



NSW mine safety update

Promoting safety in the NSW mining industry

Digging Deeper for improved OHS performance

The NSW Mine Safety Advisory Council's Digging Deeper consultancy project, conducted by Shaw Idea Pty Ltd, recently completed its final report addressing a number of recommendations made by the 2005 Wran Mine Safety Review.

The Digging Deeper project assessed the impact on OHS performance of production bonus payments and safety-based incentive schemes, fatigue management and working hours in the mining industry, and OHS management systems and consultation.

Never before has so much detailed and credible information been obtained from all sections of the NSW mining industry. The extensive knowledge gathered from this process provided a clear picture of how work is structured and how systems are implemented in the NSW mining industry. It also provided an insight into how relationships can be built to improve management and performance in the industry.

The Digging Deeper Final Report has the full support of the Mine Safety Advisory Council, the primary body advising the NSW Government on occupational health and safety in the mining industry. The council comprises NSW Government representatives, mining employers and employees and independent experts in OHS.

The Digging Deeper project gathered accurate, credible and representative data about the whole industry by undertaking a literature review, issues paper, census of mines, data collection and analysis, interviews with key stakeholders and workshops.

The findings of the Digging Deeper project include:

Production bonus payments and safety-based incentive schemes

Production bonus and safety incentive schemes that involved payment in exchange for achieving particular outcome targets did not prove themselves to consistently or reliably improve safety outcomes. The confusion about



Safety innovation success for Mount Thorley

NSW Minerals Council chief executive officer Nikki Williams celebrates Mount Thorley Warkworth's Safety Innovation Awards success at the NSW Minerals Industry OHS Conference with Mount Thorley Warkworth representatives (from left) Wayne Nealon, Myles Huntley and Warrick Glouster. For a full review of the OHS Conference turn to pages 4 and 5. Photo: Mark Stanley

the presence of such schemes suggested that any positive effects were likely to be limited at best.

Generally, sites reported that safety incentive schemes, which made payments as a result of achievement of outcome targets, either made no difference at all or had negative effects on incident reporting.

A small number of sites had safety incentive schemes that recognised contribution and effort towards OHS. More positive outcomes for organisational factors associated with effective OHS management were evident at these sites, suggesting that an approach involving recognition of contribution rather than

payment for outcome targets may have more positive results.

Fatigue management and working hours in the mining industry

Few sites sampled during the project provided evidence of systematic risk assessments of fatigue. They found limited evidence that sites had a thorough understanding of the causes of fatigue, with most attitudes to fatigue focused around non-work causes, rather than the contributions made by working arrangements. The importance of addressing the inter-related personal and organisational factors were not widely recognised.

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Information provided in this newsletter to promote the enhancement of the safety culture of NSW mining and to alert a wide range of people to potential risks and to potential risk controls. Each site must manage its own risk according to its own hazard identification, risk assessment, control systems and monitoring process. Whereas all care is taken in producing NSW Mine Safety Update, NSW Department of Primary Industries accepts no responsibility for accuracy of information supplied. Inclusion of any product, service or company in NSW Mine Safety Update does not imply NSW Government or NSW Department of Primary Industries endorsement.

Minister calls on mining industry to commit to positive change

Minister for Mineral Resources Ian Macdonald has welcomed the NSW Mine Safety Advisory Council's Digging Deeper Action Plan and believes it will enhance mine safety across the State.

"The Digging Deeper project highlighted what is really happening in the industry and addressing its recommendations will allow measures to be developed to improve industry health and safety for the State's miners," Minister Macdonald said.

"Practical improvements can now be made in important areas

like fatigue management and working hours through high-level commitment from Government agencies, industry and unions.

"I have asked the Council to implement this action plan as soon as possible and to work closely with industry because it is only through their committed action that positive change will be achieved.

"I congratulate all on the high level of cooperation achieved on this issue and look forward to the implementation of the Digging Deeper Final Report's recommendations, including the setting of a fatigue management standard and a program of education and assistance to industry."



NSW Minister for Mineral Resources Ian Macdonald MLC.

The 10 Platinum Rules

Digging Deeper also highlighted a need for the NSW mining industry to get the basics of occupational health and safety management right. To address this, the Mine Safety Advisory Council endorsed the Digging Deeper Final Report's call to action for industry - the 10 Platinum Rules:

10 Platinum Rules

1. Remember you are working with people
2. Listen to and talk with your people
3. Fix things promptly
4. Make sure your paperwork is worth having
5. Improve competence in OHS
6. Encourage people to give you bad news
7. Fix your workplace first
8. Measure and monitor risks that people are exposed to
9. Keep checking that what you are doing is working effectively
10. Apply adequate resources in time and money

Digging Deeper for improved OHS performance

from page 1

Hours of work in the NSW mining industry are high (average 49.8 per week) and far in excess of the hours worked in the mining industry on average around Australia (average 44.7 per week). Factors that affect the hours of work include occupation, sector, employment status, site size and location.

Roster arrangements also did not effectively control the fatigue risks associated with extended hours and shiftwork. Most rosters studied neglected circadian rhythms, did not allow sufficient rest breaks within or between shifts or accrued cumulative sleep debts through consecutive or on-call shifts.

In summary, the industry's approach to fatigue risk management must recognise that working long hours and at night will necessarily result in fatigue. More effective approaches to fatigue management that recognise the responsibilities of employers, as well as employees, have benefits broader than just OHS.

OHS management systems and consultation

All sites were found to have some degree of a formal OHS management system. Proactive sites displayed trust in management, felt supported by supervisors and there was organisational justice. Proactive sites also implemented the formal system by providing adequate resources and training while reactive sites did not.

Reactive and transitional sites failed to close the loop between intention and action on site, thus fostering a disconnect between workers and the OHS management system. Reactive and transitional

sites did not always receive competent advice while management appeared to be driven by legal obligation and insurance rather than improving health and safety culture (eg pressure to reduce LTIFR unintentionally resulted in reduced reporting).

Contractors also report difficulties in adapting to different systems from site to site

The industry's commitment to the project is clear evidence of its preparedness to embrace continuous improvement and identify clear opportunities available. Areas identified that need to be addressed across the industry are:

- focusing on a systematic approach to OHS management, rather than adherence to a specific OHS management system
- improvements in consultation and participation by the workforce
- controlling risks at source
- applying resources to OHS
- seeking good advice
- monitoring performance through auditing, feedback and review.

Successful strategies for dealing with these issues must be built on of organisational culture identified as closely linked with the effective implementation.

More information on the findings of the Digging Deeper project and the 25 recommendations can be found at:

www.dpi.nsw.gov.au/minerals/safety/consultation/wran-consultancy-project

Action plan to address Digging Deeper recommendations

The NSW Mine Safety Advisory Council has developed a comprehensive action plan to address the 25 recommendations of the Digging Deeper project and to help the State's mining industry achieve world-class occupational health and safety.

The Digging Deeper Action Plan addresses areas of mine safety that need improvement, including fatigue and hours worked, contractor safety and effective working relationships.

The action plan will benefit the industry through the introduction of educative assistance programs that are designed to help the mining industry become more proactive and achieve best practice in safety.

Up to 30 per cent of mine sites are currently pro-actively working towards best practice in OHS. A further 43 per cent of sites are currently in a transitional stage and about 27 per cent are currently reactive on OHS issues.

The Digging Deeper Action Plan's educative assistance programs will assist organisations in closing the loop between intention



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NSW MINE SAFETY ADVISORY COUNCIL

and action when implementing safety management plans.

The NSW Mine Safety Advisory Council, the NSW Department of Primary Industries and industry stakeholders will be working closely

to implement these educative assistance programs.

The Digging Deeper Action Plan has a strong focus on fatigue and will facilitate the development of a fatigue management standard along with a specific fatigue risk management education and improvement strategy. This is an emerging safety issue with serious ramifications for the mining industry.

The action plan will also further examine the Digging Deeper Final Report's preliminary findings on safety incentive schemes and production bonuses, with industry stakeholders to review the ability of these schemes to improve occupational health and safety over time. The NSW Mine Safety Advisory Council is encouraging industry to reassess any such programs currently in use.

For a copy of the Mine Safety Advisory Council's Digging Deeper Action Plan or the Digging Deeper Final Report visit the NSW Department of Primary Industry's website at:

www.dpi.nsw.gov.au/minerals/safety/consultation/digging-deeper

Industry workers' innovation driving safer outcomes

A simple but ingenious device which removes workers from the risks associated with installing supports during the relocation and storage of heavy equipment has won the NSW Minerals Council Safety Innovation Award for 2008.

The self-locking Heavy Equipment Jack, designed by the engineering and maintenance teams at Mount Thorley Warkworth Coal Mine, is a combination jack and support stand.

The unanimous winner of this year's award has widespread application to other industries and is designed to remove workers from the risks of standing under a heavy suspended load to put in place support stands, required when using conventional jacks or hydraulic systems to move such loads.

The jack's inventors Wayne Nealon, maintenance team leader at the mine, and Myles Huntley, reliability engineer, said they were extremely surprised to discover that there was no jack on the market which would allow workers to complete this essential task without standing under a suspended load.

Dr Nikki Williams, CEO of the NSW Minerals Council, said the device was an example of the lateral thinking which has driven world-changing innovation.

"Given that it is impossible to remove the existence of hazardous suspended loads, this device removes workers from the vicinity of the hazard while still completing the task at hand.

"Australia's mining industry is the safest in the world. It has achieved that record by constantly looking at what it does and how to do it better.

"The beauty of this year's winner and many, many other inventions from the mining industry is that they not only raise the safety bar but they have widespread application to people outside the sector."



Mount Thorley Warkworth reliability engineer Myles Huntley and maintenance team leader Wayne Nealon with their award-winning self-locking heavy equipment jack. Photos: Mark Stanley

This year's Highly Commended award went to Austar Mines for its development of a world-first positive pressure chamber which eliminates the fatal risk of spontaneous combustion in underground mines.

The People's Choice Award, voted by conference delegates at the 2008 NSW Minerals Industry OHS Conference, went to Centennial Coal, Springvale's vent sliding door which has helped eliminate injuries and near misses caused by the difficulty of opening hinged doors when they are under high pressure.

Centennial Coal's Mandalong Mine was commended for its development of a magnetic mesh locator which has helped eliminate common safety incidents associated with installing mesh to secure mine roofs.

A Special Acknowledgement was awarded to Xstrata Coal NSW, Beltana Mine for the development of Longwall Automation in underground mines.



Safety Innovation Awards judges (above) Jim Galvin, Rob Regan, Norman Jennings and Bob Dixon. Mountaineer Lincoln Hall (below).



BP Texas City deputy business unit leader Kathleen Lucas shares her thoughts and experiences on OHS.



NASA's head of risk management Michael Lutamski (above). Industry leaders (below) Steve Hedges (Peabody), Brad Neilson (Joy Mining), Tony McPaul (Newcrest) and Colin Bloomfield (BHP Billiton) during the forum panel discussion.





NSW Department of Primary Industries Director-General Richard Sheldrake (above) delivers the opening address to the OHS Conference. Safety Performance Solutions senior consultant Bob Veazie (left) talks about the need for people-based safety to be more than just a process.
 Photos: Mark Stanley, Stanley Images

Challenge issued to ‘design zero harm’

Almost 500 delegates at this year’s NSW Minerals Industry OHS Conference were encouraged to adopt the event’s theme by making their next quest the target of ‘designing zero harm’.

NSW Minister for Primary Industries Ian Macdonald MLC called on the industry to accept the challenge.

Representing the Minister in delivering the opening address, NSW Department of Primary Industries Director-General Dr Richard Sheldrake said employers, unions, contractors and workers needed to examine their OHS performance.

“Do you have effective consultation? Is there trust and effective working relationships right across the workplace? Are contractors safely managed? Are workers fatigued? Do your OHS management systems drive positive change?” Dr Sheldrake said.

An impressive group of international speakers gave presentations during the conference.

Bob Veazie, a senior consultant for the United States-based Safety Performance Solutions, gave a keynote address on the power of people-based safety.

“There is no way to obtain zero harm without becoming more interdependent and more actively caring,” he told delegates. “A zero harm culture promotes interdependency.”

Bob Veazie said people-based safety is creating a culture of personal responsibility, accountability and ownership – not only a process.

Kathleen Lucas, the deputy business unit leader at BP’s Texas City oil refinery, shared the company’s journey following the Texas City explosion and fire on 23 March 2005 that killed 15 people and injured many more.

The external review into the incident found that leadership, process safety and the competence and culture of the people were issues that needed addressing.

Kathleen Lucas said BP had committed to becoming a safety leader. She also said much of what the company has learned had similarities with the findings and recommendations of the Digging Deeper Final Report of key issues in the NSW mining industry.

Michael Lutomski, NASA’s head of risk management for the International Space Station Program at Houston, Texas, described the causes of the 2003 Columbia Space Shuttle disaster, its implications for NASA’s management and tolerance of risk, and relevance to other professions.

Other key speakers included Australian motorsport legend Dick Johnson, who provided a bird’s eye view of safety from the perspective of the touring car racing, mountaineer Lincoln Hall and psychologist Andrew Marty, who reviewed the ‘business case for happiness’ and described how to design a happy workplace.

NSWMC chief executive officer Dr Nikki Williams said the annual conference was always a landmark event on the mining industry calendar – as the State’s industry, from shop-floor employees to senior management, have collectively committed to the drive towards the ultimate goal of zero harm.

“Mining is one of the most technologically advanced industries in the world,” Dr Williams said.

“And in Australia we are in the enviable position of leading the world when it comes to our safety record. But with continuing advances and an ever-changing mining environment we can never be complacent. Our two overseas speakers from organisations – NASA and BP – which have experienced two of the worst workplace accidents in living memory are a sobering reminder of this.

“Safety is not a stationary target. It requires constant innovation, evidence-based learning and an open mind with which we challenge ourselves constantly to lift the bar.”

Mines rescue teams rise to challenge of biennial competition

Teamwork, leadership and rescue skills were all put to the test during the 2008 NSW Mines Rescue Challenge at Cobar in March. Volunteer rescue teams were faced with simulations based on real-life mine emergency situations.

The biennial challenge provides a unique opportunity for mine rescue teams to develop their proficiency, techniques, rescue methods and overall skills in a realistic rescue environment and under the watchful eyes of experienced adjudicators.

Eight mine rescue teams from Endeavour, CSA, Peak, North Parkes, Olympic Dam, Drayton, Barrick Gold and Bengalla mines participated. They learnt new skills and gained valuable experience after being challenged with scenarios involving fire fighting, vertical and vehicle rescue, confined space search and rescue, endurance and triage in multi-casualty situations.

In addition to testing and developing skills, the unique nature of the challenge allows the teams to also share knowledge and provide encouragement. Bengalla mine was awarded the Esprit de Corps Champion Team title for helping others to learn, sharing equipment and providing advice and guidance.

NSW Department of Primary Industries Senior Inspector of Mines John Moss said the Esprit de Corps approach to the challenge was embraced by all participants and adjudicators.

"This year's challenge once again provided an excellent opportunity for mine rescue team members to learn new skills and techniques in a wide range of events and to share their experience and knowledge with other teams," Mr Moss said.

"The organisers are to be congratulated on the challenge initiative which is very different to more traditional mine rescue competitions held throughout Australia.

Other winners during the event included Phillip Dalessandro (Champion First Aider) and Gavin Wilks (Best Captain), both of Bengalla. Best squad members from each team were John Foster (Endeavour), Deb Guise (Peak Gold Mine), Casey Martin (CSA), Derek Garment (North Parkes), Robbie Van Mooring (Olympic Dam), Chelsea Fraser (Drayton), Chad Chittenden (Barrick Gold) and Mick Ryan (Bengalla).



Mines from throughout NSW were represented at the 2008 Mines Rescue Challenge held at Cobar earlier this year. Teams were put throughout a range of challenges that simulated real-life mine emergency situations.



Mechanical Engineering Safety Seminar focuses on knowledge

The annual NSW DPI Mechanical Engineering Safety Seminar is a great opportunity to learn about current mechanical safety issues and mine safety resources you can use in the workplace.

The theme for this year's seminar is *History*

repeats: the management of knowledge.

The seminar will be held on Wednesday 13 and Thursday 14 August 2008 at the WaterView Convention Centre at Sydney Olympic Park, a purpose-built conference facility that is central for the attendees.

A highlight of the event will be the conference dinner featuring guest speaker Bill Harrigan .

Find more information and registration brochures at the NSW DPI website at:

www.dpi.nsw.gov.au/minesafety

OHS Regulation extended to all NSW mines

The *Occupational Health and Safety Regulation 2001* currently applies in part to the NSW mining industry. From 1 September 2008 the regulation is being extended to fully cover the industry.

The *Occupational Health and Safety Act 2000* and OHS Regulation are the 'parent' legislation protecting the health and safety of people at all workplaces and are supported by other mine-specific legislation. When any inconsistencies occur, the OHS legislation prevails.

The OHS Regulation sets out risk controls for hazards common to all workplaces and applies to employers, self-employed people and employees.

The regulation also has implications for people in control of plant, substances and non-domestic premises, as well as anyone involved in the 'life cycle' of plant and substances, including manufacturers, designers, suppliers and users.

Under the OHS Regulation employers must ensure the health, safety and welfare of employees and both employers and self-employed people have a duty to ensure the health, safety and welfare of visitors.

The OHS Regulation also places a duty on employers to assess and control risk and to consult employees when doing a risk assessment or developing safety plans and prior to making a decision that may affect their health, safety and welfare.

Other responsibilities for industry include:

- Certain high-risk plant must be item and/or design registered with the government (either NSW DPI or NSW WorkCover depending on the type of high-risk plant)
- People must hold a certificate of competence licence for high-risk work, except for load shifting equipment (which will not apply to the mining industry at this stage)

■ *Mines Inspection General Rule 2000* provisions for hazardous substances will now be regulated by the OHS Regulation

■ Specific risk controls must be put in place for hazardous processes and construction work

■ Certain businesses must be licensed and some work will require a permit and/or notification. Licensing and permits required by the OHS Regulation and issued by NSW Workcover include Construction Induction Certificates (if and where required - Chapter 8), National Certificates of Competency (Chapter 9), licenses for certain businesses (Chapter 10), permits for certain work (Chapter 11).

For more information see the NSW DPI website at:

www.dpi.nsw.gov.au/minerals/safety/legislation

Legislation framework reform continues for mining industry

The impending introduction of the *Mine Health and Safety Act 2004*, *Mine Health and Safety Regulation 2007* and the extension of the *Occupational Health and Safety Regulation 2001* continues the reform of the state's mine safety legislative framework.

A series of seminars held throughout NSW in this year helped participants from metalliferous, extractives and opal mining industries to better understand what will be required of them under the new legislation, which comes into force from 1 September 2008. The seminars provided an outline of the new legislation, details on new responsibilities for duty holders and timeframes for implementation.

The seminars gave industry participants a unique opportunity to put questions about the legislation to senior officers from NSW DPI. Local Inspectors and Mine Safety Officers also provided insights on specific requirements, such as nominating an operator and submitting reporting forms, and were available to answer questions on local issues.

Most importantly, participants were advised that they must submit a Nomination of Operator form to NSW DPI as soon as possible for approval. No mining is to take place from 1 September 2008 unless an operator has been nominated.

Participants were also provided with copies of support documentation including guidance notes, a catalogue of support documents, ready reference guide, overviews and reporting forms.

For anyone who was not able to attend one of the seminars, the presentation and copies of the support documents are now available on the NSW DPI website at www.dpi.nsw.gov.au/minerals/safety/legislation/mines/supporting-resources

Timetable for implementation		
	Coal mines	Metalliferous, extractives and opal mines
Occupational health and safety legislation	<p>The <i>OHS Act 2000</i> applies. The <i>OHS Regulation 2001</i> applies in part to all mines. From 1 September 2008</p> <p>The remaining parts of the <i>OHS Regulation 2001</i> will apply to all mines. New Codes of Practice will apply to all mines From 1 September 2009</p> <p>Persons must hold certificates of competence for certain work.</p>	
		<p>From 1 September 2009 High-risk plant must be registered with NSW WorkCover.</p> <p>From 1 September 2010 Powered winding systems must be registered with NSW DPI</p>
Mining safety legislation	<p>The <i>Coal Mine Health and Safety Act 2002</i> and the <i>Coal Mine Health and Safety Regulation 2006</i> apply to coal mines.</p>	<p>From 1 September 2008 The <i>Mine Health and Safety Act 2004</i> and the <i>Mine Health and Safety Regulation 2007</i> applies to all metalliferous, extractive and opal mines. Mines Inspection Act 1901 and General Rule 2000 will be repealed. All metalliferous, extractive and opal mines required to have submitted a Nomination of Operator Form. No mining can take place in metalliferous, extractive or opal mines unless an operator has been nominated.</p>

OHS Regulation seminars for coal mining industry

A series of seminars was held during July 2008 which helped people in the coal mining industry better understand their obligations under the extension of the *Occupational Health and Safety Regulation 2001*.

For more information, visit the NSW DPI website at:

www.dpi.nsw.gov.au/minerals/safety/legislation/coal

Vigilance required in managing electrical safety

Electrical standards requirements at all NSW metalliferous and extractive sites will be strengthened upon the commencement of the *Mine Health and Safety Act 2004* and the *Mine Health and Safety Regulations 2007* in September 2008.

The ever-increasing consumption of electricity combined with changing electrical technology means that mine sites must be vigilant in managing those risks associated with the design, manufacture, installation, operation, maintenance and disposal of electrical equipment.

This life-cycle approach is reflected in the new requirements of the *Mine Health and Safety Regulation 2007*, which includes, but is not limited to:

- The inclusion of competent persons with appropriate electrical engineering competence in the management structure of the mine
- The testing of electrical installations in accordance with AS/NZS 3000, including the requirement to provide a certificate of compliance to the operator
- The identification of electricity as a prescribed hazard that requires a documented risk assessment to be conducted
- The requirement for persons working on electrical installations to provide safe work method statements to the operator prior to work commencing.

In addition to the state-wide legislation workshops held in March – April 2008, the Mine Safety Operations branch has commenced an electrical audit program of all extractive sites in the northern region of the state. This audit will focus on current electrical compliance, as well as taking the opportunity to formally advise management, contractors, tradespersons and, particularly, electricians of their responsibilities and obligations under the new mine health and safety legislation. The program has generally consisted of a formal audit conducted by an Inspector of electrical engineering in the company of senior site management and, most importantly, the site electrician. A site inspection is then used to confirm the application of the site's management and control systems.

As anticipated, it became evident that some small to medium-sized extractive operations were struggling with the management of risks associated with electricity. A progressive industry feedback presentation was used to highlight and educate management and electrical professionals on the deficiencies of their systems.



NSW DPI Inspector of Electrical Engineering Rob McKenzie speaks with mine representatives about managing electrical engineering safety on the mine site.

Major discussion points included:

- Electricity not identified as a hazard
- Limited risk controls and systems documented in the mine safety management plan
- Insufficient involvement by management in the application of electrical standards
- Absence of reference to AS/NZS 3000 and AS 3007 by electrical professionals
- Concept of maintenance on electrical equipment not understood or performed
- Failure to manage basic earthing and earth fault protection requirements
- Welding management procedures were lacking.

By involving both management and electrical professionals the feedback presentation was able to initiate positive interaction and acknowledgement of legislative requirements from both parties. The key learnings assisted in highlighting and outlining the path forward for electrical safety compliance.

For further information please refer to *Technical Reference EES-013 Electrical Engineering Safety - Guide to the Mine Health and Safety Regulation 2007 and Occupational Health and Safety Regulation 2001* available on the NSW DPI website at:

www.dpi.nsw.gov.au/minerals/safety/legislation/mines/supporting-resources

Centre rill helps prevent vehicle collision on haul road

The Queensland Department of Mines and Energy (DME) Mines Inspectorate issued the following Safety Alert.

Collision saved by centre rill on haul road

A Cat 785 driver who was momentarily distracted lost control of his truck, which was brought to rest by the centre safety rill of the haul road. At the time of the incident another vehicle was approaching from the opposite direction and a head-on collision would have been highly probable if the rill was not in place. Centre rills are a 'hard' control not commonly used in the mining industry and were installed at the mine after two previous loss-of-control incidents.

Investigations after these incidents had found the 'long, straight and boring' nature of the road was a significant causal factor. Many other loss-of-control incidents in the industry have been caused by wet roads, micro sleeps, brake faults, speed, inexperienced drivers and various distractions and have often resulted in vehicles crossing lanes. It is recommended that all mines review risk assessments relating to traffic management on haul roads and ramps, ensuring that all potential controls are considered, including hard barriers.

For further information on this safety alert visit the DME website at:

www.dme.qld.gov.au/mines

SA08-01 Electric shock from a high-voltage test set

An electrical worker received an electric shock while carrying out insulation testing of an 11kV cable network. The electrical worker reached for the voltage control knob to make a fine adjustment of the output voltage of a high voltage battery-powered test set when an electrical discharge occurred from the test unit to the worker.

The test set was being used for the first time to test the mine's 11kV network. It had recently been delivered to the mine and had been inspected and commissioned. The electrical worker is a qualified high voltage level two worker with extensive testing experience. He connected the test set in reverse to the operating instructions and did not use the earth connection on the test set. The test set manual was also not specific to the test set supplied and contained information that was intended for a different model of test set, it was placed into use without the benefit of product training from the supplier and the marking and colour of leads was different to convention used on other types of test set. The test set had reached a stable voltage and the cables under test were charged with stored energy that discharged through the victim to earth. The stored energy was capable of inflicting a lethal electric shock.

For detailed recommendations from NSW DPI refer to the full safety alert.

SA08-02 Electric shock direct contact with high-voltage electricity

An electrician/plant operator received a serious electric shock and burns when direct contact was made with a live 3300 volt terminal in a switch-fuse unit that was fed from a 5 ampere earth fault limited system. This incident is being investigated by the NSW DPI Investigation Unit. NSW DPI may issue further communication.

While investigating a potential loose connection on the mains supply to the motor, the electrician/plant operator relied on isolation that had previously been carried out. As part of the isolation, an interlocked earth had been applied to the load side of the switch fuse. The electrician/plant operator used a castel key that was released when the earth switch was applied to gain access to the conveyor switch fuse enclosure and assumed that the bottom of the switch was isolated (dead). He did not 'test for dead' before touching electrical conductors.

The electrician/plant operator received a severe electric shock between both hands and, consequently, across the chest. He also received burns to both hands. Earth leakage protection located on the neutral of the supply transformer operated and disconnected the 3300 volt supply by tripping off the transformer primary (11,000 volts) circuit breaker via a shunt trip.

For specific recommendations refer to the full safety alert, as well as NSW DPI Safety Alert SA05-11, EES-001 Technical Reference - Electrical Engineering Management Plan and ESS-002 Technical Reference - Control and Supervision of Electrical Work.

SA08-03 Lightning strikes stationary truck

A large rear dump truck (RDT) was struck by lightning while stationary and unattended. No employees or personnel were injured. Three tyres were blown off the truck between 2 to 5 minutes after the lightning strike. Two tyres exploded on the driver's side of the truck, sending debris several hundred metres from the vehicle and causing extensive damage to the truck and other equipment. One complete wheel base (weighing 1.6 tonnes) was thrown about 100 metres from the truck. A solid wheel flange (weighing 250kg) was thrown to the top of the

stockpile about 275 metres from the truck. The air blast and shock wave caused damage to the operator's cabin, other equipment and buildings up to 230 metres from the truck. The tyres were ejected and finished between 50 to 60 metres from the truck. Immediately after the incident the site's tyre fire procedure was put into place. The area was barricaded as a no-go zone for a minimum of 24 hours.

For recommendations and applicable standards refer to the full safety alert as well as NSW DPI Safety Alert SA04-01.

SA08-04 Failure of explosion-protected characteristics of a diesel engine system

During a scheduled code 'D' mechanical inspection the intake manifold gasket of an explosion-protected diesel engine system was found to be damaged to such an extent that the diesel engine system would not have been in an explosion-protected condition. The intake manifold gasket had been incorrectly installed at the previous code 'D' inspection, so it appears the diesel engine system may have been operating in this non-explosion-protected condition for about 2000 hours.

The investigation found that between the mechanical code 'D' inspections (2000 hours), the intake manifold or gasket had not been replaced by the mine. The intake gasket appears to have been dropped while the intake manifold was being installed at the previous code 'D' inspection. The gasket was not broken, however, it was not lined up with the bolt holes. There were some witness marks on the manifold and gasket, showing this explosion-protected joint was most likely compromised. The mine carries out visual and soapy water tests every 250 hours engine operating time. No defects were identified during these inspections and tests.

For detailed recommendations from NSW DPI refer to the full safety alert.

SA08-05 Miner's arm injured while using drill rig

A miner suffered serious injuries to his left arm when it became entangled in steel rib mesh and a rotating drill steel. The miner's lower left forearm was later amputated while in hospital.

Initial investigations revealed the continuous miner-mounted hydraulic roof bolter may have been inadvertently operated by the operator, or it may have inadvertently operated independent of the operator. At the time of the incident the process being undertaken was to locate the roof mesh and the horizontal section of the rib mesh on top of the continuous miner-mounted temporary roof support, using the left and right hand drill steels as guides.

This incident is being investigated by the NSW DPI Investigation Unit.

continued next page

Safety Alerts and Safety Bulletins

NSW DPI issues Safety Alerts following the occurrence of an event such as a fatal accident, dangerous occurrence or incident which is considered to be of significance to the industry, with the aim of preventing a similar occurrence. Safety Bulletins are also issued by NSW DPI. Like Safety Alerts, they contain information relating to safety issues but are not directly linked to a specific incident.

If you would like to receive an email copy of Safety Alerts and Safety Bulletins visit www.dpi.nsw.gov.au/minerals/safety/signup and enter your details.

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All mine operators and designers should review their risk assessments for the installation and/or operation of rib and roof mesh support systems to ensure that people are prevented from becoming entangled in either the mesh or the drilling plant. Further specific recommendations and an overview of legislative obligations are contained in the full safety alert.

SA08-06 Worker falls through guardrail

A mechanical tradesperson working alone in an underground metalliferous mine fell through the guardrail of an elevated platform while cleaning the mine water screening plant. While hosing screens on the elevated platform the tradesperson either tripped or stumbled back onto the platform's guardrail which collapsed and broke. The tradesperson fell about 2.5 metres to the concrete floor below, sustaining serious injuries, and was not found for three hours.

A preliminary investigation has established probable causes of the incident as: fixed guardrails corroded and in poor condition; inadequate inspection and testing of the structural condition of the fixed plant, guardrails and ladders; and inadequate procedures for working alone.

For detailed recommendations from NSW DPI refer to the full safety alert.

Safety Bulletins

SB08-01 Operator behaviour around remote control equipment

Since the introduction of remote control equipment into the mining industry, there have been numerous incidents putting persons at risk. Some accidents have resulted in serious injuries and a number of fatalities. Previous safety alerts provide particulars on several such serious accidents.

Despite industry efforts and technological advances made with remote control equipment, accidents continue to occur. Operator behaviour around remote control equipment is an important issue to consider in managing the risk. This safety alert contains detailed recommendations and advises industry to revisit this risk area and ensure the health and safety of persons involved with remote control equipment.

SB08-02 Safe use of flameproof headlamps

NSW DPI has been provided with information about the potential for flameproof headlamps to exceed a surface temperature of 150°C. Variation in the voltage applied to the headlamp, angle of inclination of the headlamp, the type of lamp within the headlamp and the ventilation around the headlamp can all impact on the surface temperature of the headlamp.

Other matters that NSW DPI is aware of are headlamp failures due to impact and excessive internal heat generation leading to premature failure of internal components and wiring and the possibility of 12 volt-rated lamps being supplied at a voltage of 13.8 volts. For detailed recommendations, information on applicable standards and legislative obligations please refer to the full safety bulletin.

SB08-03 Vehicle-mobile plant support stands

A recent incident at a Queensland coal mine has highlighted the

need for fit-for-purpose equipment. The mine had purchased a set of support stands that did not include a maximum operating height. There was also no indication on the plant of compliance with any Australian or other standard. Testing by a recognised industry testing agency revealed that the stand's maximum operating height was 700mm, indicating that the stand stability did not comply with Australian Standard AS/NZS 2538:2004 Vehicle support stands.

The Queensland Department of Mines and Energy – Mines Inspectorate released Safety Alert No 187 on the incident on 18 March 2008. Download at: (www.dme.qld.gov.au/mines/mining_safety_health.cfm)

Recently, a support stand being used at a NSW coal mine failed while supporting heavy machinery. This incident is currently being investigated.

SB08-04 Unplanned movement of shuttle cars

NSW DPI has conducted a review of unplanned movements of shuttle cars, where the shuttle car has moved in either a forward or reverse direction contrary to the operator's intention. This review encompassed the period 1 July 2005 to 31 March 2008. There have been 28 events recorded in the NSW DPI database. Problems with the shuttle car footswitch contributed to 22 of those events. Shuttle cars operate in an underground environment with restricted space. An unplanned movement of a very small distance has the potential to cause death.

All coal operations using shuttle cars should review their risk controls associated with the use of shuttle cars. In particular, identify sources of unplanned movements, identify and implement risk controls in accordance with the hierarchy of controls to bring the risk from unplanned movement to a tolerable level, develop and implement a safety requirements specification for shuttle cars to incorporate the identified risk controls, develop commissioning, testing, maintenance and repair actions to provide for ongoing confidence that the identified risk controls are effective and develop operational procedures, including supervision, and management audit and review, to provide for ongoing confidence that the risk is at a tolerable level.

Further attention is drawn to Safety Alert SA06-01 Dangerous Unplanned movements – Shuttle Cars and Continuous Miners.

SB08-05 In-service failures of explosion-protected diesel engine systems

Following a number of incident investigations and audits there appears to be inconsistency in incident notifications from underground coal operations with regards to the reporting of 'the in-service failures of the explosion-protection characteristics of explosion-protected plant' on explosion-protected diesel engine systems.

Clause 56 (1) (m) of the Coal Mine Health and Safety Regulation 2006 requires notification to the Chief Inspector and the industry check inspector of any incident or matter involving the: 'the in-service failure of the explosion-protection characteristics of explosion-protected plant'. This safety bulletin clarifies the above notification provision, in relation to explosion-protected diesel engine systems, to provide a consistent approach for all underground coal mines. Refer to the safety bulletin for full clarification and further recommendations from NSW DPI.

Find all Safety Alerts at: www.dpi.nsw.gov.au/minerals/safety/safety-alerts

Baal Bone Colliery

On 12 September 2001 at the Baal Bone Colliery, while in the process of charging a blast hole with explosives for shotfiring, a large piece of shale detached from the underground longwall coal face striking the deputy Graham Jordan, who died as a result of his injuries. Miner Alan Eckford was also struck by the falling rock, resulting in serious injuries. The joint operators of the mine, Oakbridge Pty Ltd and Wallerawang Collieries Limited, were each charged with a breach of section 8(1) and 8(2) of the *Occupational Health and Safety Act 2000*. Both defendants pleaded guilty to the charges when the matters were heard on 10 March 2008. On 24 April 2008 the Industrial Court of NSW fined each defendant \$140,000.

Bellambi West Colliery

On 20 December 2000 at the Bellambi West Colliery, while setting timber to retrieve a remotely controlled continuous miner that had become immobilised under unsupported roof, a section of roof fell resulting in fatal injuries to Gregory Aspinall and serious injuries to Justin Rowles. The mine manager at the mine and a director of the mining company, Allied Coal Pty Ltd, were both charged under section 15(1) of the *Occupational Health and Safety Act 1983* by virtue of section 50 of the Act. The proceedings against the individuals were dismissed on 14 April 2008, but are currently subject to an appeal. The proceedings against Allied Coal Pty Ltd alleging a breach of section 15(1) of the OHS Act 1983 are still to be heard.

Metropolitan Colliery

On 28 May 2004 at the Metropolitan Colliery a chain connection snapped in the course of attempting to rejoin a conveyor chain belt that had earlier jammed. When the chain connection snapped Gary Hammond was struck on the front of his safety helmet by a component of the failed chain assembly resulting in serious head injuries and partial loss of sight. Other employees of the corporate defendant were also at risk of injury from flying metal. The mine operator Helensburgh Coal Pty Limited was charged under section 8(1) of the *Occupational Health and Safety Act 2000*. Helensburgh Coal Pty Limited pleaded guilty with the matter being heard on 5 and 6 December 2007. The defendant was fined \$175,000 on 1 February 2008.

Dartbrook Mine

On 28 May 2004 at the Dartbrook Mine, an underground coal mine, contractor James Adams Jnr was fatally injured by a fall of roof. The contractor company and employer of Mr Adams, Roche Mining Pty Ltd, was charged under section 8(1) of the *Occupational Health and Safety Act 2000*. The company that managed the mine, Anglo Coal (Dartbrook Management) Pty Ltd, was charged under section 8(2) of the OHS Act 2000 and the mine manager charged under section 8(2) by virtue of s26(1) of the OHS Act 2000. The contractor

company pleaded guilty to the charge when the matter was heard on 21 September 2007. The mining company and the individual defendant pleaded guilty to the charges on 29 and 30 October 2007. The contracting company was fined \$180,000 on 10 December 2007. The mining company was fined \$160,000 on 12 December 2007. The charge against the individual defendant was dismissed on 12 December 2007.

Clarence Colliery

On 12 July 2004 at the Clarence Colliery, Ben Houlison received serious injuries resulting in paraplegia when he was crushed between the conveyor boom of a continuous miner and the roof of the underground workings. The employer Clarence Coal Pty Ltd was charged under section 8(1) of the *Occupational Health and Safety Act 2000* and the mine owner Centennial Coal Company Limited was charged under section 8(2) of the OHS Act 2000. Both defendants pleaded guilty. The matter was heard against both defendants over four days from 16-19 October 2007. On 30 November 2007 each defendant was fined \$80,000.

Perilya Broken Hill Mine

On 28 November 2002 at the Perilya Broken Hill Mine, while operating a shaft cage at the underground metalliferous mine, Darren Andrew was fatally injured when he was crushed between the drop bar at the front of the cage and some part(s) of the shaft. The mine operating company Perilya Broken Hill Limited was charged under section 8(1) of the *Occupational Health and Safety Act 2000*. The matter was heard on 14 August and 7 December 2006 and 10 May 2007 with the company pleading guilty. A director of the corporation was charged under section 8(1) by virtue of s26(1) of the OHS Act 2000. Perilya Broken Hill was fined \$95,000 on 8 June 2007. The charge against the individual defendant was dismissed on 8 June 2007.

Mount Thorley Warkworth Mine

On 28 May 2004 at the Mount Thorley Warkworth Mine, while changing tyres on large surface mining machinery, contractor Paul Strong was crushed between the tyre and the rear of the service vehicle receiving fatal injuries. The employer of Mr Strong, Marathon Tyres Pty Ltd, was charged under section 8(1) of the *Occupational Health and Safety Act 2000*. The operator of the mine Rio Tinto Coal (NSW) Pty Ltd was charged under section 8(2) of the OHS Act 2000. The charge against Marathon Tyres was heard on the 21 March 2007 following an early plea of guilty. Marathon Tyres was fined \$135,000 on 4 April 2007. The Rio Tinto matter was heard 22 March 2007 with the company entering a plea of guilty. On 4 April 2007 Rio Tinto was fined \$135,000.

Court judgments can be accessed at: www.lawlink.nsw.gov.au/lawlink/caselaw/ll_caselaw.nsf/pages/cl_index

Informal risk assessment system enhances Risk Management Pocket Guide

A new informal risk assessment system has been added to the popular *Risk Management Pocket Guide*, jointly produced by NSW DPI and the Institute of Quarrying Australia. The *Risk Management Pocket Guide* provides employers, contractors and employees with a straightforward system and simple tools to help them identify hazards and determine where and when risk management strategies must be applied.

The new informal risk assessment system strengthens the risk management process by providing an alternative when a formal risk assessment may not be required. The *Risk Management Pocket Guide* also includes an explanation of practical risk management, templates, hazard report forms, prompt cards and a CD presentation. Since its creation in early 2007 more than 500 pocket guides have been sold through NSW DPI.

Each part of the pocket guide can be purchased separately or as a full package. Participants in the Refining Your Safety Management Plan Workshop, run by NSW DPI and the Institute of Quarrying Australia, receive the Risk Management Pocket Guide as part of their registration.

For more information visit:

www.dpi.nsw.gov.au/minesafety

CALENDAR OF EVENTS

Mechanical Engineering Safety Seminar, 13-14 August 2008, Water-view Convention Centre, Sydney Olympic Park. For further information visit www.dpi.nsw.gov.au/minesafety or call Michelle Russell on 02 4931 6632.

Electrical Engineering Safety Seminar, 13-14 November 2008, Water-view Convention Centre, Sydney Olympic Park. For further information visit www.dpi.nsw.gov.au/minesafety or call Michelle Russell on 02 4931 6632.

Mine Operators Workshops, held regularly, next held 2-4 September July 2008, Morilla Street, Lightning Ridge, contact Janet Town, DPI, 02 6829 0678.

Mine Safety Awareness Course, held regularly, next held 29-30 September 2008, Lightning Ridge Bowling Club, contact Janet Town, DPI, 02 6829 0678

Hunter Valley Underground Mine Mechanical Engineers meeting, Mine Safety Technology Centre at Thornton, held quarterly, contact Paul Drain, Mine Safety Officer, DPI 02 4931 6652

Hunter Valley Opencut Mine Mechanical Engineers meeting, Mine Safety Technology Centre at Thornton, held quarterly, contact Matt Willoughby, Mine Safety Officer DPI 02 6571 8788

Southern and Western Coalfields Mechanical Engineers meeting, held quarterly, contact Graham Johnston, Mine Safety Officer, DPI 02 4222 8307 or Wally Koppe, Inspector Mechanical Engineering, DPI 02 4227 1699

Introduction to Safety Management Workshop for small mines and quarries, at various venues and dates throughout NSW, see NSW DPI website www.dpi.nsw.gov.au/minesafety for further details or contact Institute of Quarrying Australia (education@quarry.com.au)

Refining Your Safety Management Workshop for small mines and

quarries, at various venues and dates throughout NSW, see NSW DPI website www.dpi.nsw.gov.au/minerals/safety/resources/training-and-workshops for further details or contact Institute of Quarrying Australia (education@quarry.com.au)

Mechanical Safety Presentations to the Extractive Industries, closed workshop 'onsite', held periodically throughout the year as required. Generally workshops are not open to broader industry however if you would like more information please contact Angus McDouall, Inspector Mines, DPI 02 6776 0309 or Paul Drain, Mine Safety Officer, DPI 02 4931 6652 (Nth Coast) or Matt Willoughby, Mine Safety Officer, DPI 02 6572 1899 (Mid North Coast)

Hunter Valley Electrical Engineers meeting, held bi-monthly on the first Friday of the month — venues change for each meeting, contact Steve Bentham, Inspector Electrical Engineering DPI 02 4931 6653 or Owen Barry, Inspector of Electrical Engineering 02 6571 8708.

Southern and Western Coalfields Electrical Engineers meeting, TestSafe, Londonderry, quarterly (limited numbers), contact Bob Kennedy, Inspector of Electrical Engineering 02 4227 1699 or 0417226 362

HIESN (Hunter Industry Electrical Safety Network) meeting, held monthly on the first Thursday of each month — venues change, contact Peter Henderson, Tomago Aluminium 0408 683 544

Western and Central Western NSW (Cobar, Broken Hill, Orange) Mine Electrical Engineer meeting, held at various venues and dates throughout the year, contact Stan Maginnis, Inspector of Electrical Engineering, 02 6351 3052 or 0417223 875

Remote Control Equipment Advisory Group meeting, invite required, held quarterly, contact John Waudby, Senior Inspector of Electrical Engineering, 02 4931 6641 or 0418 295 656

MEMMES (Mining Electrical and Mining Mechanical Engineers Society of the IEAust) Meeting, held monthly, contact Peter Whipp, President 0427 425 798

For more information go to: www.dpi.nsw.gov.au/minerals/safety/resources

NSW DPI — Mineral Resources Offices

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NSW Department of Primary Industries
Mineral Resources
516 High Street, Maitland NSW 2320
(PO Box 344, Hunter Region MC NSW 2310)
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ARMIDALE

NSW Department of Primary Industries,
PO Box U86 UNE Armidale NSW 2351
Earth Sciences Building (C2)
University of New England, Armidale NSW 2350
Phone: (02) 6738 8500, Fax: (02) 6772 8664

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Broken Hill NSW 2880
(Note changed PO Box number)
(PO Box 696 Broken Hill NSW 2880)
Phone: (08) 8088 9300, Fax: (08) 8087 8005

COBAR

Government Offices, 62–64 Marshall Street,
Cobar NSW 2835
(PO Box 157 Cobar NSW 2835)
Phone: (02) 6836 6000, Fax: (02) 6836 4395

LIGHTNING RIDGE

Lot 60 Morilla Street, Lightning Ridge NSW 2834
(PO Box 314 Lightning Ridge NSW 2834)
Phone: (02) 6829 9200, Fax: (02) 6829 0825

LITHGOW

Suite 1, Level 1, 184 Mort Street,
Lithgow NSW 2790
(PO Box 69 Lithgow NSW 2790)
Phone: (02) 6350 7888, Fax: (02) 6352 3876

LONDONDERRY

Core Library
947–953 Londonderry Road,
Londonderry NSW 2753
Phone: (02) 4777 0322, Fax: (02) 4777 4397

ORANGE

(Note changed address and telephone numbers)
161 Kite Street, Orange 2800
(Locked Bag 21, Orange NSW 2800)
Phone: (02) 6360 5333, Fax: (02) 6360 5363
After hours – emergency only – (02) 6360 5343



NSW DEPARTMENT OF
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1 Civic Avenue, Coal Services Building,
Singleton NSW 2330
(PO Box 51 Singleton NSW 2330)
Phone: (02) 6571 8788, Fax: (02) 6572 1201
THORNTON

MINE SAFETY TECHNOLOGY CENTRE

8 Hartley Drive, Thornton NSW 2310
(PO Box 343, Hunter Region Mail Centre,
NSW 2310)
Phone: (02) 4924 4000, Fax: (02) 4924 4080

WOLLONGONG

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Level 3, Block F, 84 Crown Street,
Wollongong NSW 2500
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