

# minesafe

WESTERN AUSTRALIA

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Government of Western Australia  
Department of Mines and Petroleum  
Resources Safety

## Reaching safety reform milestones

TAPPING IN TO  
INDUSTRY EXPERTISE

EMERGENCY RESPONSE

IS YOUR SITE READY FOR  
THE CYCLONE SEASON?



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**W**elcome to the final issue of *MineSafe* for 2010. Resources Safety has been active in the mining community recently, with safety roadshows travelling to the Pilbara, South West and Goldfields, as well as Perth. Consultation with roadshow participants has been extremely useful in determining the direction and content of strategies related to safety culture resources and a new drilling safety code. The next issue of *MineSafe* will feature the recommendations that came out of the workshops on toughness in mining and how it can affect safety performance.

The mining community has also been active, with emergency response competitions held in Greenbushes and Kalgoorlie. Resources Safety is proud to support and recognise such important industry activities.

There is an update on the safety reform initiative being implemented by the Department of Mines and Petroleum.

Your attention is drawn to the safety alerts reproduced at the back of each *MineSafe*.

In other news, Research Solutions was engaged by the Department to determine the baseline of current stakeholder perceptions and expectations of the role, services and functions of Resources Safety as the safety regulator for the resources industry. Thank you to all who participated in the survey, which was structured so that the effectiveness of the safety reform initiative can be measured over time. Research Solutions will be reporting to the Department in early 2011.

Enjoy your reading.

**Malcolm Russell**  
*Executive Director, Resources Safety*



# Stakeholder liaison

## REACHING SAFETY REFORM MILESTONES

It has been just over a year since the Minister for Mines and Petroleum announced the overhaul of the way that resources safety is regulated in Western Australia. In the past few months, some key milestones have been reached in the Department of Mines and Petroleum's safety reform strategy to achieve the Minister's vision.

The Ministerial Advisory Panel on Best Practice Safety Regulation (MAP), its working groups and the Safety Reform Project Team have been engaged in exploring a variety of issues, and discussions are well advanced on the cost recovery approach for petroleum and geothermal energy, and licensing of dangerous goods.

The launch of the notifications and approvals functions of a new online business system, establishment of a lead auditor training program and in-principle agreement to implement principal hazard management plans across the mining industry are the latest safety reform initiatives announced by the Department.

"These are some important milestones and demonstrate the Department's commitment to safety reforms within the Western Australian resources sector," Director General Richard Sellers said.

"The goal is to ensure the Resources Safety Division has the appropriate capacity, competency and legislative framework to regulate an expanding industry well into the future. This means employing more staff, including inspectors, improving our systems, and providing further training and development for staff. The training and development program, through the lead auditor training, also presents a unique opportunity for industry participation."

### MAP AND WORKING GROUPS

Following MAP approval of the Best Practice Safety Strategies Work Group's recommendations, the

Department has now received the Minister's approval to consult industry and unions on the development and implementation of principal hazard management plans and associated key performance indicators. The proposal was developed by the working group, which included industry, unions and the regulator, to support the move towards more risk-based regulation. It aligns with the proposed national occupational safety and health harmonisation process.

The Work Group will reconvene early in 2011 to consider the national model mines safety regulations and implementation of the principal hazard management plans.

The Financial Reporting and Transparency Work Group was responsible for developing an agreed mechanism for reporting expenditure, including the cost to administer safety regulation. This group's work is now complete, with its draft report presented to MAP at its November meeting. MAP has made further recommendations, which will be presented to the Minister for consideration in January 2011.

The Legislative Review Work Group reviewed the Mines Safety and Inspection Levy Regulations 2010 and made recommendations to MAP at its November meeting. MAP has signed off on the recommendations. If approved by the Minister, the Department will commence the process of amending the Mines Safety and Inspection Levy Regulations from early 2011.

This working group will now change focus to review the various safety Acts and advisory committees (including the Mining Industry Advisory Committee), with new industry representatives and terms of reference.

The next meeting of the Ministerial Advisory Panel is 21 February 2011.

## COST RECOVERY FOR RESOURCES SAFETY REGULATION

The Minister has given his in-principle agreement on the proposed model and implementation of the Petroleum and Geothermal Safety Levy. The Department has been liaising with the Australian Petroleum Production and Exploration Association (APPEA), Australian Pipeline Industry Association (APIA) and MAP on the development of the model. Consultation will continue with industry as the model is finalised.

The Minister has also signed off on the proposed amendments to dangerous goods licences and implementation of cost recovery for dangerous goods safety regulation. There will be further industry consultation in early 2011.

## SAFETY REFORM PROJECT TEAM

The Safety Reform Project team continues to brief industry on reforms. Workshops will be held in early 2011 with APPEA regarding the safety legislative framework, and Rio Tinto about integrating safety reform plans into its strategic planning processes.

The Safety Reform Project Team welcomes the opportunity to discuss implementation of the safety reform strategy with interested companies and operations. Please contact [safetyreform@dmp.wa.gov.au](mailto:safetyreform@dmp.wa.gov.au)

## SAFETY REGULATION SYSTEM

The Safety Regulation System (SRS) is a corporate business system that aims to provide an integrated and efficient management environment for:

- notifications
- approvals
- auditing
- compliance
- registrations.

Currently, the following functions are available:

- SRS Notifications – allows online submission and tracking of legislative notifications, replacing injury, monthly status and occurrence report forms
- SRS Approvals – allows online submission of project management plans.

## LEAD AUDITOR OSH MANAGEMENT SYSTEMS TRAINING

Seven of the twenty participants in the recent Lead Auditor Occupational Health and Safety Management Systems Training run for Resources Safety were industry representatives from the sectors regulated by Resources Safety.

This training allowed maximum communication, mutual understanding and networking opportunities between inspectors and industry professionals, and helped industry and the regulator to understand

each other's roles. This is vital as the regulator and industry look to improve the safety culture across the Western Australian resources sector.

The aim is for Resources Safety mines and petroleum inspectors, and dangerous goods officers dealing with major hazard facilities, to be qualified in lead auditing. This will ensure inspectors have nationally recognised lead auditing skills, and further supports risk management safety regulation.

## PROPOSAL FOR PRINCIPAL HAZARD MANAGEMENT PLANS

Another important development is the in-principle agreement for Western Australian mining operations to prepare principal hazard management plans for major hazards on mine sites.

A principal hazard management plan means mine operators must identify all hazards arising in their mining operations that could cause a fatality, identify what controls need to be in place to manage these hazards, validate the effectiveness of these controls and ensure that this process is supported, and owned, at all levels of the operation.

When developing site-specific plans, companies will be required to consult with a representative group of workers with the appropriate skills, knowledge and exposure from relevant levels in the organisation. This includes workers directly involved in the activity being assessed.

The next step in the process for the safety regulator will be to further develop the plans and commence consultation with industry on the implementation strategy.

It is proposed that industry submit a principal hazard management plan once every three years or when there is a significant change to operations.



## WANT TO KNOW MORE?

Visit [www.dmp.wa.gov.au/safetyreform](http://www.dmp.wa.gov.au/safetyreform) for more information about the safety reform strategy.

# ADDITIONAL RESOURCES SPREADING THE SAFETY LOAD

The Department of Mines and Petroleum is in the midst of one of its largest recruitment campaigns in recent history. The goal is to ensure that Resources Safety has sufficient resources to implement the reform strategy for mines safety regulation in Western Australia.

Resources Safety Executive Director Malcolm Russell said that the drive aimed to recruit the best possible people for the range of positions available.

“These are technically and intellectually challenging positions and it is vital that we have skilled, passionate people to fill them,” Mr Russell said. “This campaign, which is going national and international in some cases, ensures that we are doing all we can to attract the right people.”

Two Regional Inspectors have been appointed — Trevor Jones is responsible for the Eastern Region (including the Goldfields) and Andrew Chaplyn for the Northern Region (including the Pilbara and Kimberleys).

Seven of the recent mines inspector appointments are for Kalgoorlie-based positions servicing the Eastern Region. They include recruits with expertise in the geotechnical, mechanical, process engineering and mining engineering fields.

It is expected that at least ten additional mines inspectors will be based in Perth, with some dedicated to servicing the Northern Region and others complementing the activities of the Collie inspectorate in the Southern Region. They have expertise in the occupational safety and health, structural, geotechnical, and mining, electrical and mechanical engineering

The arrival of additional inspectors means that the Collie inspectorate will no longer be required to service the Pilbara as well as the South West. In fact, the Collie contingent will be boosted by the arrival of three new locally based inspectors who bring skills in occupational safety and health, and electrical and mechanical engineering.

“The calibre of applicants has been extremely high. These appointments will play an important role in better positioning the regulator for the next period of sustained growth in the resources industry,” Mr Russell said.

Further recruitment is scheduled for 2011.

## HOW TOUGH WILL A RESILIENT SAFETY CULTURE BE?

**T**he Western Australian resources industry is renowned for being tough, but how does that perception of toughness influence safety in the industry?

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This was one of the workshop questions posed to over 400 attendees at the 2010 Mines Safety Roadshow series in the Pilbara, South West, Goldfields and Perth in October, and 2010 Exploration Safety Roadshow in Kalgoorlie and Perth in December.

Dr Dean Laplonge, a leading researcher in gender and safety culture, ran the regional workshops and presented interim findings at the Perth Mines Safety Roadshow.

The roadshows presented a unique opportunity to discuss workplace and management perspectives on safety, and determine what resources and commitments are required to support a positive cultural change.

The workshops focussed on gathering evidence about the nature and extent of risk-taking tough behaviour, and how it might vary between regions, companies and even within sites, and discussing what might be done about it at both personal and industry levels.

There is a lot of research into gender, toughness and other issues, but it is important to go out and talk to people actually in the industry — to gather stories and

ideas from those involved in the culture. This brings life to the research and the opportunity to develop strategies for the workplace, by the workplace.

In particular, the roadshow workshops gave an insight into what those in the mining industry think about being tough, how toughness affects their safety performance and their visions for a safer working environment.

The findings might cause some boards and managers to rethink their safety strategies and how they are applied, and all of us in mining and exploration to think about our own role in determining safety culture.

Dr Laplonge's findings and recommendations will be submitted in early 2011. After consideration, the report will be available on the Resources Safety website, and the key messages published in the next issue of *MineSafe* magazine.

Using Dr Laplonge's report as the blueprint, Resources Safety will develop resources to support industry as it moves towards resilient safety cultures being the norm. Some 185 roadshow participants have offered to provide input and feedback on this guidance material. Their commitment to making a difference is appreciated. This extended "working group" will be contacted early in the New Year to continue the consultation process.

## BUNBURY



## KALGOORLIE



## KARRATHA





# MinesSafety Roadshow 10

## NEWMAN



NE



NE



NE



SH

## PERTH



All photos TYC

## TOM PRICE



SH

# KALGOORLIE



All photos SH

# EXPLORATION SAFETY ROADSHOW

# 10

# PERTH



All photos TYC



BP

“ I BELIEVE MY BROAD EXPERIENCE, WHICH COVERS SITE-BASED AS WELL AS CORPORATE ROLES, LINE MANAGEMENT AS WELL AS CONTRACTOR, ENABLES ME TO GIVE A BALANCED AND INFORMED VIEW OF THE NEEDS AND ISSUES, RISKS AND OPPORTUNITIES FACING THE MINING INDUSTRY ON HEALTH AND SAFETY.

BOB HIRTE

”

## TAPPING IN TO INDUSTRY EXPERTISE

**The secondment of a leading health and safety expert from industry to the Resources Safety Division will help improve the way the regulator and industry work together.**

Bob Hirte is General Manager for Health and Safety – Iron Ore at Rio Tinto and been seconded to Resources Safety for 12 months, until December 2011.

“The State Government has committed to reforming the way safety and health in the resources industry is regulated,” DMP Director General Richard Sellers said. “The appointment of Mr Hirte presents a unique opportunity for industry and the regulator to work together to improve safety across the resources industry. Having Mr Hirte, a very senior industry representative, working directly with the regulator shows that industry and the regulator are taking the safety reform process seriously.”

“Before my current position, which I’ve held for two years, I worked in mine operations general management and registered manager roles across a number of Rio Tinto Iron Ore residential and fly-in, fly-out mining operations,” Mr Hirte said.

“I have also worked for contractors across Australia and New Zealand in project and contract manager roles. I believe my broad experience,

which covers site-based as well as corporate roles, line management as well as contractor, enables me to give a balanced and informed view of the needs and issues, risks and opportunities facing the mining industry on health and safety.

“It is vitally important that there is a common understanding between the mining industry and regulator to ensure we can work together to improve health and safety across all operations. I see this as a unique opportunity to help bring about a sustainable change from which we can all benefit.”

Mr Sellers said it was critical that Mr Hirte has a hands-on role in working with the regulator.

“We are expecting a number of new inspectors as a part of these reforms, so the timing of Mr Hirte’s appointment is ideal,” he said.

Mr Hirte will be based with Resources Safety at Cannington, and work closely with inspectors and the Safety Reform Project Team.

“Over the next 12 months, Mr Hirte will focus on a number of areas including the recently announced development of principal hazard management plans or PHMPs across industry,” Mr Sellers said. “This development is important, particularly as the industry shifts further towards risk-based management. Rio Tinto has considerable experience surrounding PHMPs, so this is certainly one area where Mr Hirte can have a significant role.”

## FAMILIAR FACE JOINS GOLDFIELDS TEAM

**O**ne of Resources Safety's new inspectors looking to make a difference is Trevor Jones, Regional Inspector of Mines (Goldfields).

Trevor has occupied various mining engineering and management positions in the industry over the past 20 years.

"I am looking forward to the challenge this job presents," he said. "One of the biggest challenges will be to work with industry to reduce the number of serious incidents, accidents and near-misses.

"Another challenge will be how we can influence the safety culture at mine sites and support sites as they respond to what we are trying to achieve."

Trevor will be stationed in Kalgoorlie, where he has been based for more than 30 years.

"I first moved to Kalgoorlie in 1976 to take up a position as a teacher, before I moved into the mining industry," he said.

Trevor said that it was important to foster understanding between industry, workers and the safety regulator.

"There is still a lot of blame out there for when things go wrong," he said. "Sometimes that's relevant and at other times it is not."

Trevor said that it would be a challenge to move away from a culture of blame.

"It is in people's basic makeup to want to blame someone when something goes wrong, whether it's the mining industry or not," he said. "It is going to be difficult, but we have to develop an approach defined by what we want to achieve in regards to improving overall safety performance. I'm not convinced bigger fines and more blame is going to get us to where we want to be."

Despite the challenges ahead, Trevor said that he had noticed positive changes in the safety regulator and industry in recent years.

"There have been some huge advances in the past ten years and it is important to build on them, and for mine sites and companies to learn from each other," he said. "As an industry, we need to pick up on what is working and why, and share that information. No one mine site, or company, has all the answers."

As Regional Inspector of Mines (Goldfields), Trevor will be leading the Kalgoorlie inspectorate team in the safety reform change process. This is expected to be a journey over several years and will entail dialogue with both internal and external stakeholders. The end result will be an inspectorate that is seen to truly add value in the workplace and is proactive in meeting the challenges before it.



Photos courtesy Sustainability Pty Ltd

Top: Chief Auditor Sustainability Pty Ltd, Tony Webster-Smith, assisting participants with auditing exercise at pilot training course tested with inspectors and industry representatives in November 2010

Above: Successful participants at November 2010 training course with Certificates of Achievement for Lead Auditor OHS Management Systems Auditing

Applications for enrolment must be received at least 21 days before course commencement. For further information, visit [www.dmp.wa.gov.au/events](http://www.dmp.wa.gov.au/events)

## LEADING THE WAY WITH AUDITOR TRAINING

**A**uditing is a systematic and documented process for evaluating objective evidence about the extent to which policies, procedures and standards requirements are applied in practice.

OHS Management Systems auditing allows a company to have a long, hard look at itself, independent of any regulatory inspection.

The Resources Safety Division of the Department of Mines and Petroleum is conducting a series of Lead Auditor OHS Management Systems training courses for mines inspectors in 2011.

Places in the four-day courses are being offered, on a cost-recovery basis, to industry participants in Kalgoorlie, Bunbury and Perth.

A specialist audit training provider, locally based Sustainability Pty Ltd, has been contracted to customise and deliver the competency-based auditor training, which provides an internationally recognised certificate. Coursework is based upon Resources Safety's methodologies and mining industry issues.

This training is a key component of the safety reform strategy underway at the safety regulator to ensure that its authorised officers are well equipped to work with the State's minerals sector to achieve the next step change in occupational health and safety.

The course will benefit any company seeking to implement a standardised management system auditing regime to manage their risk. OHS practitioners, OHS consultants, and managers who are, or will be, involved in implementing OHS management systems may be interested in attending.

This is an outstanding opportunity for networking and communication building between mines safety inspectors and their industry counterparts.

Places are available at the following courses:

Bunbury— 21-24 February 2011 and 23-26 May 2011

Kalgoorlie – 13-16 June 2011

## THE TIMES ARE CHANGING

**2** 010 has been a year of momentous change for Resources Safety, particularly within the Mines Safety Branch.

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The fruits of many months, even years, of work are finally being ripened and harvested. There is a clear vision for the future and a firm financial footing to support that vision.

The mines inspectorate has been heartened by the participation of many stakeholders at the various safety roadshows during 2010. Your input and feedback are greatly appreciated.

The year also saw the formation of the Ministerial Advisory Panel on Best Practice Safety Regulation, which has provided valuable input into the continued development of the new approach to mines safety regulation.

It is only with sustained free and open communication that we can make the next step change in safety performance.

In 2011, the safety regulator will continue to develop the strategies and tools needed to go beyond compliance monitoring over the next decade. The changes will require significant consultation with stakeholders. There is also a move towards a team-based matrix management style of operation, designed to ensure consistency in regulatory interventions on mine sites.

It is paramount that the mines safety inspectorate's on-site interventions "add value" to the operator's risk management processes. The inspectorate needs to develop a thorough understanding of each site's risk profile, the risk management strategies in place, and the residual risk associated with the hazards being treated. Using this knowledge and dialogue between the mine employees and mine management, the inspectorate can then develop and implement work programs tailored to each mine site.

In December 2010, the inspectorate welcomed several new employees and some 20 additional staff are expected in January 2011. These new recruits will undertake a six-month training program to equip them with the basic skills of an inspector. They will complete course work, project work and field trips during this time, so please take the opportunity to get to know them when they visit your sites in 2011.

# DMP LEGISLATIVE PROGRAM AS AT 24 DECEMBER 2010

## MINES SAFETY

### Levy

The Minister for Mines and Petroleum Norman Moore has endorsed recommendations made by the Ministerial Advisory Panel on Best Practice Safety Regulation to amend the Mines Safety and Inspection Levy Regulations 2010.

In response to issues raised through a series of industry briefing and feedback sessions held in July 2010, a working group comprising representatives from industry, unions and the regulator was established to review the regulations.

Resources Safety's Legal and Policy Section will start drafting the amendments shortly. There will be further consultation with industry regarding the amendments before they come into effect.

### Principal hazard management plans

Following the Ministerial Advisory Panel's approval of the Best Practice Safety Strategies Work Group recommendations, the Department has now received Ministerial approval to consult industry and unions on the development and implementation of principal hazard management plans (PHMPs) and associated performance indicators. Adoption of a PHMP approach will require legislative amendment, following the consultation phase.

### National harmonisation

Resources Safety continues to work on the implementation of the model Work Health and Safety legislation as it applies to mining.

## DANGEROUS GOODS SAFETY

Resources Safety continues to progress a raft of amendments to reduce the regulatory burden and streamline administrative processes associated with the dangerous goods safety legislation. Amendments to the Storage and Handling of Non-explosives, Explosives, Security Risk Substances, and Goods in Ports regulations are in the final stages of drafting, with completion anticipated in the first few months of 2011.

The licensing structure for dangerous goods sites in Western Australia is also being overhauled, and will include the introduction of a cost recovery regime for the regulation of dangerous goods safety. There will be a move from three-year terms to annual licensing, as allowed by recent amendments to the regulations.

## PETROLEUM AND GEOTHERMAL ENERGY SAFETY

Comprehensive occupational safety and health requirements are now included in the *Petroleum Pipelines Act 1969* and *Petroleum and Geothermal Energy Resources Act 1967*, and provide for the introduction of safety requirements covering geothermal energy operations. Regulations covering occupational safety and health and management of safety now apply to pipeline, petroleum and geothermal energy operations.

To assist industry in understanding and implementing the new legislative requirements, Resources Safety is developing a suite of guidance material to support the new regulations. A comprehensive guideline on submitting a petroleum pipeline safety case is now available in the petroleum publications section of the Resources Safety website. Other guidance material will be made available in the coming months.

## NATIONAL MODEL WORK HEALTH AND SAFETY LEGISLATION

The Australian Government has identified occupational health and safety (OHS) as a priority area for reform. One of the key elements is harmonisation — moving towards one set of national OHS laws. The aim is to reduce the incidence of workplace death, injury and disease across Australia.

In July 2008, the Council of Australian Governments (COAG) formally committed to the harmonisation of OHS legislation by signing an Intergovernmental Agreement for Regulatory and Operational Reform in OHS. The Agreement outlines the commitment of all states and territories and the Commonwealth to work together to develop and implement model OHS legislation.

The Agreement also provides for the establishment of an independent body to drive the development and implementation of the model work health and safety laws. On 3 April 2009, the Workplace Relations Ministers' Council (WRMC) endorsed the creation of Safe Work Australia.

Safe Work Australia is responsible for developing national model OHS legislation. The model legislation consists of a principal OHS Act, supported by model regulations and model codes of practice that can be readily adopted around Australia. This requires each state and territory to pass their own laws that mirror the model OHS laws and adopt them by December 2011.

### Public comment sought on model regulations

On 7 December 2010, Safe Work Australia endorsed the package of model Work Health and Safety Regulations and Codes of Practice. The draft regulations and codes will be available for public comment for a four-month period, with submissions closing 4 April 2011.

Individuals and organisations should "ensure their voice is heard by taking up the opportunity to participate", Safe Work Australia Chair Tom Phillips has said.

"We need your views to ensure the model regulations and priority model codes of practice are relevant to all Australian workplaces," Mr Phillips added. "The harmonised laws would allow organisations to effectively manage workplace safety and work to one set of laws regardless of how many states or territories they are operating in."

Visit the Safe Work Australia website at [safeworkaustralia.gov.au](http://safeworkaustralia.gov.au) for more information.

## CODE OF PRACTICE TARGETING DRILLING SAFETY

**C**onsultation with participants at the 2010 Exploration Safety Roadshow series has played an important role in preparation of Resources Safety's new drilling code of practice, scheduled for release in mid-2011. The code specifically covers land-based drilling, including exploration drilling, mining drill and blast, and water well drilling as it applies in the mining process.

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The code of practice will outline a range of hazards associated with drilling operations and the risks associated with operating drilling equipment. It will focus on the risk management process and provide practical guidance on the methods and systems that can be used to eliminate or reduce some of the risks associated with drilling activities. The hazard categories addressed will include:

- adverse weather
- compressors and boosters
- disused operations and workings
- driving
- objects dropped from height
- dust
- emergency response
- environment
- falls from height, trips and slips

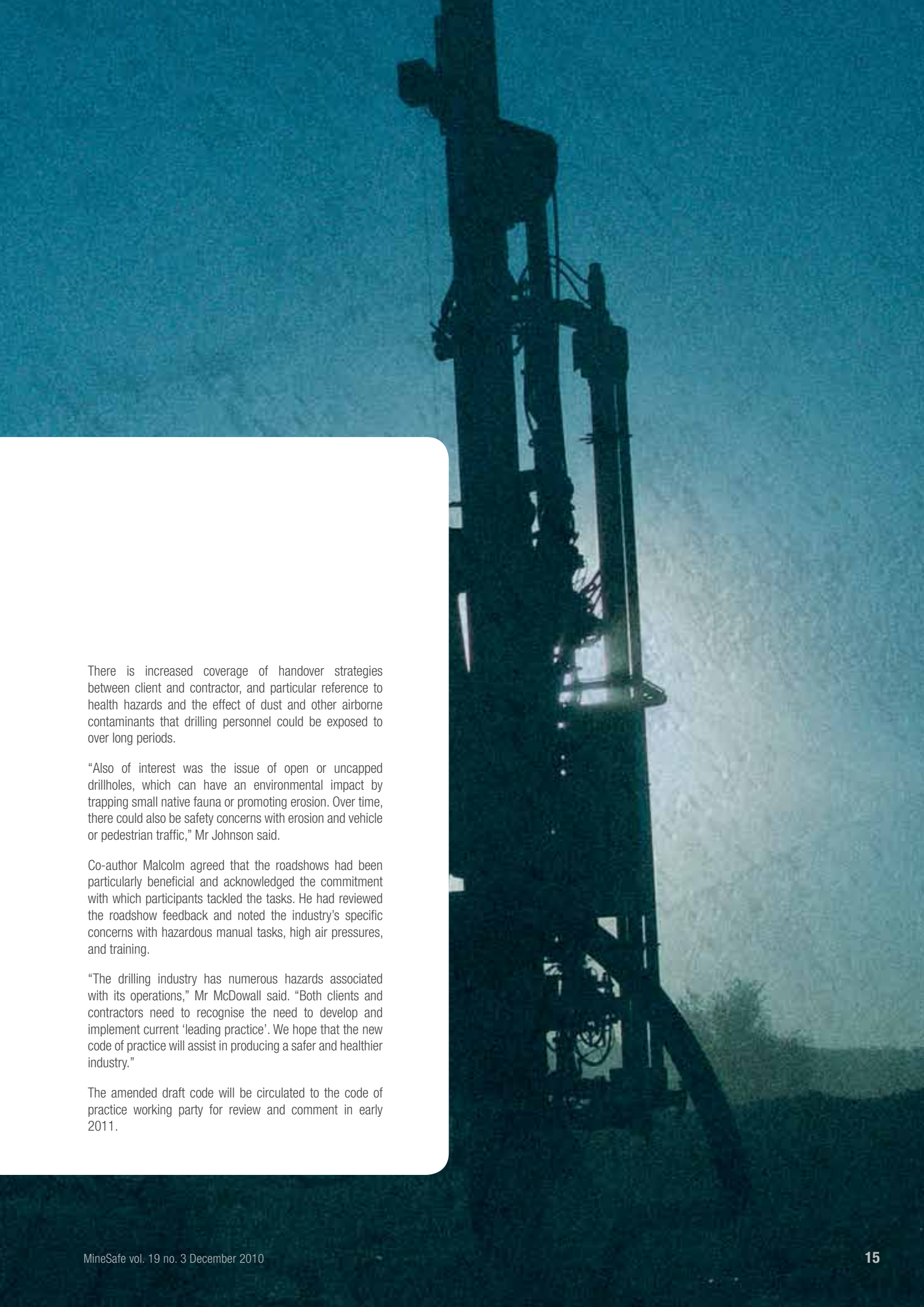
- fitness for work
- guarding
- hand tools
- hazardous manual tasks
- hazardous substances
- high-pressure air and hydraulic systems.

The code then considers the hazards specific to the various drilling techniques, and potential control measures that could be adopted. The role of training and responsibilities of designers, manufacturers, importers and suppliers will also be covered.

Rod Johnson, who was contracted with Malcolm McDowall to produce the code for Resources Safety, said that not only did the input from the Kalgoorlie and Perth roadshows confirm that the content was on the right track, but participants provided new and practical perspectives.

For example, the code now addresses the need to undertake risk assessments, and implement control measures when drilling operations intercept potentially fibrous mineral horizons. Also, the intersection of in-ground gases such as methane must be considered an inherent drilling hazard.





There is increased coverage of handover strategies between client and contractor, and particular reference to health hazards and the effect of dust and other airborne contaminants that drilling personnel could be exposed to over long periods.

“Also of interest was the issue of open or uncapped drillholes, which can have an environmental impact by trapping small native fauna or promoting erosion. Over time, there could also be safety concerns with erosion and vehicle or pedestrian traffic,” Mr Johnson said.

Co-author Malcolm agreed that the roadshows had been particularly beneficial and acknowledged the commitment with which participants tackled the tasks. He had reviewed the roadshow feedback and noted the industry’s specific concerns with hazardous manual tasks, high air pressures, and training.

“The drilling industry has numerous hazards associated with its operations,” Mr McDowall said. “Both clients and contractors need to recognise the need to develop and implement current ‘leading practice’. We hope that the new code of practice will assist in producing a safer and healthier industry.”

The amended draft code will be circulated to the code of practice working party for review and comment in early 2011.

## DANGEROUS GOODS SAFETY



“NAMING OUR LNG BUSINESS AS DANGEROUS GOODS INNOVATION COMPANY OF THE YEAR RECOGNISES AND REWARDS THE COMMITMENT AND WORK OF THE EVOL LNG TEAM.

BILL HAZELL

”

LNG West Coast Sales Manager Bill Hazell (left) accepts the 2010 Dangerous Goods Innovation Company of the Year Award from Dangerous Goods Director Philip Hine

## REWARDING UNIQUE SOLUTIONS FOR ALTERNATIVE FUEL

**A** twelve-year project that looked to use liquefied natural gas (LNG) as an alternative fuel for heavy duty vehicles and remote power generation was recognised with the 2010 Dangerous Goods Innovation Company of the Year Award.

EVOL LNG, which is owned by Wesfarmers Kleenheat Gas Pty Ltd, collected the award at the 2010 WA Transport Industry Awards held in Perth on 16 October 2010.

The award recognises excellence in implementing a creative solution to a dangerous goods transport safety issue. EVOL LNG won the award for its innovative approach to the transport and handling of LNG on heavy duty vehicles to remote mine sites and heavy duty vehicle refuellers, and for the use of LNG as a fuel for heavy duty vehicles.

The annual award, sponsored and judged by the Resources Safety Division of the Department of Mines and Petroleum, is open to operators directly involved in dangerous goods and explosives transport.

Philip Hine, Resources Safety's Director Dangerous Goods Safety, congratulated EVOL LNG and commended the professionalism of operators and drivers involved in the transport of dangerous goods in Western Australia.

“This award encourages the adoption of innovative measures, such as those developed by EVO LNG, which will continue to improve the safe transport of dangerous goods in this State,” Mr Hine said.

LNG West Coast Sales Manager Bill Hazell said that the team was delighted to accept the award.

“This award promotes industry excellence and professionalism in the Western Australian Road Transport Industry,” he said.

“Naming our LNG business as Dangerous Goods Innovation Company of the Year recognises and rewards the commitment and work of the EVOL LNG team. Over the last few years, the team has worked hard to prove the commercialisation of LNG in the Australian market and to achieve the economic and environmental benefit that comes from consuming LNG.”

LNG has only been introduced to the Western Australian market on a major scale in the past two years. There is therefore a recognised need to raise the level of training, knowledge and awareness of those who could be involved in an incident involving LNG. To achieve this, EVOL LNG established a number of initiatives such as:

- TAFE training programs on LNG-powered vehicles;
- training workshop operators on the standards required to work on LNG vehicles and tankers; and
- training LNG drivers and operators, and FESA and other emergency response services personnel on the basic characteristics of LNG and how to respond to any LNG incident.



## INTERSTATE SHOTFIRING LICENCES – CHECK LICENCE CONDITIONS AND SECURITY CLEARANCE

**Interstate shotfirers are entitled, under the provisions of the Mutual Recognition Act 1992, to apply for mutual recognition of their shotfiring licence in Western Australia.**

When a Western Australian shotfirer licence is issued under the mutual recognition principles, conditions or restrictions may be applied to ensure the licence granted is equivalent to the authorisation provided in the applicant's home state. Common conditions include limiting the shotfirer to either surface or underground blasting activities, or blasting for agricultural purposes.

Mine operators are encouraged to check the conditions listed on an individual's shotfiring licence to ensure that the person is authorised for the activities required by their employment.

Mine operators should also routinely check the security clearance status of employees granted unsupervised access to explosives and security risk substances (SRS). This is especially important in situations where employees have moved to Western Australia and hold recognised interstate security clearances.

As per regulation 16 of the Dangerous Goods Safety (Explosives) Regulations 2007, such interstate security clearances cease to be recognised after the holder has permanently resided in Western Australia for more than three months — a Western Australian Dangerous Goods Security Clearance card will be required.

If the individual's usual place of residency remains as interstate (e.g. a fly-in, fly-out arrangement) then the interstate security clearance will be valid until its expiry date.

## WHAT IS THE COST OF SLEEP DEBT?

**C**ertain working hours arrangements have been linked to occupational safety and health risks, such as fatigue and impaired performance, and increased exposure to some hazards, such as noise, vibration, dust and hazardous chemicals.

Recently, the Coroner found that fatigue, as well as medication, contributed to the death of a health worker. This finding highlights the need for all employers to have rigorous and well thought-out fatigue management strategies in place. The strategies need to be appropriate for the workplace, prepared in consultation with and understood by the workforce, and implemented and supported by managers and supervisors.

Companies are reminded of the availability of the Western Australian code of practice on working hours. The code is designed to be a highly practical document. It promotes a holistic approach to identifying the hazards and assessing the risks of extended working hours. In particular, the risk management guidelines that accompany the code can be a very useful tool for companies to gauge the level of risk in specific workplaces so control measures can be put into place.

This publication can be used as a starting point for the workplace risk management process to address relevant issues where working hours arrangements may have occupational safety and health considerations.

The code can be downloaded from the Resources Safety website in the mining publications section, or purchased from WorkSafe (phone 1300 307 877).

## WHAT IS FATIGUE?

Fatigue can result from long hours or arduous work (mental or physical), little or poor sleep, and the time of day when work is performed. It can be influenced by health and emotional issues, or by several of these factors in combination. Fatigue can accumulate over a period of time.

“Fatigue” is a general term used to describe the feeling of being tired, drained or exhausted. Fatigue is accompanied by poor judgment, slower reactions to events, and decreased skills.

Work practices that may increase the risk of fatigue include long hours, prolonged night work, split shifts, irregular hours, and early starts or those that limit quality sleep.

Repetitive movements, standing for long periods, frequent manual handling and monotony may also contribute to fatigue when accompanied by long working hours.

Work schedules that require people to be awake and active at night or early morning or working for extended periods disrupt the body’s natural rhythms (the body clock). This will affect the quality and quantity of sleep, leading to a build up of sleep debt and a decline in alertness and performance.

The risk of incidents may increase when employees are working at times when they would normally be asleep, particularly in the pre-dawn hours. There is also an increased risk of incidents during the mid-afternoon “siesta hours”.

Where fatigue may affect a person’s ability to work safely, it must be identified, assessed and controlled like other risks at the workplace.

Importantly, fatigue impairs a person’s judgement of their own fatigue. This means the effective management of fatigue should not be the responsibility of employees alone.

Controlling fatigue requires cooperation between employers and employees — both have a role to play in ensuring any risks are minimised.



## MANAGING FIBROUS MINERALS

**The mining and processing of some previously uneconomic orebodies in Western Australia have become commercially viable with the increasing demand for minerals. Consequently, fibrous minerals are encountered more frequently during exploration and mining operations than in the past. This has necessitated the updating of information relevant to the management of these minerals.**

Resources Safety's latest guideline increases the emphasis on taking a risk-based approach to manage the risks associated with fibrous minerals. The guideline will help industry understand the hazards associated with exposure to airborne asbestiform and other common naturally occurring mineral fibres, and assist in the development of a fibrous minerals management plan.

State Mining Engineer Simon Ridge said that the presence of mineral fibres in rocks has always been a potential health factor considered by the regulator and the mining industry.

"It is well known that there are significant health risks associated with inhalation of airborne fibrous minerals," Mr Ridge said.

As demand for the State's resources increases, it is likely that more mining operations will encounter orebodies that contain some form of fibrous material.

Mr Ridge said that employers have a duty to ensure that the exposure of workers to airborne fibrous minerals is within regulatory standards and as low as reasonably practicable.

"Achieving this requires using appropriate strategies to recognise, evaluate and control such hazards to workers," he said.

"Another fundamental principle of occupational health and safety practice is that workers have a right to know about workplace hazards."

Mr Ridge said that as well as engineering and procedural controls, effective control strategies should include provision of relevant information to workers and targeted training programs.

"The purpose of this guideline is to help the minerals industry understand the hazards associated with exposure to airborne asbestiform mineral fibres and other common naturally occurring mineral fibres, and to identify, assess and control these hazards," he said.

"The guideline has been developed with input from the Mining Industry Advisory Committee and incorporates the risk assessment process documented in regulation 7.27 of the Mines Safety and Inspection Regulations 1995."

The guideline is available from the publications section of the Resources safety website or contact the Promotions and Web Support Officer ([RSDComms@dmp.wa.gov.au](mailto:RSDComms@dmp.wa.gov.au), phone 08 9358 8154).

### WHAT COUNTS – MINERALOGY OR MORPHOLOGY?

Although the effects of asbestos fibres are well documented, and mineralogy influences the type of cancer that could develop, other minerals should not be neglected when carrying out health surveillance for exposure to mineral fibres.

It is the shape of the mineral particle not its chemistry that is the main concern when counting fibres to determine airborne exposure. Does its length exceed its diameter by more than 5 to 1?



# IS YOUR SITE READY FOR THE CYCLONE SEASON?

**M**ining and onshore petroleum operations throughout the North-West of the State are reminded to ensure contingency plans are established and in operation for the cyclone season.

Under WA's occupational safety and health laws for the minerals, onshore petroleum and geothermal energy sectors, employers must have adequate plans and provide adequate training to protect workers from hazards at the workplace, including natural hazards such as cyclones.

The 2010-11 cyclone season officially began on 1 November 2010. The Bureau of Meteorology has forecast a greater number of cyclones in the waters off the North-West coast this season.

The tragic circumstances surrounding Cyclone George in 2007 demonstrate that it only takes one cyclone to cause significant damage and suffering.

Resources Safety has issued the following advice for workplaces it regulates in cyclone-sensitive regions.

1. Employers must develop emergency procedures and plans in conjunction with advice from FESA and other regional emergency planning groups where their work sites and camps are located.
2. The emergency plans should include details for making the site safe and ensuring the safety of personnel as far as is practicable. This should include the removal or restraint of loose objects and structures and evacuation of personnel. The plans must be communicated to all personnel likely to be on site during the cyclone season.
3. Every accommodation unit or donga and every transportable building on work sites in cyclone sensitive regions should be adequately secured.
4. During the Blue and Yellow Alert Cyclone Warning phase, a safe and orderly evacuation of non-essential personnel from the work site or camp should be considered before high intensity cyclones pass by.
5. To prevent injuries during transfer, any personnel remaining on site during the cyclone should be moved to a designated appropriate shelter well in advance of the arrival of the cyclone.
6. Where personnel are required to stay on site, adequate stocks of food and other essential items should be available during the period when the site may be cut off due to high winds or flooding.
7. During the Red Alert Cyclone Warning phase, when all power has to be isolated or in the eventuality of damage or interruption

occurring to the power supply or telephone and internet connections, an adequate means of reliable emergency backup communication should be available on site to make contact with external emergency services should help or assistance be required.

8. Each site should continuously monitor cyclone warnings issued on radio, television or the Bureau of Meteorology or FESA websites. Battery-powered radios should be available in the event of power interruptions on site.

## FURTHER INFORMATION

Cyclone safety alerts and a report on Cyclone Bobby in 1995 are available from the Resources Safety website at [www.dmp.wa.gov.au/ResourcesSafety](http://www.dmp.wa.gov.au/ResourcesSafety)

Additional information on preparing for cyclones can be found on the following websites:

- Bureau of Meteorology [[www.bom.gov.au](http://www.bom.gov.au)]
- Fire and Emergency Services Authority [[www.fesa.wa.gov.au](http://www.fesa.wa.gov.au)]
- Building Code of Australia [[www.aib.org.au/buildingcodes/bca.htm](http://www.aib.org.au/buildingcodes/bca.htm)]
- WorkSafe [[www.worksafe.wa.gov.au](http://www.worksafe.wa.gov.au)]
- Department of Transport [[www.transport.wa.gov.au](http://www.transport.wa.gov.au)]

## 'TIS THE SEASON

With summer upon us, it is timely to review your management plans and preparedness for other natural hazards such as:

- heat stress
- lightning strike
- snake bite.

Does everyone who could be affected know what is required of them?

Do you have everything you need to implement your plan?

## KEEPING YOUR SEAT

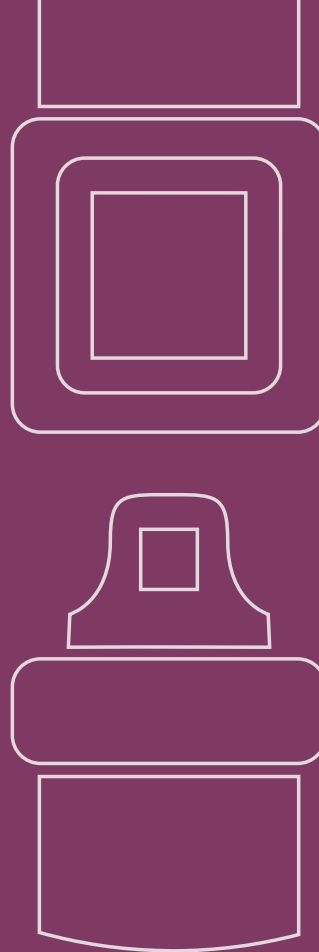
**FAQ:** Is there specific safety legislation that requires seat belts on plant and equipment to be replaced at particular frequencies?

**Response:** Under the *Mines Safety and Inspection Act 1994*, there is no specific period after which a seat belt should be replaced.

Of course, the seat belt must be replaced if it is damaged, non-operational or shows clear signs of reduced efficiency.

Replacement should be considered if the seat belt has been worn during a collision.

Consult the service manual provided by the original equipment manufacturer (OEM) for further advice on maintenance and replacement.



## HANDY HINTS FOR SEATBELT MAINTENANCE AND CHECKS

- Seatbelts should be kept clean, as dirt and grit will cause internal damage to the fibres that make up the webbing. Use only mild soap and lukewarm water to clean the webbing, and never use bleach or solvents.
- The webbing should not be frayed or damaged, nor should it be sun bleached.
- The webbing should be securely attached to its end fittings and the stitching should not be frayed or damaged. It should also be flat throughout its entire length. Warping indicates that the belt has been stretched (often a sign that it has been worn in a crash) and should be replaced immediately.
- The tongue and buckle assemblies should securely latch and eject freely when released. Plastic and metal components should have no signs of cracks, warps, deformation or other damage.
- All anchorage points should be securely fastened and be free of corrosion and damage.
- For vehicles fitted with metal cable-type seat belt stalks, grip the buckle assembly and twist it clockwise and then anti-clockwise. A “clicking” noise from inside the cable indicates a broken “memory wire”, which, if left unattended, can cause the stalk to fail completely.
- The retracting mechanism should be tested by grasping the webbing and pulling it out suddenly. The belt should lock and then freely retract when released. When moved slowly the belt should pull out and retract fully without sticking or binding.
- Should any of these danger signs be present, or there is any doubt about a belt’s safety there is no option but to replace the assembly. Your life and those of your passengers depend on it. If you are unsure of the condition of the belt consult your mechanic.

From the RACQ website at [www.racq.com.au](http://www.racq.com.au)



SH Woodside's Alistair Oliver (left) and Resources Safety Executive Director Malcolm Russell at the 2010 forum

## PERMISSION TO WORK BETTER

The Resources Safety Mines Inspectorate Forum held in September 2010 provided an opportunity to tap into petroleum industry expertise and its potential application to mines safety. Woodside's Operation Manager Projects Alistair Oliver described Woodside's development of a computer-based safety system that provides a single set of procedures for managing isolation and permits to work and assessing risk across all Woodside's operations. Woodside's integrated safe system of work was credited with raising safety awareness and performance at the same time as reducing paperwork. An overview is also provided here for MineSafe readers. Alistair has published a paper in the 50th anniversary issue of APPEA Journal (available from [www.appea.com.au](http://www.appea.com.au)) that provides more information.

The permit-to-work system is a formal system used to control certain types of work that are considered potentially hazardous. Essential features of such a system are:

- clear identification of who may authorise particular jobs, and who is responsible for specifying the necessary precautions;
- training and instruction in the issue and use of permits; and
- monitoring and auditing to ensure that the system works as intended.

When implemented correctly, a permit-to-work system should be an effective means of communication between facility management, plant supervisors and operators, and those who do the hazardous work.

Before 2008, Woodside used a paper-based permit-to-work system which, although compliant with company standards had become fragmented, with each facility developing its own variants. There was no mechanism to consolidate the systems or benchmark them against each other.

Addressing this provided an opportunity to develop a new common and centralised system using modern technology. The Integrated Safe System of Work (iSSoW) software package, developed by Woodside in partnership with Sage Technology, adopts best practices from permit systems worldwide and is administered through a simple-to-use computer interface.

The system comprises three elements:

- risk management
- isolation management
- permitry.

Essentially, iSSoW is a risk management tool that takes a holistic and robust approach to risk assessment, isolation management and the issue of permits. The system is structured to guide the user to decision points consistent with the hazards encountered in the work activity and the controls required to minimise or eliminate the risk associated with those hazards.



Its functionality provides:

- readily determined permit status;
- single-click access to data critical to emergency response;
- secure access, with a full audit trail;
- a mechanism to assign staff to key positions;
- automatic expiration of user access for inactive accounts;
- a means of effective communication between relevant parties at critical stages in the permit process;
- access to the system from anywhere in the company network;
- a similar feel to existing software to aid intuitive use;
- the capability to fully manage complex processes such as the sanction to test individual or multi-discipline items of equipment with the temporary removal of safety isolations, and provision of temporary actions to override or remove equipment to carry out such tests;
- centralised control of the database content;
- continuous improvement through a “full lessons learned” feature; and
- tracking and management of the security of isolations and the execution of dependent permits.

Woodside has seen a decrease in permit-related incidents since the introduction of iSSoW as it strives for an improved safety culture. By improving the quality of risk assessment and increasing risk awareness and reducing the need to retrain staff when they move from one facility to another, it is easier for people to “do the right thing”.

## RISK MANAGEMENT

Hazard identification risk assessment (HIRA) is central to iSSoW’s operation, with a database containing:

- work categories for activities common to most facilities;
- hazards encountered in the undertaking of that work; and
- the controls required to minimise or eliminate the risk associated with those hazards.

Links can be built between a work category and any number of hazards. Similarly, each hazard can be linked to any number of controls.

Work categories are specific to an activity (e.g. working at height, opening of low voltage electrical equipment, confined space entry), not necessarily a particular task.

The system requires additional assessment for any new, complex or unique activity, or any work that has historically been the cause of a higher proportion of serious incidents in the industry (e.g. confined space entry).

## ISOLATION MANAGEMENT

Mismanagement of isolations is a major cause of incidents in the oil and gas industry, so the objective was to deliver an easily administered “no compromise” solution.

In the iSSoW system, the hazard factor assessment for a scenario considers six risk factors that affect the escalation potential of an incident resulting from an isolation failure. A scoring system is used to determine the level of risk associated with the isolation and, ultimately, the minimum allowable isolation requirement.

Electrical isolations are not subjected to the same risk assessment. Instead, the personnel responsible for electrical matters is involved in the development and approval of any isolation scheme.

The tags used in isolation management include bar codes, and an isolation certificate is not issued until all tags are scanned, reducing the potential for human error.

There is also a “safety system inhibit” certificate, which is similar to an isolation certificate but relates to safety-critical systems required for detection, protection, communication or escape in the event of an incident. These certificates must be approved by the site controller, who is responsible for the day-to-day management of the facility.

## PERMITRY

The function of the permit is simply to:

- allow work to take place;
- drive site endorsement by the area authority before work starts; and
- link the risk assessment and associated certificates with the activity.

The site controller’s authorisation is required for permits for “hot work” (involves or potential for source of ignition) and “red hot work” (material is hot enough to glow), but not “cold work” (no potential source of ignition).

# IMPORTANCE OF MINE RESCUE TEAMS

Two recent events that captured world-wide attention have highlighted the importance of mine rescue teams.

On 5 August 2010, a rock fall trapped 33 miners more than 600 metres underground in a Chilean copper mine. The men were trapped for more than two months and were only freed after a global mines rescue effort, which included Australian expertise.

The world rejoiced as live pictures broadcast each miner slowly emerging from the specially designed rescue capsule. It was a triumph of human ingenuity and lifted the spirits of all who saw it.

Just over a month later and the world held its breath once again as an explosion rocked the Pike River underground coal mine in Greymouth, New Zealand.

Twenty-nine miners, including two Australians, were unaccounted for following the explosion. Despite the best efforts of rescuers, there would be no fairytale ending. A second underground explosion left no hope of survival.

The despair of Greymouth's locals was felt across the international mining community. It was a tragedy that cuts to the heart of the mining industry and reinforces the incredibly difficult, but vital role played by mine rescue teams. As the Pike River incident reminded the world, some mine emergencies end in tragedy.

It is hard not to see the importance of mine rescue competitions in a new light after the Chilean and New Zealand incidents. The trophies and awards seem less significant in comparison to the experience and knowledge gained by teams participating in such competitions.

Whether it was the four teams that competed in the South West challenge or the 13 teams at the Goldfields competition, workers from all sites represented can be assured of the priority their companies give to having well-trained rescue teams.

The commitment to emergency response shown by the teams and companies involved should never be taken for granted. As recent events have shown, having skilled mine rescue teams should not be seen as a luxury but as a necessity.

Many of Resources Safety's inspectors are former mine rescue team members and they regularly assist in the running of the State's emergency response competitions. Their feedback indicates that, in some cases, participation in these events has fallen away. The mines inspectorate urges all companies to seriously consider the opportunities offered by participation, especially in the light of recent international incidents.

## HISTORIES BUILT ON MINING

On the surface, the difference between the venues for the South West emergency response challenge and the Goldfields competition may appear quite stark. However, scratch beneath that surface and you find more than a few similarities.

Both towns have a long, proud mining history.

Prospectors first came to Greenbushes in 1888, two years after a Mines Department geological survey reported alluvial tin deposits.

Gold was found near Mount Charlotte in 1893, sparking the Kalgoorlie gold rush and cementing the town's place in mining history.

Underground mining features prominently throughout the history of both Greenbushes and Kalgoorlie.

Much of the tin mined by small operators at Greenbushes in the early years came from underground workings.

Likewise, before the establishment of the Super Pit, gold mining at Kalgoorlie was conducted mainly through underground workings.

The fortunes of Kalgoorlie and Greenbushes have ebbed and flowed on the back of commodity price cycles, as have their populations.

The population of Kalgoorlie soared to more than 30,000 a mere ten years after gold was discovered.

Greenbushes also experienced rapid population growth, although on a smaller scale, and by 1907 the population was estimated at more than 3,000.

Kalgoorlie and Greenbushes both feature an Exchange Hotel, but Kalgoorlie's Exchange Hotel can claim naming rights thanks to its 1900 construction. The Greenbushes Exchange Hotel was completed in 1907.

Both towns feature mines with a significant place in history.

Kalgoorlie's Golden Mile is a world-class deposit and has produced almost 50 million ounces of gold since Hannan, Flanagan and Shea made their discovery near Mt Charlotte.

However, Greenbushes also has an important place in history. The Greenbushes mine, now operated by Talison, is the world's largest hard-rock tantalum resource and the largest and highest grade lithium minerals resource in the world. At first it was tin that the miners sought. While the presence of tantalite was first noted back in 1893, at the time the mineral had no value and it was, ironically, seen as an inconvenience because it downgraded the value of the tin.

Greenbushes and Kalgoorlie may be hundreds of kilometres apart, and virtual opposites in terms of landscape and climate, but their histories and futures are inextricably linked to mining.

2010 SOUTH WEST EMERGENCY RESPONSE SKILLS CHALLENGE





### COMPETITION TEAMS

- Boddington Gold Mine
- Premier Coal
- Talison Greenbushes Operation
- Tiwest Kwinana

## HONOUR BOARD

<b>Overall best team</b>	Talison Greenbushes Operation
<b>Runner-up best team</b>	Boddington Gold Mine
<b>Team safety</b>	Talison Greenbushes Operation
<b>Outstanding medic</b>	Murray Discombe (Tiwest Kwinana)
<b>Fire fighting</b>	Talison Greenbushes Operation
<b>First aid</b>	Boddington Gold Mine
<b>HazMat</b>	Premier Coal
<b>Confined space rescue</b>	Talison Greenbushes Operation
<b>Vehicle extrication</b>	Boddington Gold Mine
<b>Rope rescue</b>	Talison Greenbushes Operation
<b>Theory (joint winners)</b>	Talison Greenbushes Operation and Premier Coal



SH Anthony Finlayson

“ IT HAS REAL INFRASTRUCTURE HERE, AS OPPOSED TO A TANK IN THE MIDDLE OF A FLAT WHERE YOU HAVE TO SIMULATE THAT IT IS A PART OF AN OPERATING MINE. GREENBUSHES IS A REALLY GOOD VENUE.

ANTHONY FINLAYSON



## TESTING EMERGENCY RESPONSE CAPACITY

**F**our teams were put through their paces in scenarios ranging from vehicle extrication to theory at the 2010 South West Emergency Response Skills Challenge, presented by the South West Regional Council of the Chamber of Minerals and Energy Western Australia.

Teams from Talison Greenbushes Operations, Premier Coal, Boddington Gold Mine and Tiwest Kwinana tested their emergency response skills.

State Mining Engineer Simon Ridge said that such competitions are an important way to gauge the capacity of mine sites to deal with on-site emergencies.

“These competitions really test the emergency response capacity of mine sites,” Mr Ridge said. “It gives them a good understanding of what their strengths are and the areas where they can improve. This is important in ensuring competence across all areas of mine emergency response.”

Talison Greenbushes General Manager Pat Scallan said that the pressure created through emergency response competitions was an important part of honing teams’ skills.

“To show your skills under pressure is different to doing it under a training regime,” Mr Scallan said. “It also gives the team a little bit more of an edge and focus for their training. Everybody goes home with a better idea of their skills and what they need to work on.”

This is the second consecutive year that the competition has been held at Talison’s Greenbushes site.

Anthony Finlayson, event manager for the confined spaces scenario, said that it was one of the best sites he has seen for a mines rescue competition.

“It looks like you could flick the switch and start it up tomorrow,” Mr Finlayson said. “It has real infrastructure here, as opposed to a tank in the middle of a flat where you have to simulate that it is a part of an operating mine. Greenbushes is a really good venue.”

Mr Scallan said that the company was happy to be able to offer the site as a venue.

“We are just fortunate we have the facilities available so we aim to make the most of it,” he said.

The team from Talison Greenbushes definitely made the most of it, taking out the award for overall best team.

“The Greenbushes team did put in a lot of work,” Mr Scallan said. “I also hope that it encourages the other guys. It is important to keep everybody enthused, otherwise people can get stale. We need the competition to keep that enthusiasm going and also attract new team members.”

The importance of the skills challenge was not lost on Tina Webster, event manager for the first aid scenario.

“Emergency response competitions are a vital part of the industry,” she said. “You can’t go past training and you can’t go past practical scenarios. They are a necessity.”

“ THE TEAMS ARE DEFINITELY VERY SERIOUS ABOUT THEIR JOB AND YOU CAN SEE THAT. THEY WERE CONSTANTLY DOCUMENTING ALL YOUR VITALS. THERE WAS A LOT OF WRITING INFORMATION DOWN WHILE THEY WERE TREATING YOU.

GRAEME TURNER

”



SH Lou Ranieri, Alissa Cook and Graeme Turner

## BLOOD AND GORE IN THE NAME OF REALISM

**A** man sits in a chair as the final touches are applied to his makeup. Liberal splashes of red liquid drip down the back of his head.

.....  
A woman is seated nearby. Her white face masks any hint of a normal, healthy complexion. She makes her way over to a paper-mâché rock, which has a hollowed out section to hide her lower torso and legs.

Another man has a string of sausages taped to his stomach. He has been eviscerated on machinery while working in an underground workshop.

These are just a few of the gory “casualties” that go some way towards creating a realistic scenario as part of the competition.

Graeme Turner, Lou Ranieri and Alissa Cook were three such casualties for the 2010 South West Emergency Response Skills Challenge. All three are completing their Certificate III in open cut mining and jumped at the opportunity to volunteer for the competition.

In their scenario, an intermediate bulk container (IBC) has fallen, trapping both Graeme and Lou. Graeme manages to free himself, but

Lou is trapped. To further complicate the incident, Alissa is playing Lou’s wife and works on the same site. She is one of the first people on the scene. When she sees her husband trapped, she tries to lift the IBC off of him and receives horrific lacerations and gashes to her hands. She comes bolting out of the shed and starts screaming for help.

This is the point where emergency response teams enter the scenario.

Alissa said that playing a casualty was a great experience.

“It has been a real privilege to get to see the competition and how the teams approach the scenario,” she said.

Graeme said there were big differences between the teams.

“There was a clear difference in priorities and which casualties they were giving the most attention to,” he said. “The teams are definitely very serious about their job and you can see that. They were constantly documenting all your vitals. There was a lot of writing information down while they were treating you.”

Lou said that the experience was a real eye-opener.

“It gives you a good perspective as to what an actual rescue would be like,” he said.



## THIRST FOR THEORY

**T**he teams convene in a small room overlooking Talison's Greenbushes Operation. In less than 12 hours the site will be bustling with activity as teams tackle a range of scenarios in the 2010 South West Emergency Response Skills Challenge. But, for now, it is deserted.

Greg Kennedy works for Talison Greenbushes and walks out of the small room. In unison, four teams start poring over the exam papers in front of them.

Greg is one of the organisers of the competition and, among other tasks, helped compile the theory exam, which contains 80 questions covering a range of emergency response skills.

"It is about assessing people's theoretical understanding, rather than the practical application of their knowledge," Greg said. "It is important that they not only know how to do it, but also understand why they do it."

Greg said that he had noticed an increasing interest in the theoretical aspects.

"The first time I was involved in the theory side of the competition, there weren't a lot of questions answered. There are a lot more now," he said. "There is more of a thirst for understanding."





SH

Talison Greenbushes Operation



## SAMPLE QUESTIONS

Q1 What gas am I?

- I am lighter than air
- I am odourless, tasteless and colourless
- I am highly flammable
- I have an SG (Specific Gravity) of 0.0695

Q2 What does the acronym PUVCE stand for?

Q3 Anchor points can be divided into three basic categories. What are they?

Q4 What is the normal composition of the air?

Q5 Name the three ways that chemicals can penetrate protective clothing.

Q6 In dangerous goods Classes, what is a Class 6.1(a) material?

- A6 Poisonous (toxic) substance
- A5 Penetration, degradation and permeation
- A4 78% Nitrogen, 21% Oxygen and 1% traces of others
- A3 Structural, natural and improvised
- A2 Percussive Unconfined Vapour Cloud Explosion
- A1 Hydrogen

ANSWERS

# 2010 SOUTH WEST EMERGENCY RESPONSE SKILLS CHALLENGE



Premier Coal



Talison Greenbushes Operation



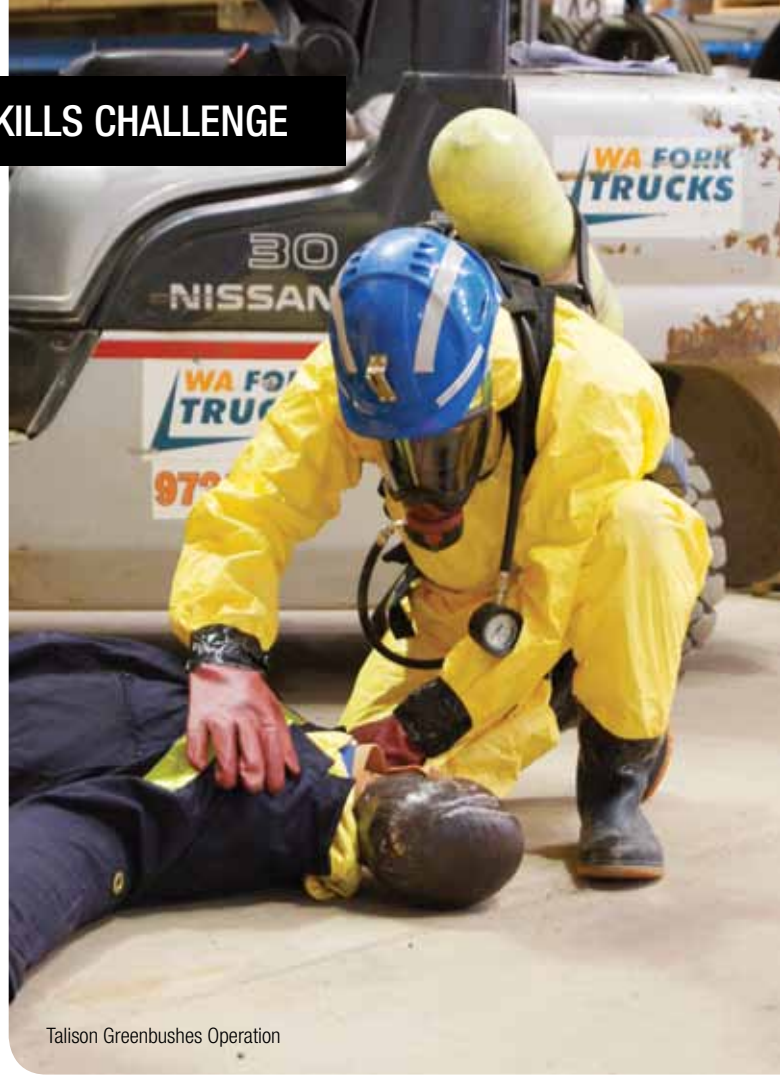
Talison Greenbushes Operation



# 2010 SOUTH WEST EMERGENCY RESPONSE SKILLS CHALLENGE



Premier Coal



Talison Greenbushes Operation



Tiwest Kwinana



Talison Greenbushes Operation



Rope rescue adjudicators



Tiwest Kwinana



Talison Greenbushes Operation



Tiwest Kwinana



Talison Greenbushes Operation

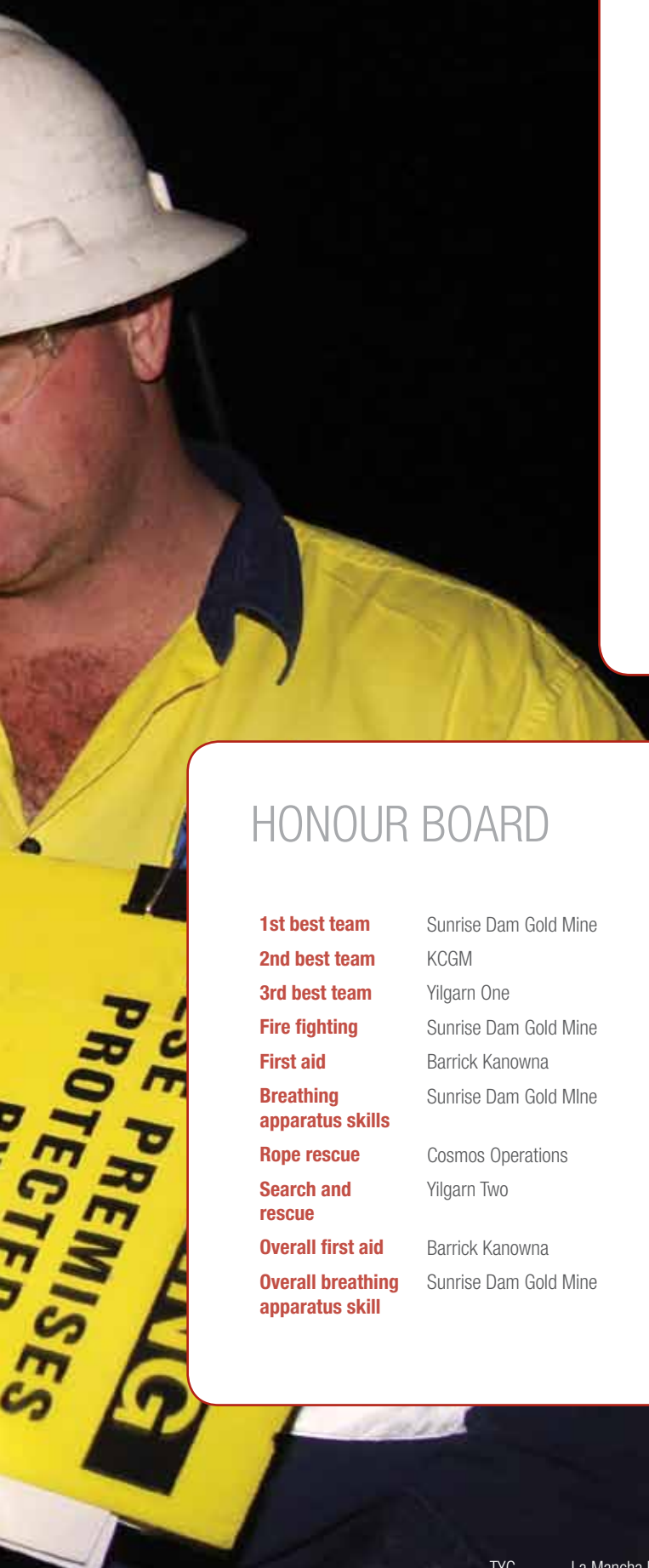


Boddington Gold Mine



All photos SH





## COMPETITION TEAMS

- Agnew Gold Mine – Gold Fields Australia
- Barrick Kanowna – Barrick Gold of Australia
- Cosmos Operations – Xstrata Nickel
- Kambalda Mutual Aid – Silver Lake Resources, Lightning Nickel and Mincor North
- Kalgoorlie Consolidate Gold Mines (KCGM)
- La Mancha Resources
- Leinster Operation – BHP Billiton Nickel West
- MMG Golden Grove
- Newmont Jundee – Newmont APAC
- St Ives – Gold Fields Australia
- Sunrise Dam Gold Mine – AngloGold Ashanti Australia
- Yilgarn One (Granny Smith) – Barrick Gold of Australia Pacific
- Yilgarn Two (Lawlers) – Barrick Gold of Australia Pacific

## HONOUR BOARD

<b>1st best team</b>	Sunrise Dam Gold Mine	<b>Team skills</b>	KCGM
<b>2nd best team</b>	KCGM	<b>Team safety</b>	KCGM
<b>3rd best team</b>	Yilgarn One	<b>Theory</b>	Sunrise Dam Gold Mine
<b>Fire fighting</b>	Sunrise Dam Gold Mine	<b>Individual theory</b>	Nick Sutherland (MMG Golden Grove)
<b>First aid</b>	Barrick Kanowna	<b>Incident management scenario</b>	John Collins (Yilgarn One)
<b>Breathing apparatus skills</b>	Sunrise Dam Gold Mine	<b>Best captain</b>	Mike Hobbs (Sunrise Dam Gold Mine)
<b>Rope rescue</b>	Cosmos Operations	<b>Best new captain</b>	Nick Sutherland (MMG Golden Grove)
<b>Search and rescue</b>	Yilgarn Two	<b>Best new team</b>	MMG Golden Grove
<b>Overall first aid</b>	Barrick Kanowna	<b>Best scenario</b>	Fire fighting
<b>Overall breathing apparatus skill</b>	Sunrise Dam Gold Mine		

## 2010 UNDERGROUND MINE EMERGENCY RESPONSE COMPETITION



### TEAMS SHOW COMMITMENT TO EMERGENCY RESPONSE

**T**hirteen teams descended on KCGM's Mt Charlotte mine site in Kalgoorlie for the Chamber of Minerals and Energy Western Australia's 2010 Underground Mine Emergency Response Competition.

The three-day competition started on 5 November and tested teams with eleven event categories within nine emergency rescue scenarios.

To say that the competition was a closely run affair would be somewhat of an understatement. The difference between the first and third placegetters in this year's competition was less than ten points, and only 1.6 points separated the top two teams — Sunrise Dam and KCGM — with Sunrise Dam taking the honours.

Further evidence of the evenness of the underground competition can be seen in the results for the various skill categories. The winners of five of the eleven events were decided by less than one point, while a further three were decided by less than five points.

The Chamber's Eastern Regional Council Chairman and KCGM General Manager Russell Cole thanked all the competitors.

"Their efforts at various events over the last three days has showcased the commitment the mining industry places on continued improvement to occupational health and safety standards," he said.

Mr Cole said that the rescue of the trapped miners in Chile captured the attention of the whole world.

"While an event such as Chile grabs attention globally, it is the effort at a local level that makes a difference," he said. "The role of this weekend's competition is indispensable."

Mr Cole also thanked all the volunteers and organisers of the competition, particularly Brad Stearns and the competition committee.

"They are incredibly committed to these competitions and give up a lot of their own time to ensure the competition runs successfully," he said.

The Member for the Mining and Pastoral Region Ken Baston congratulated the organisers, competitors and volunteers in his speech at the presentation event, held at the Australian Mining and Prospectors' Hall of Fame.

"The companies represented here have shown the kind of commitment to safety that deserves to be highlighted," he said. "Regardless of who wins, you all deserve to be congratulated."

Mr Baston said that such events help to increase the focus on safety in the mining sector.

"Participating in these events is an incredibly useful way of honing and maintaining skills for dealing with potential emergencies on mine sites," he said. "While we all hope you never have to face a real emergency, the skills and knowledge you have displayed here could someday help to save the lives of your workmates. Jobs don't come any more important than that."





## KEEPING TRACK OF THE TAG BOARD

**The metal door slams shut and the bells ring out. The winder whirrs into action and the yellow cage begins its steady descent below ground. The cage is in continuous motion up and down the shaft, with different combinations of bell rings signalling specific levels.**

Watching everyone who goes in and out of the cage is tag board operator Jackie Porter.

"I basically monitor who is going in and out of the mine, and where they are going, so we can keep track of all the mine rescue teams and where they are in the mine," Jackie said as the bells ring out once more.

This time the cage is coming back up to the surface. As the teams emerge, a quick head count confirms that everyone on the team is back up top. Jackie moves the team on the tag board to signify that they have surfaced.

"It is an important role," Jackie said. "We don't want to leave anyone down in the hole or wandering around unsupervised, particularly when they are not familiar with the mine."

Jackie said that the cage travelling speed is set at about four and a half metres per second, and the deepest that teams will travel is to level 28. This is 2,800 feet, or about 850 metres, below the surface.

Jackie has been involved in underground mining for about eight years and has competed in previous emergency response competitions. For the last couple she has helped as a volunteer. She said that the competition was vital for emergency response teams to hone their skills.

"It is the best training you can get to prepare you for the real thing," Jackie says. "You don't get anything else like it."

## MT CHARLOTTE AND THE DECLINE OF SHAFTS

**T**eams arrive at Mt Charlotte's Cassidy shaft kitted up and ready to go. For some it will be the first time that they have travelled in a cage down a shaft.

"Shafts are becoming less and less common," said Mt Charlotte Superintendent Vic Simpson.

Some 6.5 metres in diameter, the Cassidy shaft is about 1.2 km deep, while the last level that has been mined is just short of a kilometre.

Access to the mine was originally via a single shaft. A second shaft was added before the Cassidy shaft, commissioned in 1985, made the first two redundant. However, one of the original shafts — the Reward shaft — is still used as an escape way.

According to Vic, the Mt Charlotte mine has been operating a very long time, but the scale of production really ramped up in the mid to late 1960s. Bulk underground mining reached a peak of about 1.8 million tonnes per year.

"The Cassidy shaft has a much greater capacity to move ore and is twice as deep as the other two shafts," Vic said. "The mining technique was very large scale stoping. All the ore

was fed through ore passes down to the crusher chamber, on level 36, loaded into skips and brought to the surface."

Vic said that, in those days, it was quite cutting edge.

"When they were bulk mining out of the shaft, they were using big open-pit style equipment," Vic said. "The equipment was broken down into parts, brought down the shaft and assembled underground. There weren't many places doing that sort of thing back then."

Towards the late 1990s, as ore reserves began to be exhausted, it was decided that it wasn't financially viable to continue moving ore via the Cassidy shaft, and the Sam Pearce decline was developed around 1997.

"The decline allowed the mine to exploit nearer surface reserves and truck it to surface," Vic said. "The company managed to find remnant ore in sufficient quantities and at low enough extraction costs to keep mining."

Vic said that the majority of hard rock gold mines are now accessed via a decline.

"However, if you found another orebody like Mt Charlotte then a shaft might be justified," he said. "Mt Charlotte was a very large deposit, and most operations are much smaller in comparison."



# 2010 UNDERGROUND MINE EMERGENCY RESPONSE COMPETITION



La Mancha Resources



La Mancha Resources



MMG Golden Grove



St Ives



Agnew Gold Mine



Yilgarn Two



Cosmos Operations



Sunrise Dam



Sunrise Dam



# 2010 UNDERGROUND MINE EMERGENCY RESPONSE COMPETITION



Agnew Gold Mine



Agnew Gold Mine



Yilgarn Two



Yilgarn Two



Newmont Jundee



St Ives



Yilgam One



Barrick Kanowna



Kambalda Mutual Aid



Leinster Operation



BP Jock speaking to an underground worker at Carnilya Hill

## WORKERS' SAFETY A PASSION FOR JOCK

**M**ineSafe's Beau Pearson recently spent time with David Watson, an Employee's Inspector of Mines for the Kalgoorlie region — and better known as Jock. Here Beau recounts a day in the working life of Jock.

.....

We head down the decline into Mincor's Carnilya Hill underground nickel mine. Jock Watson is conducting an inspection and is accompanied by the site's safety representative, Shayne McDonald.

As an Employee's Inspector, Jock heads to where the employees are working. However, we stop at a fresh air base along the way. Jock makes sure that the communications are working and checks the first aid equipment. Everything is working and adequately supplied so we continue down to check on the mine's airleg miners.

We find the first airleg miner drilling a rise. Jock checks the work environment and asks the driller a few questions about the rise he's working on. Everything is fine and the process is repeated for the other two airleg miners working underground today.

We then head further down to inspect a refuge chamber, but come across a boggler operator along the way. Jock speaks to the operator and checks that everything is as it should be. Once again, there are no safety issues.

We arrive at the refuge chamber and Jock checks the required equipment. It is all properly maintained, supplied and working, unlike a recent experience Jock had at another mine site in the Goldfields.

"I was doing an inspection a few months ago and came across three refuge chambers that didn't have any working communications equipment," Jock said. Somehow the communications cable had been damaged. However, the problem was fixed in less than 12 hours.

"When I went back to the mine the next morning, the nightshift had fixed the problem," Jock said.

Back to Carnilya and we travel further into the mine, coming across a twin-boom jumbo installing rock bolts. The appropriate warning signs are up and, again, neither the operator nor offside raise any safety concerns with Jock.

After two hours underground, Jock finds that all the areas he inspects





BP

are properly maintained and no safety concerns are flagged by any of the employees.

We head back to the surface and Jock inspects the site's workshops. These areas are also properly maintained and none of the workers raise any safety concerns with him.

All up, we are onsite for just over three hours. Jock said that he saw no reason to issue any notices during the inspection.

"It was quite a satisfactory inspection," he said.

However, this was just a small operation.

"That was one of the shorter ones (inspections)," Jock said. "The average mine takes about five or six hours, but a big mine is at least eight hours."

Jock said that he likes to speak to everyone who is working underground.

"As an Employee's Inspector, I am their representative – I am elected by them," Jock said. "If they have concerns then I have to try and solve them."

Safety has always been a passion for Jock and was a priority well before he started as an inspector. Jock was a shift supervisor for almost a decade before joining the Resources Safety Division of the Department of Mines and Petroleum.

"Ensuring the safety of workers was my number one goal as a supervisor," he said. "I also spent many years volunteering for St John's ambulance and competing in mine rescue competitions. I have always had an interest in the safety side of the industry."

However, Jock did not actively seek to become an inspector until it was suggested by a previous Employee's' Inspector.

"He persuaded me to go for the job as he was retiring. He thought I would be a good choice for the role," Jock said. "Six of us applied and I was elected."

Jock has since been re-elected three times and has a further three years to run on his latest term. The ability to make a difference for the workers he represents ensures Jock's passion for safety remains strong.

"It's a good job," he said.

# NAVIGATING THE SAFETY REGULATION SYSTEM

**A**s reported in the October 2010 issue of *MineSafe*, the Department of Mines and Petroleum has developed the Safety Regulation System (SRS), an integrated online system for Resources Safety to meet legislative requirements related to mining, exploration, petroleum, geothermal energy and dangerous goods.

When fully developed, there will be modules for notifications, approvals, auditing, compliance and registrations. Some components will be available to external registered users.

The first phase of implementation is primarily for mining and exploration, including:

- approvals relating to project management plans; and
- notifications relating to injury, occurrence and monthly status reports.

Other enhanced features allow a site administrator to manage users within the system and access a history of submissions to Resources Safety.

Since 8 November 2010, over 1,000 applications for registration have been received from industry, with most applicants being approved for registration.

"By adopting a phased approach with this program, we have been able to provide a successful and early delivery of the mining and

exploration related components," Resources Safety Executive Director Malcolm Russell said.

"Disparate legacy systems are being replaced with this new fully integrated system based on the latest technology, and we will have the ability to provide end-to-end reporting, facilitating data- and evidence-driven analyses, and promoting preventative safety actions," ISB General Manager, Gee Lightfoot added.

The new system offers a common look and feel to enhance the user experience through guided submissions via the stepped "wizard" concept and online help material.

Recent feedback from industry has been extremely positive, with one user commenting "I found it very simple and easy to use ... a huge step forward".

Resources Safety staff users have access to advanced functions including management of security access and roles from within SRS, and the ability to assess and process submissions based on business rules, workflow and tracking.

In addition, any communication between Resources Safety and industry users can be carried out via SRS, and is automatically linked to and stored with the submission.

You can access SRS through the "Online systems" tab on the Department's website at [www.dmp.wa.gov.au](http://www.dmp.wa.gov.au)



# Safety Regulation System

# IMPORTANCE OF REPORTING

**O**ccurrences are the things that go wrong on a mining operation that might not hurt anyone or damage property but the potential for harm is so significant that they are specifically listed in the legislation. Ten categories of occurrences have been identified.

For example, as outlined in Chapter 4 of Resources Safety’s accident and incident reporting guideline, mine managers are required to immediately notify Resources Safety in the event of “any outbreak of fire above or below ground in any mine” and “every electric shock or burn to a person, and every dangerous occurrence involving electricity”. This is regardless of whether these incidents result in injury to a person or damage to property.

There were no fatalities associated with fire or electric shock incidents on Western Australian mine sites in the 2010 calendar year to 17 November. During that period, 673 fire and 256 electrical occurrences were reported to the safety regulator. These figures indicate the seriousness with which the industry takes its reporting duties for these two categories, for which the consequences can be most severe. For example, many of the fire incidents were rapidly detected and addressed before escalating, but they were still reported.

The difficulty with electric shocks is that there might be no outward sign of an injury, but there has still been tissue damage — this is why all electrical incidents should be investigated and must be reported.

In the last three years, there have been less than ten lost time injuries (LTIs) as a result of electric shock, and 34 people have required medical treatment or observation due to fire incidents.

It is vital that Resources Safety is able to capture an accurate picture of safety performance within the Western Australian resources industry — it can only do this when the reporting is accurate and timely. Such data are essential to target regulatory activities and help industry to improve safety outcomes.

Then there are the incidents that aren’t listed as a specific occurrence type but the outcomes could be just as serious if circumstances had been different. These are the “near misses” that, in the manager’s opinion, had the potential to cause serious injury or harm to health.

An organisation that doesn’t take reporting seriously, whether it is for internal purposes or to satisfy legislative requirements, sits at the vulnerable end of the safety culture spectrum.

## OCCURRENCE OF FIRE

Year	Surface	Underground
2008	583	92
2009	545	68
2010 to 17 November	576	97

### WHY MIGHT REPORTING BE NEGLECTED?

- Too much effort
- Incident not considered serious or potentially serious
- Potential for ridicule (“toughen up” attitude)
- “Failure” punished (loss of employment, loss of contract bonuses)

### WHAT ARE THE CONSEQUENCES IF AN INCIDENT REPORT IS ....

**not done?**

- Hazard might not be identified
- Risk assessment could be flawed because it doesn’t include all knowledge for that site
- Incorrect assumptions made
- Outcome for next person might not be so favourable

**not done well?**

- Again, risk assessment could be inadequate
- Control measures are ineffective because they are based on insufficient or inaccurate information

**not followed up?**

- No remedial action — hazard is still there
- People stop reporting because it’s a waste of time — nothing happens

**not recorded (regardless of regulatory requirements)?**

- Loss of operational knowledge
- No opportunity to identify trends over time (lessons learnt may be lost)
- What about manufacturers? If they aren’t aware that there’s a problem, how would they know to do a product recall or warning, or address design issues?

**followed-up but the outcome is not communicated to the workforce?**

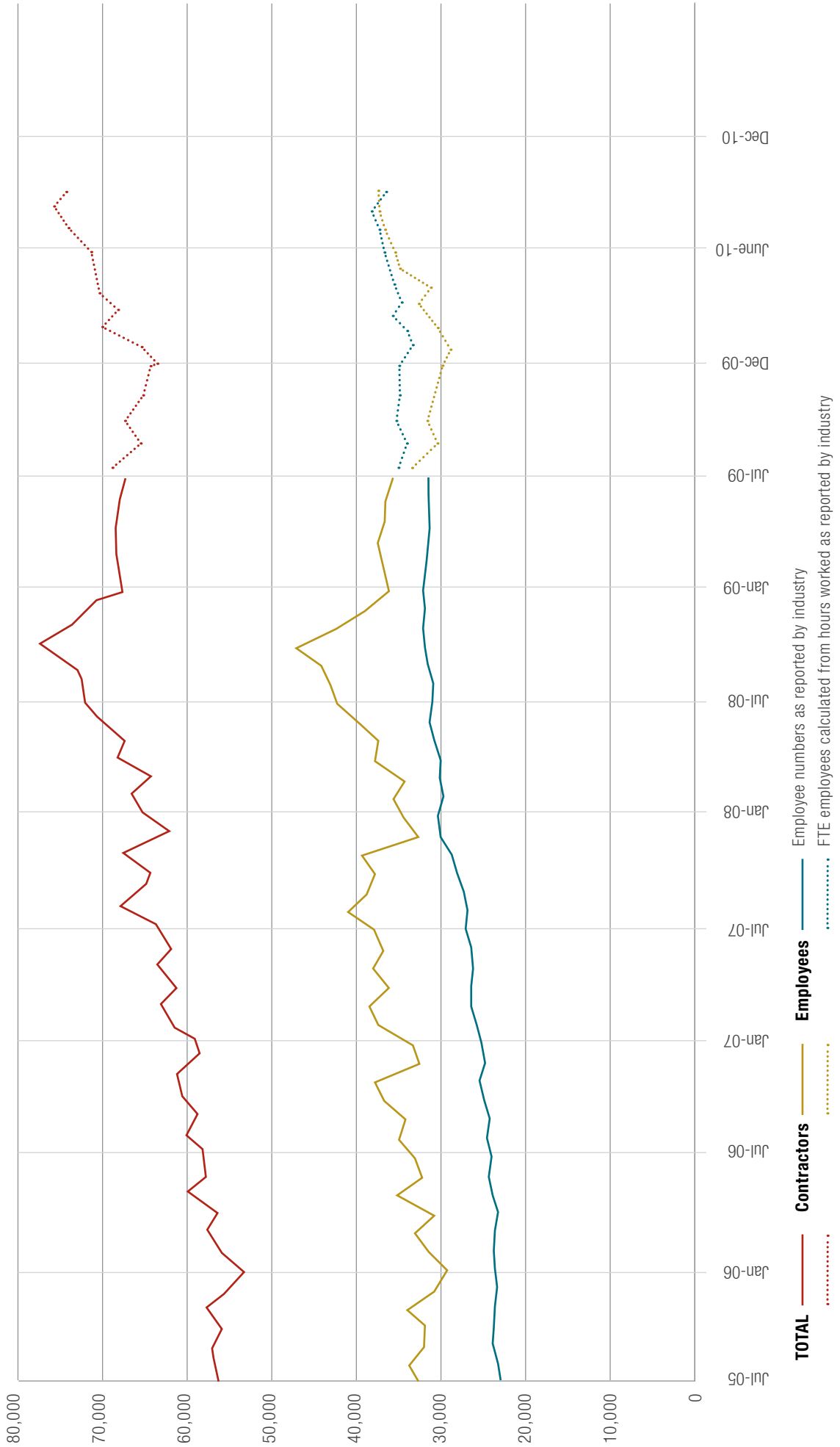
- Workforce doesn’t know that there may be safety system changes
- No positive reinforcement indicating the value of reporting
- People stop reporting

## ELECTRIC SHOCKS

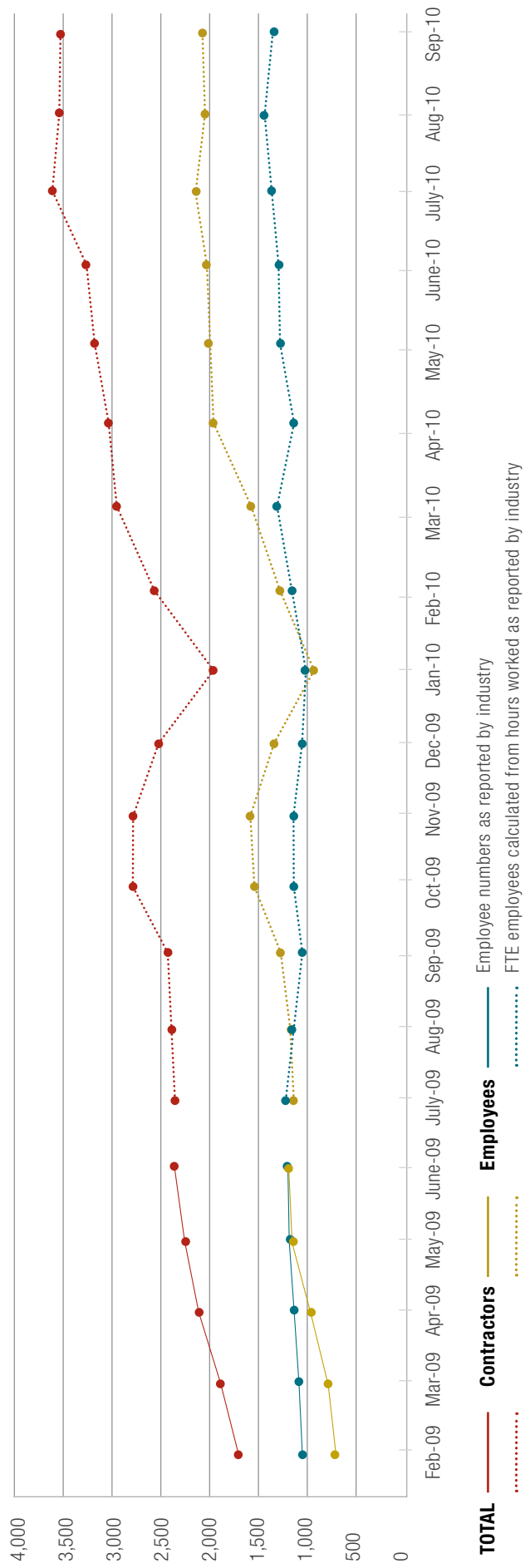
Year	Surface	Underground
2008	235	19
2009	247	22
2010 to 17 November	230	26

MONTHLY MINING WORKFORCE

NOTE: From 1 July 2009, monthly mining workforce figures are plotted as full-time equivalent (FTE), where 1 FTE = 2,000 hours worked per year



## MONTHLY EXPLORATION WORKFORCE



NOTE: From 1 July 2009, monthly mining workforce figures are plotted as full-time equivalent (FTE), where 1 FTE = 2,000 hours worked per year

# CRUNCHING THE NUMBERS

## DISTRIBUTION OF SAFETY AND HEALTH REPRESENTATIVES AS AT 30 SEPTEMBER 2010

- ..... Mining registrars administration boundary
- MARBLE BAR** Administration region
- 153 (11/23)** Number of SHRs (Number of sites with SHRs/Total sites)
- Town/city
- [9,578]** Mining workforce as full-time equivalent

KUNUNURRA

DERBY

**KIMBERLEY**  
52 (13/32)  
[2,961]

KARRATHA

MARBLE BAR

**MARBLE BAR**  
220 (14/23)  
[10,546]

**KARRATHA**  
411 (25/43)  
[15,322]

CARNARVON

**MEEKATHARRA**  
159 (14/20)  
[8,172]

MEEKATHARRA

**LEONORA**  
112 (9/17)  
[7,667]

**WARBURTON**  
0 (1/1)  
[3]

GERALDTON

**MT MAGNET**  
19 (4/8)  
[1,577]

MT MAGNET

LEONORA

**SOUTHERN CROSS**  
47 (6/13)  
[1,874]

KALGOORLIE

**COOLGARDIE**  
45 (14/23)  
[3,024]

**KALGOORLIE**  
35 (17/22)  
[5,103]

PERTH

**PERTH & COLLIE**  
223 (49/121)  
[16,961]

COLLIE

SOUTHERN CROSS

**NORSEMAN**  
7 (6/8)  
[402]

NORSEMAN

ESPERANCE

Total active (incl. C&M) mine sites = 331  
 Mine sites with SHRs = 172  
 Total SHRs = 1,433  
 SHRs attached to mine sites = 1,330  
 Others (e.g. exploration) = 103

## MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 165

### SUDDEN DEPRESSURISATION OF AN ANFO CHARGE-UP KETTLE

ISSUED: 6 DECEMBER 2010

#### Summary of incident

Shortly after a Normet Charmec ANFO charge-up kettle was pressurised, the pressure (sealing) plate ejected from the throat of the kettle (Figure 1). The plate was restrained by a stainless steel mesh screen bolted to the top of the kettle. However, an operator standing nearby received facial and eye injuries when ANFO sprayed into his face as a result of the sudden pressure release. The operator's hardhat and safety glasses were blown off.

#### Probable causes

The Normet Charmec ANFO charge-up kettle involved in the incident had a slightly oval-shaped pressure plate to seal and pressurise the vessel (Figure 2). The plate was slightly wider than the throat opening but could be removed when placed vertically along the major axis of the opening. The kettle could be pressurised when the plate seated inside the throat.

*Note: Not all ANFO charge-up kettles have this sealing mechanism (e.g. some use a cone-shaped plug).*

The pressure plate was originally fitted by the original equipment manufacturer (OEM) with a seal about 3 mm thick and positioned about 10 mm outside the diameter of the plate. This seal allowed the kettle to be pressurised.

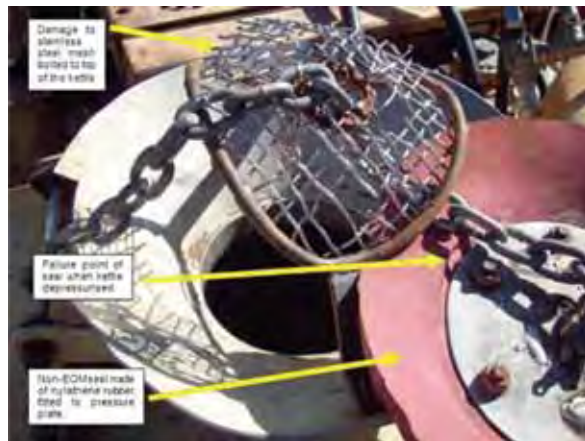


Figure 1 The Normet Charmec ANFO charge-up kettle following the incident

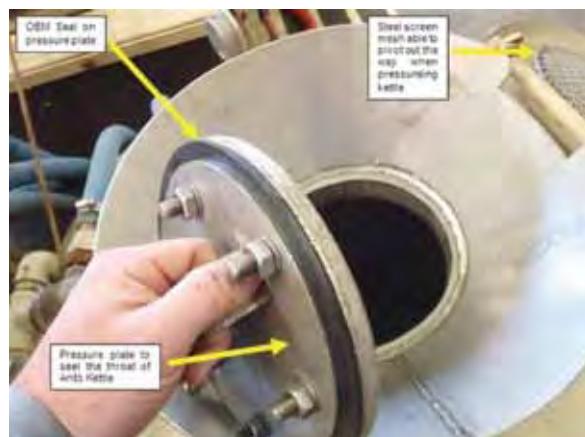


Figure 2 A Normet Charmec ANFO charge-up kettle complying with OEM requirements

*Mines Safety Significant Incident Report No. 165 continued*

The investigation revealed the OEM pressure plate seal (Figure 2) required regular replacement to ensure an effective seal of the kettle. However, the service sheets for the kettle did not specify any requirement to inspect the pressure plate seal.

Some time before the incident, the OEM seal on the pressure plate had been removed and replaced with a fabricated non-OEM seal made of nylathene rubber, about 10 mm thick and extending about 100 mm beyond the diameter of the pressure plate (Figure 1).

Normet provides a handle on the pressure plate and a pivoting screen that can be lifted out of the way when pressurising the kettle. However, a chain had been connected to the top of the pressure plate and pulled through an opening in the fixed mesh screen to position the pressure plate. This modification made it difficult to accurately locate the pressure plate in the throat of the kettle before pressurising it.

It appears that when the kettle was being pressurised, the pressure plate was not located in its correct position inside the throat of the

kettle. The oversized pressure plate seal allowed a “false” pressure seal to develop against a section of the nylathene rubber but the kettle suddenly depressurised when the nylathene rubber seal failed.

The investigation did not reveal any damage to the kettle, its regulators or pressure relief valves prior to the incident. The compressed air pressure at the mine was 105 psi (i.e. 724 kpa).

### **Action required**

To avoid a recurrence of this type of incident for Normet Charmec ANFO charge-up kettles, mine management must ensure:

- relevant procedures are in place to check that the pressure plate, seal and mesh screen are in a serviceable condition and meet OEM specifications; and
- charge-up operators and assisting personnel are properly trained and competent before pressurising the kettle.



# MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 166

## FALL FROM HEIGHT IN A PROCESS VESSEL – FATAL ACCIDENT

ISSUED: 16 DECEMBER 2010

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### Summary of incident

In 2009 an employee sustained fatal injuries when he fell at least 25 metres inside a process vessel at height and struck the ground.

The deceased was one of three team members using high pressure water cleaning equipment to clean scale from the vessel. The vessel comprises two separate but adjoining chambers. Access to these chambers is provided at various levels by manholes about 750 mm in diameter. Two 250-mm diameter pipes connect the top and bottom chambers, and provide a means of clearing scale from the top chamber during the cleaning process.

Immediately prior to the accident, the crew was focused on cleaning the top chamber of the vessel. Some adjustments were required for

the equipment being used in the cleaning process, and the deceased left the top chamber platform area to get a tool to assist in changing the high pressure cleaning equipment. The other two employees noticed his absence and went looking for him. He was found on the ground below the vessel.

### Probable causes

It appears that the deceased had fallen into the lower chamber of the process vessel and then to the ground via a discharge chute. Contributory factors are listed below.

- The vessel was more than 25 metres above the ground.
- The manholes in the side of the vessel were 750 mm in diameter.
- All the manholes were open.
- No barriers, fences or guard rails restricted access to the manholes.
- A fall from height hazard was not identified, assessed or controlled.
- Fall arrest or restraint equipment was not being used.
- Work was occurring towards the end of nightshift.

*Mines Safety Significant Incident Report No. 166 continued*

## Action required

This incident demonstrates the hazard posed to employees where:

- they are required to work in the vicinity of large open manholes or there is a need to view the interior of the vessel via the manholes; and
- there is a potential to fall from height associated with the manholes.

Regulation 4.4(1) of the Mines Safety and Inspection Regulations 1995 states:

*The manager of, and each employer at, a mine must ensure that adequate handrails, guards or fences are provided on all steps, stairs, elevated walkways and platforms, and on any other elevated workplace where there is a risk of injury to employees from falling.*

Page 11 of the *National Code of Practice for the Prevention of Falls in General Construction* (2008) states that high-risk construction work includes work at height where there is a risk that a person could fall 2 metres or more. Hence, the phrase “fall from height” can generally

be taken to mean a fall of 2 metres or more. In some cases, a fall from height of less than 2 metres can also pose a serious hazard to an employee.

The term “manhole” includes a specifically designed manhole or any other opening to a process vessel or any other volume or space not normally designated as a workplace.

To avoid a recurrence of this type of incident, managers and employers must ensure safe work practices are in place for employees working or travelling in the vicinity of open manholes that expose employees to a potential fall from height. Safe work practices include:

- placing suitable and sufficient guards, barricades or barriers across any manholes to restrict uninhibited employee access during that phase of the task where such access is unnecessary;
- wearing appropriate industrial fall-arrest equipment attached to a suitable anchorage point (see Australian Standard AS/NZS 1891 Series for more details);
- placing signs warning of the hazard close to any manholes; and
- marking out a zone of “no approach” or “no go” near any manholes.

# MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 167

## FAILURE OF THE ROPE GUIDE ON A DEMAG OVERHEAD TRAVELLING CRANE

ISSUED: 16 DECEMBER 2010

### Summary of incident

The metal rope guide on the hoist winch (Figure 1) of a three-tonne auxiliary hoist overhead travelling crane (Demag model P416H22L) broke apart while the crane was being set up for a task. A section of the guide weighing about 7 kg fell 23 metres, narrowly missing an employee who had been rigging up for the lift task (Figure 2). Another 2 kg section slid down the rope to rest on the hook sheave (Figure 3), while a third section weighing about a kilogram was found in plant adjacent to the overhead crane lifting bay.



Figure 1 Undamaged metal rope guide on the hoist winch of a Demag crane model P416H22L



Figure 2 Final resting position of 7 kg section of rope guide and location of the employee involved in the near-miss incident



Figure 3 Section of rope guide resting on hook sheave after incident

*Mines Safety Significant Incident Report No. 167 continued*

## Probable causes

It appears that there had been a severe side loading or impact event, or both, before the incident involving the rope guide. Evidence included:

- kinking of the wire rope (Figure 4);
- shavings from the rope guide as it wore on the host drum (Figure 5); and
- wire rope impact marks on the rope guide (Figure 6).

This event, or events, had not been reported or communicated to a responsible person. There was no control in place regarding who could use the crane and it is uncertain if the person or people who caused the original damage were:

- competent to use the crane; and
- aware of the potential consequences of such damage.

A pre-start inspection had been performed but it would have been difficult, given the environment (i.e. poor lighting) and location (at height), to determine if the hoist drum was fit for use.

- It also appears that this type of incident is known to occur for this type of rope guide but neither the original equipment manufacturer (OEM) nor supplier had been advised of past events, and therefore no safety alert regarding the possibility of equipment failure had been issued.



Figure 4 Kink in wire rope



Figure 5 Rope guide shavings



Figure 6 Wire rope imprint

## Action required

- Metal rope guides are common on all Demag overhead travelling crane models that are identified by a “P” prefix, which indicates pre-1985 manufacture. For such cranes, contact the OEM for recommendations on replacement components, fitting or installation procedures, inspection and maintenance requirements, operating instructions and limitations on the crane’s use.

*Note: After 1985, the hoist drums should be fitted with a plastic rope guide. There is currently no retrofit available to replace metal rope guides with the plastic versions.*

- When working with Demag model “P” hoists, be aware that the tolerance angles for vertical lifts are set as:
  - 5° sideways (i.e. parallel to the drum)
  - 15° perpendicular to the drum.
- Ensure the hook block is at its uppermost position when manoeuvring overhead travelling or gantry cranes.
- Maintain a controlled work zone when using overhead travelling or gantry cranes (e.g. marking off or barricade the area to restrict access).
- Ensure appropriate personal protective equipment (PPE) is worn by all personnel in or near the overhead crane lifting bay.
- Ensure there is no rigging equipment (e.g. chain sets, slings) left on hooks when overhead travelling or gantry cranes when they are not in use.
- Consider using a logbook to record usage and ensure only authorised and competent operators are using the crane.
- Ensure appropriate systems are in place to satisfy regulatory reporting requirements and record incidents involving cranes.
- Advise the OEM or supplier about equipment failures so that incident trends can be identified and safety alerts issued to raise industry awareness.

## MINES SAFETY BULLETIN NO. 93

### LOWERING AND RAISING OF BOTTOM GUARDS ON DOZERS – FATAL ACCIDENTS

ISSUED: 16 DECEMBER 2010

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#### Summary of hazard

This bulletin was prompted by concern relating to serious and fatal accidents involving the lowering and raising of bottom guards (“belly plates”) on heavy earth-moving equipment during inspections, maintenance and repairs. There have been three fatalities recently around the world during attempts to remove dozer bottom guards, including a fatal accident at a Western Australian mine in 2009.

Bottom guards are heavy. They also accumulate debris during dozer operations, which significantly increases their weight and obscures the critical components that secure them in position. Uncontrolled movement can occur when nuts or bolts securing the guard are loosened if the guard is not be appropriately restrained or supported. This may result in serious or fatal crush injuries.

#### Contributory factors

The preliminary investigation into the incidents confirmed that many employers, supervisors, operators and contractors were not sufficiently aware of the hazards associated with this task. In some cases, a job safety analysis (JSA) or job hazard analysis (JHA) was not performed, and safe work procedures were found to be inadequate or not followed.

The common contributory factors identified include:

- failure to establish appropriate systems of work that took into account different work environments;
- failure to plan and supervise the work and ensure available employees had the necessary knowledge, skills and equipment;
- failure to identify the hazards and put controls in place before work commenced;
- employee-training processes that did not effectively evaluate the trainee’s understanding of the bottom guard lowering and raising process, and lack of periodic re-assessment;
- lifting and lowering aids such as come-a-longs and lifting or component handling equipment were not used;
- employees positioned themselves directly under the bottom guards while attempting to remove mounting nuts and bolts;
- failure of the securing devices during the task and absence of back-up protection such as blocks;
- missing mounting nuts and bolts; and
- inadequate lighting.

## Action required

Clearly, bottom guard lowering and raising on earth-moving equipment must be regarded as a safety critical task, and needs to be performed by competent persons in accordance with documented systems of work addressing all risks involved.

This bulletin serves as a reminder to responsible persons at mines to review current work practices and ensure their adequacy. It is appropriate to consider the following actions.

- The establishment and adherence to comprehensive bottom guard lowering and raising procedures as per the original equipment manufacturer's (OEM's) recommendations.
- Information on bottom guard lowering and raising provided and updated by the OEM should be readily available for review by employees.
- Bottom guard lowering and raising work should be undertaken in a workshop environment with the aid of fit-for-purpose lifting and lowering equipment to control the movement of the guard (see example in Figure 1).
- Where bottom guard lowering and raising tasks are required to be performed in the field, a comprehensive JHA must be performed and measures implement to control all hazards with appropriate management input, approval and supervision.
- Employees carrying out bottom guard lowering and raising tasks must be appropriately trained and assessed as competent before undertaking the work.
- Mounting nuts and bolts on bottom guards should be regularly inspected and tested by a competent person in a safe environment. Equipment component change-outs, repairs, testing and inspection must be recorded.
- During lowering and raising of a bottom guard, employees must not position themselves directly beneath the equipment, in the "line of fire".
- If adverse environmental conditions (e.g. inclement weather, poor lighting or visibility) are present then appropriate controls need to be put in place to manage the additional hazard.
- Regular monitoring and supervision of the workplace must be undertaken, including task observation and peer review.



Figure 1 Example of a fit-for-purpose component handler positioned to support the bottom guard (photo courtesy of Direct Mining & Industrial International Pty Ltd)

## MINES SAFETY BULLETIN NO. 94

### USE OF CONTACT CLEANING AGENTS

ISSUED: 16 DECEMBER 2010

#### Summary of hazard

This bulletin was prompted by concern relating to serious incidents where employees have received burns to their upper bodies when an ignition source has been introduced into the work area after contact cleaner has been used.

In the first incident, a fitter was fault finding on a water truck with the ignition on. He removed the fuse panel from behind the driver's seat and sprayed contact cleaner on the wiring so he could better see the wires he wanted to trace. After spraying for 10 seconds he waited a short time and then pulled the fuse panel further out. In doing so he inadvertently shorted a connection to the body of the vehicle, igniting the vapour from the contact cleaner. He sustained significant burns.

In the second incident, a fitter was removing broken studs with easy-outs from the front differential of a loader. He had sprayed contact cleaner around the differential to clean the area. He heated the area around the broken stud with a micro-jet burner and the vapours ignited, burning his face.

#### Contributory factors

Preliminary investigations into these incidents confirmed the following.

- Some employers, supervisors, operators and contractors are not sufficiently aware of all the hazards involved with the use of such cleaning products and had not put controls in place.
- Although the cleaner is a precision electronic cleaning solvent, it is often used for general cleaning purposes.
- The resultant vapour is heavier than air and sinks into confined areas.
- There was inadequate ventilation of the work area.
- The contact cleaner is flammable when it comes into contact with a heat source.
- The lower explosive level of the vapour is 1% and the upper explosive level is 7%.

#### Action required

This bulletin serves as a reminder to responsible persons at mines to review current work practices and ensure their adequacy. It is appropriate to consider the following actions in relation to contact cleaners and other flammable spray products.

- Where possible, eliminate the use of flammable contact cleaners and hazardous cleaning products.
- Substitute flammable products with non-flammable products.



- Provide adequate controls for the use of such products.
- Where it is necessary to use contact cleaners and similar products, ensure directions and cautions on the container and in the manufacturer's literature are strictly adhered to, including the provision of suitable personal protective equipment (PPE) and clothing.
- Ensure copies of material safety data sheets (MSDSs) for the products are located at the workplace, appropriate risk assessments are conducted, and control measures are implemented in accordance with Part 7 Division 3 of the Mines Safety and Inspection Regulations 1995.
- Ensure containers are stored in appropriate storage facilities when not in use.

The contact cleaner should be restricted to the cleaning of precision electronics and the warnings on the container strictly adhered to. These include the following warnings provided on the container.

**DIRECTIONS:**

- 1. DEACTIVATE AND ISOLATE EQUIPMENT BEFORE USE.**
- 2. VENTILATE AFTER USE TO DISSIPATE FLAMMABLE VAPOURS FOR 30 MINUTES.**

**CAUTIONS:**

**EXTREMELY FLAMMABLE: FAILURE TO ADEQUATELY VENTILATE AFTER USE CAN CAUSE VAPOUR TO IGNITE OR EXPLODE.**



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