AGENDA 2019 FINAL

See abstracts for descriptions on papers

CPD POINTS

7.75 Mine Surveying Points

5.0 Survey Practice Points

Wednesday 14 August

3:00 PM	Registrations	Hotel Foyer
3:30 PM	Workshop 1 - RIEGL 3D Long Range LiDAR Technology *Thomas Gaisecker, Business Division Manager Mining, RIEGL International GmbH* *Glenne Blyth, Managing Director, Riegl Australia Pty Ltd*	Hyde Park Room
4:30 PM	Workshop 2 - CR Kennedy - Emesent Hovermap *CR Kennedy - Mark Hickey General Manager - QLD National Business Manager – DRONES*	Hyde Park Room
6:00 PM	Pre Dinner Drinks	Grand Ballroom Foyer
6:30 PM	Welcome Dinner	Grand Ballroom Foyer

Thursday 15 August

Partners Tours- Please meet in the foyer at 10.30am to depart for the cooking school

7:30 AM	Registration Desk Open	Grand Ballroom Foyer
9:00 AM	MC Welcome *Andrew Gill*	Grand Ballroom
9:05 AM	Opening Speaker *CEO of the NSW Minerals Council, Stephen Galilee*	Grand Ballroom

9:30 AM	GDA 2020 *Joel Haasdyk, GDA2020 Implementation Program Manager (NSW)*	Grand Ballroom
10:00 AM	Establishment of two statutory areas at Mt Arthur Coal *Jake Robins, Registered Mine Surveyor, Mt Arthur Coal*	Grand Ballroom
10:30 AM	Morning Tea	Grand Ballroom Foyer
11:00 AM	CR Kennedy - Platinum Sponsor Address *Platinum Sponsor*	Grand Ballroom
11:10 AM	Evaluation of Mobile Laser Scanners for Mining Applications *Dr.Simit Raval, Program Director - Undergraduate Mining Engineering Degree, Co-Director - Laboratory for Imaging of the Mining Environment (LIME), School of Minerals and Energy Resources Engineering UNSW*	Grand Ballroom
11:40 AM	Real time subsidence monitoring for Longwall operations - Multiple sensor approach *Chris Crosby, Surveying Superintendent – Grosvenor Mine with Anglo American*	Grand Ballroom
12:10 PM	Lunch	Grand Ballroom Foyer
1:00 PM	Keynote Speaker - Wayne Bennett *Wayne Bennett, NRL Legend*	Grand Ballroom
2:00 PM	AAM - Gold Sponsor Address *Mark Freeburn CEO, AAM*	Grand Ballroom
2:10 PM	Mine surveying at a mineral sands mine applying dredge mining *Pieter Bekker, Superintendent Surveying,Tronox Holdings plc*	Grand Ballroom
2:40 PM	Deswik - Gold Sponsor Address *Stephen Rowles, Product Manager, Deswik*	Grand Ballroom
2:50 PM	Afternoon Tea	Grand Ballroom Foyer
3:30 PM	Tunnelling with Success, applied Spatial Knowledge. *Cameron Mills, Surex Surveyors*	Grand Ballroom
4:00 PM	Tailings Dam Monitoring *Andrew Jones, Business Development Manager, Position Partners*	Grand Ballroom
4:30 PM	Annual General Meeting (AGM) *Members Only*	Grand Ballroom

6:30 PM	Pre Dinner Drinks	Grand Ballroom Foyer
7:30 PM	Final Dinner	Grand Ballroom

Friday 16 August

Partners Tours- High Tea will be held in The Gallery on Level 1 at 12noon

7:30 AM	Registration Desk Open	Grand Ballroom Foyer
9:00 AM	MC Welcome *Andrew Gill*	Grand Ballroom
9:15 AM	Size does matter *Julia Spark, Business Development Specialist, AEROmetrex*	Grand Ballroom
9:45 AM	Traversing spiral decline - error propagation and surveying strategies. *Andrew Jarosz/ Chris Moy, ISM Vice President/ AIMS Director*	Grand Ballroom
10:15 AM	NSW Surveying Taskforce *Craig Turner, Director, Consulting Surveyors National*	Grand Ballroom
10:45 AM	Morning Tea	Grand Ballroom Foyer
11:15 AM	Position Partners - Gold Sponsor Address *Geoffrey Preece, Business Development Manager – Scanning*	Grand Ballroom
11:25 AM	Deformation Monitoring for Rib Optimisation *Chris Crosby, Surveying Superintendent – Grosvenor Mine with Anglo American*	Grand Ballroom
11:55 AM	New borehole-deployable 3D laser & sonar cavity survey technologies *John Lea, Managing Director, Groundsearch Australia*	Grand Ballroom
12:25 PM	Sphere Drones - Gold Sponsor Address *Alex Kondilios, Business Development Executive*	
12:35 PM	Lunch	Grand Ballroom Foyer
1:15 PM	Sydney Water Pressure Tunnel Survey *Matt Stanley, Registered Surveyor RPS*	Grand Ballroom
1:45 PM	The future of Cavity monitoring *John Lupton, GeoSight*	Grand Ballroom
2:15 PM	Close of conference & Drinks *AIMS President*	Grand Ballroom

ABSTRACTS

Wednesday

Workshop - RIEGL 3D Long Range LiDAR Technology

Thomas Gaisecker, Business Division Manager Mining, RIEGL International GmbH
Glenne Blyth, Managing Director, Riegl Australia Pty Ltd

We present our latest state of the art terrestrial laser scan system RIEGL VZ-2000i. This system operates with RIEGL Lidar Waveform Technology providing highly accurate data with extensive coverage up to 2.5 km range in combination with extremely high measurement rates of up to 1.2 million measurements per second. Furthermore, it enables multiple target capability and precise results even in harsh conditions (rainy, dusty, foggy environments). The instrument supports smart operation by remote scanner control, onboard software apps, and customizable workflows. Connectivity by LAN, Wi-Fi, and 3G/4G interfaces enables the integration of RIEGL sensors into any given environment. With all these options the system is designed and developed for the next generation of mine planning – the fully remote-operated digital mine.
See the capabilities of this new scanner in real-time, as we demonstrate live how it is now possible to operate the latest instruments remotely over the internet, as well as retrieve data automatically without touching the instrument. Further to this, we will demonstrate how this remotely acquired data can be quickly and easily used to make surface comparisons over time for deformation analysis.

Workshop - CR Kennedy - Emesent Hovermap

CR Kennedy - Mark Hickey General Manager - QLD National Business Manager – DRONES

The Emesent Hovermap offers revolutionary efficiency, safety and operational insights to challenging above ground, underground and GPS-denied environments. Drones normally rely on GPS for localisation, navigation and flight control. Hovermap uses LiDAR data and advanced algorithms on-board in real-time to provide reliable and accurate localisation and navigation without the need for GPS.
This allows drones to fly autonomously in GPS-denied environments, enabling a host of new applications such as flying and mapping in underground mines, inside buildings or inspections underneath structures. Additionally, if GPS is available this helps to locate the point cloud for above ground data collection. Following the implementation of this ground-breaking technology, Hovermap provides not only Advanced autonomy for unmanned UG use but also extreme levels of flexibility and ease of use for broad benefit around the mine site both under and above ground.
Hovermap can be used in many configurations including hand held, back pack mounted, boom mounted, vehicle mounted, boat mounted and of course on a UAV for non-autonomy or autonomy-based flights as required.

Collected data can quickly be processed through the Emesent desktop software to create a LAZ file. Generally collection to processing time is double, following this process you can quickly have access to a point cloud for quick processing of data or consideration towards next steps.

ABSTRACTS

Thursday

GDA 2020

Joel Haasdyk, GDA2020 Implementation Program Manager (NSW)

GDA2020 is the new static Geocentric Datum of Australia, to be adopted in NSW on the 1st of January 2020, with the new 'time-dependent' Australian Terrestrial Reference Frame (ATRF) to follow in the coming years. This presentation will highlight the recent upgrades to CORSnet-NSW and SCIMS to provide both GDA94 and GDA2020, along with new measures of Positional Uncertainty and Local Uncertainty. Expected timeframes for the provision of GDA2020 across all Spatial Services tools and datasets, along with the anticipated changes to Legislation and Directions, will be reviewed.

Establishment of two statutory areas at Mt Arthur Coal

Jake Robins, Registered Mine Surveyor, Mt Arthur Coal

Effective July 1st 2019, Thiess took over the southern half of Mt Arthur Coal Mine under a Total Services Contract arrangement. In line with this decision, it was deemed that Thiess will assume full statutory responsibilities of which formalization of their own area, defined by a new statutory boundary was required. This paper will discuss the steps required to enact this and issues – both legal and practical, which had to be resolved from a Mine Surveying perspective.

Evaluation of Mobile Laser Scanners for Mining Applications

Dr.Simit Raval, Program Director - Undergraduate Mining Engineering Degree, Co-Director - Laboratory for Imaging of the Mining Environment (LIME), School of Minerals and Energy Resources Engineering UNSW

This presentation highlights the two ACARP funded projects:
ACARP C26030 (Improved structural mapping of pit walls using UAV-based mobile laser scanning): This recently completed project evaluates the suitability of a UAV-LiDAR system for mapping structural characteristics of pit walls compared to terrestrial laser scanning and UAV-photogrammetry.
2. ACARP C27057 (Automated Structural Mapping in Underground Mines using Mobile Laser Scanning Technology): This current project deals with the challenges, opportunities and solutions for underground mobile mapping using a SLAM based laser scanner.

Real time subsidence monitoring for Longwall operations - Multiple sensor approach

Chris Crosby, Surveying Superintendent – Grosvenor Mine with Anglo American

The effect of subsidence from Grosvenor Mine's longwall panel 104 is expected to impact third party owned overhead high voltage powerlines that service North Queensland. Total vertical displacement of subsidence is anticipated to reach 2.7m through the centre of the panel. Due to requirements from the owner of the assets and the sensitivity with lateral movement on the integrity of the structures, a decision was made to install real time monitoring devices as a simulation over longwall panel 103 in order to capture baseline data to predict the rate of subsidence, both lateral and vertical to ensure footing structures can be designed ahead of longwall 104 commencement to mitigate the risk of the towers toppling or being severed. Current data indicates 70mm of subsidence at simulated tower 2254, 1,500mm of subsidence at simulated tower 2255 and minimal subsidence at simulated tower 2256 however, interesting to note, the path of movement since installation shows tower 2256 is moving towards longwall panel 103 which challenges the accepted view of the zone of influence for subsidence.

ABSTRACTS

Mine surveying at a mineral sands mine applying dredge mining

Pieter Bekker, Superintendent Surveying,Tronox Holdings plc

Mine surveying at a mineral sands mine applying dredge mining

Tunnelling with Success, applied Spatial Knowledge.

Cameron Mills, Surex Surveyors

An introduction to the methods of tunnel construction with a focus on pipe jacking.

Tailings Dam Monitoring

Andrew Jones, Business Development Manager, Position Partners

Trends in tailings dam wall failures and how they can be monitored more productively by surveyors. Highlighting the TSF monitoring system potentially including results from Northparkes.

Friday

Size does matter

Julia Spark, Business Development Specialist, AEROmetrex

Work through when a UAV is replaced by a manned system with emphasis on the Pilbara and larger mining projects.

Traversing spiral decline - error propagation and surveying strategies.

Andrew Jarosz/ Chris Moy, ISM Vice President/ AIMS Director

Use of “wall stations” become prominent in Australian underground coal and metalliferous mines. Authors analyse how the “wall station” arrangements and setup geometry may impact on the accuracy of direction and position transfer alone a small radius spiral decline. The theoretical error analysis and the results of practical trial surveys are presented.

ABSTRACTS

NSW Surveying Taskforce

Craig Turner, Director, Consulting Surveyors National

Consulting Surveyors National has completed a study into the future demand, supply and skills gap for surveying and geospatial professionals with research conducted by BIS Oxford Economics. This research was supported by many within the surveying profession and now has results for every state and territory in Australia.This is the third study of its kind, and it showcases the successes of the Surveying Taskforce to combat the shortages within the profession. Now, with new data available from the 2016 Census and following the infrastructure investment across the country, the report has been reviewed and updated to determine how the projections are trending.In this presentation, Consulting Surveyors National will highlight the results from the 2018-2028 study and the possibly implications for our profession.

Deformation Monitoring for Rib Optimisation

Chris Crosby, Surveying Superintendent – Grosvenor Mine with Anglo American

Due to the current stratigraphy at Grosvenor Underground Coal Mine, additional rib and roof support is required to be installed to ensure stability within the development roadways.
Based on this requirement from the Geotechnical Engineers, the rate of advance for the development units is significantly reduced. In order to increase operational efficiency for the development units, laser scanning was introduced to provide baseline scan data and subsequent scans to ascertain the extent of deformation throughout the active development mining areas. Initially, a GroundProbe GML scanner was trialled to monitor deformation with varying degrees of success. Subsequent to this, a Maptek SR3 scanner was trialled and eventually implemented on site. Results from this rib optimisation program have yielded highly accurate results and have provided a mechanism to communicate potentially hazardous areas to underground coal mine workers. Outputs from the scan processing has identified areas of the mine where centreline bagging of roadways are under geotechnical stresses, areas where rib integrity has been damaged or spalled into the roadway as well as overall rib deformation. To date, no rib deformation has been experienced based on current geotechnical support strategies. The next phase of this program is to reduce rib support as a measured approach and monitored with the laser scanner at regular intervals to evaluate the effect of the reduction in support and thus the increase in operational performance without compromising the safety of the underground coal mine workers.

New borehole-deployable 3D laser & sonar cavity survey technologies

John Lea, Managing Director, Groundsearch Australia

Uncertainty exists in many areas that overlie underground cavities. Groundsearch Australia and Flodim offer laser/HD video and sonar cavity survey technology in Australia. 3D laser and sonar surveys are now possible without the need to drill boreholes larger than H-size (96 mm) in diameter. Examples from two NSW abandoned coal mines are discussed.

ABSTRACTS

Sydney Water Pressure Tunnel Survey

Matt Stanley, Registered Surveyor RPS

Beginning work on three of Sydney's largest infrastructure projects; Sydney Metro City & Southwest, Sydney Metro West and WestConnex, requires an understanding about how the construction of these new projects fit in with Sydney's existing infrastructure.
Constructed in the 1930's, part of Sydney Water's water supply infrastructure in the inner west is a 2.5m diameter Water Pressure Main, located 60m below the surface, which is set to be crossed by the three new projects. To facilitate these projects and to safeguard Sydney Water's infrastructure, RPS was engaged to survey the tunnel and to locate vibration monitoring equipment. RPS was asked to confirm the existing Work as Executed surveys compiled at the date of construction.
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The future of Cavity monitoring

John Lupton, GeoSight

With the advancement of technology in Drones and autonomous vehicles it is only inevitable that some of that technology will make its way into the underground mining environment. With the introduction of the MINEi Mini some of that technology is now available to users in an environment where it could never be used before.
Safer, faster and easier then ever before giving the users options that they can implement in the various environments that they are faced with underground. With the advancement of technology in Drones and autonomous vehicles it is only inevitable that some of that technology will make its way into the underground mining environment.

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