

minesafe

WESTERN AUSTRALIA

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Government of Western Australia
Department of Mines and Petroleum
Resources Safety

Role of the safety regulator

GETTING THE JOB DONE –
SAFELY

ON THE ROAD WITH SAFE
TOUGHNESS

SURFACE MINE
EMERGENCY RESPONSE
COMPETITION



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Welcome to the the second issue of *MineSafe* for 2010. Firstly, thank you to the many readers who participated in the survey to see what you think about the magazine. The encouraging results are reported here and your feedback has been invaluable for planning purposes.

In keeping with the diverse readership, we cover a diverse array of topics in this issue, with articles intended to inform, educate and stimulate discussion. There is something for everyone.

In particular, there is an update on the safety reform initiative being implemented by the Department of Mines and Petroleum. And in a first for *MineSafe*, a reprint of a paper by Professor Andrew Hopkins has been included to accompany an article on the role of the regulator. It is hoped that, along with other contributions in the magazine, these will generate discussion about safety regulation of the Western Australian resources industry and how the regulator, companies and individuals might work towards improving industry's safety performance and developing resilient safety cultures.

To this end, Research Solutions has been engaged by the Department to determine stakeholder perceptions and expectations of the role, services and functions of Resources Safety as the safety regulator for the resources industry. An industry survey has been developed based on a series of focus groups and in-depth interviews with executives, managers and safety professionals in the mining, petroleum and geothermal energy sectors and from companies operating major hazard facilities, and elected safety and health representatives in the mining sector. Sincere thanks to all those who participated in these extensive discussions. The survey has been structured so the Department can measure stakeholder perceptions of the effectiveness of the safety reform initiative over time.

The survey will be distributed in late October to early November 2010 — I encourage you to complete it should you receive one. Note that all responses will return to Research Solutions and, to maintain individual confidentiality, only aggregate results will be reported to the Department.

As always, enjoy your reading.

Malcolm Russell
Executive Director, Resources Safety

SAFETY REFORM PROGRESS REPORT

There have been some key developments in the Department of Mines and Petroleum's Reform and Development at Resources Safety (RADARS) strategy since May this year.

Project Director Safety Reform Simon Skevington said that the Ministerial Advisory Panel on Best Practice Safety Regulation had identified areas of focus, and three working groups have been formed to quickly progress these core components of the safety reform initiative.

The working groups, which include industry and union representatives, are Best Practice Safety Strategies, Financial Reporting and Transparency, and Legislative Review.

"These are areas where we can work collaboratively with industry and the unions to address key issues raised by the Panel in more detail," Simon said.

"It is an opportunity to ensure that there is alignment on how to deliver better safety outcomes across the State and ensure these are being delivered at all levels from the workers right through to management.

"Safety is everyone's responsibility and we need to ensure that everyone recognises this fact."

A phased cost recovery model is being implemented to fund the RADARS changes. The first phase was the introduction of a Mines Safety and Inspection Levy earlier this year. Cost recovery for the petroleum and dangerous goods sectors will follow as the rollout of RADARS continues.

The first Mines Safety and Inspection Levy assessment notices were issued from 16 June, based on hours worked by mining and exploration operations during the month of May 2010. This money is being used to offset the costs of developing and implementing the reforms.

The next levy assessment notices cover the period from 1 July to 30 September 2010 and will be issued from 16 October. The levy will only apply to mining and exploration operations with a quarterly total of more than 5,000 hours worked.

The Legislative Review Working Group will be reviewing the levy regulations over the coming months, based on industry feedback received post-implementation.

Cost recovery for dangerous goods and petroleum and geothermal energy is currently being developed, and industry will be consulted as part of this process.

The Department will also liaise with the Chamber of Minerals and Energy WA and other peak bodies to provide industry updates regarding the mines safety levy and RADARS strategy at their forums.

The Chamber forums will include representatives from the Safety Reform Group who will present information and answer questions from industry representatives about the levy and RADARS.

These forums are in addition to the Department's recent series of industry briefing sessions held in Perth, Bunbury, Kalgoorlie and Karratha between 5 and 8 July.

The briefing sessions were well received by industry and are one way the Department is communicating directly with industry regarding the safety reform initiative and the mines safety levy. Representatives from the Chamber attended the briefing sessions, and were joined by over 60 industry employees from across the State.

Department of Mines and Petroleum Director General Richard Sellers said that communication between the Department and industry was vital in establishing the reforms.

"It is through communication with industry that we develop an understanding of its expectations and also potential issues with the implementation of the reforms, including the mines safety levy," he said.

"Working with industry is the key to making a meaningful difference to safety culture on Western Australian mine sites."

National harmonisation of occupational health and safety legislation is progressing, and Resources Safety has assigned resources to prepare for its introduction.

The Best Practice Safety Strategies Working Group is looking at what strategies and tools may be required to contribute to the national harmonisation process for occupational health and safety legislation.

Improvements to data collection and IT systems have also taken significant steps forward.

The initial phase of replacing old compliance systems is underway. The internal release of the Safety Regulation System "AXTAT Plus" in July was an important milestone for Resources Safety.

The system is due to be externally accessible by the end of the year and will enable industry to submit safety data via a web portal rather than completing forms.

Companies will also be able to produce reports on the data they submit and compare these industry-wide to gauge performance.

This will also improve efficiency for the Division by removing the need for staff to manually transfer the data from forms to databases.

Resources Safety recruitment has also been ramped up. New employment packages, competitive with those offered by industry, are being developed in an effort to attract applicants with the necessary skills and experience.

Go to www.dmp.wa.gov.au/RADARS for further updates.

WHAT IS THE ROLE OF THE MINES SAFETY REGULATOR?

It is clear from the typical response to mining accidents that many in the public, including the media, have a limited understanding of the role of the regulator in occupational safety and health. So often the call following a serious injury or fatality is for the regulator to be held accountable in some way, with blame assigned on the basis that the root cause of the accident was due to some failing by its inspectors or the legislation.

There are two fundamental flaws with this argument.

Firstly, the law clearly states that operators are responsible for what happens on their sites. Resources Safety is no more liable for accidents on mine sites than the Police are for accidents on Western Australian roads.

Secondly, in a truly resilient safety culture, responsibility for safety would be shared and such an event should provide an opportunity for reform rather than repair. In other words, apart from dealing with the consequences where negligence is proven, assigning blame doesn't get anyone very far and is a reactive response.

So the role of the safety regulator is neither that of a policeman nor scapegoat. However, it is important that the regulator discharges its statutory responsibilities effectively. What are those responsibilities?

According to the second report of the Australian Government's National Review into Model Occupational Health and Safety Laws, released in January 2009, some of the roles of an occupational health and safety regulator are to:

- set safety standards;
- provide interpretations of laws and standards;
- provide information and guidance materials in regard to occupational health and safety matters;
- promote fair, safe and decent work through policy development and community information, managing programs and improving compliance; and
- promote and encourage safe, fair and productive working lives by working with employers, employees, unions and industry representatives.

In Western Australia, the objects of the *Mines Safety and Inspection Act 1994* are to:

- promote, and secure the safety and health of persons engaged in mining operations;
- assist employers and employees to identify and reduce hazards relating to mines, mining operations, work systems and plant at mines;
- protect employees against the risks associated with mines, mining operations, work systems at mines, and plant and hazardous substances at mines by eliminating those risks, or imposing effective controls in order to minimise them;
- foster and facilitate cooperation and consultation between employers and employees, and associations representing employers and employees, and to provide for the participation of those persons and associations in the formulation and implementation of safety and health standards and optimum working practices; and
- provide procedures for employers and employees to contribute to the development and formulation of safety legislation for mines and mining operations and to consult regarding its administration.

How will the implementation of the Reform and Development at Resources Safety (RADARS) strategy achieve the Act's objectives and improve delivery of regulatory services? Rather than reinventing the wheel, perhaps we should look at what an internationally recognised expert has to say on how to effectively regulate occupational safety and health.

WHAT DOES AN EXPERT SAY?

Professor Andrew Hopkins of The Australian National University has written several articles on new strategies for safety regulators to go beyond merely monitoring compliance. Inserted in this issue of *MineSafe* is a reprint of Professor Hopkins's 2007 paper "Beyond compliance monitoring: new strategies for safety regulators", published in *Law and Policy*.

Professor Hopkins' paper is recommended reading for all those interested in how safety regulation might be improved. It discusses how a safety regulator can go beyond compliance monitoring to encourage duty holders to improve their management of risk, independently of the issue of compliance. In other words, how can the regulators of high-risk industries improve their effectiveness — or adopt "best practice"?

The paper argues that the advent of general duty legislation makes the task of the regulator far less clear-cut than it was under prescriptive regimes. No longer are duty holders simply required to comply with specific rules; instead they are required to manage risk. Professor Hopkins suggests that, in practice, there are still rules to be followed, which may be formulated as codes of practice or industry standards. Rules may even be implicit in the notion of "good industry practice". In reality, therefore, regulators are still involved to some extent in monitoring and enforcing compliance with rules of various sorts.

As Professor Hopkins points out, one activity invariably carried out by regulators that goes beyond compliance monitoring is the provision of information and advice. This is a traditional regulatory function

undertaken at Resources Safety but, with improved data collection and analysis under RADARS, communication strategies will be increasingly targeted and informed by industry consultation.

Professor Hopkins's article discusses the following strategies, summarised below, that a safety regulator could adopt to improve its regulatory services and, ultimately, industry outcomes:

- auditing the auditors;
- proactive investigation;
- supporting company safety staff;
- advising on organisational design;
- exposing performance; and
- promoting regulatory crisis.

AUDITING THE AUDITORS

Routine auditing can rapidly degenerate into a tick-a-box exercise. The questions auditors should be asking are far more challenging. They cannot be answered with a tick, and may require a great deal of work. For example, the question is not "Have all hazards been identified?" but "How good is the hazard identification methodology?" If the quality of auditing can be improved in this way, the quality of risk management will certainly improve.

There is clearly a role for regulators in encouraging auditors to ask more probing questions about the effectiveness of an operator's risk management system. If the regulator can identify a significant hazard that has not previously been identified, or a procedure that auditors say is being followed but which, on examination, turns out to be of little value, the effectiveness of the operator's own auditing is brought into question. If regulators regularly find problems that the operator's audits have failed to identify, the audit system can be expected to undergo continuous improvement. The strategy is to traverse the same path as the operator's auditor and identify oversights — to audit the auditor.

PROACTIVE INVESTIGATION

Proactive investigation has one major advantage over reactive investigation. After a harmful incident has occurred, individuals may be fearful of blame and likely to be less than cooperative. Moreover, the organisation itself may be uncooperative in order to avoid disclosing information that might make it liable to legal action. Where an inspector carries out a proactive investigation, however, there is far less reason for companies or individuals to be fearful and far more likelihood that the investigation will be seen as an aid to prevention, rather than as a prelude to punishment.

SUPPORTING COMPANY SAFETY STAFF

Large organisations have internal staff with a specific responsibility for safety, whose job is to ensure compliance with regulations protecting shareholders, customers, workers, the environment and so on. Many studies have shown that these internally located compliance professionals are vital for organisational compliance. They have clout when they have sufficient resources and a high status within an organisation, and there are direct lines of communication between them and chief executives.

If company safety officers can appeal to regulators for support when they take an unpopular line, their clout is enhanced. If regulators seek them out, consult with them, and then champion their concerns at a higher level, their influence is expanded. Regulators, therefore, have an important role promoting the effectiveness of these internal change agents. Inspectors who consult with safety officers may be able to identify deficiencies in company systems far more quickly than working in isolation.

Elected safety and health representatives are another safety-oriented group within the organisation that regulators should cultivate. This group plays a significant role in assuring safety and it therefore behoves inspectors to do all in their power to enhance representatives' credibility within the organisation by listening to them, and, where appropriate, championing their concerns.

Creating these alliances is a valuable means of promoting better risk management.

ADVISING ON ORGANISATIONAL DESIGN

Various authors have noted that safety management systems have not yielded all the safety benefits that were originally expected and that too often these systems consist of little more than sets of manuals on shelves. Something else is needed to breathe life into such systems, and that something else is a safety culture.

Organisations may need to redesign themselves in significant ways by developing better mechanisms for detecting and responding to information about things that may be going wrong, or are about to go wrong, and they must develop different styles of decision making. These are fundamental features of the way an organisation operates, which go well beyond health and safety. Research on so-called high reliability organisations has shown that safe operation is not just a matter of compliance with various regulations and codes — it is crucially dependent on organisational design. For example, flexibility is important to these organisations, with appropriate teams assembled to make decisions rather than relying on centralised control.

Issues of organisational design have a particular bearing on the impact of internal safety staff. The best companies have safety staff at several different points of the hierarchy, with safety officers reporting directly to the most senior manager at that level, not via a human resources manager or some other intermediary. There are also reporting links between the safety staff at various levels. Moreover, in best practice companies, the corporate safety manager visits sites on a regular basis and given that he or she is on a par with, or even outranks the site manager, his or her views carry great weight.

There is a role here for regulators to prod companies that do not have such arrangements to move in this direction. Again, the role is one of advising on organisational design.

EXPOSING PERFORMANCE

Good safety performance depends on the commitment of the top management. A crucial question from the regulator's point of view is

how to motivate top management to make this commitment. One way to do this is to measure and publicise organisational performance with respect to various indicators, such as injury statistics. It is a classic example of the observation that what gets measured is what gets managed.

Unfortunately, performance in relation to other safety matters, such as the prevention of major accident events, is not so easily measured. The challenge for the regulator is to find ways in which relevant data can be assembled and publicised. It should be noted that quantitative data are not essential for mobilising shame. Publicising the details of a single accident can impact on reputation and motivate better performance.

PROMOTING REGULATORY CRISIS

Fear of the regulatory and public relations consequences of non-compliance, rather than a humanitarian concern, appears to be the major motivator for many top managers to comply with regulatory requirements. There is, of course, an intimate relationship between public opinion and enforcement in motivating compliance. Legal action against a company damages its reputation and it is often this, rather than the strictly legal consequences, that provides the real motivation. In turn, poor reputation can fuel public demand for tougher enforcement.

Moreover, the most common reason that companies set about improving regulatory compliance is the experience of a regulatory crisis or disaster. In some cases it is difficult to disentangle the effects of the regulatory response to an incident from those of the incident itself. But even in these circumstances, the regulatory response can intensify the impact on the company and strengthen its motivation to avoid further incidents. Moreover, a conviction for a regulatory violation is of enormous assistance to those wishing to sue the company for damages.

In the occupational health and safety context, prosecuting the most senior officers of a very large company is one way in which regulators can broaden the crisis for the organisation. If the site at which the offence took place is organisationally and geographically remote from corporate headquarters, the personal impact of prosecuting the company or one of its subsidiaries may be minimal. But when senior officers are prosecuted, the ripples spread quickly throughout the whole company and even throughout the industry. These are the people who are making major spending decisions and are in a strong position to influence outcomes.

Regulatory crises do not automatically lead to improved health and safety outcomes. The point is that a regulatory crisis for an organisation represents a window of opportunity during which the company will be susceptible to change. In particular, company safety staff, who may have been battling against commercial pressures, have a chance to bring about the changes they have been seeking. It is also an opportunity for inspectors to promote organisational and others changes they see as needed, and kick start companies on the road to change.



THE CHALLENGE FOR RESOURCES SAFETY

All stakeholders must contribute if the oft-stated vision of “zero harm” is to be realised.

For its part, industry generates the risk and therefore must accept full responsibility for eliminating or mitigating the risk to as low as reasonably practicable in all circumstances. This reduction in the risk of harm can only be achieved through a continuous process of identifying hazards and managing the risks.

The Government has the role of articulating the community’s expectations and ensuring that industry is meeting its obligations. It must establish a foundation of good legislation, maintain an effective compliance monitoring regime, and seek out other strategies that enhance and support risk management in industry.

If Western Australia is to aspire to be among the world’s best for safety in the resources industry then the following elements are critically important:

- legislation must be relevant, clearly drafted and up to date;
- legislation should be complemented by sufficient (but not suffocating) guidance material, codes of practice and technical standards relevant to the needs of industry;
- legislation should contain a graduated range of penalties that the regulator is confident to use;
- modern approaches to safety regulation must be adopted by industry and the regulator to replace traditional, prescriptive regulation;
- the safety regulator must be adequately resourced;
- the safety regulator must have an organisational structure that is effective and efficient in delivering resources safety regulation;
- the safety regulator’s staff must possess appropriate skills and experience across a broad spectrum of technical disciplines, together with the other legal, management and educational competencies, as relevant, necessary to carry out the functions of an effective inspectorate;
- internal procedures and administrative processes must guarantee consistently high levels of service delivery by the safety regulator;
- the safety regulator must be able to interact closely with industry and determine when it is appropriate to adopt an educating role rather than a directing role;
- the safety regulator must achieve the right balance between promoting safety outcomes, monitoring compliance and enforcement, and know when to escalate issues to create the required sense of urgency; and
- the safety regulator must have the capacity to collect, collate and analyse safety and health data to ensure that its decisions on strategic direction and resource allocations are evidence based.



Government of Western Australia
Department of Mines and Petroleum



Want to make a difference in resources safety?

A major recruitment campaign is underway at the Resources Safety Division of the Department of Mines and Petroleum.

Rewarding opportunities are available for qualified experienced professionals in our Perth, Kalgoorlie, Karratha and Collie offices.

These positions come with competitive remuneration packages and include flexible work arrangements, excellent working conditions, generous leave entitlements and an extensive professional development program.

This is your chance to be involved in making significant and meaningful changes to safety in the Western Australian resources sector. Visit our website for more details.

**www.dmp.wa.gov.au/mining-jobs or www.jobs.wa.gov.au
or call (08) 9358 8069 to learn more about our exciting opportunities**

Conditions Apply

“ MORE THAN 95 PER CENT OF RESPONDENTS AGREED THAT THE INFORMATION IN *MINESAFE* IS INTERESTING, EASY TO READ AND IMPORTANT TO THEIR JOB. NINETY-SEVEN PER CENT SAID THAT THEY TRUSTED THE INFORMATION THAT APPEARS IN *MINESAFE*. ”

WHAT YOU SAID ABOUT *MINESAFE*

It has been more than a year since *MineSafe* had a makeover and, according to the latest survey results, our readers believe the change has been for the better.

In the first comprehensive survey since the launch of the “new look” *MineSafe* magazine in 2009, the overall content, design and layout of the magazine were rated good, very good or excellent by 99 per cent of respondents.

Feedback found that 79 per cent of respondents agreed that the magazine has an attention-grabbing appearance, signifying the success of the new look.

Seventy-five per cent of those surveyed said that the quality of *MineSafe* has been improving over the past few years.

More than 95 per cent of respondents agreed that the information in *MineSafe* is interesting, easy to read and important to their job. Ninety-seven per cent said that they trusted the information that appears in *MineSafe*.

The survey also found more than three quarters of our respondents actively seek to read each edition of the magazine.

When finished with the magazine, the majority of respondents pass it on to other staff, leave it in the crib room or keep it for future

Government of Western Australia
Department of Mines and Petroleum
Resources Safety

We want to hear from you!

To continuously improve our *MineSafe* magazine, we would appreciate your valuable feedback.
Please complete this survey and post it back in this self-Add Reply Paid envelope by 28 June 2010.
Alternatively, you can complete this form online at www.surveymonkey.com/s/minesafe_magazine_survey by 21 June 2010.

- Please indicate your workplace**
(If non-mining, which industry?)
 Mine site Exploration Mining administration Non-mining
- What is your role or position? (Tick all boxes that apply)**
 Employee Safety and health representative Supervisor or shift boss
 Contractor Manager O&M professional
- Your age group**
 18-24 25-30 31-40 41-50 51-60 61+
- Gender**
 Male Female

The following questions relate to *MineSafe* magazine and associated topics.

- Do you have internet access?** Yes No (if no, please go to Q9)
- Where do you access the internet? (Tick all boxes that apply)**
 Home Work Other (provide details e.g. internet cafe, mobile phone)
- If *MineSafe* was not available in its present hard copy format, would you read the online version?**
 Yes No
- Generally I prefer to read material online** Yes No
MineSafe is available for viewing and download from www.dmp.wa.gov.au/minesafe
- I actively seek to read each edition of *MineSafe*** Yes No
- I read *MineSafe* because:**

I trust the information provided	<input type="checkbox"/> Agree	<input type="checkbox"/> Disagree
It is interesting to read	<input type="checkbox"/> Agree	<input type="checkbox"/> Disagree
Its appearance grabs my attention	<input type="checkbox"/> Agree	<input type="checkbox"/> Disagree
It is easy to read	<input type="checkbox"/> Agree	<input type="checkbox"/> Disagree
The information is important to my job	<input type="checkbox"/> Agree	<input type="checkbox"/> Disagree
- Approximately how much time do you spend reading *MineSafe*?**
 Less than 15 mins 15-30 mins 31-60 mins 1-2 hrs More than 2 hrs
- How do you read *MineSafe*?**
 Read entire magazine from cover to cover in one sitting
 Skim over most articles in one sitting
 Read one entire article and return to read another article at a later time
 Quick flick through it
- Over the past few years, *MineSafe*'s quality has:** Improved Declined Stayed the same

reference at work or home, giving an indication of the “longevity” of the magazine. More than half of the respondents keep *MineSafe* for one month or more.

Despite the increasing profile of online access to information, hardcopy is still the preferred medium to distribute the magazine. Fifty per cent of respondents stated that they would not read *MineSafe* if it was only available online. This is further backed up by the fact that an overwhelming 85 per cent said that they would prefer to read a hardcopy of *MineSafe*.

Nine per cent of respondents access the internet via sources other than home and work, such as mobile phones, indicating a possible growing trend. Opportunities may exist in making the magazine accessible in different formats.

Topics that were suggested for future articles included an overview of changes in the Mines Safety and Inspection Act and regulations, prosecution case outcomes, incident investigations and outcomes, prevention measures and gender roles.

Some 272 responses were received by the end of June deadline, and were used as the baseline for survey results. However, Resources Safety continued to receive surveys for six weeks, including a couple from overseas, giving an indication of how much the magazine is valued by readers. At last count, 301 surveys had been received, giving a ten per cent response rate.



“ RESOURCES SAFETY WILL BE ABLE TO ACCESS DATA MORE EFFICIENTLY, PROVIDING AN IMPROVED SERVICE TO INTERNAL AND EXTERNAL STAKEHOLDERS.

JOHN O’SULLIVAN

”

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IMPROVING DATA HANDLING WITH THE NEW SRS AXTAT+

The Department of Mines and Petroleum has taken the first steps in a program of works towards improved data and evidence driven safety regulation, with the introduction of the Safety Regulation System (SRS).

Replacing the previous incident and accident system commonly known as AXTAT, SRS is a web-based database that forms the foundations for the release of future safety systems. SRS AXTAT+ will enable better communication between Resources Safety and industry, encompassing not only mining and exploration safety but also onshore petroleum, geothermal energy and dangerous goods.

The changes have been brought about as a result of the Division's desire to improve safety standards across industry by improving data management methods and enabling more effective reporting capability.

The improved capacity to collect, collate and analyse safety and occupational health data will ensure decisions on strategic direction and resource allocation are evidence based.

John O'Sullivan, Resources Safety's Manager Data Services, said that the system would benefit the Department by changing the way Resources Safety was able to interact with industry and internal customers.

"Resources Safety will be able to access data more efficiently, providing an improved service to internal and external stakeholders," he said.

"The new system cuts down processing time, allowing greater focus on the quality of data and therefore improving data reporting and analysis."

By the end of 2010, industry will benefit through the ability to submit safety data online, as well as being able to view monthly injury status reports. The new system will have added functionality such as tailored security access, employees being able to send information directly to the submitter, advanced reporting capabilities, improved useability and full audit consoles.



In the mining sector, as for other industry sectors, safety performance has been sitting on a plateau for some time. Our particular industry has struggled in recent times to maintain an acceptable rate of improvement and, in fact, has started to slide backwards in the fatal incidence rate.

.....

This situation is of great concern to all of us. Only a significant change in the approach to safety is going to arrest the back sliding and provide mechanisms to achieve a new step change.

Commentators in the oil and gas sector, where there are similar issues with a plateau in safety performance, suggest that the key lies in developing a new safety culture where employees have real ownership of — and drive — safety improvements.

Traditionally, it has been held that safety performance relies upon leadership from the top. It is now recognised that although this is undoubtedly a significant part of success, it also requires that shop floor personnel, and particularly safety and health representatives, are empowered to drive key safety programs.

Safety must become a habit that we all practise. Only when we all adopt this habit can it be said that a resilient safety culture has taken over our workplaces. Habits are only developed when associated behaviours are rewarded. In the case of safety, we need to reward the bearers of “bad news” so that, with the strength of awareness, we can pro-actively treat the symptoms before they develop into a chronic and devastating illness.

Unless we harvest the knowledge of our employees and workmates so we really understand the issues in the workplace, it is unlikely that our safety performance will improve, and highly likely that serious incidents will continue to occur.

Managers and supervisors should be seeking out the “bad news” and engaging shop floor employees and their safety and health representatives in meaningful dialogue to develop effective and targeted programs, driven by the employees, that address the problems.

Simon Ridge
State Mining Engineer

DMP LEGISLATIVE PROGRAM AS AT 31 AUGUST 2010

MINES SAFETY

The Mines Safety and Inspection Levy Regulations 2010 were implemented in May 2010.

An annual per-hour levy rate is calculated on the budgeted cost for mines safety and health regulatory services for each year, divided by the estimated number of hours worked by mining industry workers for that financial year. The levy rate will be reviewed and published annually. The rate will be adjusted according to:

- the number of hours worked by people employed in the industry;
- costs associated with the delivery of safety regulatory services; and
- any funds remaining in the special purpose account.

Visit www.dmp.wa.gov.au/RADARS for more information on the levy and its application.

There has been some industry feedback about aspects of the reporting requirements under the current levy regulations. These are currently being addressed by the Ministerial Advisory Panel's Legislative Review Working Group, which will provide advice to the Minister for Mines and Petroleum about how these concerns could be addressed.

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 General, Road and Rail Transport of Non-explosives and Major Hazard Facilities Regulations came into force on 22 June this year. Amendments to the remaining four sets of regulations are in the final stages of drafting, with completion anticipated in the coming months.

PETROLEUM AND GEOTHERMAL ENERGY SAFETY

Parts 2, 3 and 5 of the *Petroleum Legislation Amendment and Repeal Act 2005* (PLARA) and Part 2, Division 2, of the *Petroleum Amendment Act 2007* were proclaimed in May 2010. This legislation introduces comprehensive occupational safety and health requirements into the *Petroleum Pipelines Act 1969* and *Petroleum and Geothermal Energy Resources Act 1967*, and provides for the introduction of safety requirements covering geothermal energy operations.

The following new petroleum and geothermal energy regulations were gazetted on 14 May 2010 to support the proclamation of the remaining parts of the PLARA:

- Petroleum and Geothermal Energy Resources (Occupational Safety and Health) Regulations 2010;
- Petroleum and Geothermal Energy Resources (Management of Safety) Regulations 2010;
- Petroleum Pipelines (Occupational Safety and Health) Regulations 2010; and
- Petroleum Pipelines (Management of Safety of Pipeline Operations) Regulations 2010.

For the latest copies of legislation, visit www.slp.wa.gov.au

NATIONAL MODEL WORK HEALTH AND SAFETY LEGISLATION

On 11 December 2009, the Workplace Relations Ministers' Council (WRMC) endorsed the national Model Work Health and Safety Bill (the Model Bill) subject to any further technical and drafting amendments agreed by Safe Work Australia.

A revised version of the Model Bill was approved by Safe Work Australia on 29 April 2010 and published on its website on 11 May 2010. Since then, Safe Work Australia has made some further minor technical amendments to ensure the legislation can operate as intended. A final version of the Model Bill incorporating those changes was distributed to jurisdictions on 26 August 2010.

In relation to the National Mine Safety Framework (NMSF), at a May 2010 meeting of the Ministerial Council on Mineral and Petroleum Resources, it was agreed that drafting instructions for mining occupational health and safety (OHS) matters to be addressed in regulations under the Model Bill would be transmitted to the WRMC. This enables Safe Work Australia (with the assistance of the Parliamentary Counsel's Committee) to incorporate the provisions into the Model Bill Regulations scheduled to be released for public comment in November 2010.

Ministers also endorsed a process for developing further provisions by Western Australia, New South Wales and Queensland for mining-specific OHS issues not addressed under the Model Bill to provide a nationally consistent approach to mine safety. Meetings of the relevant working group are currently being held, after which the NMSF Steering Group will meet to sign off on the "non-core" regulatory provisions.

WHAT ARE YOU DOING ABOUT YOUR DUTY OF CARE?

If you see or hear about something wrong in the workplace, or that could go wrong, what is your responsibility? In Western Australia, the mines safety legislation embodies a “duty of care” approach.

The *Mines Safety and Inspection Act 1994* imposes a general duty of care to maintain safe and health workplaces at mining operations, protect people at work from hazards, and describes the conduct required of people responsible for occupational safety and health.

The legislation aims to make each person who works at a mine, exploration site, processing plant, refinery or other mining operation, or provides services or equipment to those operations, responsible for his or her own safety and health, and those of others who would be affected by his or her actions or inaction. The Act outlines the obligations of each group, and provides penalties for any breach of those obligations. The focus is on the prevention of unsafe or unhealthy situations. There is no need for an injury or harm to occur before enforcement action can be taken to have the situation fixed.

The Act provides a framework where the general duty of care should be supported by consultation, cooperation, workplace standards and procedures to resolve issues. The general duty of care is the guiding principle for all other parts of the Act. The Act is supported by regulations that describe some of the requirements that apply to specific work situations. While the regulations must be complied with, the overriding responsibility is to comply with the general duties in the Act.

EXTENT OF THE DUTY

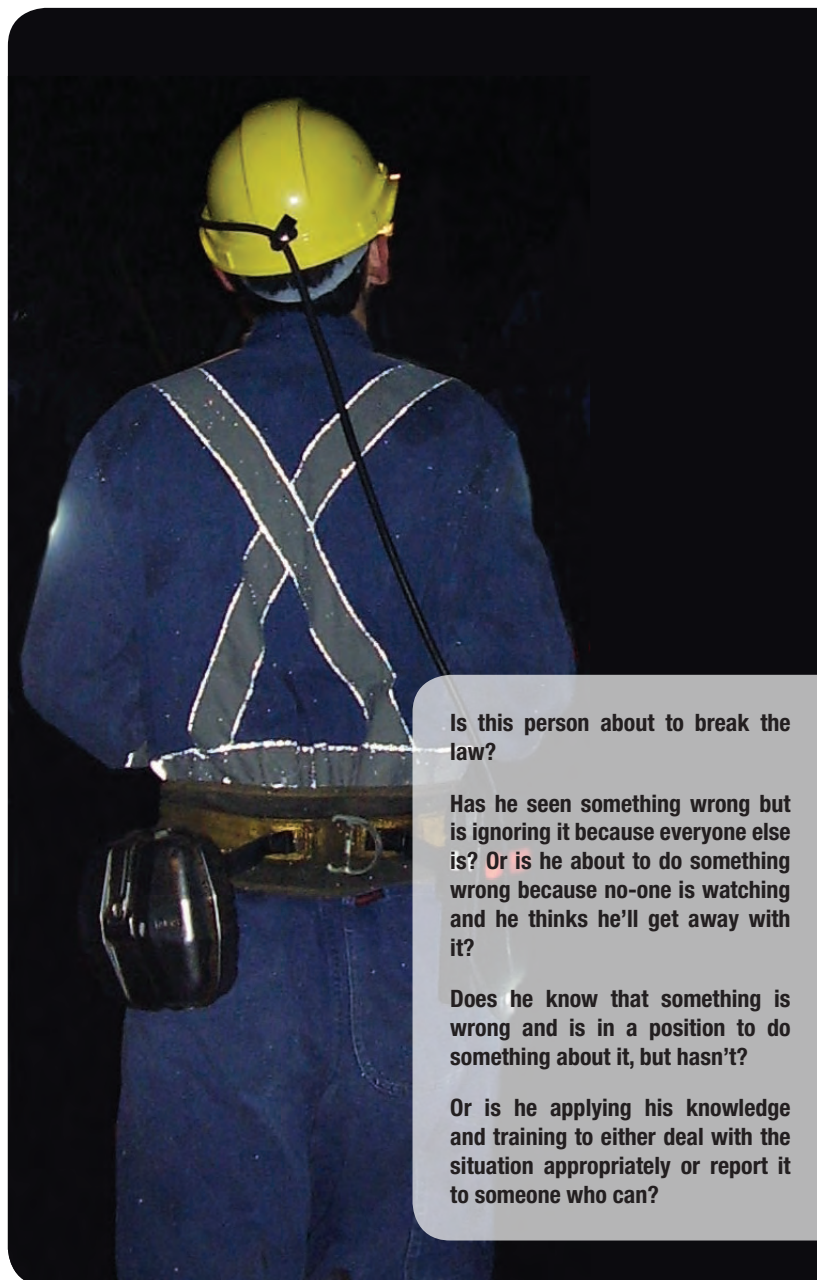
The principle of having a duty of care applies to all workers, including those who are self-employed, supervisors and managers, and to employers at all levels, including corporations. General duty of care obligations extend to:

- employees;
- employers;
- contractors and their employees;
- labour hire agents and workers; and
- people involved in the design, supply, installation and maintenance of plant.

The aim is to prevent anyone being killed, injured or contracting an illness because of work activities in the mining industry.

LEVEL OF CARE REQUIRED

A person must take the amount of care that a reasonable person would take. What is reasonable will vary according to the situation, but the following principles may be applied:



Is this person about to break the law?

Has he seen something wrong but is ignoring it because everyone else is? Or is he about to do something wrong because no-one is watching and he thinks he'll get away with it?

Does he know that something is wrong and is in a position to do something about it, but hasn't?

Or is he applying his knowledge and training to either deal with the situation appropriately or report it to someone who can?

- the standard of care will rise with the seriousness of the injury or harm that could result;
- the greater the likelihood of injury or harm, the greater the care that should be taken to avoid it; and
- the easier it is to avoid the injury or harm, the more reasonable it is to expect that something will be done about it.

GROSS NEGLIGENCE

The term “gross negligence” is defined in the Act to apply to certain breaches of the general duty of care. Gross negligence occurs if the person knew that that his or her contravention of the Act was likely to cause death or serious harm to a person to whom a duty of care was owed, but he or she still acted or failed to act, resulting in a fatality or serious harm to that person.

IMPORTANCE OF EXPLORATION NOTIFICATIONS

Resources Safety must be notified whenever an exploration company is planning a mineral exploration program in Western Australia. The May 2009 issue of *MineSafe* (volume 18, number 2) provided guidance on how to complete the exploration notification form, available from the Resources Safety website.

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But why is notification important? The reasons relate not only to statutory requirements but also to improve safety outcomes through compliance activities.

- Notification provides information to the inspectorate about the nature, scope, location and timing of proposed “on the ground” exploration activities that is not readily available elsewhere.
- Through the notification process, mineral explorers are linked to:
 - Resources Safety’s accident and incident reporting system; and
 - the Mines Safety and Inspection Levy statutory provisions.
- Information submitted by explorers in accordance with the accident and incident reporting requirements is used by Resources Safety to record and monitor the safety performance of exploration operations.
- Notifications enable mines inspectors to plan and implement site compliance inspections and audits of exploration activities.



RAISING DUST AT THE EXPLORATION SAFETY ROADSHOW

Planning is underway for the 2010 Exploration Safety Roadshow, to be presented in Kalgoorlie and Perth in December.

The program will include:

- an introduction to the Reform and Development at Resources Safety (RADARS) strategy;
- an overview of industry safety performance this year, including exploration issues of particular concern to the mines inspectorate;
- a discussion about how to manage the risks associated with naturally occurring fibrous minerals and silica dust;
- a look at what might constitute “best practice” drilling; and
- an update on Resources Safety’s plan to understand how widely accepted “tough” behaviours and communication styles

affect safety in the workplace, and what industry and the safety regulator could be doing to address the issues.

Industry input will be sought on these topics at the events but Resources Safety is particularly keen to hear from companies who have developed innovative solutions to deal with drilling hazards and would be prepared to share their ideas with others at the Roadshow. Please contact Malcolm McDowall (08 9358 8025, malcolm.mcdowall@dmp.wa.gov.au) or Rod Johnson (08 9358 8063, rod.johnson@dmp.wa.gov.au) if interested.

Malcolm and Rod recently joined Resource Safety and have been engaged to seek industry input into the development of a code of practice for the drilling industry. The code will assist drilling companies in achieving “leading practice” and addressing the major hazards associated with drilling operations. The aim is to reduce the number and severity of drilling-related incidents and accidents.

Further information about the 2010 Exploration Safety Roadshow will be posted at www.dmp.wa.gov.au/events as it becomes available.

DEALING WITH MINERAL CONCENTRATES CLASSIFIED AS UN 3077

Resources Safety has been assisting the mining industry and its transporters in implementing national dangerous good requirements for certain mineral concentrates classified as Class 9 “Miscellaneous Dangerous Substances” of UN 3077, Environmentally Hazardous Substance, Solid, Not Otherwise Specified (N.O.S.).

Substances classified as UN 3077 are those that do not fall into any other dangerous goods classification and have no significant hazardous properties other than aquatic toxicity to either marine or freshwater organisms.

These new classification criteria for UN 3077 resulted from the adoption of recent United Nation requirements on the transport of dangerous goods into the seventh edition of the *Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG7)*. It means that the mining industry needs to engage eco-toxicology consultants to test whether a particular metal in the mineral concentrate is sufficiently soluble in fresh or marine water to exhibit toxicity to aquatic organisms.

Resources Safety is aware of several mining companies that have classified their zinc, copper and lead sulphide concentrates into UN 3077. It is possible that many nickel sulphide concentrates will also test positive for UN 3077 — nickel sulphide producers are currently doing the testing.



Individual mining companies, transport companies and the Chamber of Minerals and Energy of Western Australia have made submissions to Resources Safety to obtain exemptions from some of the dangerous goods requirements. The Minerals Council of Australia has sought similar exemptions from the national Competent Authorities Panel (CAP) for the transport of dangerous goods.

Resources Safety has examined this issue and it is clear that the additional costs and complexities introduced by the requirements in ADG7 to do with UN 3077 cannot be justified on health, safety or environmental grounds and, indeed, may pose additional safety risks.

As a result of some significant implementation problems faced by the transporters of mineral concentrates of UN 3077, and consistent with overseas dangerous goods transport regulations (see The European Agreement Concerning the International Carriage of Dangerous Goods by Road), the Chief Dangerous Goods Officer has granted the following determinations and exemptions to the dangerous goods transport industry in Western Australia:

- A determination to allow sheeted bulk containers (BK1) such as kibbles or side-tippers and not just closed bulk containers (BK2);
- An exemption from the licensing of dangerous goods vehicles and drivers; and
- An exemption from the requirement to display emergency information panels (EIPs). Instead of EIPs, it will be necessary to placard the prime mover and any trailers on all sides with a "Class 9 – Miscellaneous Dangerous Goods" diamond. This is deemed sufficient since the mineral concentrates have no toxic, corrosive, flammable or other chemical hazards.

Further information is available in Chapter 2.9 of ADG7 and the legislation and policy section of the Resources Safety website.

Notwithstanding the above exemptions, transporters must still ensure that their sheeted bulk containers are well maintained and functional in compliance with the BK1 requirements of ADG7. Transporters also need to have a contract with or be an "approved emergency responder" to demonstrate their ability to perform a quick and efficient clean-up in the unlikely event of a vehicle roll-over.

Note: A BK1 is an open top bulk container with rigid bottom (including hopper-type bottom) and side and end walls, and a non-rigid covering, such as a tarpaulin. These containers include "sheeted kibbles".

WHAT ARE NTC, ATC AND CAP?

Under Australia's federal system of government, states and territories regulate transport operation, safety standards, weights and dimensions. In the past, differences between these regulatory systems meant that interstate road and rail operators faced inconsistent road rules, licence categories, registration classifications, charges, vehicle standards and driving hours, creating unnecessary inefficiency and cost.

The National Road Transport Commission (NRTC) was formed by inter-governmental agreement in 1991 to develop and coordinate regulatory reform for nationally consistent road transport policies and laws. This was extended into rail and inter-modal transport in 2004 when it became the National Transport Commission (NTC).

As an independent statutory body, NTC develops and submits reform recommendations to the Australian Transport Council (ATC) of Federal, State and Territory Transport Ministers for approval. There is also a role in coordinating and monitoring implementation of approved reforms.

The Competent Authority in each state or territory is responsible for enforcing dangerous goods transport legislation, and ADG6 and ADG7. The Chief Dangerous Goods Officer is the Competent Authority for Western Australia. The Competent Authorities Panel (CAP) meets quarterly and is responsible for issuing approvals and variations to the existing regulations, and ensuring mutual recognition of decisions taken across jurisdictions. Applications to CAP must be submitted to the local Competent Authority.

TRANSPORT OF EXPLOSIVES IN UNDERGROUND MINES

The transport of explosives in underground mines involves unique risks that must be properly managed. This article outlines the critical issues to consider and how they should be approached.

Further information on explosives transport at mines is available at Resources Safety's *Transport of explosives on roads and at mines – guidance note*, available in the publications section at www.dmp.wa.gov.au/ResourcesSafety

In recent years, the scale of many underground mining operations has expanded, with a subsequent increase in the number and size of underground explosives storage magazines. Large shipments of explosives are usually transferred from the surface to underground magazines on explosives transport vehicles or “bomb utes”. Smaller quantities of explosives are often transferred from the main underground explosives storage magazine to the point of use on underground explosives charging vehicles (e.g. ANFO charger). The explosives transfer process needs to be managed through risk assessment and appropriate action.

GENERAL UNDERGROUND TRANSPORT REQUIREMENTS

The requirements to plan, communicate, separate, segregate and go straight to the destination when transporting explosives are detailed below. These points apply to all vehicles transporting explosives, including “bomb utes” and underground explosives charging vehicles.

KEY REQUIREMENTS FOR TRANSPORT OF EXPLOSIVES UNDERGROUND

Plan

Plan the trip from point of pick-up of explosives to delivery to the underground location.

- Organise personnel and materials handling equipment in advance to enable the safe and secure transfer of explosives from the surface to underground storage.
- Vehicles must comply with requirements for use on mine sites. See the guidance note on transporting of explosives on roads and at mines for more information.

Communicate

Communicate to all personnel which route and vehicle will be used to transport explosives.

- Communicate information through appropriate signage or communication via a selected radio channel.
- Mark the vehicle with appropriate placards and signage. See the guidance note on transporting of explosives on roads and at mines for more information.

Separate

Separate the explosives from people and critical infrastructure.

- Avoid regularly used travel ways, such as service shafts or declines, whenever possible.
- If it is necessary to use a service shaft or decline for transport, minimise the exposure of personnel to explosives by conducting the transfer during shift change or at a time when minimal personnel are underground.

Segregate

Segregate detonators from other explosives, and incompatible explosives from one another.

- Detonators of Classification Code 1.1B must not be transported on the same vehicle as other explosives except in accordance with an approved method. See the guidance note on transporting of explosives on roads and at mines for more information.
- Explosives must be securely stowed in designated, fit-for-purpose storage boxes on the vehicle, and carry boxes must be securely attached to the vehicle.
- Explosives must not be stowed loose in the tray of a vehicle, or in nooks and crannies of underground explosives charging vehicles.
- Explosives should be kept in their original boxes where possible to facilitate ready identification and containment.

Go direct

Go straight to the destination.

- Conduct the transfer as directly as possible between the point of pick up and the end destination (e.g. direct from surface to underground magazine, or from magazine to the shot). Do not deviate to deliver explosives to other sections of the mine.
- Vehicles accessing the explosives storage section of a magazine (e.g. forklifts, charging vehicles) must satisfy the requirements of Australian Standard AS 2187.1:1998 for powered vehicles.

DANGEROUS GOODS SAFETY INFORMATION SHEETS

This article is available as an information sheet in the dangerous goods safety publication section of the Resources Safety website.

Another recently released information sheet looks at the requirements for the management of explosives.

- Vehicles must not be:
 - started or stored inside the explosives storage section of the magazine; or
 - refuelled, maintained or left running unattended near the magazine.
- Vehicles should be parked facing towards a wall to prevent them from “running away”.

Parking underground explosives charging vehicles

Given the distances involved in underground mines and the logistics of the cleansing process required, it is often impracticable for an underground explosives charging vehicle to be returned to the surface, or sterilised from ANFO, between shift changes and other short-term breaks in operation.

To accommodate operational needs, designated underground lay-up areas may be developed for the safe and secure short-term parking of underground explosives charging vehicles with residual ANFO contained in the kettle.

A risk assessment must be completed when designing the lay-up area. The area’s location and design must satisfy safety and security requirements, including:

- adequate separation from main mine facilities and critical infrastructure;
- adequate separation from explosives magazines; and
- appropriate security measures (e.g. locked gates) to prevent unauthorised access to lay-up area.

The following requirements apply to parking in a lay-up area:

- all packaged and loose explosives and detonators must be removed from the underground explosives vehicle before parking in the lay-up area;
- all explosives removed from the vehicle must be returned to the main explosives storage magazine (preferably), or to a compliant external portable magazine;
- stock reconciliation of the explosives is required upon return;
- where appropriate, a procedure to “dip the kettle” may be used as a means of determining and recording residual ANFO in kettles;
- where possible, the inlets and outlets to the ANFO kettle should be closed and locked;
- the driver should walk around and check the vehicle to ensure there are no fires (e.g. overheated brakes) or smouldering combustibles on board the vehicle; and
- safety and security measures must be complied with at all times.



COMPETENCY-BASED TRAINING COMING FOR SHOTFIRERS

The Australian Forum of Explosives Regulators (AFER), which reports to the Workplace Relations Minister's Council, has reviewed the options for nationally consistent training requirements for shotfirers.

At its 18 May 2010 meeting, AFER endorsed the relevant units of competency from the National Industry Skills Council for Drilling, Mining, Quarrying and Civil Infrastructure training package as the basis for shotfirer training, and determined that shotfirers should undergo this training every five years.

The new training requirements will provide a number of advantages, including:

- allowing the portability of training qualifications between States and paving the way for the introduction of national shotfirer licences under a new national licensing system;
- matching the training more closely to the skills needed by industry;
- linking shotfirer training to higher qualifications such as certificate and diploma courses;
- enabling shotfirers to train for the special hazards of underground operations; and
- ensuring consistently high standards of training.

Given these benefits, Resources Safety intends adopting this arrangement under the Dangerous Goods Safety (Explosives) Regulations 2007 (the Explosives Regulations) and, to ensure a consistent quality of training, will also require training providers to become registered training organisations with the Training Accreditation Council.

There will be two approved training courses in Western Australia, one for surface operations and another for underground operations. Further information about the new system of training, including the composition of training courses, is available from Resources Safety. The Chief Dangerous Goods Officer intends approving these two training courses under Regulation 14 of the Explosives Regulations as of 1 November 2011.

Adoption of the national units of competency means that, from 1 November 2011, all previously approved training courses and associated certificates will no longer be accepted as being sufficient evidence of an individual's competency.

Furthermore, shotfirers licensed under the new training regime will need to be re-assessed against the relevant units of competency every five years to ensure that they have kept up to date with developing blasting technology, the Explosives Regulations, and relevant explosives codes and standards.

These changes will affect existing shotfiring licence holders whose licences expire on or after 1 November 2011. From 1 November 2011, all shotfirers will need to be re-assessed (and possibly trained) against the new national units of competency before their licence expires. This assessment should be relatively straightforward for practising shotfirers as it will be largely based on their work experience and will recognise prior learning.

In order to achieve the 1 November 2011 deadline, all training providers have been asked to cease offering all previously accepted training courses to new applicants or existing shotfiring licence holders from 1 September 2011. They have also been asked to remind all trainees attending courses from 1 March 2011 to 1 September 2011 that licence applications based on these courses will not be accepted from 1 November 2011.

Any questions or requests for detailed information on training courses may be directed to Resources Safety on (08 9358 8001 or rsdclientservices@dmp.wa.gov.au).

FINE-TUNING CLASSIFIED PLANT REGISTRATION

There can be many types of plant at a mine site but there is a particular group, related to a higher operational hazard, referred to as “classified plant”, which has specific regulatory requirements. The Mines Safety and Inspection Regulations 1995 require certain types of classified plant to be registered before being used.

Resources Safety has released a procedure to accompany the pro forma “Application for registration of classified plant – all types”, available from the Resources Safety website.

The procedure will help those registering classified plant to comply with regulatory requirements by describing the type of information being sought. Topics covered include:

- responsibility for registration;
- exemptions from registration with Resources Safety;
- application requirements; and
- how to lodge an application

The exemptions section should be read carefully to determine whether registration with Resources Safety is required for specific plant or situations.

Importantly, the procedure tackles design calculations requirements, particularly those for pressure vessels and cranes, where the most delays occur in the registration process because insufficient information is provided.

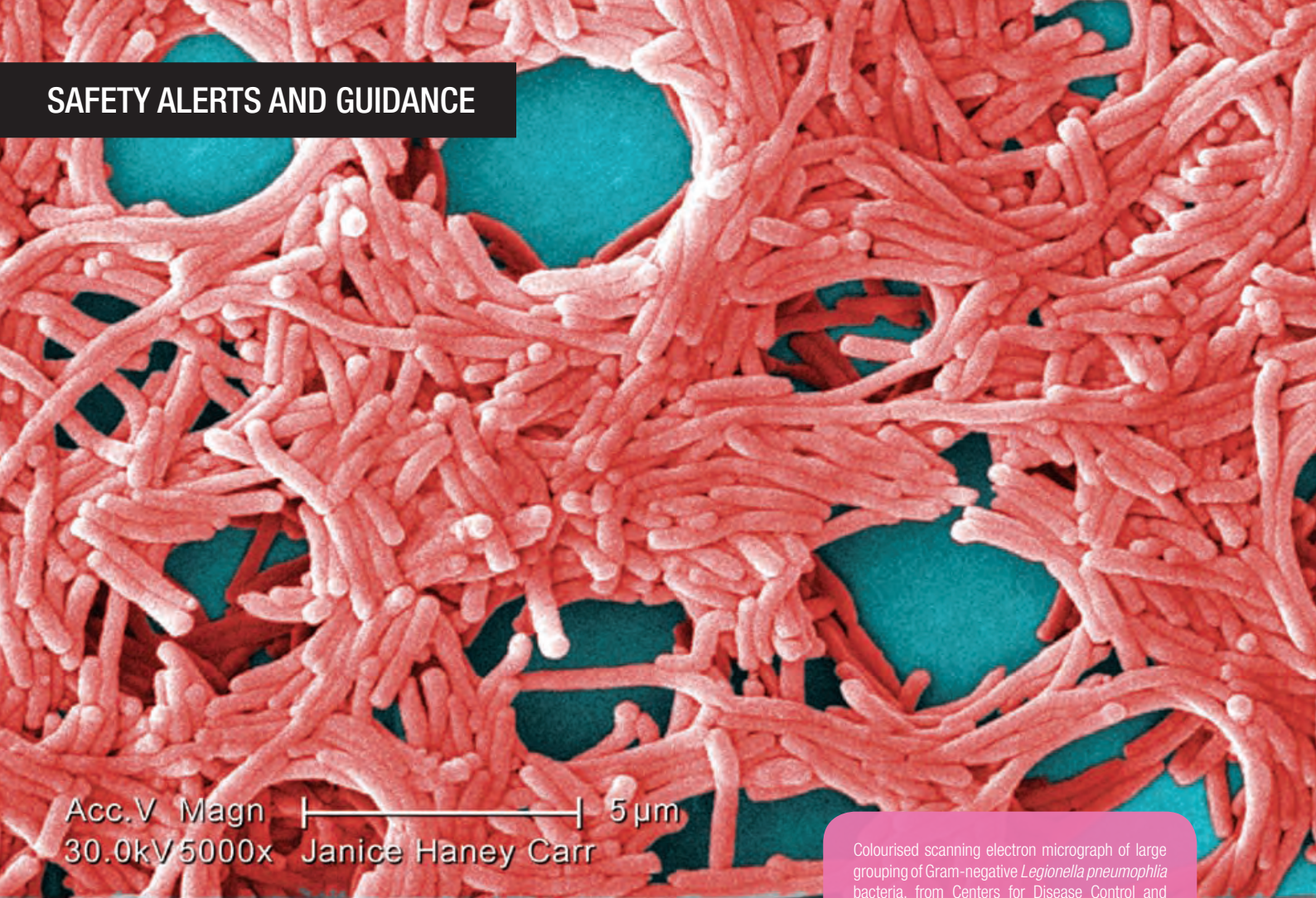
DESIGN CALCULATIONS

Pressure vessels

- Design pressure
- Corrosion allowance
- Plate thicknesses and compensating plate details
- Manufacturer’s data report
- Hydrostatic test report
- Drawings required to:
 - show plate thicknesses and compensating plate details
 - show design pressure
 - be minimum A3 size and legible

Bridge and gantry cranes

- Design loads for bridge beam and runway beams
- Derivation of design loads
- Spans of bridge beam and runway beams
- Design loads for runway beams must ONLY be taken from the bridge beam calculations
- Design of runway corbels
- Design of all connections, including bridge beam to bogies
- Independent review statement for bridge beam and bogies
- Independent review statement for runway beams and supporting structure
- Drawings required:
 - for bridge beam, bogies, runway beams, corbels and connections
 - to be minimum A3 size and legible



Acc.V Magn |-----| 5µm
30.0kV 5000x Janice Haney Carr

Colourised scanning electron micrograph of large grouping of Gram-negative *Legionella pneumophila* bacteria, from Centers for Disease Control and Prevention's Public Health Image library at phil.cdc.gov/phil

LEGIONNAIRES' DISEASE

Legionnaires' disease, or Legionellosis, is an infectious disease caused by bacteria belonging to the genus *Legionella*.

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Since its discovery in 1976, following an outbreak of serious respiratory disease at a convention of the Pennsylvania Branch of the American Legion, over 40 species of *Legionella* bacteria have been identified, although only a handful are known to cause infections in humans. The two most common species associated with infections in Australia are *Legionella pneumophila* and *Legionella longbeachae*.

There have been over 620 diagnosed cases of Legionnaires' disease in Western Australia since 1999. Of these, almost 87 per cent were caused by *Legionella longbeachae*, a species commonly found in potting mix. Only nine per cent of diagnosed cases were caused by *Legionella pneumophila*, an organism found in cooling towers, air conditioners and other water systems — more likely to be an issue for mining operations than potting mix.

INFECTION CHARACTERISTICS

Legionnaires' disease is usually transmitted through the inhalation of contaminated aerosols and is a form of pneumonia caused by an acute bacterial infection of *Legionella*. According to the Western Australian Department of Health, the early symptoms of the disease are often "flu like", and can include fever, chills, muscle soreness, headaches, tiredness, reduced appetite and diarrhoea, along with a dry cough and breathlessness.

The incubation period for Legionnaires' disease is usually two to ten days. However, in most cases, it will be up to five to six days before symptoms appear. Acute infections can affect many bodily systems, leading to diarrhoea, vomiting, mental confusion and kidney failure. In severe cases, Legionnaires' disease can be fatal.

The infection rate is usually low in healthy individuals, but people with compromised immune systems are at an increased risk from the disease. The mortality rate for Legionnaires' disease is about five per cent.

Infection from person to person, or from animals to humans, does not occur.

SOILS AND COMPOSTS

The most common strain of *Legionella* in Western Australia, *Legionella longbeachae*, can be found in potting mix, garden soils, and mulches or composts. Infection results from the inhalation of airborne soil particles carrying the bacteria.

Cases of infection from *Legionella longbeachae* are usually isolated and single events, although many people can be affected in any outbreak. The infection can usually be treated with a course of antibiotics.

WATER SYSTEMS

Legionella bacteria are natural inhabitants of fresh water systems such as ponds, streams, lakes, rivers, soil, mud and underground water. While low levels of bacteria are normal, *Legionella* can thrive in warm, moist conditions.

In general, the sources of *Legionella* bacteria in recorded outbreaks of Legionnaires' disease have been traced to either large air conditioning plants or hot water distribution systems that have been incorrectly commissioned or poorly maintained. Organisms can enter fixtures either through the water supply or from aerosols produced by other (nearby) affected fixtures.

In Australia, major outbreaks have been traced to cooling towers and to evaporative condensers associated with refrigeration systems. For example, there was a major outbreak at the Melbourne Aquarium in April 2000, with 101 people being infected and four reported deaths. This and other outbreaks were caused by *Legionella pneumophila*.

Any source with the potential to create water aerosols has the potential to transmit the disease when the water is contaminated with *Legionella*.

Although best known from infections of cooling towers, air-conditioning units and garden soils, other places where *Legionella* bacteria are known to accumulate include:

- evaporative condensers;
- hot and cold water systems;
- humidifiers or foggers and water misting systems;
- coolant in industrial milling machines;
- high pressure cooling and cleansing processes; and
- potable water aerosols, such as shower heads.

Standby or backup installations can also be sources of infection if they are used infrequently and not included in the general maintenance routine. Other potential sources of infection include:

- evaporative air conditioners;
- fire sprinklers;
- emergency deluge systems;
- air washers or wet scrubbers;
- water-based dust suppression systems;
- above ground storage tanks, which feed aerosol generating equipment; and
- any water system that generates an aerosol and the water temperature ranges between 20°C and 45°C .



Window or wall-unit refrigerated air conditioners have not been associated with Legionnaires' disease, as they use refrigerated air instead of relying on the evaporation of water for the cooling effect.

REDUCING THE RISK

A code of practice is now available from the Resources Safety website to provide general guidance on the prevention of risks in relation to Legionnaires' disease and improve understanding on the associated responsibilities of duty holders, who include people in control of workplaces with water systems, who have a general "duty of care" to maintain these systems.

Where required, further guidance for those with responsibilities for cooling towers and air-handling units can also be found in relevant Australian and Australian/New Zealand Standards.



LEGIONNAIRES' DISEASE IS A NOTIFIABLE DISEASE?

Given the serious nature of Legionnaires' disease, and its potential to impact on a large number of people, notification of the disease is required under Western Australian law. For mining operations, the District Inspector for the region in which the operation is located and the Department of Health must be notified as soon as possible after a case is confirmed.

In particular, the Mines Safety and Inspection Regulations 1995 require that if an employer receives advice that an employee has an occupational disease, the employer must, as soon as is practicable, notify the Mines Occupational Physician on a "Notification of occupational diseases" form, available from the Resources Safety website.

The *Health Act 1911* also classifies Legionnaires' disease as a notifiable disease, and covers the circumstances under which a medical practitioner, nurse or responsible pathologist should report an infectious disease, such as Legionnaires' disease.

GETTING THE JOB DONE – SAFELY

Supervision and safety go hand in hand. They are the “bread and butter” of an organisation’s approach to worker wellbeing at the “coal face”.

The supervisor assures the correct implementation of the company’s safety systems — that is, they are there to ensure that the work environment is safe and work is conducted by the rules. You may say that the supervisor “cannot think of everything, all of the time”, which is partly true of course. However, by applying the four basic provisions listed below we can go a long way to making our workplaces accident free.

- Ensure that workers are trained and competent for the job being done.
- Continuously re-evaluate worker performance and correct any unsafe acts.
- Demand 100% compliance with safety rules and procedures.
- Constantly monitor the workplace for unsafe conditions and correct them when they are observed.

You cannot “supervise” from a desk — an effective supervisor spends most of their time in the workplace engaged with the workforce conducting meaningful observations, consultation and interventions.

Moving into a supervisory or team leader role involves the application of a range of new skills. As shown by the four provisions above, much of the additional responsibility comes down to managing people, and to do this successfully requires a comprehensive range of workplace communication skills.

To assist in the transition of operators to supervisory or team leader roles, the Commonwealth Department of Education, Employment and Workplace Relations has released a free interactive CD-ROM for the resources and infrastructure industries. The resource, *Getting the Job Done*, aims to develop a broad range of language, literacy and numeracy skills, including their application to teamwork, negotiation, consultation, documentation and reporting. It has been designed to assist the team leader to:

- plan and coordinate their work;
- collect, summarise and pass on accurate information to work personnel (e.g. team, line manager);
- prepare and lead meetings (e.g. toolbox meetings);
- write brief reports (e.g. incidents, investigations);
- complete workplace documentation (e.g. meeting notes or minutes, diary entries);
- encourage team participation and feedback in meetings and training;
- read and respond to emails;
- prepare and make presentations;
- clarify information;

- use language effectively to resolve workplace conflict and issues;
- prepare and run informal training sessions; and
- communicate appropriately with a diverse workforce.

The CD-ROM is based around the work tasks of a team leader, as recorded in a daily diary. Each task is presented as a module, with 11 modules in total. Each module comprises:

- an introduction;
- photos and voiceover to set the scene;
- topics and interactive work-related activities to complete;
- key points; and
- work-based activities to practise the skills presented in some modules.

The CD-ROM is designed to be used as a support resource by trainers, mentors and WELL teachers (workplace English language and literacy) to develop the broad range of workplace communication skills required by employees who:

- have recently moved into a supervisory or team leader role;
- have been targeted as potential team leaders; or
- are interested in taking on a supervisory or team leader role.

However, it can also be used:

- to supplement a supervisory training program; and
- as an individual self-paced instruction program, particularly for employees in remote areas.

Being interactive, it allows users to:

- work at their own pace;
- select topics and activities that are relevant to their communication skill needs; and
- repeat activities until they feel confident.

This resource is extremely well designed, and is user friendly for even the most computer-phobic person. The learning flows sensibly so that messages stick.

The learning outcomes are incorporated into nationally recognised training packages. It is possible to complete the work-based activities on the CD-ROM and use them as evidence towards obtaining qualifications.

Easy to use, entirely practical, nationally recognised and free (apart from postage) — what more could you want from a training resource that fits in your pocket?

To get your copy, contact the national office of SkillsDMC, the National Industry Skills Council for the Drilling, Mining, Quarrying and Civil Infrastructure sectors (02 9299 3014, skillsdmc@skillsdmc.com.au) or visit www.skillsdmc.com.au and look for information about WELL resources.

Getting the Job Done

a communications skills resource for team leaders



SOME HELPFUL HINTS WHEN USING THE CD-ROM

- As well as the Western Australian mines safety legislation, you may find the following Resources Safety publications to be useful aids when working through the CD-ROM:
 - code of practice on consultation at work;
 - code of practice on the prevention and management of violence, aggression and bullying at work; and
 - guideline on dealing with bullying at work.
- The CD-ROM uses Adobe Flash Player 9, which can be downloaded free from the Adobe website at www.adobe.com
- A printer would be handy.
- This resource may also help new safety and health representatives to gain more confidence in their ability to take on the role.



Australian Government

Department of Education, Employment
and Workplace Relations

skills **DMIC**
national industry skills council
DRILLING • MINING • QUARRYING • CIVIL INFRASTRUCTURE

“

MINERS' PROMISE HAS BEEN FORMED TO MINIMISE THESE PRESSURES AND MAKE LIFE JUST THAT LITTLE BIT EASIER FOR THE FAMILIES OF RESOURCES WORKERS.

PETER BROWNE

”

MINERS' PROMISE TO LEAVE A LASTING LEGACY

The loss of a loved one in a workplace accident is one of the most difficult experiences families can go through.

Resources Safety has an online publication that outlines what happens following a mining fatality, including information on how the safety regulator's investigation proceeds, and the role of the Police and Coroner. The booklet also lists a range of services available to families and individuals to help them cope.

Under existing legislation, the provision of counselling and financial assistance is outside Resources Safety's ambit. However, there are other commercial, private and government agencies that are in a position to deal with these matters, although not specifically for the resources industry — which is why the independent legacy scheme Miners' Promise was created.

Miners' Promise supports the families of resource industry employees permanently disabled or killed at work in Western Australia.

The scheme was created in recognition of Helen Fitzroy, a member of the Miners' Promise Management Committee and author of a book called *Just a Number*, which highlights her plight after her husband, Steve, was tragically killed in a Western Australian mining accident in 1991.

For the first seven years following her husband's death, Ms Fitzroy had to concentrate on giving their three children a "normal" life while also following through with the legal repercussions of her husband's

death. This proved to be an incredibly difficult task with no support structure in place.

Miners' Promise Chairman Ian Fletcher said that the scheme has been created to assist families and to ensure that no dependant is left in a circumstance of need or poverty due to the death or permanent disability of the family's primary income earner.

"Although the resources industry is such an important part of our country's economy, there is no existing support service for families of workers who are killed or who suffer permanent disability while employed within the resources industry in Western Australia," Ian said.

Helen Fitzroy said that the creation of the Miners' Promise has been a long time coming and will assist families in dealing with the trauma of a fatality — whether it be work-related or otherwise.

"The idea that families will no longer have to bear the burden that my family and many other families have had to endure is a huge satisfaction and relief to me personally," Helen said.

The Miners' Promise is built on the ethos and vision of "mining people looking after mining people" and each joining member commits to ensuring that support and assistance is available to other resource workers and their families.

Officially commencing on 1 July 2010, Miners' Promise delivers legal and financial support, education development and property services to families in need, following the death or permanent disability of their loved one.



Miners' Promise Chairman Ian Fletcher, Committee Member Helen Fitzroy, Mining Club President Jennifer Abols and Miners' Promise Executive Officer and Secretary Peter Browne at the launch of Miner's Promise earlier this year.

BP

Miners' Promise has also built relationships with highly qualified service providers to assist families with other financial or legal matters, such as wills. Miners' Promise Secretary Peter Browne said it was estimated almost 60 per cent of the population does not have a will.

"We would like to encourage our members to draft one," Peter said. "A will ensures that a person's last wishes are carried out and guarantees that their dependants are not left without a safety net, especially during the grieving or recovery period."

Miners' Promise is available to all employees of participating employers who have applied to participate in the Scheme and have been approved by the Miners' Promise Management Committee.

"Losing a loved one is a deeply traumatic experience that requires time and space to mourn without having to deal with legal repercussions, financial concerns and additional stresses," Peter added.

"Miners' Promise has been formed to minimise these pressures and make life just that little bit easier for the families of resource workers."

To check your employer's status or to become a participating employee, contact Miners' Promise Secretary, Peter Browne (08 9228 8558, pbrowne@minerspromise.org.au) or visit the Miners' Promise website at www.minerspromise.org.au for more information.

On a sad note, one of the inaugural board members of the Miner's Promise was John Jones, who died on 19 June 2010 in the Sundance Resources plane crash in Africa.

As well as being a board member, John was also treasurer and played an integral role in making the Miners' Promise a reality. Not only did he provide invaluable knowledge about what families in the resource industry need, but he also played an instrumental role in designing and developing the model of the organisation. John will be sadly missed.

GOING UNDERGROUND IN THE CITY

Western Australian mine workers understand the importance of safety in the industry, particularly for underground mining operations. The Central Institute of Technology (formerly Central TAFE) now offers training with a unique “laboratory” to ensure its students are well aware of those responsibilities before they even set foot in an underground mine.

The CUT Mine (short for Central underground training) is under the college’s Aberdeen Street campus in a former service tunnel that has been converted, with industry support, into a simulated underground mine.

Centre for Mining Lecturer Rod Ebrall said that the simulated mine gave students a good idea of what underground work is like, and what is expected of them.

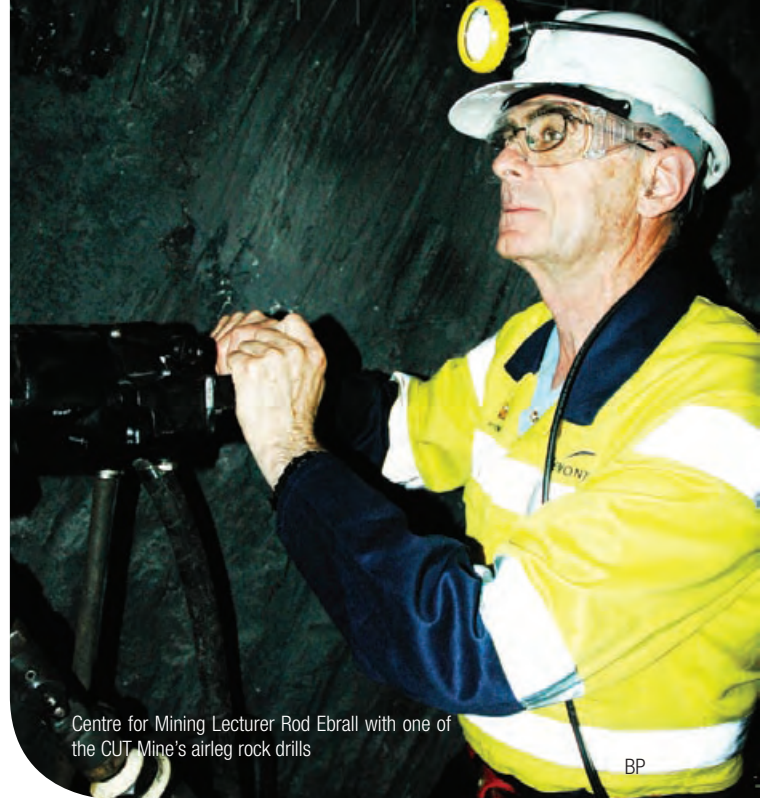
Mr Ebrall said that it was important to ensure students were aware of the type of working environment they could be entering, and whether it was something they genuinely want to pursue.

“And having worked in mining all my life, I am well aware of the need for and importance of safety. The focus on safety awareness during the course reflects industry’s attitude,” he said.

“We want our students to be really thinking about safety. In the classroom, students are used to seeing presentations in two-dimensions. This facility offers them a perspective much closer to the real thing.

“Safety is a key element of the course. It is vital that students demonstrate competency in safety awareness. If you haven’t got that then we won’t let you go out there (into the industry).”

One of the scenarios puts students “at risk” from a rock fall if they wander under a section of unsupported ground — those that do are “fired” on the spot.



Centre for Mining Lecturer Rod Ebrall with one of the CUT Mine’s airleg rock drills

BP

“It teaches students to be constantly aware of their surroundings and take notice of more than just what is immediately in front of them,” Mr Ebrall said.

“This kind of scenario helps them prepare for the environment they will end up working in. They also quickly learn that you should not work under unsupported ground.”

The mine was opened in November last year and is the first of its kind in Western Australia. Some of the visual effects of the mine were created by a design company that usually specialises in film sets. They include creating the structure of simulated orebodies for geological mapping.

Mining and service companies supported the project and provided vital input into its design.

“A number of companies donated their ideas, equipment and time to help establish this mine,” Mr Ebrall said. “For example, one company provided the mine with its own simulated refuge chamber. It looks like a refuge chamber that you would find in an underground mine. We bring the students in, run through the procedures and give them an experience similar to what it would be like in real life.”

It is not just the visual elements that replicate the underground environment. There is also a soundtrack that gets played throughout the mine, although it certainly won’t be appearing on any of the music charts. The sounds of jumbos, trucks and other machinery saturate the darkness.

“We can turn it up pretty loud, so students get a good idea of the sorts of sounds they will experience when working underground,” Mr Ebrall said.

It all adds to the experience of going underground in the city.



OPERATING PROCEDURE

1. ...
2. ...
3. EN ...
4. ...

CO SCRUBBER
MOISTURE
REMOVAL TRAY
8
CARBON
MONOXIDE
CHEMICAL TRAY
7

MINE SITE SAFETY THE REAL WINNER

It may sound like a cliché, but it is true — everyone is a winner at the Chamber of Mineral and Energy's mine emergency response competitions.

But it is not just the competitors that are the winners from the 2010 Surface Mine Emergency Response Competition. Every worker employed at mine sites featured in the competition can be assured that their rescue teams are better skilled and equipped to handle emergency situations.

Eastern Regional Council Mines Rescue Committee Chairman Brad Stearnes agreed that the mine sites were the real winners from the competition.

"The skills that the guys get from competing here are taken back to their sites," he said. "That is where it makes a difference."

While it may be true that everyone benefits from the competition, it is also important to acknowledge the eventual winners. For the third consecutive year it was the team from AngloGold Ashanti's Sunrise Dam that took out the title of Best Team.

"It is important everyone has learnt something from the experience that they can take back to their workplace," Team Captain Michael Nugus said. "We felt it was important to make sure that while there was a bit of experience at the top end, there was also a lot of new blood and fresh interest coming through — they are the people who will get the most out of it."

Mr Nugus said that the scenarios were the best he had seen in his three to four years of competing.

"There were a lot of hot starts where basically you walk into a scenario and are asked to fix it," he said. "Every scenario reflected something you might be likely to be involved in — they (the organisers) deserve a lot of credit. They were very tough."

Mines and Petroleum Minister Norman Moore was guest of honour at the awards night and said recent incidents at mine sites put the importance of such competitions into the spotlight.

"Along with the underground competition held in November, this event really does help increase the focus on safety in the mining sector," he said.

The Chamber's Eastern Regional Council Chairman Russell Cole said that the rescue competition was vital.

"This competition is not just about improving the capability of emergency response teams but also demonstrating the mining industry's desire to improve its safety culture," Mr Cole said.

Rescue teams from across Western Australia, including the Goldfields and Pilbara, and one team from New South Wales took part in the event.



TYC Brad Stearnes

“ IT MAY SOUND LIKE A CLICHÉ, BUT IT IS TRUE — EVERYONE IS A WINNER AT THE CHAMBER OF MINERAL AND ENERGY'S MINE EMERGENCY RESPONSE COMPETITIONS.

BRAD STEARNES

”

The teams competed in realistic scenarios to evaluate their knowledge and skills in fire fighting, first aid, vehicle extrication, hazardous chemicals, rope rescue, confined space rescue, team skills and theory.

The competition was held at the Australian Prospectors and Miners' Hall of Fame in Kalgoorlie-Boulder.

Competition Chief Adjudicator Mark Pannewig said that the competition was a great success.

"Our focus is always continuous improvement and trying to involve as much realism as we can," he said. "There was a good spread of teams winning the various scenarios."



COMPETITION TEAMS

AngloGold Ashanti Sunrise Dam

Avoca Resources

Barrick Cowal Gold

Barrick Kanowna Mines Rescue

Barrick Yilgarn One

Barrick Yilgarn Two

Macmahon Orebody 18

Goldfields Australia St Ives Gold Mine

Kalgoorlie Consolidate Gold Mines (KCGM)

Murrin Tripods

Newcrest Telfer Gold Mine

Nickel West Kalgoorlie Nickel Smelter and Concentrator (KNSC)

St Barbara Southern Cross Operations

HONOUR BOARD

1st Best Team	AngloGold Ashanti Sunrise Dam	Team Skills	KCGM
2nd Best Team	Barrick Yilgarn Two	Team Safety	AngloGold Ashanti Sunrise Dam
3rd Best Team	Barrick Yilgarn One	Theory	Barrick Yilgarn One
Fire Fighting	KCGM	Individual Theory	Miriam Rehder (Barrick Yilgarn Two)
First Aid	AngloGold Ashanti Sunrise Dam	Incident Management Scenario	Todd Smoker (Barrick Yilgarn Two)
Vehicle Extrication	Barrick Yilgarn One	Best Captain	Michael Nugus (AngloGold Ashanti Sunrise Dam)
HAZCHEM	Barrick Yilgarn One	Best New Captain	Brad Fletcher (KNSC)
Rope Rescue	AngloGold Ashanti Sunrise Dam	Best New Team	Newcrest Telfer Gold Mine
Overall First Aid	Barrick Yilgarn Two	Best Scenario	Incident Management Scenario
Overall Breathing Apparatus Skills	KCGM		
Confined Space Rescue	KNSC		



REALISM THE KEY TO CREATING A GOOD SCENARIO

VEHICLE EXTRICATION

A car with three people in it has smashed into a semi-trailer. The driver of the car is stuck in the front, while a passenger lies injured on the back seat.

Another passenger has been thrown from the car and underneath the semi-trailer. Parts of a pig carcass represent the victim, or what is left of him, while a distraught driver wanders across the road in a dazed state of shock.

It is a confronting scene faced by rescue teams in the vehicle extrication scenario as they attempt to free the surviving "victims" from the wreckage. For one man it is all a little too close to home.

In the briefing session, the man admits he froze after finding the remains of the pig strewn along the road. A former truck driver, he said that he has witnessed the confronting aftermath of car crashes in real life and the unsettling nature of the scenario brought back some disturbing memories.

The reaction is a reminder of both the distressing reality of a car crash and the realism of the scenario faced by rescue teams in this year's competition.

Competition Chief Adjudicator Mark Pannewig said that it was important to make the scenarios as real as possible.

"We try and take teams out of their comfort zone, put them under pressure and hope they continue to perform in those conditions," he said.

"In emergency response there are only two ways that people are really going to gain experience. One is responding to a real-life event, and you don't want to be practising in those circumstances, or we conduct these events using staged situations that are as real as possible."

Realism is a strength of this competition, and an area that the event organisers pride themselves on.

"The realism is one of the most important things," Eastern Regional Council Mines Rescue Committee Chairman Brad Stearnes said. "It is about putting people into these lifelike situations and seeing how they deal with them."

"There is a lot of effort put in by the organisers to make sure the scenarios are as real as possible."

CONFINED SPACES

The cold morning chill has well and truly set in as the sun offers feeble resistance to the easterly sweeping through the Mining Hall of Fame.

Despite the collective chill of the spectators, the team from Barrick Cowal are not cold. If anything they are sweating. This may have



something to do with the amount of personal protective equipment needed for the confined spaces scenario, or it may be due to the apprehension as they wait tentatively to begin their second scenario for the day. Chances are it's a combination of both.

A starter's pistol signifies an explosion and, before the team has time to react, a man comes out of seemingly nowhere. His gloves are on fire as he rushes towards the team, screaming in mock pain.

If the team is taken aback then they don't show it. They quickly order the man onto the ground and smother the flames that have engulfed his gloved hands with fire blankets.

For teams that had competed in the corresponding scenario in previous competitions, this latest incarnation is a whole new ball game.

"We wanted to break away from the mould," Confined Spaces Event Manager Jesse Francis said.



“Usually when teams get here they get a sheet of questions, they know the basic format of the event and they are in a real comfort zone. They get a big brief, they get the names of the missing persons, the number of people missing — all that sort of stuff. We tried to mix it up this year and really confront them.”

As the drama unfolded it became clear that while the visual elements were exciting for spectators, it was all about making teams think on their feet as the situation unfolded.

“In a lot of real-life situations they are not going to get there and have a briefing waiting for them,” Mr Francis said. “They’re going to get there and everything is going to be pear-shaped, and they have to basically adapt to the situation, improvise and overcome the obstacles that they are faced with. That is what we are really trying to bring out in the teams this year.”

And that is what the organisers were seeing.

“The teams were initially confronted and that really threw them, but they are adapting very quickly and we see those improvisational skills that show they can negotiate any obstacles that are thrown their way,” Mr Francis said.

“If we do the same sort of thing next year, I am sure we would see an improvement.”

Once again the key to making the scenario work was the element of realism.

“I have been in emergency services for about six years and I have never arrived at an incident where there is an incident controller and I am prompted and get a brief,” Mr Francis said. “Usually the information you get, if any, is really bad, so you have to do some detective work. That is what we are really trying to do — to recreate a real life situation.”

FIRE FIGHTING

Flames punctuate the deep blue sky, foreshadowing the imminent dawn, as silhouettes cut through the darkness.

Three people are visible. One lies motionless on the ground, about 15 metres from a fire-engulfed transistor. Another is screaming hysterically and motioning towards her unconscious friend.

The third person waves down the emergency response team from Yilgarn One as it approaches the scene. He tells them that a man is dead.

It seems that there is a fourth person involved in this unfolding drama. However, all that is left of them is a rib cage, a pair of charred work boots and some ashen remains, not visible to the naked eye from a distance, particularly in the soupy darkness of pre-dawn.

Two members of the team roll out the hoses and start putting out the fire. Meanwhile the team captain deliberates on how to get to the unconscious victim and start first aid.

Just when the team seems to be getting a handle on the situation, two detectives from the Gold Detection Unit creep over a rise in their four-wheel-drive to descend on the crime scene.

It turns out that three thieves were stealing copper wiring from some electrical infrastructure when an unknowing electrical engineer powered up. As he flicked the switch there was an electrical explosion. One man is dead and another injured.

This means a whole new element comes into play for the emergency response teams. Not only do they have to contend with a fire that is blazing out of control and a seriously injured victim, but they are also in the middle of a crime scene.

One of the detectives asks the team leader for details about the situation as they try and make sense of what has happened. The presence of the detectives adds an extra element of realism to the situation and is the kind of curve ball the event organisers love throwing at competitors.

Chamber of Minerals and Energy Goldfields Regional Liaison Officer Matthew Payne said that organisers plan the events to be as real as possible.

“The event managers plan their scenarios for a good four to five months out from the event,” he said. “At the end of every competition we wonder how next year’s scenarios could possibly be better but, to the credit of the event organisers, they always seem to manage it. I think the committee takes great pride in creating realistic scenarios.”



TYC KNSC



TYC Barrick Yilgarn One

INCIDENT MANAGEMENT EVENT

Several people are crowded into a small room. All are seated bar one, who is standing next to a whiteboard filled with neat, steady handwriting. There is a tense air in the windowless room that belies the innocuous setting.

It is the hypothetical situation unfolding outside the door that is creating the drama, and proving that not every scenario needs physical fires, explosions or car wrecks to create tension.

The theoretical unfolding of a serious incident at a mine site is enough to focus everyone's attention.

The following is a direct transcript of what emergency response coordinators faced in the incident management event.

It is the weekend, in the afternoon and there have been some construction activities occurring on site. The mines rescue team is on site and managing the construction activities as required including maintenance coverage in confined space work.

There was a call about 20 minutes ago from the first aid room to say that Terry Hard has slipped and fallen down some stairs in the mill area and needs assistance. You have sent some of the rescue team to provide assistance to Terry. One of the other rescue members is in the rescue shed doing a stock take and gear checks, other members are doing patrols of the mill.

There are both company employees, permanent and additional contractors around site in different locations. There are some senior processing personnel on site that are conducting checks on the mill and are stationed in the mill control room.

The shutdown on the mill is scheduled to finish at approximately 0900 on Monday and will involve the crusher starting up Monday morning at 0400.

You have finished speaking to the mill shift supervisor John Waugh in regard to the shutdown when he starts yelling stop, stop, stop over the phone. He yells out stop again and hangs up the phone.

Five minutes later you hear a call over the PA system, emergency, emergency. Sandy Pear, a mines rescue member, has picked up the phone and gathered the following information. A road train carrying a chemical has tipped over and solution is coming from the top of the trailer. There appears to be injured people but injuries are not known.

Sandy said the person on the PA told her they were concerned about the chemical and needed to get out of the area.

Sandy is in the emergency response shed and asked if you want the evacuation alarm activated. She also has said the rescue team captain Tony Child is now in the rescue shed and contactable on UHF channel seven.

You are the emergency response coordinator/emergency controller for this site and have been given the above information. You are the person on call that weekend and are required to look after the emergency coordinator/responder role on site.

The response is now up to the emergency coordinator, as is the gathering of additional information by asking the right questions and people. It turns out that at least four people are dead and up to ten have been injured. No wonder there is tension in that small room.

SURFACE MINE EMERGENCY RESPONSE COMPETITION



TYC Newscrest Telfer Gold Mine

REMOTE CHALLENGES FOR NEWCREST TELFER

When the nearest town is 450 km, or about a five-hour drive away, the importance of mine site safety is apparent. So too is the value of a skilled emergency response team. That is why the team from Newcrest Telfer takes the Surface Mines Emergency Response Competition so seriously. Apart from Marble Bar, a small township about 180 km away, the closest town to the Telfer mine site is Port Hedland.

Telfer Emergency Response Team Manager Trent Breen said that working on a remote site brought unique challenges.

“We have to make sure our group is large enough to have our own back up team,” he said. “Generally there would be six people on a team, so we need at least 12 people that are trained on the site.”

Another important factor was ensuring cooperation between different mine sites in the region in the event of an emergency situation.

“We have a memorandum of understanding with Nifty and Woodie Woodie,” Mr Breen said.

These two mine sites are Telfer’s closest neighbours, with Nifty about 60 km and Woodie Woodie about 100 km west of Telfer.

Mr Breen said that the emergency response competitions were important for all mine sites in Western Australia.

“They bring everyone’s skill levels up, which is one of the main reasons people come to these events,” he said. “The competition allows them to expand their experience and also pass it on to other team members.”

It is this passing on of knowledge that is critical for remote mine sites, particularly when the nearest hospital is hours away.

Mr Breen said that he was exceptionally proud of how the team performed this year, particularly considering they are relative newcomers to the competition.

“I think we did really well,” he said. “The real gauge is how much the guys took out of it on an individual level. I think they have learnt a lot.”

The judges were certainly impressed, with the Telfer team taking out the Best New Team award for 2010.

“I am really proud of the team,” Mr Breen said. “They did really well and worked well together.”



TYC Macmahon Orebody 18

IT'S TOUGH BEING THE NEW GUYS

The 2010 Surface Mines Emergency Response Competition was one of the toughest on record. Imagine then being a team competing in the event for the first time.

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This is exactly the position the emergency response team from Macmahon Orebody 18 found themselves in — and it was a steep learning curve.

Team Emergency Response Coordinator Colin Cockburn said that the team learnt a lot from the experience.

“The guys performed extremely well,” he said. “In the first couple of scenarios we made a number of mistakes, as you do when you are a new team, but we continued to grow and get better and better. In the end, the last few scenarios were absolutely fantastic.”

Mr Cockburn added that he was extremely proud of his team and what they achieved, especially during the confined spaces scenario.

“The guy running out with his hands on fire got the team pumped immediately,” he said. “They got straight to him and treated him quickly and efficiently. It was absolutely fantastic. It was a really good scenario for us.”

The group work for Macmahon Holdings at BHP Billiton Iron Ore’s Orebody 18 project, about 34 km east of Newman.

The team included two reserves and Mr Cockburn said that even though the reserves didn’t compete, they were able to learn a lot.

“They both said they had learnt so much, perhaps even more than the guys that were actually participating in the competition,” Mr Cockburn said. “It was fantastic for the whole team.”

Mr Cockburn said the experience also held them in good stead for an upcoming company competition.

“The guys gain some great experience (at the surface competition),” he said. “I will be taking a few of these guys over (for the company competition) and they will be a lot better because they have been here.”

Mr Cockburn said that events like the Surface Mines Emergency Response Competition were vital in improving the skills of emergency response teams.

“I think it is imperative to have competitions like this to give teams the experience and skills to be able to respond to emergencies if they actually happen,” he said. “It was a great learning curve.”



TYC
Barrick Cowal Gold



NO DISTANCE TOO FAR TO HONE SAFETY SKILLS

The chance to return to Western Australia to compete in the 2010 Surface Mines Emergency Response Competition was an opportunity grasped with both hands by the team from Barrick Cowal Gold Mine.

The team hails from central New South Wales and was one of five teams representing Barrick at the competition (including Kalgoorlie Consolidated Gold Mine — a joint venture between Barrick and Newmont).

Barrick Cowal Team Captain Richard Tait said that the event offered challenges they could not get in Eastern States competitions.

“There is only one other competition that we compete in and that is held at LaTrobe in Victoria,” he said. “It is a coal mine competition and features completely different types of machinery. This competition is much more suited to our type of mining.”

Mr Tait said the nature of coal mining meant such competitions were less relevant to their own operations.

“They represent situations we will probably never have to face, whereas here (at the surface competition) all the scenarios are based on real situations that relate to us.”

Mr Tait said that this was the second consecutive year Barrick Cowal had entered a team and that there were many new members.

“This year we only had two people here who competed in last year’s team,” he said. “It is great for the new guys to come over here and experience it. They all found it really challenging.”

Mr Tait said that the scenarios tested the team’s endurance.

“There were three or four events that were really physically challenging,” he said. “The Hazmat exercise was our last exercise and we had already had vehicle extrication and team skills, which are all physically challenging. To do that one last — the guys were just struggling.”

Mr Tait added that the scenarios were the closest you could get to real emergencies.

“It is very difficult to get that simulation so close to reality,” he said. “At these sorts of events they do it so well, because they have been doing it for so long. They know how to simulate reality.”

Mr Tait said that company support was crucial in allowing the New South Wales-based team to compete.

“To have five out of the thirteen teams from Barrick is an indication of the company’s support and commitment towards the competition,” he said. “They support us 110 per cent.”

Q: TOUGHEST EVENT? A: THEORY!

It may not have the same visual impact as some of the other scenarios, but the theory section of the Surface Mines Emergency Response Competition can be one of the most formidable challenges faced by teams during the competition.

This year was no exception. The average scores in the theory section were the lowest of all the scenarios at 54 per cent. Eight of the thirteen teams scored below 60 per cent. In the end it was the team from Barrick Yilgarn One that took out this year's theory section with a respectable 70.4 per cent.

To prove just how tough the theory section can be, we have included 12 of questions that competitors faced — and these were the “easy” ones.

However, just a quick word of warning before attempting question six. Do not do a computer search for the word “priapism” if you are unaware of the definition, particularly if it happens to be on a work computer. Better to stick to an old-fashioned dictionary. It also makes the multiple choice answer of “A patient who is happy to see you” all the more amusing.

It is good to see the exam's writers have a sense of humour.



TYC KCGM

QUESTIONS

1. Define the term Pyrolytic Distillation.
2. Hard hats compliant with AS/NZ 1801 are commonly used on mine sites. Are they suitable for fire fighting? Why?
3. If the Safe Working Load (SWL) of a rope is 325 kg, what is the maximum breaking strain?
4. Before abseiling anywhere you should ...
 - a) Test your anchor point away from the edge, conduct a gate and harness check, check your route of travel and get final instructions from the incident controller.
 - b) Check to ensure there are no children in the area.
 - c) Keep your eyes closed as you go over the edge to prevent vertigo.
 - d) Test your anchor point away from the edge, conduct a gate and harness check and check your route of travel.
 - e) Test your mobile phone for coverage, if none switch to a different provider
5. Which body systems are affected by shock?
6. In an emergency situation a priapism can indicate what?
 - a) Onset of shock.
 - b) Possible spinal cord damage.
 - c) Internal bleeding.
 - d) Heart failure.
 - e) A patient who is happy to see you.
7. Define the “safe oxygen range” in relation to confined space work.
8. Rounding to the nearest whole number, what is the composition of air?
9. What is the minimum chain size that should be used for extrication purposes?
10. Hybrid vehicles introduce a new range of exposures to emergency responders. One of these is high voltage cables. What colour are these cables?
11. What are the four main methods of decontamination?
12. Hazardous materials can be classified into several physical statuses. Name five.

1. The liberation of vapour from a substance through the application of heat.
2. No they are not. They are only heat rated to 50°C and do not provide adequate head and neck protection.
3. 2600 kg
4. (d) Test your anchor point away from the edge, conduct a gate and harness check and check your route of travel.
5. All of them.
6. (b) Possible spinal cord damage.
7. 19.5 – 23.5%
8. Oxygen – 21%, Nitrogen – 78%, Inert Gas – 1%
9. 10 mm
10. Orange.
11. Dilution, absorption, chemical degradation, and isolation and disposal.
12. Liquids, gases, vapours, fumes, solids, mists, dusts.

ANSWERS

SECURING THE FUTURE OF A GOLDFIELDS' ICON

The venue for this year's competition was the Australian Prospectors and Miners' Hall of Fame in Kalgoorlie. The location has become inextricably linked with the Surface Mine Emergency Response Competition in recent years.

At the start of the year, however, it was revealed that the Hall of Fame was suffering severe financial hardship and its future hung in the balance. It was only when the State Government committed to an emergency funding package that the immediate future of the facility was secured.

In February this year, Mines and Petroleum Minister Norman Moore pledged State Government assistance for the Hall of Fame.

"This facility is not just important to Kalgoorlie, it is also important to Western Australia and Australia in showcasing the past, present and future of mining in this country," he said. "This funding will allow the organisation's board to develop a plan for the future and ensure the long term sustainability of the Hall of Fame."

Hall of Fame Chief Executive Officer Andrew Govey said that the Hall of Fame would most likely have gone into receivership had it not received the State Government's support.

"The State Government's interest in the Hall of Fame served as a catalyst for industry interest as well, so we were able to go out and raise a further \$290,000 to match the Government's funding," Mr Govey said.

"It means we have time to continue to work on our business plan and develop the site to where it can become economically viable in the future. We could not do that without the State Government's support."

Chamber of Minerals and Energy Goldfields Regional Liaison Officer Matthew Payne said that it was good news for the Goldfield's icon and the emergency response event.

Mr Payne said that the open day, which coincided with the last day of competition, attracted about 2,000 people to the venue.

"The open day has become an important community event in its own right and allows the public to see the teams in action," he said.

"The surface competition has been held at the Hall of Fame for the last seven or eight years, apart from the Varischetti centenary commemoration in Coolgardie in 2007. If the competition was held at a mine site then the public wouldn't have that opportunity.

"With the State Government's assistance package, hopefully now we can make a plan and ensure the Hall of Fame is sustainable over the long term."



TYC Kevin Broadbent, Jon Field, Peter O'Loughlin, James Donnelly with Colin Steinhauser (second from left)



TYC Barrick Yilgarn Two

RECOGNISING MINE RESCUE EXCELLENCE

HARRY STEINHAUSER AWARD

The Harry Steinhauser Award was developed in 2001 to recognise individuals and groups who have made a significant contribution to mine rescue in Western Australia through:

- the development and improvement of standards;
- outstanding achievements; or
- the promotion of mine rescue.

The award was named in memory of Harry Steinhauser, who sadly past away in 2001, for his tireless efforts in his mining community. The inaugural award was presented to three ex-WMC employees — Harry Steinhauser, John Abetamatteo and Terry Potts — who developed the standards for mine rescue at Kambalda as we know it today. Details of the award and past awardees can be found in the History of Mine Rescue, available from Mathew Payne, the Chamber of Minerals and Energy's Goldfields Regional Liaison Officer (08 9021 2155, m.payne@cmewa.com).

The 2010 Harry Steinhauser Award at the surface competition was presented to Jon Field by Harry's son, Colin.

JON'S STORY

Born in Adelaide, Jon became an interstate truck driver for some time before travelling around Australia in 1978. In 1979, he settled in Kambalda, driving trucks at various surface operations until he started work on the underground service crew with WMC in 1982.

Jon joined the Kambalda Mine Rescue team in 1984, training under John Abetamatteo and Harry Steinhauser.

Jon was an active volunteer with the Kambalda Mine Rescue team for the next eight years while progressing through the underground ranks to jumbo operator in 1990. He accepted the position of emergency services coordinator in 1992 and took over the training of the

Kambalda Mine Rescue Team from Mick Slobe. He left this position in 1995 and became an instructor for Fallright.

Jon commenced as the underground foreman at the Yilgarn Star Mine in 1996 and was very active in training the mine rescue teams for Yilgarn Star, Sons of Gwalia and St Barbara Mine, and continued to assist with training of the St Barbara's team when available until he left in 2009. He has now taken up a mine foreman role with Goldfields Australia at Agnew.

Throughout Jon's many years involved in mines rescue, he has attended numerous underground fires and several underground fatalities. He has attended the recovery of injured people from both underground and surface, cleaned up hazardous chemical spills, and been called to assist at traffic accidents and missing persons searches of old mine shafts.

Jon has also been involved in a number of official capacities with mine rescue competitions, including membership of the Eastern Regional Mine Rescue Committee between 1992 and 1996. He has set up and run many scenarios, and been instrumental in helping train teams for many years.

Some of Jon's highlights are listed below:

- trained and was part of the winning WMC team at the 1992 underground competition held at the Fisher Decline;
- trained and was part of the winning WMC team at the 1993 surface competition held at KCGM;
- trained and was part of the winning WMC team at the 1994 Victorian Mine Rescue Competition; and
- assisted with the training and was team manager for the winning Yilgarn Star team at the 2000 Victorian competition.

The 2010 Harry Steinhauser Award recognises Jon Field for nearly quarter of a century of continuous involvement with mine rescue, most of which was as a volunteer.

SURFACE MINE EMERGENCY RESPONSE COMPETITION



Barrick Yilgarn One



KNSC



42

Barrick Cowal Gold



KNSC



Sunrise Dam



Avoca Resources



Avoca Resources



Barriok Kanowna



St Barbara Southern Cross Operations



All photos TYC

SURFACE MINE EMERGENCY RESPONSE COMPETITION



St Ives



Sunrise Dam



St Ives



KCCM



Murrin Murrin



KCGM



Avoca Resources



KCGM

All photos TYC



Sunrise Dam

ANTON'S STORY

Anton Guinea is a workplace accident survivor. He is now a safety and business coach, a best-selling author and an international motivational safety speaker with The Guinea Group (www.antonguinea.com.au).

PART 1 – DON'T GET "BURNT" BY BEING UNSAFE AT WORK

At the age of 21, I experienced a life-changing event that left me lying in an intensive care ward, and then a burns unit, with electrical burns to my hands, neck, face and arms. For the next month, I had to have my skin forcibly removed. The physical pain was intensive, as was the emotional struggle to work through the recovery process and to return to work. All this occurred because I was unsafe at work, and I made the wrong safety choices.

The sad part about my accident was that it was totally avoidable. Another tradesperson and I were doing a very simple job, and it was a job that should have taken only a short amount of time to complete (and to complete safely). We were given the job just after smoko on a Tuesday morning, and from that point on, neither of our lives would be the same.

The job that we were tasked with involved mounting an electrical component in a switchboard on the site of an industrial chemical plant in Central Queensland. Following the isolation and permitting process, which we did correctly, we proceeded to set up the job, and work through how we could do it in the fastest possible way (not necessarily the safest). Then I took over the work and started measuring where the component would be mounted. The problem was that I used a steel ruler to measure in that switchboard that day.

On reflection, there are several things that amaze me about the actions that I took on that day. Firstly, I knew full well that to stick a steel ruler in a switchboard was an extremely unsafe thing to do. Secondly, I knew that if something went wrong, it was going to be disastrous. So, why would I do that? That is the million dollar question that everyone at work today should ask themselves at every moment that they are trying to choose whether to do something safely, or whether it is worth taking a short cut. If you choose the short cut, and something goes wrong, you will be left asking yourself, "Was it worth it?", and the answer is always a resounding "No!"

As I started measuring, the steel ruler got in behind the main switch (which was isolated) and touched the live bus bars in the switchboard. The resultant arc flash was enormous, and engulfed the top part of my body in flames with temperatures up to (potentially) 15,000°C. I was thrown backwards across the switch room, and temporarily blinded and deafened by the brightness and the intense noise of the blast. I had received second-degree burns and, at that stage, had no idea of what had just happened.

As I pushed myself up off the ground, the skin on one of my hands was torn off, and the pain that I started to feel was nothing short of intense. The pain from burns is one of the most intense pains that you can experience, and as I was transported to intensive care, not much could be done to reduce the physical and mental anguish that I was experiencing.

Over the next several months, I went through the journey of recovery, and returning to work and my old life. The challenge, though, was that I had changed — I had changed for the better, and I was going out into the world with a renewed belief around why it was important to work safely and to help others work safely.

PART 2 – WORKPLACE SAFETY IS ALL ABOUT THE CULTURE

So what have I learnt since the accident? Well, I have worked on both the safety systems and safety mindset of many organisations around Australia and the world, and the one thing that I have focused on has been “What is it that makes one organisation safer than another?”

What is it about employees that are genuinely focused on their own and their workmates’ safety? What is it that they do or think that set them apart?

It is my observation that those organisations managing to consistently perform safely, and where their employees feel safe at work, work in a safe manner and are solid ambassadors for the safety process, have (simply) developed a superior safe work culture. Furthermore, and although the results of a safe work culture are reflected at an organisational level, those responsible for culture development are more often than not the employees (ably supported by quality leadership, and with the bottom-up and top-down approach working in conjunction with each other).

In essence, though, and remembering that safety culture (or workplace culture in general) is really about the common beliefs, values or shared feelings of the organisation, safety culture can be observed in the behaviours of employees. The three most common behaviours that I have observed in safe organisations are:

- ability and willingness on the part of employees to utilise safety systems;
- ability and willingness on the part of the management team to foster engagement in the safety process; and
- ability, at all levels of the organisation, to openly and freely discuss safety, including how a job, task or activity can be made safer.

In relation to the first behaviour, it makes sense that employees willing to utilise safety systems will be safer employees. Yes, but there is more to it than that. Employees in safe organisations have moved past using safety systems only because they “have to”. They have moved to a point where they actually see the value in the systems, and they use the systems because they “want to”. They know that the systems, if used correctly, will keep them and their workmates safe. This is a major mindset shift for some employees, but when made, is reflected in extremely safe behavioural patterns.

Furthermore, as employees become more engaged in the safety process within an organisation, it is incumbent on management teams to continue to foster this engagement, and develop it to the point where employees feel as though they have a “safety voice”. Employees know their jobs better than anyone else, and when employees are engaged, the site becomes a safer one. This is because there is an enormous amount of knowledge sharing when employees have a safety voice, and employees become willing to contribute and managers become willing to listen. The safety process becomes more transparent.

The final and perhaps most important behaviour demonstrated by safe organisations can be seen in the field, when everyone in the organisation is willing to discuss safety — not just in the office, but on the shop floor. Gone are the days when it was seen as “uncool” to discuss safety with your workmates. Sharing safety knowledge is now an essential element of staying safe on the job, and the sooner organisations are able to implement a “safety visit” or “safety observation” program, the sooner their safety (and overall) results will sky rocket.

In an organisation where these behaviours are the norm, the culture has moved from being very dependent on management authority, to one where employees are not only very independent, but they are interdependent, in that they are engaged in the same vision as the management team, which is to make the organisation a safer one.

WHAT’S ON BARRY’S BOOKSHELF?

Barry Healy is Resources Safety’s Training and Education Officer. Here he reviews Anton Guinea’s book, Let’s Talk About Safety: 19 Ways You Can Work Safely.

Want to see what advanced safety communication skills look like? Have a read of Anton Guinea’s book. Really advanced safety communication is simply “plain English”.

In *Let’s Talk About Safety: 19 Ways You Can Work Safely*, published in 2009, Anton draws upon his life experience as an electrician, his survival of a terrible workplace accident, and his current career speaking to workers around Australia about safety.

Every chapter consists of three or four pages and is couched as chat between Anton and an ordinary worker in

which Anton responds to typical statements like “Anton, it won’t happen to me ... Look I know how to do my job. I’ve been doing it this way for years”.

Other safety sore points covered include:

- “I just don’t have time to work safely.”
- “I never follow procedures because they are all wrong.”
- “They always put production before safety here...they say one thing but do another”

Every answer begins with “Mate, ...”. Maybe that is not sensitive to gender issues in the industry but it fits with straightening out the thinking of male workers and it certainly reflects the language on the ground.

At 82 pages it is the sort of book that can be slipped into a kit bag and read on a fly in-fly out trip or left in the crib room for people to browse. It is not the last word on safety, just a nicely weighted tool to use in building and maintaining a resilient safety culture.



ON THE ROAD WITH A SAFE TOUGHNESS

The sixth annual Mines Safety Roadshow will be presented in the Pilbara, Eastern Goldfields, South West and Perth in October 2010.

There is an update on what is happening with the safety regulator reform agenda, and an overview of industry's safety performance, including issues of particular concern to Resources Safety.

This year, Resources Safety is seeking industry input into a strategic program to understand how widely accepted "tough" behaviours and communication styles affect safety in the workplace. The main aim is to determine what Resources Safety can do to support positive cultural change in mining workplaces by addressing unsafe behaviour.

To ensure that as many people as possible are involved, consultation is being done through the roadshow program, using workshops run by Dr Dean Laplonge of Factive Communications. Dean is a leading researcher in gender and safety culture, and has a good understanding of the types of issues involved in mining workplaces, having worked with resource companies throughout the State. His delivery style is straightforward and encourages participation.

The workshops at regional venues will focus on gathering "evidence" about the nature and extent of risk-taking "tough" behaviour, and discussing what might be done about it at both personal and industry levels. The regional program culminates with a brainstorming session on the types of resources and training that could be developed for workplace use.

The findings from the regional venues will be collated and presented at the Perth event, giving participants an insight into what workers think about being tough and how toughness affects their safety performance. Dean will review the plans that regional participants have drawn up to help them address the issues, and also the types of supporting materials that could assist in the process.

The Perth program concludes with Ms Linda Morich, UnionsWA, and Mr David Todd, Chamber of Minerals and Energy of Western Australia, providing workplace and management perspectives on the topic, and discussing how we can work towards resilient safety cultures being the norm in the mining sector.

Information on the roadshow itinerary is available at www.dmp.wa.gov.au/events

HOW DO I GET INVOLVED?

Although there is no registration fee, pre-registration is required to reserve a place and early registration is recommended.

Registration must be completed online and is accessible through the roadshow entries at www.dmp.wa.gov.au/events or directly at www.starsevents.com.au/DMPRoadshow

The program runs from 8 am to 12 noon at all venues. Registrants will be provided with refreshments and a roadshow pack.

MARK YOUR DIARY

*thin
love
Men*

GHAM
DESIGN
CONTROL
OPERATION

ona
LOGISTICS
TRANSPORT

LANDER
technology

MINES SAFETY ROADSHOW

OCTOBER 2010

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
				1	2	3
4	5	6	7	8	9	10
11	12 <i>Newman</i>	13 <i>Tom Price</i>	14 <i>Karratha</i>	15	16	17
18	19 <i>Bunbury</i>	20	21	22 <i>Kalgoorlie</i>	23	24
25	26	27	28 <i>Perth</i>	29	30	31

Itinerary and register online at www.dmp.wa.gov.au/events

EXPLORATION SAFETY ROADSHOW

DECEMBER 2010

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
		1 <i>Kalgoorlie</i>	2	3 <i>Perth</i>	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Itinerary will be available shortly at www.dmp.wa.gov.au/events



Photos courtesy Kanowna Belle Gold Mine



Above: Harhan Hafeez and Alex Atkins at Kanowna Belle's paste fill plant.

Left: Richard Varden (left) and Alex Atkins (right) audit the paste fill plant with the assistance of Paste Coordinator, Colin Brown.

MINE HELPS ALEX TRIAL UNDERGROUND AUDITS

Auditing is an important safety tool for both the safety regulator and industry. Resources Safety's high impact function (HIF) audits examine the way in which certain functions with a high hazard potential are performed within an organisation.

The audit process looks at the function vertically, from inception to completion, down through the organisation. For example, the HIF audit for electrical tagging out systematically scrutinises this process from its roots in the policy and procedures of the organisation to the point where an operator physically uses it.

Earlier this year, Special Inspector of Mines Alex Atkins spent three days at Barrick's Kanowna Belle Gold Mine near Kalgoorlie. The aim was to do a site-based test run of two draft audits:

- underground geotechnical HIF audit (updated from 1997 edition); and
- underground mine fill audit, which is new and includes details about paste and hydraulic fills.

Alex was accompanied by the mine's Senior Geotechnical Engineer, Richard Varden, and Fill Engineer, Farhan Hafeez. The team approach provided an opportunity to not only trial the audits, from

the inspectorate's perspective, but also obtain industry feedback and suggestions on how they might be improved for practical application.

The geotechnical audit has been revised to reflect current underground practice, which has improved particularly in terms of ground control management plans, ground support standards and seismic monitoring in mines.

The fill audit is aimed specifically at capturing the important technical aspects of using paste or hydraulic fill in underground mines. The audit aims to ensure that important issues such as risk management, engineering design, systems of work, quality assurance and monitoring are performed effectively, and all aspects of the process are adequately resourced and controlled.

Kanowna Belle's underground and technical departments are thanked for facilitating the field trial and providing "real time" feedback to allow issues to be addressed during the visit. This trial is an excellent example of industry and Resources Safety working in a proactive, consultative way to ensure the best possible standards are in place. Respectful and open communication was a priority to obtain the best results for all concerned.

Audit guidelines and templates are available in the mining publications section of the Resources Safety website. Keep an eye out for these two additions, which will be available before the end of the year.

ARE YOU FLASHING?

A *MineSafe* reader has contacted Resources Safety with concerns about mine vehicles being driven in towns and on regional roads with their orange rotating beacons on — for no apparent reason other than the drivers have probably forgotten to turn them off.

.....

Unfortunately, this practice creates the perception of a hazard where none exists. Drivers of oncoming vehicles often pull over, waiting for an overwidth vehicle to pass, and it never arrives.

Apart from being unnecessary and inconvenient, this practice is illegal.

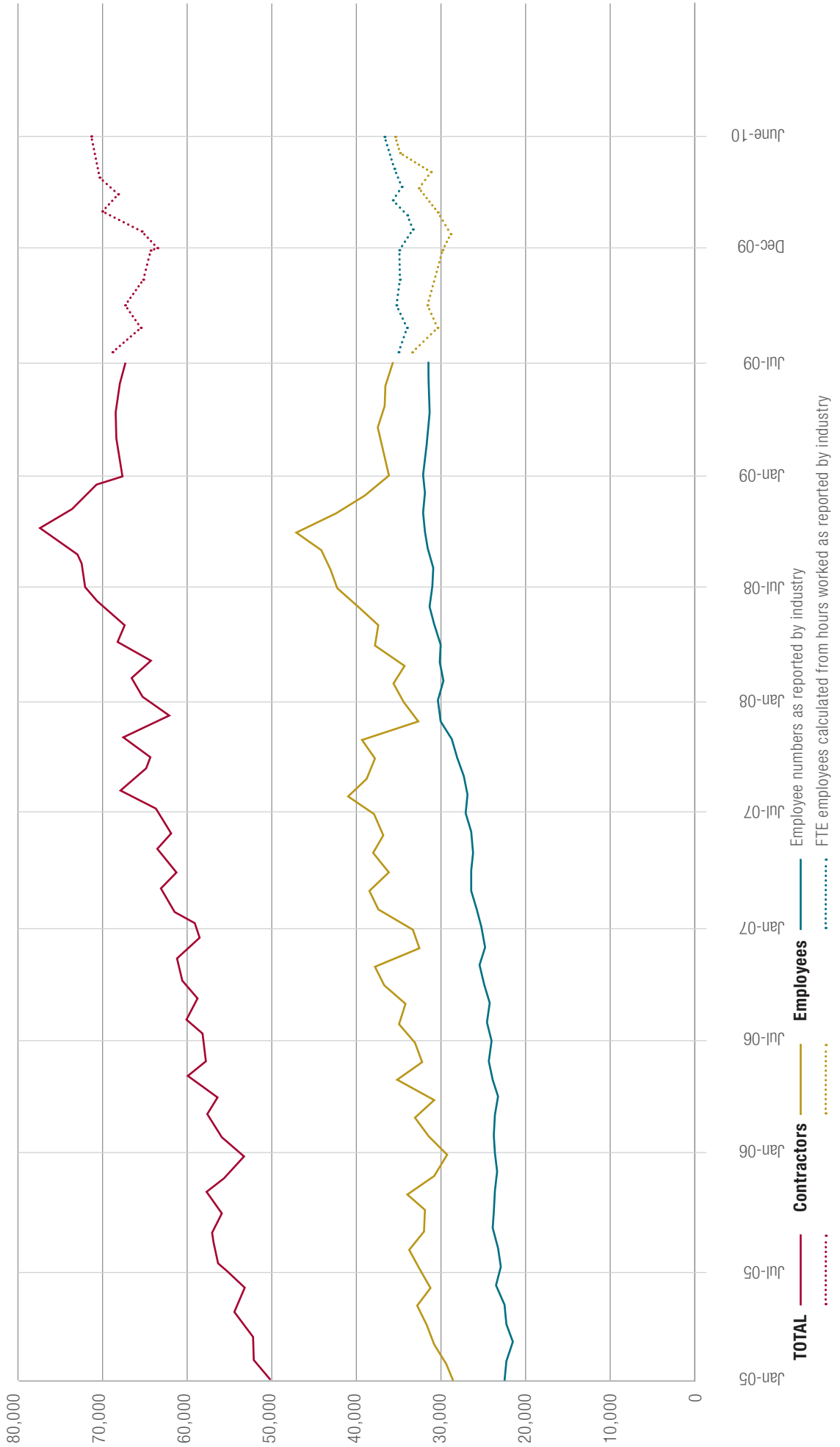
Mining vehicles equipped with rooftop warning lights are now allowed to drive on gazetted roads but it hasn't always been the case. Before mid-2006, such warning lights were required to be removed when mining vehicles fitted with them were driven on gazetted roads. There had been a proposal for the lights to be fitted with a cover to address this requirement, but it was rejected because of the increased risk to drivers, particular of larger vehicles, if they had to climb on the vehicle roof to cover the light.

In the interests of commonsense, an exemption was granted in July 2006 to mining vehicles that drive on roads with the rooftop warning lights fitted *but not in use*. So please remember, no flashing in public!

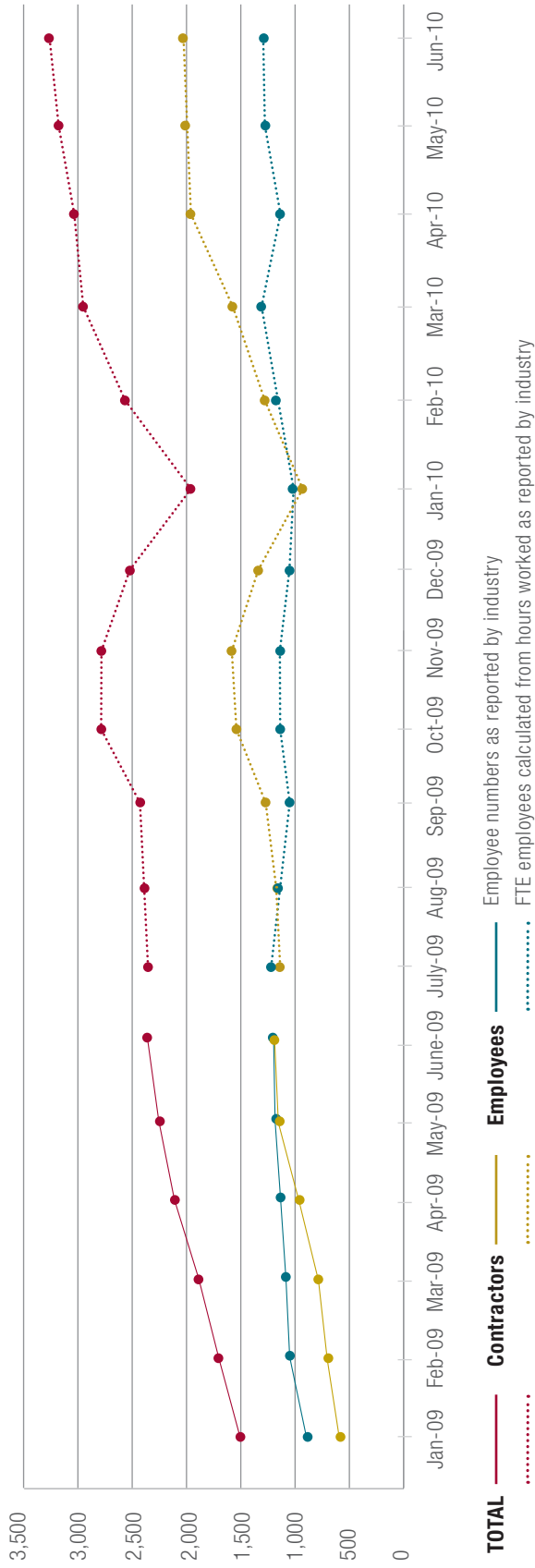


MONTHLY MINING WORKFORCE

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 JUNE 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)
[2,825]

KARRATHA

MARBLE BAR

MARBLE BAR
147 (14/23)
[9,578]

KARRATHA
376 (25/43)
[15,174]

CARNARVON

MEEKATHARRA
160 (14/19)
[8,081]

MEEKATHARRA

LEONORA
92 (9/17)
[7,950]

WARBURTON
1 (1/1)
[2]

MT MAGNET

LEONORA

MT MAGNET
23 (4/8)
[1,305]

GERALDTON

SOUTHERN CROSS
37 (7/13)
[1,810]

KALGOORLIE

COOLGARDIE
48 (14/23)
[3,148]

KALGOORLIE
39 (17/22)
[5,042]

SOUTHERN CROSS

PERTH & COLLIE
244 (50/122)
[16,667]

PERTH

NORSEMAN
10 (6/8)
[274]

NORSEMAN

COLLIE

ESPERANCE

Total active (incl. C&M) mine sites = 331
 Mine sites with SHRs = 174
 Total SHRs = 1,296
 SHRs attached to mine sites = 1,229
 Others (e.g. exploration) = 67

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 164

FALL FROM HEIGHT IN AN ORE PASS — FATAL ACCIDENT

15 JULY 2010

Summary of incident

In mid-2009, an employee sustained fatal injuries when he fell through a grizzly installed over an ore pass at an Eastern Goldfields underground mine.

The employee had been instructed to cover the grizzly to prevent dust coming from the pass.

Prior to the accident he obtained two sheets of mesh and ventilation ducting from a storage area and transported them to the ore pass.

Two pieces of ventilation ducting were put on top of the grizzly and the first sheet of mesh placed over half of the ducting.

It appears that, while installing this sheet of mesh, the employee fell through one of the grizzly openings to the broken rock about 25 metres below.

Probable causes

The employee was working close to the grizzly at the time he fell. He was not wearing any fall arrest protection attached to a suitable anchor point while attempting to cover the pass.

Action required

To avoid a recurrence of this type of incident, safe systems of work must be in place where there is a risk to persons of falling from a height.

Regulation 4.5(1) of the Mines Safety and Inspection Regulations (1995) states:

The manager of, and each employer at, a mine must ensure that

- (a) fall arrest equipment is provided to employees at a workplace if the risk of injury to employees from falling cannot be eliminated from the workplace or the system of work at the workplace; and*
- (b) the equipment referred to in paragraph (a) is*
 - (i) appropriately designed for the task for which it is to be used;*
 - (ii) used in such a way as to reduce, so far as is practicable, the possibility of injury to the user; and*
 - (iii) properly maintained.*

Where employees are required to work at an ore pass or in the general vicinity, the provisions of Regulation 4.5 should be applied to reduce the risk of injury or harm.

Managers and employers must ensure safe work practices are in place for employees working or travelling near ore passes, including:

- the wearing of fall arrest equipment attached to a suitable anchor point where there is a risk of falling;
- procedures to be in place for safely covering ore passes, and people trained in applying them;
- depending on the nature of the work involved, at least two persons to be present;
- provision for safe travelling around ore passes; and
- a prohibition on travelling over any open ore pass.

Consideration should also be given to the installation of a mechanical device that would enable the pass to be covered while the device operator is at a safe distance.

MINES SAFETY BULLETIN NO. 91

USE OF WOODEN BLOCKS TO SUPPORT EARTHMOVING EQUIPMENT

28 MAY 2010

Summary of hazard

The inappropriate use of wooden blocks to chock and support earthmoving equipment off the ground creates a serious hazard for people working under or near heavy equipment. This situation has resulted in serious crush injuries and deaths in Australia when jacks and other supporting structures have collapsed and vehicles have fallen onto individuals working underneath. Most deaths and injuries have occurred in general industry and home mechanic work. State Coroners have attributed the deaths and injuries to poor quality support stands and unsafe usage.

Resources Safety has previously advised of the hazards presented by improvised methods such as this through the MineSafe magazine and various presentations. In March 2008, the Queensland Department of Mines and Energy issued Safety Alert 187 *Vehicle/mobile plant support stands*, which identified the problems associated with support stands that do not comply with Australian Standards.

For the mining industry, the task of raising and supporting earthmoving equipment and vehicles is inherently dangerous due to the weight of the equipment and vehicles, and the lack of stability when raised. Resources Safety has issued this safety bulletin because unsafe practices continue to be identified at some Western Australian mining operations.



Example of inappropriate use of wooden blocks to support earthmoving equipment



Example of fit-for-purpose jack that can be raised and locked in position to support earthmoving equipment

Contributory factors

- Lack of appropriate workshop facilities and equipment.
- Poor selection and use of equipment that is not fit for purpose.
- A lack of appropriate safe systems of work.
- A lack of inspection and testing of workshop equipment.
- Failure to recognise the hazard.
- Poor risk assessment and control measures.

Action required

- The recommended approach is for sites to purchase specifically designed stands that are fit for purpose, with the provision of suitable equipment being the responsibility of manufacturers and suppliers.
- Where stands are fabricated to perform the function of supporting machinery, the stands must be certified and rated as meeting the requirements of the relevant Australian Standards.
- Work requiring the raising and support of earthmoving equipment should be undertaken in workshops or on designated concrete slab areas suitable for the purpose. Improvisation of repairs on rough or uneven ground and unconsolidated ground in general operating areas creates an unacceptable risk.
- Wooden blocks might be considered, following a risk assessment, when:
 - there is a need for support of components that could be damaged if the full weight is supported on steel stands;

- the tasks rely on machine or equipment movement to align component assembly (e.g. track alignment or joining);
- the only point available to place a stand creates an unstable balance point, such as raised casting nipples; or
- vibrations, possible lateral movement or other accidental contact with the supported equipment could shift the load.

Suitably shaped timber sections designed to be contained within and fully supported by steel stands may have a place in such applications, provided there is proper and appropriate engineering design.

The timber used should be of adequate dimensions and suitable strength and toughness to transfer the load to the steel supports without damage or deformation. Strapping must be used across the natural wood grain to minimise splitting.

Further Information

The relevant Australian Standards are AS/NZS 2538:2004 *Vehicle support stands* and, where applicable, Appendix A of AS 4457.1:2007 *Earth-moving machinery – Off-the-road wheels, rims and tyres – Maintenance and repairs – Wheel assemblies and rim assemblies*.

Manufacturers, importers and suppliers should also be aware of their obligations, as specified in Part 14 of the *Mines Safety and Inspection Act 1994* and Part 6 of the *Mines Safety and Inspection Regulations 1995*.

MINES SAFETY BULLETIN NO. 92

CONDENSATION-INDUCED WATER HAMMER EVENTS – POTENTIAL CONSEQUENCES OF ALLOWING STEAM AND SUB-COOLED WATER OR SLURRY TO MIX

29 JULY 2010

Summary of hazard

This safety bulletin is prompted by concern relating to a recent incident involving condensation-induced water hammer. Although the particular incident did not result in a fatality or serious injury, there was loss of containment and a significant release of energy. The resulting pipe-whip caused severe damage to the surrounding plant, had a high potential for serious injury or fatality, and resulted in considerable production downtime.

Reports received by Resources Safety suggest that this is not an isolated industrial occurrence. This bulletin serves as a reminder to responsible persons at mineral refineries to review current standard operating procedures for steam-slurry systems. Operators are urged to review systems where steam is in contact with sub-cooled liquids or slurries, especially during non-routine events, such as unplanned power outages, plant start-ups or shutdowns, and process equipment on standby.

Condensation-induced water hammer results from the rapid condensation of steam when sealed off by sub-cooled condensate in an enclosed system, such as a pipeline. "Sub-cooled" means that the liquid or slurry has cooled 30°C or more below the saturation temperature of the steam with which it is in contact.

Condensation-induced water hammer may also be referred to as "rapid steam bubble collapse". The phenomenon is not limited to water and steam systems. Process equipment is also at risk, particularly pipelines where sub-cooled slurries and steam are in direct contact.

Figure 1 shows a pipeline where steam and sub-cooled liquid condensate or slurry are in direct contact. Prior to the fluid draining through the valve, the horizontal pipe is full, so steam is not in contact with condensate or slurry along the length of the pipe. The condensate in the line cools due to heat loss through the pipe walls.

When liquid condensate or slurry is drained from the formerly full line by opening a valve, steam can enter the horizontal line. The steam in the line condenses due to contact with the pipe walls as well as the sub-cooled liquid or slurry. As the steam condenses, it induces more steam to flow into the low-pressure void. This flow of steam over the condensate draws up waves, via the Bernoulli effect.

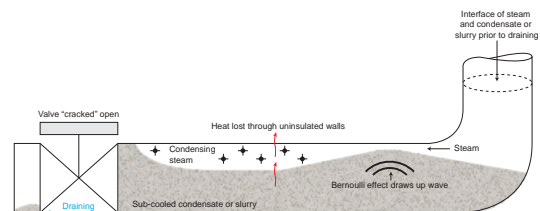


Figure 1 Steam influx, via the Bernoulli effect, draws up a wave of condensate or slurry

Note: For horizontal fluid flow, an increase in the flow velocity to get by a restriction results in a decrease in the static pressure. The equation describing this effect is known as Bernoulli's law.

If the rate of steam inflow is rapid enough, the inrush of fresh steam can draw up a wave of liquid or slurry that plugs the pipeline. This isolates a steam pocket within the sub-cooled liquid condensate or slurry, as shown in Figure 2.

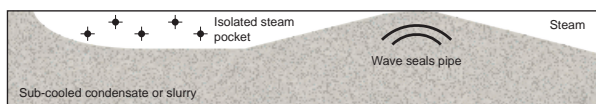


Figure 2 Rapid heat transfer creates a significant Bernoulli effect and seals steam in isolated pocket

The continued rapid condensation of steam inside the isolated pocket (which is cut off from steam replenishment) decreases the pressure in the void. The difference in pressure between the high pressure steam and the collapsing steam void causes the water (or slurry) plug and surrounding fluid to rush in to fill the low pressure void, as shown in Figure 3.

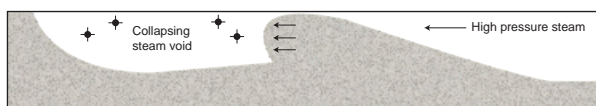


Figure 3 A pressure front is created by the collapsing steam void inside the pipeline

The water or slurry “slaps” into itself. The change in momentum of the inrushing incompressible fluid is converted to overpressure (Figure 4).

This overpressure wave travels in both directions from the site of the collapse, and may be sufficient to blow out gaskets or rupture pipe elements.

If there is a rupture, the thrust from the liquid and slurry escaping from the pipe can be calculated as follows (in SI units).

$T = 2,000 \times p \times A \times \sin(\theta/2)$, where T is the thrust in newtons (N), p is the internal pressure in kilopascal (kPa), A is the area of the opening in m², and θ is the bend angle in degrees. The factor of 2,000 assumes frictionless flow (or a short pipe) and an orifice coefficient of 1.0 (i.e. discharge not affected by downstream pressure).

For a straight pipe (i.e. $\theta = 180^\circ$), the $\sin(\theta/2)$ term reduces to 1 and the thrust calculation simplifies to $2,000 \times p \times A$.

For example, a 10” schedule 80 pipe (area of 0.046 m²) discharging liquid at 3,250 kPa (465 psi) through its entire area will do so with a thrust of up to 301,140 N (67,000 pounds force). The potential consequences of this discharge include significant plant damage and serious or fatal injuries.

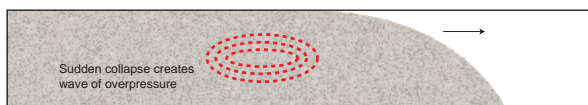


Figure 4 An overpressure wave is generated that travels the length of the water - or slurry-filled portion of the pipe

Contributory factors

Factors determining the occurrence and severity of condensation-induced hammer include:

- *Steam pressure:* The motive power for accelerating the liquid condensate or slurry is supplied by the differential between the surrounding steam pressure and the collapsing pressure within the void. Higher steam pressure will result in higher fluid velocities and more powerful hammer events.
- *Degree of condensate sub-cooling:* A more sub-cooled condensate implies a larger thermal energy differential (or driving force) for condensation between the steam and condensate.
- *Presence of non-condensable components left in the void:* The presence of non-condensable species serve as a cushion to the impact of condensation-induced water hammer. It is common for process steam to be produced from de-aerated feed water, which means that dissolved air (and other non-condensable species) has been removed from the feed water.
- *Size of the low-pressure void left by rapidly condensing steam:* A larger void will allow the inrush of liquid condensate or slurry to reach a higher velocity before crashing to a halt.
- *Pipeline slope:* The steam bubble must first become entrapped by condensate before it can create condensation-induced hammer. This cannot happen during draining in a vertical line where steam is atop condensate (unless draining is extremely rapid). The greatest risk is associated with draining where steam enters horizontal lines. In addition, the slope of the line will determine where liquid or slurry accumulates.
- *Pipeline geometry:* Once the pressure wave is generated, the weakest fitting filled with water or slurry will be the one most susceptible to rupture.

Action required

High-pressure steam in contact with sub-cooled condensate or slurry is an unstable mixture, which may be subject to condensation-induced water hammer at any time.

Operators should refrain from:

- draining a liquid line under steam pressure that allows steam to enter the formerly liquid-filled line, especially if the liquid is sub-cooled with respect to the steam; and
- allowing sub-cooled liquid to be pushed or drawn into a steam-filled line.

If sub-cooled condensate is in contact with steam (e.g. a vertical section of line above a horizontal section), do not drain the condensate or slurry from the line. Instead, isolate the steam and let the pressure subside. The condensate may then be bled off.

Engineers, operators and maintenance personnel must be trained to ensure awareness of this phenomenon and its potential consequences.

Further information

Kirsner, W., 1999. Condensation induced water hammer. Published in *Heating/Piping/Air Conditioning Magazine*. Available from www.kirsner.org/kce/media/pdfs/KirsnerHammer.pdf [as viewed 13 June 2010]

Acknowledgement

Mr Wayne Kirsner, Professional Engineer, assisted in the writing of this safety bulletin.

PETROLEUM SAFETY SIGNIFICANT INCIDENT REPORT NO. 01/2010

VIBRATION-INDUCED FRACTURE OF SMALL-BORE PIPEWORK RESULTS IN GAS LEAK

2 AUGUST 2010

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Incident

A gas leak occurred at a compressor station when small-bore pipework fractured. The incident resulted in a small natural gas release that was successfully resolved without harm, although the licensee identified the potential for the situation to have escalated if it was not for the careful inspection prior to works being undertaken.

The small-bore pipe that failed was a low point in the drain system located in a pit that was not readily accessible.

Contributory factors

- The root cause was identified as the small-bore pipe that failed had not been designed to handle vibration resulting from high gas flows and decreased suction pressures.

- The small-bore pipe's limited accessibility resulted in it being missed on previous site reviews specifically undertaken to identify potential points of failure due to vibration.

Comments and preventative actions

- Preventing vibration starts with considering the full range of potential operating conditions during design. In addition, making a conscious effort to avoid placing small-bore pipework in difficult-to-access places is important for ongoing maintenance and the ability to review a given facility.
- For existing facilities, it is important to consider if and where vibration can occur when operating conditions change. In order to do this, the licensee needs to know where all unsupported pipework is located, including small-bore pipework that may be in access pits.
- Given that it may not be practicable to predict every potential failure during design, it is important to remain vigilant during pre-work inspections. In this incident, it was the inspection required by the Permit to Work that prevented a more significant incident.

PETROLEUM SAFETY SIGNIFICANT INCIDENT REPORT NO. **02/2010**

EXCAVATOR DAMAGES COATING OF BURIED PIPELINE IN COMPRESSOR STATION

2 AUGUST 2010

Incident

Excavation of a pipeline within a compressor station for the purpose of inspecting the coating integrity resulted in an excavator damaging the pipeline coating.

The incident was exacerbated by a lack of immediate reporting, and was only identified through the investigation of another incident. If left untreated, the damage would have been a latent defect in the pipeline of which the licensee was unaware.

Contributory factors

- There was a failure to adhere to business processes during planning and the actual works — if followed, these processes would have prevented the incident. The business processes included the requirements for risk assessment, the Permit to Work system, and procedures for identifying pipeline location.

- The persons undertaking key management and supervisory roles during planning and the actual works did not understand the need for, or could not implement, the business processes with the necessary rigour.
- The licensee's investigation identified a culture where non-compliance with business processes was tolerated under certain circumstances.

Comments and preventative actions

- Personnel holding management and supervisory roles not only need to be aware of the business systems that are in place to protect the pipeline, but also need to be the role models for their subordinates to ensure that a culture of non-compliance does not evolve.
- This incident highlights the need for rigorous reporting of incidents, particularly those involving contact with the pipeline, within each licensee organisation. While this may be difficult to achieve, it is important so that potential problems are not left to escalate in the future.
- Accident and dangerous occurrence reporting requirements have been expanded with the 2010 update of petroleum pipeline legislation. An incident such as that described here may need to be reported to the Department of Mines and Petroleum and new reporting forms are being issued.

PETROLEUM SAFETY SIGNIFICANT INCIDENT REPORT NO. **03/2010**

EXCAVATOR DAMAGES BURIED SMALL-BORE PIPE IN COMPRESSOR STATION AND CAUSES GAS RELEASE

2 AUGUST 2010

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Incident

During works at a compressor station, an excavator struck and fractured a 2 inch diameter utility line. Fortunately, no ignition occurred nor were there any injuries. However, the compressor station did need to be isolated and evacuated.

The emergency response was adequate and the event did not escalate.

Contributory factors

- There was a failure to adhere to business processes during planning and the actual works — if followed, these processes would have prevented the incident. The business processes included the requirements for risk assessment, the Permit to Work system, and procedures for identifying utilities and other services.

- The persons undertaking key management and supervisory roles during planning and the actual works did not understand the need for, or could not implement, the business processes with the necessary rigour.
- The licensee's investigation identified a culture where non-compliance with business processes was tolerated under certain circumstances. Consequently, no-one within the licensee organisation questioned the non-compliances that led to this incident.

Comments and preventative actions

- Personnel holding management and supervisory roles not only need to be aware of the business systems that are in place to protect the pipeline, but also need to be the role models for their subordinates to ensure that a culture of non-compliance does not evolve.
- The successful implementation of the emergency response plan demonstrated that, if managed properly, emergency situations do not necessarily escalate. Licensees must ensure that their emergency response processes cover the potential range of incidents and will function when required.

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