inter-relationship with downstream processes.

Aside from operator ability, material digability is the fundamental factor affecting production of excavators and shovels. Drill and blast plays a significant role in influencing dig rates.

Geology and structure align with targeted blast objectives to determine the explosive product used, powder factor, number of drillholes, drill pattern (spacing, burden, length, angle, bearing, diameter), drill penetration, and the blast initiation.

Digging rates, toe and wall control and loss or dilution provide a good measure of blast performance. Maptek BlastLogic™ drill and blast decision support system assists engineers to harness existing under-utilised information to enhance dig rates.

Many sites already implement quality checks on drilling and charge placement. However, efficient use of this data is restricted as it is often manually compiled into spreadsheets or tabular QA systems. Identifying areas of a pattern that can lead to toe or oversize due to poor execution of drilling is difficult. Ambiguity associated with the actual placement of charge can result in suboptimal dig rates.

BlastLogic focuses on getting the fundamentals of drill and blast right. This leads to improvement on bench performance in critical areas like pattern preparation, hole depth variation, charging and stemming compliance. It is a powerful tool for blasting engineers to offset risk and deliver consistent and predictable blast performance.

Minimising loss and dilution is important to the cost effectiveness of a mine.

Blast damage can lead to significant coal loss in open cut mines. A 5-20% loss can be attributed to damage to the top of the seam and loss of coal during mining, as well as edge movement or block movement and subsequent burial of coal under overburden.

A lack of adherence to the blast plan in the field is cited as a key factor in coal loss. Operations require a standardised, replicable approach to overburden blasting and excavation to achieve the hardcap protective layer above the seam.



At a coking coal price of \$200/tonne, and a production output of 2 mtpa, a 0.5% improvement in recovery would amount to increased earnings of \$2 million.

Drill and blast inaccuracies can have other costly downstream effects. Blast sizing performance affects digability, truck loading efficiency, safety and crusher performance. Excessive hardcap thickness will require additional effort in breaking rock, as well as rehandle and movement of shovel and excavator fleet.

The overall cost of blast performance is kept to a minimum by achieving the right result first time.

Balancing blast effort and cost factors can provide an insight into the critical processes that underpin a mining operation. The value in BlastLogic is that critical drill and blast information is immediately available in a usable format so it can be acted on. This provides a platform for more logical planning and execution of blasting activities. ✓

Email blastlogic@maptek.com.au for a free demonstration of BlastLogic

> In this issue

Achieve the impossible
Automate your projects
Find the dirt-coal divide
Mineable stope optimisation
New survey equipment

ACHIEVE THE IMPOSSIBLE!

Scripting is recommended as a 'hands off' way to run Vulcan, freeing geologists and engineers to do more of the 'thinking work'.

Every project has some repetitive tasks, performed daily, hourly or many times in any Maptek Vulcan™ session. So why script? Scripting can be used to re-execute frequent commands, streamlining workflow.

Scripting allows you to customise or build processes. A complex multi-step task can be made a continual process that can be run without supervision, saving minutes or even hours of your time.

A real benefit of Lava scripting is the ability to access data structures like triangulations, databases, objects or grids and manipulate them directly. Historically, data would have been exported to ASCII, manipulated and then re-imported.

Geologists and engineers are paid to solve problems. Creating an audit trail allows review and standardisation of processes for multiple users across multiple sites. Locking down parameters establishes consistency. Recalculating reserves at the end of each month is a mechanical task. Once you have worked out the process you can lock it in a script and run it confidently every month.

There are several options to choose from. The macro function in the file menu is a simple way to automate existing Vulcan menu functions. This is an easy method for creating scripts, and to learn how the scripts should be structured.

Macros record menu selections that a user makes. Once you understand how macros work, you can start passing variables to them. They are a really good place to start.

A range of external programs can be run through the command shell. This is perfect for processes that may take a couple of hours. Start them up and return later for the answer. You can build very complex processes, passing arguments between scripts and programs, doing loops and testing variables. Most of the time this is run at the GUI or through the command shell. This requires more programming skill than just using the macro function.

Lava or Perl scripting appears under the Vulcan file menu, providing direct access to all of the Vulcan data structures. It lets you control the graphics window and create your own panels to get user input.

Lava scripts can be executed from the file menu or run externally. Lava can be used to bring together all of the existing functions in Vulcan, and to build custom processes on top of that. The advanced programming skills are not that difficult to learn.

Most scripting will be a combination of all three options. The macro function allows you to run all of the existing menu functions. The T-Shell scripting can pull together all of the external programs, and you can also run Lava scripts from T-Shell script. Similarly you can use the power of Perl or Lava to run external programs.


Developing a run of mine working section block model for a multi-seam coal deposit is one example where scripts are useful.

A T-Shell script takes command line arguments to execute a series of Perl scripts that read parameters from a spec file, build multiple GDCalc scripts and run the command line version of GDCalc. The script checks and executes all of the files.

The output includes in-situ and ROM grids for each seam and potential working section combination, Envisage polygons describing the extent of each working section, and a logfile for checking successful execution of GDCalc. Results can be visually checked at this stage.

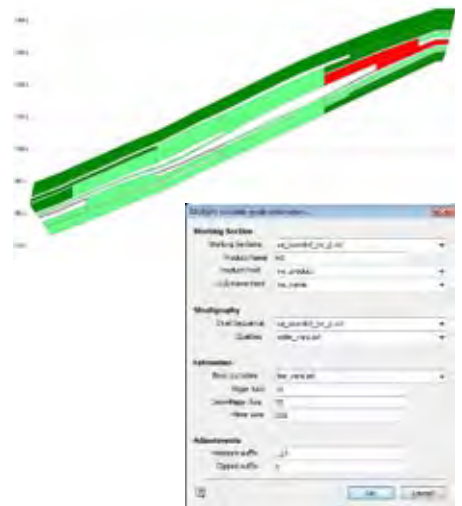
The second step is to flag those working sections into the block model. This script builds solid triangulations for each working section polygon, a BCF to flag the block model within the respective solid for each working section, a T-Shell script to execute the block model flagging, and then executes the flagging.

The third script creates block estimation files and mapfiles from the ROM working section grids and a T-Shell script to run the estimations, and then runs the estimations.

Scripting can create custom functionality, and perform tasks not directly available within current Vulcan tools. Try it. 

*Thanks to Andrew Vidale
Principal, AVCS*

Presented at AUSTRALIA 2012



AUTOMATE YOUR PROJECTS

Professionals in any industry spend at least 40% of their time manipulating, transforming and reporting data in some way or form.

The mining industry is no different, with repetitive calculation and reporting requirements for reconciliation, estimation, grade control and end of month reports.

Vulcan provides powerful functionality for validating and transforming raw mining data into dynamic 3D models, but the sheer volume of data can make these tasks unwieldy. Vulcan's built-in scripting language, Lava, allows repetitive manual tasks to be run autonomously, freeing up time for other tasks.

Automation projects that Maptek has delivered to clients include:

- Real time aqua table monitoring
- End of month reconciliation - in one example, processing time was reduced from 48 hours to just 3 minutes
- Block model optimisation
- Short term geology model generation
- Coal thickness calculation by seam
- 3D drillhole ID barcode generation
- Mine block generation for scheduling
- Export of Isis drillholes to SQL databases
- Cumulative rise and fall calculations
- Leica TS scan data import/export

Vulcan Technical Services staff can help set up and run automation tasks. Contact your nearest Maptek office for details.

FIND THE DIRTY COAL DIVIDE

Stockton Mine produces almost 2 mtpa of low ash semi-hard coking coal for export. Determining an accurate top of coal boundary is important for efficient mine planning.

Stockton's product coal is a blend from multiple pits and the wash plant. Since 2009 the mine has been operated by an alliance between Downer EDI Mining NZ and Solid Energy New Zealand. Stockton has used Maptek Vulcan™ for 15 years.

The principal coal seam is up to 15 metres thick in the centre of the deposit and less than 3 metres thick in daughter splits at the margins.

Overburden and interburden lithologies form an ash continuum, grading from sandstones to mudstones to high ash coal, and into coal with very little ash. Lithologies can change laterally within a few metres from sandstone to mudstone. Bedding thickness ranges from decimetres to metres. While the upper overburden is mostly sandstone, the coal roof can be a mix of sandstone and mudstone and high ash coal.

The overburden is up to 50 metres thick. Pre-stripping is done with large machinery to within a metre above the coal. Final preparation is done with smaller machinery. When overburden turns 'black', a mine geologist must determine whether it is coal or mudstone, as operations strive to avoid wasting coal. Occurrences of thick black mudstone slow the stripping operation.

With the current resource, the 'easy' coal has mostly been mined. As mining moves into the margins occurrences of thick black mudstones on top of the coal become more common.



Coal is black but black is not always coal! Modelling the structures to identify the margins between black coal and black mudstones allows the right tools to be employed to strip the overburden

The issue in 2009 was whether the thick black mudstones can be predicted and thereby incorporated into the mine plan prior to stripping. The resource model had no information about the burden lithologies.

The bulk of the data used came from exploration diamond drilling. Downhole geophysics was not available at the time. Chip logging from some coal quality drilling could also be used.

Previous attempts to model lithology using grids and cross-sectional wire-framing had failed because of the sparse data. A new approach was required. With a classic block model surfaces are used to code blocks, but we didn't have these surfaces. Our 'reverse' model solution involved block modelling the lithologies as populations and then turning those populations into surfaces.

The concept is to estimate the probability of a block being a particular lithology; sandstone, mudstone, hi-carb mudstone or coal. A 'top of black' surface can then be created and incorporated into existing models.

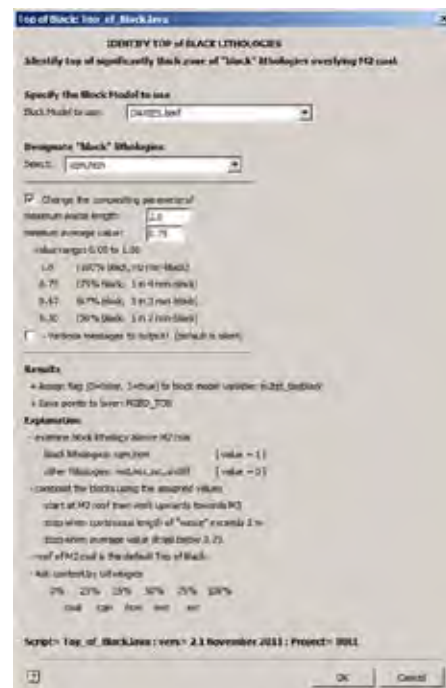
Two data 'streams' are available from drilling data; explicitly logged lithologies, and lithologies derived from ash analyses. Using Vulcan, samples are composited to an Isis database, indicators are assigned, then estimated into a block model. Vulcan's unfolding (projection method) is excellent for this process.

The final block model (3 million blocks) of burden lithologies has limited appeal to mine planning where surfaces are preferred. A 'top of black' surface is required, that being seam roof or overlying mudstone. A Lava script was



The lithology at Stockton is a continuum of sandstone, mudstone, high ash coal and coal

written, incorporating several options. The Lava script burrows down each stack of blocks, evaluating lithology and 'grade of black' to determine 'top of black'.



Lava scripts were set up to identify the top of the significantly thick black lithology overlaying the coal. Results are written direct to a design layer

The new geology model proved useful in predicting occurrences of thick black material on top of the coal. A good model can't be built on poor data, however. The need for more data on burden lithologies was recognised, and then implemented in subsequent drilling programs.

Thanks to Peter Manning
Geologist, Southern Geo Logic
Presented at AUSTRALIA 2012

MINEABLE SHAPE OPTIMISATION FOR OPEN CUT MINES

Maptek participated as a supplier sponsor of the PRIMO project and has since commercialised the Mineable Shape Optimiser as the Maptek Vulcan™ Stope Optimisation module.

This Vulcan module uses, as input, a 3D geological model containing both structural and grade data. Structural integrity is parsed to the module through sub-blocking against geological boundaries.

Modelled geological boundaries can also be used to align reserve increments during accumulation and cut-off grade analysis. Mining parameters of layout and orientation are provided along with constraints on thickness and angle tolerances.

From these inputs a seed shape is established which undergoes an annealing optimisation process. This results in an optimum stope shape represented in a solid triangulation model with the corresponding reserve.

Underground applications of the technology are commonly sub-vertical vein systems and the like.

The technology is also applicable in sub-horizontal deposits which are near surface and stratigraphically influenced with undulating geological boundaries.

Mining parameter inputs including minimum mineable thickness, minimum separable parting/interburden, pit working slope and dilution, as well as optimisation constraints such as grade cutoff, are transferred to the horizontal strip and block layouts commonly used in open cut mines. The mining layout can be aligned independently of the model block sizes and orientation.

The software is capable of producing the optimum mineable ore bench solids within strip and block mining layouts.

Bench solids are optimised for grade and thickness (tonnage), subject to the applied constraints. The result is a set of triangulated bench solids with their corresponding reserve summaries.

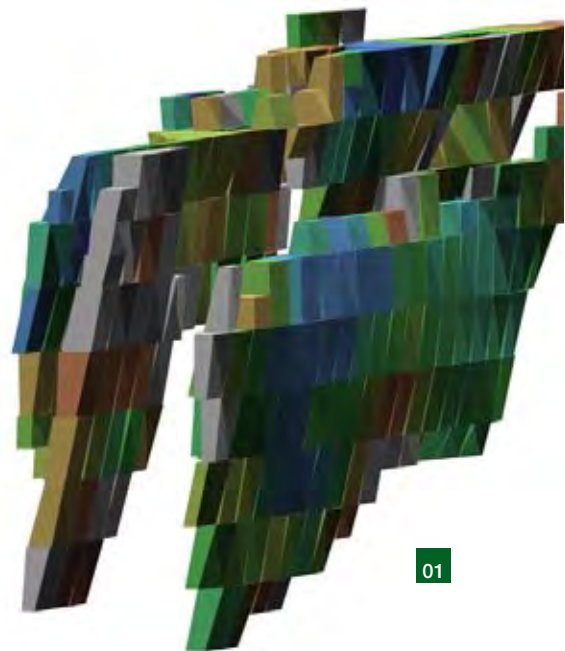
The Vulcan Stope Optimisation module can be used in stratigraphically influenced block models to de-couple the geometric alignment of model blocks from the orientation of the strip/block mining layouts in open cut mines.

It provides great flexibility in applying mining bench optimisation within strips and blocks of any size or orientation.

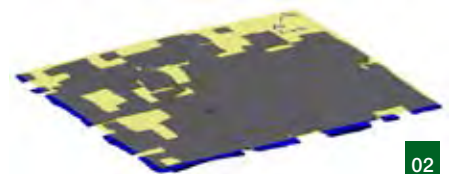
Maptek is keen to foster further development of industry applications. 

*Thanks to Robert Slade
Senior VP Sales, Maptek North America*

PRIMO is an applied research project established by the Australian Mining Industry Research Association (AMIRA) in 2006. The project brought together researchers to advance the state of the art in methodology and tools for optimised underground mine planning and design. One of the goals of PRIMO is to make results available to the mining community through the software vendors involved in the project.



01



02

- 01 This image shows the classical stope optimisation result in a sub-vertical vein deposit
- 02 Bench optimisation of a lateritic cobalt-nickel-manganese deposit within a 30 m x 30 m strip/bench layout
- 03 Optimised bench solids showing ore and waste (interburden) volumes

03

BLOCK : CO	
-99.000 <	<= 0.000
0.000 <	<= 0.140
0.140 <	<= 0.200
0.200 <	<= 0.300
0.300 <	<= 0.400
0.400 <	<= 0.500
0.500 <	<= 1.000
1.000 <	<= 999.000

NEW SURVEY EQUIPMENT

The best laser scanning technology for mining just got better. The I-Site 8810 scanner with I-Site Studio 4.0 software is a combination that is unbeatable for easy fieldwork.

The I-Site 8810 retains the panoramic imaging capability of the I-Site 8800, adds some of the must-have features of the I-Site 8400 and provides some unique upgrades of its own.

Onboard controls mean that the I-Site 8810 can be operated in the field with no other peripherals attached. It can perform two-resolution 360 degree scans from those onboard controls. Optional onboard USB or tablet PC scan storage makes data easier to handle.

A fully integrated compass enables even easier vehicle scanning and registration. A new calibration for the vehicle mount removes the impact of the vehicle on the compass. This allows uninterrupted capture of reliable data. Battery time extends continuous operation to 6 hours.

A wireless link means the scanner controller no longer needs to be tethered. A new interface and layout make for greater flexibility and faster setting up. These features lead to greater mobility and dramatically improved efficiency and field safety for the operator.




Operation is much simpler with the one controller for both scanner and GPS through an integrated third party GPS interface. The latest Panasonic Toughbook is the most rugged tablet in the world, with an extended temperature range and solid state hard disk.

The I-Site 8810 is really a scanner for the extremes. Operation time at subzero temperatures has been significantly extended, and the storage temperature has been extended to minus 40 degrees.

A new intelligent pulse algorithm automatically analyses the multiple waveform returns, giving the I-Site 8810 laser scanner an accuracy of 8mm out to 200 metres.

The Maptek I-Site 8000 series scanners are the only terrestrial laser scanners rated to IP65 for environmental protection.

The I-Site 8810 is teamed with I-Site Studio 4.0 software for faster processing. Dynamic scan manipulation and improved photo image registration are just a couple of features. Customised toolbars, point attributes and LAS import are all new to I-Site Studio 4.0.

To survive in mining, survey equipment must be tough. I-Site equipment meets all requirements. 

Email isite.sales@maptek.com.au for more information and request a demonstration.



NEW IN I-SITE STUDIO 4.0

Free image registration allows an image from a higher resolution or different wavelength camera, such as thermal, to be registered to a laser scan.

Dynamic manipulation or rotation allows users to drag or rotate the scan of interest to allow for quicker adjustments.

Users can assign attributes or values to each point in the scan, e.g. label as ground, tree or water. All points that are not required can be turned off.

Improved dataengine performance across networks, and dataengine is recoverable if power is cut.

Custom toolbars allow users to set up a logical workflow for each job. Maptek will supply sample workflows.

VULCAN FOR NW MISSOURI

Students at NW Missouri State University have begun using Vulcan, following the Maptek donation of 21 licences in May this year.

All advanced undergraduate students across economic geology, stratigraphy, sedimentology and geostatistics courses will learn how to use Vulcan to analyse data and create dynamic 3D models.

The university has installed Vulcan GeoStatModeller because it provides students with tools for statistical analysis and grade estimation, which are required for accurate modelling and mine planning.

The software complements the Geology Department's teaching approach, where traditional classroom learning is supported by inquiry-based lab work and field experience.

'Donating software is a great way to encourage the use of high technology at universities,' said Robert Slade, Senior VP of Vulcan Sales in North America.

'Maptek is always eager to help educate the next generation of earth science, geology and engineering professionals.'

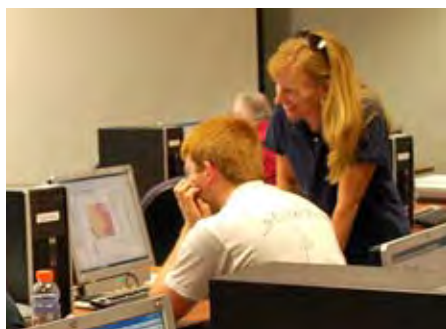


Students at NW Missouri State University take their first steps towards learning Vulcan

VULCAN AT UNI

Maptek South America's Peru office recently gave 21 Vulcan licences to Universidad Nacional del Altiplano.

Students will be able to learn about our software and become confident in applying their knowledge when they join the mining workforce.



NW Missouri Associate Professor of Geology, Renee Rohs and geology student Kellen Koll working on GIS analysis



Dean of Mining Engineering, Mario Cuentas (centre) with Maptek representatives Luis Castillo (left) and Ricardo Gonzalez

NETWORKING

Customers took advantage of the opportunity to meet new staff and learn about the latest Maptek product releases.

The networking event in August brought customers from across Western Australia to Perth to hear about enhancements in Vulcan 64-bit, as well as preview Vulcan 8.2 and other Maptek products planned for release in 2012.

The next event will be held in November.



Gaston Rodriguez (front) and guests at the networking event in Perth, Western Australia



Eduardo Coloma demonstrated new Vulcan functionality to attendees at the Maptek networking event in Perth

VulcanTM 8.2

Available November 2012



MAPTEK AT MINEXPO



Visit us at Booth 6062 for an interactive experience like no other!

Sign up for technical workshops to improve your skills in Vulcan or I-Site. Sit in the I-Site truck and discover how stop-go laser scanning can save your operation time and money. Talk to Maptek experts, and learn how Maptek products improve the entire mining life cycle.

- I-Site™ 8810 laser scanning system is the latest Maptek technology
- BlastLogic™ has been developed with industry to deliver immediate access to operational drill & blast data via an easy-to-view and easy-to-use interface

Be one of the first to learn what Vulcan™ Version 8.2 will offer. Preview Eureka™ software, a tool to help exploration geologists interpret geospatial data in an interactive 3D environment.

Maptek will hold breakout sessions throughout MINExpo in Room N119. Sign up by emailing info@maptek.com

ZAMBITIOUS

A recent Maptek road show focused on meeting with potential clients at mines in the Zambian copper belt.

Staff from the Maptek Johannesburg office were eager to hear about the specific challenges faced by copper mines, and to investigate where Maptek products and services might be of benefit.

Ring design, grade control, reconciliation, volumes, water management, geotechnical studies, exploration, and drill & blast are some applications that were of interest.



James Moncrieff with visitors at ISPRS in Melbourne in August



Dr Clayton Deutsch conducting a session during the recent Geostats Citation training in Denver



Jorge Sanchez from Maptek (left) with Vulcan trainees from Pueblo Viejo Barrick Gold

MAPTEK USERS CONFERENCES

Denver, Colorado, October 24-26

The 2012 North American Maptek Users Conference features presentations from clients across the country.

The program includes talks on:

- Long Range Mine Planning
- Stockpile Survey Reconciliation
- Cavity Modelling
- Resource Estimation
- Support Analysis
- Underground Geotechnical Mapping
- Slope Design
- Underground Mine Design

Presentations will be complemented by Vulcan and I-Site breakout sessions. Registration includes social events. Colonel Mike Mullane, astronaut and author, will deliver the Keynote Address.

Sign up now – seats are filling fast! For more information, or to register, visit www.maptek.com



Viña del Mar, Chile, December 12-14

The XV South American Maptek Users Conference will be held at the Enjoy Hotel and Resort. The technical program will feature presentations by users and Maptek staff on a range of topics relevant to the South American mining industry.

Case studies will include open cut and underground mining, mine planning, survey, optimisation and scheduling.

The keynote address will be delivered by renowned geostatistics expert Dr Clayton Deutsch, who will also lead a workshop on the latest anisotropy techniques for grade estimation on Monday December 11. For more information, or to register for the workshop, email cursos@maptek.cl

The conference is an excellent opportunity for customers in South America to share their experiences with Maptek products. Don't miss out on a place. Email conferencia@maptek.cl to find out more.



VISIT MAPTEK AT THESE TRADESHOWS IN 2012

September 12-14

EXPOMINA - Booth E118
Lima, Perú

September 18-19

AusIMM Open Pit Operators Conference
Perth, Western Australia - Booth 5

September 19-21

Mining World Central Asia - Booth C175
Almaty, Kazakhstan

September 24-26

MINExpo International - Booth 6062
Las Vegas, Nevada, USA

October 23-26

Seminario Internacional de Minería
Hermosillo, Sonora, México - Booth 59

November 12-14

SPAR Europe - Stand 15
The Hague, Netherlands

November 19-23

ATEXPO
Copiapó, Chile

December 4-5

European LiDAR Mapping Forum
Salzburg, Austria - Stand 62

December 4-6

Mines and Money London - Stand H16
London, UK

VULCAN

CAPSTONE GOLD - COZAMIN has acquired Vulcan for resource estimation and mine planning for its underground polymetallic mine located northwest of Zacatecas City in Mexico.

COMPAÑÍA MINERA DEL PACÍFICO has acquired Vulcan for geology and engineering at the Cerro Negro Norte iron deposit in the Atacama region of Chile, 35 km north of Copiapó. Production of 4 mtpa of iron concentrate is expected over about 19 years from 2012.

DONALD MINERAL SANDS will use Vulcan for geological modelling and open pit mine design for zircon and titanium operations in central Victoria, Australia.

MUTINY GOLD uses Vulcan for geological modelling on its gold, nickel and copper exploration projects in Western Australia.

NEW GOLD has acquired Vulcan for geological modelling and mine planning at the New Afton mine. This underground/open pit operation near Kamloops, British Columbia, mines copper, gold and silver.

PEABODY ENERGY is using Vulcan for long and short term mine planning at the new Coddilla project in the Bowen Basin of Queensland, Australia.

PRETIUM RESOURCES has purchased a Vulcan GeoStatModeller for its underground gold operation in Vancouver, BC, Canada.

PT LEIGHTON CONTRACTORS INDONESIA will use Vulcan MineModeller with Dragline for assessing contract mining opportunities in the Indonesian coal market.

SOUTHERN IONICS INC. acquired Vulcan for mine planning at the Folkston Mine, an open pit titanium sands operation in Georgia, USA.

TRONOX MANAGEMENT will use Vulcan for geology and mine modelling at the Cooljarloo titanium minerals deposit about 170 km north of Perth in Western Australia.

ULAN COAL MINES LTD will use Vulcan for open cut mine planning at their operations near Mudgee in New South Wales, Australia.



I-SITE

DEBSWANA JWANENG DIAMOND MINE will use the I-Site 8800 laser scanning system with vehicle mount for month-end survey of the pit and stockpiles. I-Site will also be used to map geological structures and obtain detailed geotechnical data from previously inaccessible areas on the highwalls. Located in the Naledi River Valley in Southern Botswana, Jwaneng mine has been operating since 1982.

ANGLOAMERICAN will use the I-Site 8800 and vehicle mount at the Dawson metallurgical coal mine in the southern Bowen Basin of Central Queensland. I-Site will be used at the mine's three operating pits for volume reconciliation, shot ground and highwall scanning.

BIG LAND GEOMATICS LTD has acquired an I-Site 4400LR system. This majority owned Aboriginal company and registered member of the Nunatukavut Community Council provides geomatic services throughout Canada.

BHP BILLITON MITSUI COAL POITREL has acquired an I-Site 8800 laser scanning system for use with their existing vehicle mount for volume reconciliation, volume verification and highwall scanning. Poitrel Mine is situated in the Bowen Basin, southeast of Moranbah, Queensland.

CAPSTONE MINING CORPORATION has acquired an I-Site 8400 laser scanning system for its Minto Mine copper/gold/silver operation in Yukon, Canada.

DEBEERS VENETIA DIAMOND MINE has acquired an I-Site 8800 scanner for its open pit operation in the Limpopo Province of South Africa. Venetia was the first mine in Africa to invest in an I-Site 4400 and I-Site Studio software. I-Site technology has become an integral part of daily survey.

DOWNER EDI will use the I-Site 8800 laser scanning system with vehicle mount for surface updates, volume reconciliation and blast analysis at the new **BMA DAUNIA** open-cut coal mine in the northern Bowen Basin of Queensland.

DOWNER EDI will use the I-Site 8800 system with vehicle mount for coal surface updates, volume reconciliation, blast analysis, and high wall scanning at **IDEMITSU BOGGABRI** open-cut coal mine in the Gunnedah Basin, New South Wales.

JTH SURVEYS, based in Moranbah, Queensland, will use the I-Site 8800 laser scanning system for surveying services in the Bowen Basin, focusing on stockpiles.

RANDGOLD RESOURCES KIBALI MINE will use the I-Site 8800 laser scanning system for month-end volumetric surveying and as-built applications. The Kibali Gold Mine, in the north east of the Democratic Republic of Congo bordering Sudan and Uganda, has the potential to be one of the largest gold mines on the African continent.

RED BIRD LASER, a consultancy located in New Braunfels, Texas, has acquired I-Site Topo software for topographic analysis.

SEISLAND SURVEYS LTD in Calgary, Alberta, has purchased an I-Site 8800 laser scanning system for its consulting service focused on the Canadian oil sands industry.

THE SOILWATER GROUP, a consulting and research organisation based in Perth, Western Australia, will use the I-Site 8800 laser scanning system for monitoring waste rock landforms and tailings storage facilities.

TECK COAL LIMITED has purchased two I-Site Studio and floating licenses with geotechnical tools for its regional office in Calgary, Alberta.

UNIVERSITY OF KENTUCKY in Lexington has acquired an I-Site 8800 laser scanner for research and education.



OFFICE MOVE

Maptek has relocated to new premises in Brisbane.

Level 7, 241 Adelaide Street
Brisbane Queensland 4000

Telephone and fax remain the same:
Contact us on tel: +61-7 3316 2800