



MineSafe

Western Australia



**Election of
safety and health
representatives**



**Centenary of
Varischetti Rescue** page 5

**Surface Mine Emergency
Response Competition**... page 12



Department of Consumer
and Employment Protection
Government of Western Australia

Vol. 16, No. 1
May 2007

Resources Safety 



Contents

- 2. In this issue
- 3. Duty of care
- 4. Jim Torlach to be remembered
- 4. About Resources Safety
- 5. Centenary of Varischetti Rescue
- 12. Surface Mine Emergency Response Competition
- 18. South West Emergency Response Skills Challenge
- 19. Behavioural hazards in the workplace
- 20. Safety awards
- 21. MIAC update
- 21. Occupational health news
- 24. Loss of control
- 25. Ask an inspector
- 25. Contact us
- 26. FAQs on election of safety and health representatives
- 27. Road safety on mine sites Part 2
- 30. Significant incident reports and safety bulletins

© Department of Consumer and Employment Protection 2006

ISSN 1832-4762

MineSafe is published by the Resources Safety Division of the Department of Consumer and Employment Protection (DOCEP). It is distributed free of charge to employers, employees, safety and health representatives and members of the public.

Reproduction of material from MineSafe for wider distribution is encouraged and may be carried out subject to appropriate acknowledgement. Contact the editor for further information.

Mention of proprietary products does not imply endorsement by Resources Safety or DOCEP.

Comments and contributions from readers are welcome, but the editor reserves the right to publish only those items that are considered to be constructive towards mining safety and health. Reader contributions and correspondence should be addressed to:

**Resources Safety, Locked Bag 14,
Cloisters Square WA 6850**

Editor: Susan Ho

Enquiries: (08) 9358 8149

Email: ResourcesSafety@docep.wa.gov.au

Website: www.docep.wa.gov.au/ResourcesSafety

This publication is available on request in other formats for people with special needs.

Main cover photograph: SH

In this issue

The first issue of *MineSafe* for 2007 starts with the regular section by State Mining Engineer Martin Knee, who discusses what duty of care means for the mining industry. There is also information about a trust fund being established for bursaries in memory of Jim Torlach, the former State Mining Engineer.

We finish the series on the functions of operational divisions in the Department of Consumer and Employment Protection with an overview of Resources Safety.

Resources Safety staff were involved in two significant events in March, hence the delayed publication date for this issue of *MineSafe*. The first was the centenary celebrations hosted by the Shire of Coolgardie to commemorate the rescue of Modesto Varischetti in 1907, and the second was the 2007 Surface Mine Emergency Response Competition held in Coolgardie to coincide with the centenary celebrations. We have articles and pictorial spreads for both events.

Matt Granger from The Chamber of Minerals and Energy reports on the South West Emergency Response Skills Challenge held late last year.

There have been several new publications released this year. Two are based on recent Commission for Occupational Health and Safety publications that address behavioural hazards in the workplace; namely, a code of practice on the prevention and management of violence, aggression and bullying at work, and a guideline on dealing with bullying at work.

Information on the safety performance of the Western Australian mineral industry in 2005-06 is now available.

There is a brief report on the proposed 2007 activities of the Mining Industry Advisory Committee (MIAC).

We have a section devoted to occupational health news, including information and updates about asbestos, diesel exhaust emissions, personal protective equipment, self-rescuers, welding and *Legionella*.

Nominations for the 2007 Work Safety Awards WA close on 13 July and we report on two State winners from last year who went on to achieve national recognition.

In the safety and health representatives section, we introduce you to Terry Siefken, who is based in Kalgoorlie, and answer some of the frequently asked questions about electing safety and health representatives.

We have had feedback on an article and significant incident report on loss of control of vehicles published in the September 2006 issue of *MineSafe*. The issues raised are significant and worthy of consideration by all members of the industry.

This issue continues the themed section on road safety on mine sites. Part 2 considers the human factor in traffic management, and interaction of light and heavy vehicles.

Specific safety advice is included in two safety bulletins, one on explosive mortar devices and the other on cyclones, and a significant incident report on a rockfall fatality.

Readers are encouraged to regularly check the Resources Safety website at www.docep.wa.gov.au/ResourcesSafety to find out what's new — updates and new information are posted there first, including the safety performance poster.

Malcolm Russell

Executive Director, Resources Safety

Department of Consumer and Employment Protection

List of contributors (from Resources Safety unless otherwise indicated):

Doug Austin	Susan Ho	Martin Knee	Brett Boneham
Zohurul (Hoq) Hoque	Peter W Lewis	Denis Brown	Donna Hunt
Russell Miners	Dino Busuladzic	Russell Miners	Lindy Nield
Peter O'Loughlin	Charles Robertson	Anita Rudeforth	Stephen Turner
Matt Granger, <i>The Chamber of Minerals and Energy WA</i>		Caroline De Vaney, <i>WorkSafe</i>	

Carol Baetge (Labour Relations) was omitted from the list of contributors for the previous issue of *MineSafe*. We apologise for this oversight.

Photo attribution (from Resources Safety unless otherwise indicated):

PL = Peter W Lewis, SH = Susan Ho, SK = Stephen Kamarudin



Duty of care - not just for employers and employees

We are all (or should be) reasonably familiar with the duty of care cast on employers and employees by provisions under the *Mines Safety and Inspection Act 1994* and regulations (and the equivalent provisions for general industry under the *Occupational Safety and Health Act 1984*). But there is another class of persons covered by the Act that has its own statutory duties — manufacturers, importers and suppliers of plant (and substances). These duties are specified in section 14 of the Act and further explained in Part 6 of the regulations.

Among the major duties regarding plant is to ensure — so far as is practicable — that the design and construction of the plant is such that people who properly install, maintain or use the plant are not, in doing so, exposed to hazards, and to ensure that adequate information about:

- any dangers associated with the plant; and
- the conditions necessary to ensure that persons properly using the plant are not, in doing so, exposed to hazards

is provided when the plant is supplied and whenever requested.

Further duties are cast by the Part 6 regulations (rr. 6.2 to 6.24) on employers, designers, manufacturers, importers and suppliers (including hirers) of plant for use on mines. Hazards associated with the plant must be identified and the risks arising must be assessed and consideration must be given to reducing them. Among the specific information that must be provided by designers or manufacturers (on behalf of the designer) are:

- the purpose for which the plant is designed; and
- the systems of work necessary for the safe use of the plant.

Manufacturers are also required to reduce risk by a number of particular means or by arranging with the designer to alter the design.

It may be that these duties in relation to plant are not well understood by those on whom those duties fall. Certainly, it sometimes seems to the inspectorate that this may be the case. Two examples will suffice to indicate the reasons for this belief.

The first is the continuing and significant incidence of injury arising from getting on and off mobile equipment. Strains, sprains and fractures from this source continue to be major factors in mining injuries and their causation, along with vehicle jolting and jarring incidents. Surely, it is not beyond the capability of the industry and its manufacturers and suppliers to make some real strides in mobile plant and equipment design, and eliminate or reduce the effects of this problem.

The second is the fact that we continue to see injuries, including fatalities, from rockfalls involving people working on the ground near development drill jumbos underground. The development jumbo is basically designed for the drilling of horizontal or near-horizontal blast holes in a development face and not specifically for the installation of ground support, although this kind of machine is commonly used for that purpose.

Jumbo operators have long been afforded the protection of overhead canopies, covering the operator's position as a purpose-designed means of mitigating the possibility of rockfall injury — a well-established risk factor near development faces. The same protection is not provided for those working on the ground near the machine — particularly in the hazardous work of installing ground support with the machine, often in a recently blasted and unstable area that has previously been unsupported.

The use of a drill jumbo for the installation of mesh held by friction rock anchors is a commonplace activity in underground mining. Commonly, the operator is assisted by a person on the ground who fits the mesh sheets onto the boom or bolts in the drill-feed and guides the operator to install them by driving them into a pre-drilled hole using the drifter fitted with a 'dolly'.

Presumably, the designers and suppliers of the jumbos would be aware that such use is made of the machines. It would be interesting to see how many of them actually provide information in their manuals on the safe use of the units for such purposes — or indicate that the machine cannot be used for such work without the possibility of the person on the ground being exposed to an unacceptable rockfall risk.

The same risk is not present in the use of a purpose-designed bolting jumbo, as the whole operation of drilling and installing a variety of bolt types can be carried out by a single operator from the protected operator's console. Again, it is surely not beyond the industry, designers and manufacturers to come up with a solution that complies with the law of the State.

What is the NMSF?

From 1 June 2007, you will be able to read more about the National Mine Safety Framework and consultation that is happening this year regarding:

- broad principles for national legislative consistency;
- a protocol to ensure effective consultation between stakeholders at the workplace; and
- a national data set to ensure consistency in safety and health data collection and analysis.

Visit www.industry.gov.au/minesafety

Jim Torlach to be remembered

The Management Committee of the Australian Chapter of the International Society of Mine Safety Professionals has agreed to establish a trust fund to provide bursaries for students commencing tertiary studies in occupational safety and health in Western Australia, to be titled the Jim Torlach Commemorative Trust in memory of Jim Torlach, the former State Mining Engineer.

This initiative will recognise the major contribution that Jim made in the occupational safety and health discipline

not only to the mining sector but to the community in general.

A capital sum will be set aside and the income derived used to assist students seeking a career in occupational safety and health to pursue and complete their studies. Support will also be provided to awarded students to complete the practical experience components of their study programs.

Organisations or individuals who would like to participate in this permanent memorial initiative will be appropriately acknowledged and kept fully informed of

all aspects of the bursary processes.

Those wishing to make a contribution are requested to contact Patrick Gilroy, Executive Director of the International Society of Mine Safety Professionals (Australia) at:

ISMSP

Suite 5, 12 Brodie Hall Drive
Technology Park
BENTLEY WA 6102

Telephone: 08 9355 1400

Fax: 08 9355 1499

Email: safety@marcsta.com

About Resources Safety

This is the final in the series on the operational divisions of the Department of Consumer and Employment Protection.

The role of Resources Safety is to educate and regulate industry through the administration of legislation relating to mines safety and inspection, and dangerous goods safety. The division aims to improve industry safety and health performance by promoting best practice in safety and health with companies and employees involved in the minerals industry and dangerous goods.

Resources Safety is also required to provide accurate and timely advice to the Minister for Employment Protection and other stakeholders as required.

Stakeholder liaison

Resources Safety provides safety and health information through publication, promotion and facilitation initiatives. These include the updating and publication of codes of practice, guidelines, *MineSafe* magazine, promotional literature and technical material, and attendance at regional events.

The website at www.docep.wa.gov.au/ResourcesSafety is an important source of information about the division, its functions and key

contacts, and provides online access to publications and databases.

It includes guidance material on accident (AXTAT) and incident reporting, certificates of competency, contaminant monitoring (CONTAM), the health surveillance system for mining employees (MineHealth) and dangerous goods licences. Billboards on the home page direct users to the latest updates.

Resources Safety undertakes regular mailouts to stakeholders in the mining industry, particularly mine and exploration managers, and safety and health representatives.

Annual Mines Safety Roadshows deliver topical information to the regions and provide stakeholders with an opportunity to meet with Resources Safety staff, including mines inspectors.

Mining

Within Resources Safety, the role of the State Mining Engineer is to administer, either directly or through delegation, the *Mines Safety and Inspection Act 1994* in order to protect employees in the minerals industry, including exploration, mining and processing. This position is held by Martin Knee.

The State Mining Engineer:

- must hold a first class mine manager's certificate of competency;
- has the powers conferred on an inspector by Division 2 of the Act; and
- controls and directs inspectors engaged in matters relating to mining operations.

Among other responsibilities, the State Mining Engineer approves project management plans before mining commences, determines how records must be kept and submitted to Resources Safety, reviews inspectors' decisions if requested and advises on mining matters.

Mines inspectors are subject to the control and direction of the State Mining Engineer. The Act provides for three categories of mines inspectors — district, special and employee's.

District inspectors must hold a first class mine manager's certificate of competency.

Special inspectors are appointed because of their technical or scientific training or knowledge, and have the same powers as district inspectors.

Employee's inspectors are elected by a majority of persons employed at mines in the designated region and appointed to the position by the Minister for Employment Protection. They provide an additional avenue for mine workers to consult in relation to safety and health.

Dangerous goods

Current dangerous goods safety laws date back to the 1960s. Resources Safety has been working on a comprehensive reform of the legislation to reflect the needs of today's world. This will include a shift from a prescriptive approach to regulation to a performance-based risk management approach to stimulate higher levels of public and occupational safety and environmental protection. With the signing of the Council of Australian Governments (COAG) agreement on 25 June 2004 came an added focus on the security of ammonium nitrate and explosives.

The existing dangerous goods safety legislation refers to a Chief Inspector of Explosives and Dangerous Goods

(Chief Inspector). This position is held by Malcolm Russell, Executive Director of Resources Safety.

Dangerous goods inspectors are appointed under the *Explosives and Dangerous Goods Act 1961* to act for the Chief Inspector in respect of the storage, keeping and carriage of explosives and dangerous goods.

Mr Russell is also the Competent Authority for the administration of the *Dangerous Goods Transport Act 1998*. Authorised officers are appointed to help administer this legislation.

Under the new legislation, which is due to come into effect later this year, Section 25 of the *Dangerous Goods Safety Act 2004* provides for the appointment of a Chief Dangerous Goods Officer (Chief Officer) for the purpose of administering the Act. The Chief Officer will appoint dangerous goods officers to help undertake this task.

Through the licensing and approval of activities related to dangerous goods, including explosives, the new regulations will cover:

- storage and handling of non-explosive dangerous goods;
- major hazard facilities (where the dangerous goods stored or handled on a site exceed a specified threshold quantity or pose a high risk);
- security risk substances (currently, this is ammonium nitrate);
- explosives;
- road and rail transport of non-explosive dangerous goods; and
- dangerous cargoes in port.

Once the new legislation is enacted, Dangerous Goods Safety Roadshows will be held throughout the State to disseminate information about the updated regulatory framework and licensing regime.

Resources Safety



Centenary of Varischetti Rescue

All aboard the Varischetti Express

Resources Safety staff recently assisted with the centenary celebrations of the mine rescue of Modesto Varischetti with a symbolic re-enactment of the historic train journey by the 'Rescue Special'.

Modesto Varischetti was trapped underground in a gold mine at Bonnievale for nine days, surrounded by water and in complete darkness. Regarded as one of the greatest mine rescues of the 20th century, the rescue captured the attention of the world as newspapers reported on the dedication, commitment, tenacity and endurance of those involved in saving Varischetti. He was brought to the surface on 28 March 1907.

The Varischetti Rescue Special Commemorative Prospector Service was launched on 23 March 2007 at the East Perth train station by the Minister for Employment Protection, the Hon Michelle Roberts MLA. Minister Roberts delivered a diving helmet to the train driver, symbolically emulating the 'Rescue Special' train — it was actually a series of three trains — that 100 years ago fast-tracked the delivery of diving equipment to assist in the rescue, and cut almost two hours off the normal 12-hour run from Fremantle to Coolgardie.

Resources Safety produced a set of displays to promote the historic event and modern mine safety methods,

providing an impressive backdrop to the launch by Minister Roberts. A duplicate set was displayed at the Kalgoorlie train station, and is currently on show at the State Records Office.

The 6.30am launch was attended by descendants of the key players in the rescue, some of whom had travelled from interstate, as well as staff from Resources Safety, Transwa and the State Records Office.

All Prospector passengers travelling during 23-28 March were presented

Continued on page 6...



...from page 5

with an information folder and commemorative certificate — a collaborative effort between Resources Safety, Transwa, Coolgardie Shire and the State Records Office.

Celebrations continued during the weekend at Coolgardie with community events, the opening of an interactive historical display and a new Varischetti museum exhibit, modern mine rescue displays, a relaunch of Tom Austen's book 'The Entombed Miner' and a celebration dinner.

A third set of the launch displays was located near the main venue and manned by Resources Safety staff over the weekend. After the weekend's celebrations, the display was donated to the Coolgardie museum to complement its dedicated Varischetti section.

The event also coincided with the Chamber of Minerals and Energy's 2007 Surface Mine Emergency Response Competition, with mines inspectors Peter O'Loughlin, Steve Kamarudin, Terry Siefken and Brett Boneham providing advisory, adjudicating and supporting roles. Brett also competed in the Bonnievale Bike Classic, an annual bike race rescheduled to coincide with the commemorative celebrations.

At a special presentation evening following the emergency response competition, prizes were awarded for the event categories and to the overall winners. The Hazchem event was sponsored by Resources Safety and State Mining Engineer Martin Knee presented first prize to the Newmont Jundee Operations team.

The centenary celebrations and competition provided a perfect opportunity to not only remind people of the importance of being safety conscious but also acknowledge those involved in mine rescue.

Special tribute for our Inspector Crabb

Tom Austen, author of 'The Entombed Miner', a book about the Varischetti rescue, paid a special tribute to the efforts of Inspector Josiah Crabb at the centenary celebrations.

At the time of the Bonnievale rescue, the mines inspectorate was part of the Department of Mines, and was led in the Coolgardie Goldfields by Inspector Crabb, who played a pivotal role in ensuring the success of the rescue efforts.

'Young Inspector Crabb lied about his age to get the job, a common practice at the time, and I have no doubt that without his efforts, Varischetti would not have survived,' Mr Austen said.

He made the comments at the launch of his reprinted and updated book, attended by more than 200 descendants of those involved in the great rescue, including Crabb, divers Hughes, Fox, Hearn and Curtis, and the Varischetti family.

The book was meticulously researched over 18 months, with Mr Austen travelling to London to investigate mining companies with Coolgardie interests at the time, and also to Varischetti's birthplace in Gorno, Italy.

As the foreword says, 'It is more than just a good read; it is also a gold mine of life in Australia.'

Inspector Crabb was in the headlines again in November 1914. He was instrumental in rescuing two tributers entombed by a rock fall in the Marvel Loch gold mine, south of Southern Cross.

One of their mates had been killed. Crabb swiftly organised a day-and-night attempt to locate and rescue the missing pair, with 48 men taking part in the immense effort.

After 36 hours, the sound of Crabb's party banging on the skip-rails brought a response.

Tom Austen writes in the book that the rescue team was '...digging and shoring, to push a metal pipe through to the trapped pair. Down the pipe slid bottles of water and soup, matches, candles and cigarettes. As well as the weakened workings, at all times the rescuers faced the threat of a wall of water crashing on them.'

The two were carried out alive after being trapped 84 hours. Although the Bonnievale story caught the eye of history, many at the time saw the Marvel Loch rescue as Crabb's greatest achievement.

Mr Austen said the book was a salute to the splendid spirit of Goldfields people.

The reprint was made possible by funding from the Shire of Coolgardie.

Copies of the book are available from the Coolgardie Visitor's Centre:

Gaynor Jefferies
Shire of Coolgardie
PO Box 7
Coolgardie WA 6429
Telephone: 08 9026 6090
Email: visitors.centre@coolgardie.wa.gov.au



Hon Michelle Roberts MLA and Denham Wright at the commemorative launch in East Perth

The Bonnievale rescue

Over a century ago, Modesto Varischetti was trapped underground in a gold mine at Bonnievale, near Coolgardie. Varischetti's rescue involved the mines inspectorate, 160 miners, a great train dash and underwater divers.

His story has been told by Tom Austen in 'The Entombed Miner', and original documents relating to his survival and rescue are available in the State Records Office of Western Australia archives.

Day 1, Tuesday 19 March 1907

- Westralia and Eastern Extension gold mine flooded about 4 pm following unseasonal rain
- By 4.30 pm Modesto Varischetti realises he is trapped in a rise on level 10 by the inrush of water
- By 6.30 pm all miners except Varischetti have managed to make their way to the surface
- George Beard, underground manager, and Theodore Rubischum, general manager, reconnoitre workings and ask for volunteers to search for Varischetti
- First rescue party of four descends at 7 pm and go as far as water will allow
- At 9 pm Rubischum sends telegram to Coolgardie-based senior mines inspector Josiah Crabb, who sets off for Bonnievale and arrives at 9.45 pm
- Party returns to surface at 10 pm and reports no signs of trapped miner
- Rubischum is almost certain that Varischetti has drowned but news about the exact rise in which the miner was supposed to be working gives Crabb hope that air pressed in the rise by the floodwaters might be strong enough to hold out the water
- Meanwhile Beard's workers have dammed the shaft through which most of the water had entered to prevent further incursions as it was still raining
- Crabb, Rubischum and William Faul, the mine engineer, calculate the volume of water that had entered the workings and determine that forty per cent of the water will have to be removed to let rescuers wade to the trapped miner
- By 11 pm mining skips are being used to bail out the water but the task is calculated to take a fortnight so a call for pumps goes out
- As fresh air will be critical to Varischetti's survival, air is reconnected to the machine drill in the rise where he is thought to be trapped

Day 2, Wednesday 20 March 1907

- Crabb, Rubischum and 20 others have worked through the night
- By 8 am the water level has been lowered 23 cm but 17 m is required if men are to wade along the tunnel on level 10
- At 10 am Beard is on level 9 and casually strikes the mine wall with a hammer or pick and receives a response – Varischetti is alive
- Mid-morning two Italian miners are lowered to level 9 and communicate with Varischetti using a north Italian miners' code
- Crabb has been on duty for over 30 hours and Rubischum encourages him to go home and sleep
- At home, seven-year-old son Frank suggests his father uses helmeted divers like he'd seen in a trip to New Zealand
- Musing over the suggestion, Crabb realises that using divers will be the only way to get food and messages through to Varischetti while the mine is being dewatered





Inspector Crabb continues the story through telegrams

Many telegrams relating to the Bonnievale rescue are held in State Records Office Consignments 177/1 and 2921 3009/1970. The following have been selected to tell the story of Inspector Josiah Crabb's involvement in the rescue.

Punctuation has been added for clarity.

20 March 1907, sent 2.30 pm Inspector Crabb to Secretary for Mines

Westralia Mine Bonnievale became flooded yesterday afternoon. One miner named Varischetti now entombed in workings above no. 10 level. Can be heard sounding. Everything possible being done to rescue him but consider chances very remote. Twenty other men had very narrow escape. It is estimated that it will occupy about ten days to unwater to no. 10 level provided everything goes as anticipated.

20 March 1907, time unknown State Mining Engineer (Alexander Montgomery) to Inspector Crabb

Minister instructs give every assistance rescue operations Westralia. Command boring plant and men if available Coolgardie. Incur expense if necessary.

21 March 1907, sent 7 am Inspector Crabb to State Mining Engineer (SME)

Man in rise twenty eight feet above level, about three hundred feet from incline. Only thing that can be done is to supply food by means of diver. Can one be procured? If so, will you send him and all necessary appliances as soon as possible?

21 March 1907, received 10.15 am Inspector Crabb to SME

Diver Kalgoorlie has volunteered undertake work Westralia if man cannot procurable Perth. Forward apparatus with four hundred feet tubing.

21 March 1907, sent 1.16 pm Inspector Crabb to SME

Send two diving suits and total length of thousand feet of tubing. Entombed man can still be heard sounding.

21 March 1907, sent 1.45 pm Fremantle Rail (via State Mining Engineer) to Inspector Crabb

Special leaves three o'clock. Arrange stationmaster Coolgardie tell stables when send trap to stations – four men, two outfits coming. About eight hundredweight outfit. Want large strong trap. Telephone Hudson try send you from Kalgoorlie watertight electric light.

22 March 1907, received 9.41 am Inspector Crabb to SME

Divers and equipment arrived. Work progressing satisfactorily. Man still heard knocking.

22 March 1907, sent 5.30 pm Inspector Crabb to SME

Diver Hughes and Hearn have descended twice through ore shoot to number ten level. In the third attempt Hughes advanced through silted up drive to point under Varischetti and made fast guide line. He shook air hose connected with rock in drill in rise and Varischetti shook in return. He was unable to do anything further and returned exhausted. Guide line has been fixed and divers are just about to descend with food. They are hopeful of being able to come in contact with him and keep him supplied with food until water is lowered. Men doing excellent work under high air pressure.

22 March 1907, sent 10.40 pm Inspector Crabb to SME

Diver Hughes with assistance of diver Hearne reached Verschetti (sic) five o'clock this afternoon. Supplied him with food, electric lamp, etc. Have arranged for divers take down other supplies tomorrow 3 p.m. Will not have any attempt made to have him brought out by means of diving suit as I consider his condition too weak but will have food supplied from time to time until water is pumped out. Find on examination

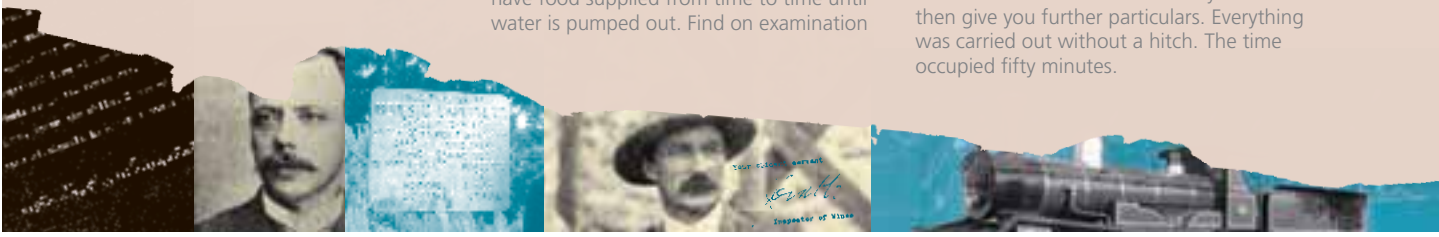
that air is escaping through ground at point just over entombed man. Consequence of this – absolutely necessary to maintain air pressure 30 lbs per square inch in workings to keep water from rising over Varischetti. Water being raised all possible speed. Ample supply diving apparatus to hand. Well pleased with results. Divers doing heroic work. Every possible assistance being rendered by Mine Manager. More hopeful of eventually rescuing miner.

23 March 1907, received 12.26 pm Inspector Crabb to SME

Pumping and bailing operation proceeding relentlessly from seven last night to eight this morning. Lowered three feet. Expect to have man out about Friday next through passage from which divers are operating. Everything working smoothly. Divers Hughes and Hearn seem none the worse after yesterday's experience and are more enthusiastic than ever. Entombed man sounded to this morning eight thirty, which was promptly answered. The up-to-date plans kept on the mine I have found to be of great assistance. Manager Westralia just received wire from Zunini Italian Consul conveying following message. "I shall be grateful if you will convey, to all who are working so bravely and unselfishly to rescue my fellow countryman Varischetti, my profound thanks. I sincerely wish them success but in any event cannot refrain from expressing my admiration. Diver whose work has been so perilous – I feel a deep sense of gratitude for efforts, which are so splendidly characteristic of their race. To one and all, my heartfelt thanks."

23 March 1907, sent 4.52 pm Inspector Crabb to SME

Another successful trip has been made to entombed man, Varischetti. He was again supplied with food. He appears to be in good health. Will interview diver shortly and will then give you further particulars. Everything was carried out without a hitch. The time occupied fifty minutes.



23 March 1907, received 6.16 pm
Inspector Crabb to SME

Hughes states as follows. "I had no difficulties to encounter in my passage to the man. When I arrived, he appeared to be asleep so that it was some time before I could get communication with him. When he appeared I shook hands with him, handed him food, letter, code of sounding signals and electric light, which should last forty eight hours. Shook hands with him and left. Man appeared to be in fairly good condition." Everything went as satisfactorily as possible. All the arrangements that have been made are excellent. Divers will make another descent tomorrow afternoon two o'clock. We think it advisable to make a try daily to reassure the man as to his safety. Beginning to feel confident divers will get him out eventually. Pumping operations were slightly retarded this afternoon through sending men up and down in skip. It is now in full swing and good progress is being made.

25 March 1907, sent 11.30 am
Inspector Crabb to SME

Everything going on satisfactorily. Water lowered during the last twenty four hours – seven feet vertical. Engines and drivers being taxed to their utmost capacity. When man was last signalled to, he reported all well.

26 March 1907, sent 11.20 pm
Inspector Crabb to SME

Varischetti was signalled to at seven this morning and he answered all right. Unwatering of mine progressing very favourably. During last twenty four hours water has been lowered seven feet vertical. Air pressure in workings now about thirteen pounds per square inch and is being gradually reduced so that by the time we are in a position to get Varischetti out, he will have been in all probability under atmospheric pressure for several hours. Cannot take out water any quicker than is being done unless a powerful air compressor plant be installed and, as this would occupy several days and also necessitate the stoppage of present bailing operation to a great extent, no advantage would be obtained. In this respect, might say arrangements were made in the event of diving operation proving unsuccessful to instal the necessary plant to unwater mine in shortest possible time.

28 March 1907, received 6.30 pm
Inspector Crabb to SME

Varischetti was brought to surface six o'clock. Doctor states he is in very good health.

Photographs 494-1B/1, 494-1B/4, 494-1B/5, 494-1B/9 and 494-1B/14 are courtesy of The Batye Library. Other material from SRO Cons 1771 and 2921 3009/1970.

Huge turnout for Bonnievale unveiling

Coolgardie Shire Chief Executive Officer Mal Osborne was stunned by the turnout on 25 March 2007 for the unveiling of a plaque and commemorative Sunday service at the Westralia mine in Bonnievale, about 15 km from the town.

The service followed the impressive celebration dinner held at the recreation centre the night before, attended by more than 250 people, mostly descendants of the key players in the Varischetti story.

'We expected about 40 people to turn out, but we had close to 400 – it was amazing. I was stunned at the turnout,' Mr Osborne said at Bonnievale.

Shire Curator Tex Moore said that, in the tradition of mine rescue, Varischetti's background had no bearing on the saving of a person.

Coolgardie Shire President Dave Bergmeier thanked Mr Osborne and his staff and the local community for the work everyone put in, ensuring a great weekend.

At the launch of the new museum exhibit the day before, Mr Bergmeier had said that Coolgardie was the site of the greatest gold rush in Australia's history, and it took guts and determination to be part of a great gold rush.

'It takes guts and determination to go and rescue Varischetti, it takes guts and determination to organise a day like this, and it takes guts and determination for the mines rescue people to put on these events and give up their time.'

The plaque was unveiled by Mr Bergmeier and special guest Mr Giampiero Calegari, Mayor of Gorno, who said the Varischetti story was a symbol of migration from Italy to Australia.

The new plaque is near an older one that simply states, 'From this shaft Modesto Varischetti safely rescued, entombed under water in rise at No 10 level 19 Mar-28 Mar 1907 – Divers Hughes, Fox, Hearne, Curtis, Inspector of Mines Crabb.'

Brett gets on his bike

Resources Safety's own ironman triathlete Brett Boneham may not have won the annual Bonnievale Bike Classic held this year as part of the Varischetti centenary celebrations, but he fine-tuned the bike of the bloke who did, friend Bruce Doig.

Brett, who came in a credible tenth in the 28 km handicap race, had used his engineering skills on Bruce's bike the night before to give it a final tune before the big race.

As a Special Inspector Mines Machinery, Brett's top-ten performance in the classic was especially significant – the race symbolises the range of events that

lead to the Varischetti rescue.

A week before the heavy rainfall that caused the mine to flood, Giuseppe Maringoni was in a cycle race in which he was pushed off his bike and injured. Modesto Varischetti was called in to cover Maringoni's shift because of the injury – the rest is history.

The return race from Coolgardie to Bonnievale featured a series of back-breaking hills pushing the fitness levels of all competitors, especially for Brett who had already cycled to Coolgardie from Kalgoorlie before the start.



Photo courtesy of Transwa



PL



SH

VARISCHETTI EXPRESS

*Left: At the launch in East Perth
Above and right: Greeting the train
in Kalgoorlie*

COOLGARDIE CELEBRATIONS

*Below: Mayor of Gorno Giampiero Calegari
Far right: Tom Austen, author of 'The
Entombed Miner'*



PL



PL



PL



PL



PL



SK

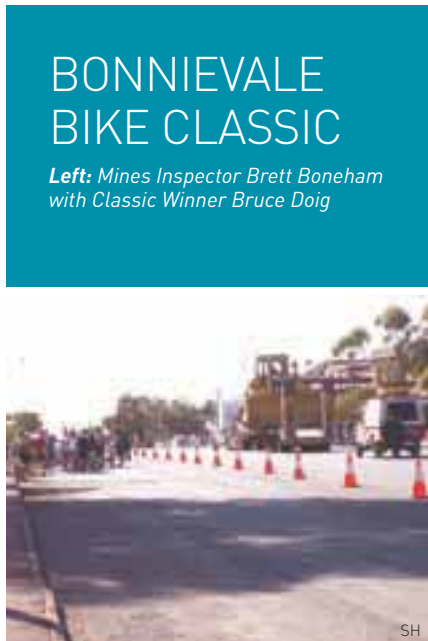
Centenary of Varischetti Rescue

BONNIEVALE UNVEILING



BONNIEVALE BIKE CLASSIC

Left: Mines Inspector Brett Boneham with Classic Winner Bruce Doig



Competition coincides with centenary celebrations

The 2007 Surface Mine Emergency Response Competition held in Coolgardie on 23-25 March had special significance this year.

Organisers worked with the Shire of Coolgardie to bring the largest rescue competition of its type in the southern hemisphere to the small Goldfields town to coincide with the centenary celebrations of the rescue of Modesto Varischetti.

Various sites around the town became venues for a range of realistic scenarios where emergency response teams were tasked with demonstrating their knowledge and skills in firefighting, first aid, vehicle extrication, hazardous chemicals, rope rescue, confined space rescue, team skills and theory.

The event, organised by the Chamber of Minerals and Energy Western Australia (CME) Eastern Regional Council's Mine Rescue Committee, aims to demonstrate the industry's commitment to safety and health.

It was an apt weekend, with the backdrop of the Varischetti celebrations attracting more than 5,000 people over the two-day event, including many descendants of the Varischetti family and the key people involved in the rescue, including the divers and Mines Inspector Crabb.

Matthew Payne, CME's Goldfields regional liaison officer, said the Modesto Varischetti rescue was arguably one of the most famous rescues, with the miner being trapped underground for nine days, without high-tech rescue equipment.

'The competition was a great success and demonstrates our industry's dedication to safety. People could see just how dedicated we are to the safety of their colleagues,' Mr Payne said.

Mine sites from around the State form the emergency response teams of volunteers who train rigorously and were put to the test in the close to real-life situations during the competition.

Casualties were dressed up and with gory make-up applied acted as if they are injured. Those unfamiliar with what is going on sometimes find the realness quite confronting.

This year 16 teams from across Western Australia showcased their mine rescue skills and professionalism. Each team is made up of six members with a reserve.

The competition began on the Friday night with a briefing by the organising committee and local police, followed by an intense team and individual theory exam.

Over the next two days the teams of volunteers worked through the scenarios from dawn to late in the day, culminating in a gala awards night at the Miners' Hall of Fame. The guest speakers were BHP Billiton Nickel West president Marcelo Bastos and Tom Austen, author of 'The Entombed Miner', a book about the Varischetti rescue.

The dinner was an opportunity to acknowledge all the competitors and their support crews, committee members, event managers, adjudicators, casualties and other assistants, and sponsors. The chief adjudicators were Peter O'Loughlin, James Donnelly and Carmen ter Rahe, who travelled from her new job in Tasmania to participate.

The awards evening was also privileged to have the Mayor of Gorno, Signor Giampiero Calegari, as one of its guests of honour. Modesto Varischetti was a native of this Italian town before coming to Coolgardie.

CME Eastern Regional Council Deputy Chairman, Dale Oram of Harmony Gold, said having the competition as part of the Varischetti celebrations had proven to be a great success.

'A record competition public attendance saw that the spirit and dedication of the Varischetti rescuers 100 years ago is very present in the

mines rescue teams of today,' Mr Oram said.

The teams competing were:

- **Agnew Gold Mine** (Gold Fields Australia)
- **Barrick Kanowna** (Barrick Gold)
- **Barrick Lawlers** (Barrick Gold)
- **BHP Billiton Iron Ore Newman** (BHP Billiton)
- **Black Swan Nickel** (LionOre Australia)
- **Harmony Gold South Kalgoorlie Mines** (Harmony Gold)
- **KCGM Mines Rescue** (Kalgoorlie Consolidated Gold Mines)
- **Lake Johnston Operations** (LionOre Australia)
- **Murrin Murrin** (Minara Resources)
- **Newmont Jundee** (Newmont)
- **Nickel West Kalgoorlie Nickel Smelter and Concentrator** (BHP Billiton)
- **Nickel West Leinster** (BHP Billiton)
- **North Eastern Goldfields Operations** (LionOre Australia)
- **Oxiana Golden Grove** (Oxiana)
- **St Ives Gold Mine** (Gold Fields Australia)
- **Sunrise Dam Gold Mine** (AngloGold Ashanti Australia).

Surface Mine Emergency Response Competition

Coolgardie competition provides new challenges to organisers

The decision to bring forward the 2007 Surface Mine Rescue Competition to coincide with the centenary celebrations of the Varischetti mine rescue at Coolgardie provided new challenges for event organisers.

Competition committee chairman Mark Pannewig said the event, normally run at the grounds of the Kalgoorlie Hall of Fame, was moved to Coolgardie at the request of the local shire.

'We were quite happy to assist the shire in its Varischetti centenary and, by combining the two events, it was a great opportunity to promote mine rescue, but it presented some new challenges,' Mark said.

'Besides having less time to organise this year's event, we were required to develop scenarios based on the different physical conditions of the event area around Coolgardie,' Mark said.

Access to the defunct railway station provided a great opportunity to create a variety of scenarios, including one in

which a locomotive had crashed into a vehicle stuck on the rail tracks.

This scenario featured a number of fatalities and injured people in the vehicle and train carriages, allowing first aid and vehicle extraction exercises to run smoothly and concurrently.

The confined space rescue was specially erected opposite the park where the main entertainment was held, giving spectators easy access to the scenario.

'Confined space incidents are one of Australia's leading industrial killers and often rescuers themselves become victims after being overcome by fumes. Using breathing apparatus, rescuers in this scenario must assess the situation, ensure the area is inhabitable through gas testing, determine how safe the conditions are, including ventilation, and put together a rescue plan,' Mark said.

'Teams must also determine if the gas is explosive and become inventive with their entry methods.'

A scenario at the town's swimming pool was based on the Varischetti rescue and involved rescuers using breathing apparatus in the pool and a specially designed sea container to search for Varischetti. Once located, he was provided with rations, a rescue plan was developed and a team sent to rescue him.

One 'casualty', KCGM miner Victor Birt, was in fact a fourth-generation descendant of diver Hughes, one of the rescuers of Varischetti, providing another historical link to the scenario.

The logistics behind the biggest event of its type in the southern hemisphere involves hundreds — many behind the scenes — with adjudicators, event managers, committee organisers, 'casualties', assistants all playing their part.

Mark works as Occupational Health and Safety Manager for La Mancha's Frog's Leg and White Foil mines and has been involved with competitions for more than a decade. He was also chairman of last year's underground competition.

Emergency response a specialised area

The demands placed on the 16 teams competing at the Surface Mine Emergency Response Competition are extremely high, with a great deal of planning involved before the event.

The volunteers train in their own time to perfect their skills in a range of competencies and develop knowledge in the use of a range of specialised equipment.

The equipment requirements for each scenario are listed below, and all have to be checked and in operational order prior to each event, making for a very busy two days of preparation, competition, cleaning and maintenance activities.

Fire fighting

- First aid equipment
- Stretcher
- 6 x Breathing apparatus (BA) sets (minimum of 4)
- 6 x Fire jackets
- 6 x Fire helmets
- BA tally board
- Personal protective equipment (PPE)

Equipment provided: hoses, branches and other equipment required to extinguish the fire

Rope rescue

All rope rescue equipment necessary for lifting and lowering including:

- Stretcher
- Rope rescue retrieval kit
- PPE
- First aid equipment
- Resuscitation unit

Equipment provided: Evac Stretcher

Vehicle extrication

- First aid equipment
- Resuscitation unit
- Stretcher
- Blanket
- PPE
- Dry chemical extinguisher

Continued on page 14...

Surface Mine Emergency Response Competition

...from page 13

Equipment provided: chocks and timber, cutting and spreading equipment

Confined space rescue

- 6 x BA sets with distress signal units (DSUs)
- BA tally board, tally tags
- Site confined space entry permits
- Hazchem equipment
- Gas monitor (oxygen, carbon monoxide, sulphur dioxide)
- 3 x Hand-held radios
- Rope rescue equipment
- PPE

Team skills

- PPE
- 50 m rope
- 6 x Rope harnesses
- Rescue strop
- Rated descender
- First aid equipment
- 2 x BA sets
- BA tally board, tally tags
- 2 x Hazchem suits
- 2 x Lanyards
- Change of overalls

First aid event

- First aid equipment to deal with multiple casualties
- PPE
- Stretcher
- Oxygen resuscitation or therapy unit with spare cylinder

Hazchem

- 6 x breathing apparatus (minimum of 4)
- First aid equipment
- 2 x Resuscitation units
- 6 x Chemical suits or splash suits
- Rubber boots
- Stretcher
- Lay down mat
- Danger Tape
- Bins or bags for removal of contaminated clothing
- Decontamination equipment
- Hazmat response equipment

Equipment provided: hoses and water

Barrick Lawlers sets the pace again

The winner of the 2007 Surface Emergency Response Competition, Barrick Lawlers, is now aiming for three in a row.

As well as the impressive 2007 effort, Barrick Lawlers took five awards in the 2006 underground event, and became the first team in four years to win both competitions in succession.

In this year's surface competition, Barrick Lawlers captured the best team award and won the Rope Rescue

and First Aid categories.

The second-best team award went to Newmont Jundee Operations, which also won the Hazchem category.

Competition newcomer Sunrise Dam Gold Mine won the best new team award, as well as the Team Safety and Theory Awards, and Best Captain and Individual Theory awards to captain Michael Negus, with the team coming an impressive third place overall.

Fire Fighting:	Lake Johnston Operations
First Aid:	Barrick Lawlers
Vehicle extrication:	Black Swan Nickel
Hazardous Chemicals:	Newmont Jundee Operations
Confined Space Rescue:	Nickel West Kalgoorlie Nickel Smelter and Concentrator
Team Skills:	Harmony Gold South Kalgoorlie Mines
Team Safety:	Sunrise Dam Gold Mine
Theory:	Sunrise Dam Gold Mine
Individual theory:	Michael Negus (Sunrise Dam Gold Mine)
ER Coordinators Challenge:	Ben Ingham (Oxiana Golden Grove)
Best captain:	Michael Negus (Sunrise Dam Gold Mine)
Best new captain:	John Morrison (Oxiana Golden Grove)
Best new team:	Sunrise Dam Gold Mine
Best scenario:	Firefighting
Ten Year Service Medallions:	Andrew Chandler (Jubilee Cosmos) and Michael Parotte (Newmont Jundee)

HONOUR BOARD

Surface Mine Emergency Response Competition



SK

CONFINED SPACE RESCUE



PL



PL

FIRE FIGHTING



SH



SH



SH



SH



PL



PL

FIRST AID EVENT

Surface Mine Emergency Response Competition



ROPE RESCUE

VEHICLE EXTRICATION



HAZCHEM

Surface Mine Emergency Response Competition

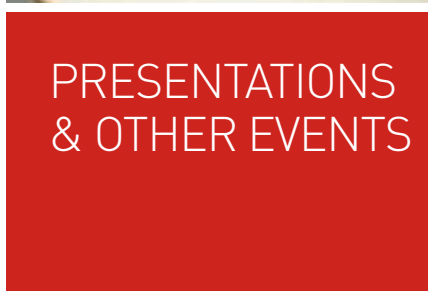
TEAM SKILLS



THEORY



PRESENTATIONS & OTHER EVENTS



South West Emergency Response Skills Challenge

New emergency response challenge in South West

Q: How do you keep emergency response personnel primed for action in an industry characterised by very few actual emergencies?

A: By presenting them with realistic emergency scenarios where they need to call on every element of their training and experience.

This explains the evolution of a new emergency response event in the resources sector in the South West, the Chamber of Minerals and Energy's South West Emergency Response Skills Challenge (SWERSC).

It has been several years since mines rescue competitions have been held in the South West. Thus it was long overdue that the SWERSC was held at Australind in November last year.

The participants reflected the diversity of the region's resources industry, with teams from the Mid West operations of Iluka Resources and Tiwest standing shoulder to shoulder with teams from Worsley Alumina's Boddington Bauxite Mine, Wesfarmers Premier Coal, Verve Energy and Sons of Gwalia's Greenbushes Operations.

The scenarios were clearly relevant to the industries represented, covering hazardous chemicals, first aid, fire, rope rescue, team skills and a theory component.

Event organisers sought to strike a delicate balance between healthy competition between teams and the overriding principal of encouraging participation, knowledge sharing and skill development.

If the good natured banter between teams and serious adjudicator feedback are anything to go by, the event clearly hit its mark.

The SWERSC hit the mark in another significant way. The venue chosen by organisers, the Australind Senior High School, enabled the public to see first hand the capacity of committed emergency response volunteers, whose 'day jobs' are many and varied in local resources companies. Communities around Western Australia can take comfort from events such as the SWERSC that showcase the high level of training and expertise in the resources industry workforce, and the fact that

these skills make their communities safer places to live.

While all participants gained from participating in the SWERSC, the broadest smiles at the presentation evening were on the faces of the Sons of Gwalia team, which was judged best team overall, as well as gaining the best scores in the Theory and Hazchem scenarios.

The Wesfarmers Premier Coal team was runner-up overall, and took out the best result for the First Aid scenario and shared equal first with Tiwest in the Team Skills event. The Iluka Resources team led in the Fire scenario, while Worsley Alumina's Boddington Bauxite Mine team led in the Rope Rescue scenario.

The success of the SWERSC in 2006 has generated momentum for a similar event in 2007, and planning is underway.

For more information, contact Matt Granger, South West Regional Liaison Officer with the Chamber of Minerals and Energy (telephone: 08 9791 6707, email m.granger@cmewa.com).



Photos courtesy of Matt Granger

Behavioural hazards in the workplace

Resources Safety recently released a code of practice on the prevention and management of violence, aggression and bullying at work, and a complementary guideline on dealing with bullying at work. Both were adapted from publications of the same titles published in 2006 by the Commission for Occupational Safety and Health. They are available online at www.docep.wa.gov.au/ResourcesSafety or contact Resources Safety (telephone 9358 8154, email ResourcesSafety@docep.wa.gov.au).

The code of practice provides guidance on meeting the requirements of the *Mines Safety and Inspection Act 1994* with respect to violence, aggression and bullying as workplace hazards, focusing on their prevention, identification and management.

The code is presented in two parts. The first deals with workplace violence and aggression, which are actions or incidents that may physically or psychologically harm another person and include situations where workers and others are threatened, attacked or physically assaulted at work. It includes information on hazard identification and risk assessment for incidents involving violence and aggression. A checklist is provided to help identify areas for improvement in managing these issues.

The second part of the code deals with workplace bullying. Bullying at work can be defined as repeated unreasonable or inappropriate behaviour directed towards a worker or group of workers that creates a risk to health and safety.

Guidance is provided for developing prevention strategies and responding to incidents. There is a checklist to use as a guide when developing bullying complaint procedures or dealing with an alleged bullying incident.

The guideline provides more information on the issues associated with bullying behaviours and some practical ideas on dealing with them.

Bullying in the workplace is a growing occupational safety and health concern, with significant organisational costs. According to WorkSafe, one of the more popular sessions at last year's Work Safe 2006 Forum was *Bullying – developing strategies and changing the workplace culture*.

Currently, there are about 600 workers' compensation claims a year for workplace injuries related to bullying and aggression. Some of the costs include a high turnover of staff, compensation costs, training of new staff (up to 500 hours of training for a new job) and a bad name for the company. There are possibly many more cases that go unreported.

Work Safe Forum presenter Sarah Jane Bryant, a senior WorkSafe inspector, said that it is not the intent of the behaviour, it is the effect — and the effect of behaviour cannot be predicted.

'There is a fine line between managing and bullying,' Ms Bryant said.

'The big problem to changing culture is that it needs management support. When people are subject to



consequences, inappropriate behaviour does diminish.

'Don't wait for complaints to happen — put policies and procedures into place. If these are established, then review them.'

The behaviours that constitute workplace bullying are varied, and can be both overt and covert in nature — examples are provided in the code of practice. Some individuals who are the recipients of such behaviours may suffer significant and serious health effects. Some bullying behaviours may also be unlawful under other legislation. For example, the *Equal Opportunity Act 1984* covers sexual and racial harassment.

A Departmental investigation into a bullying allegation will aim to determine what attempts have been made within the workplace to resolve the issue, including the requirement to report the hazard to the employer using the workplace resolution of safety issues procedures.



Safety Performance in the Western Australian mineral industry 05-06

The Safety Performance in the Western Australian mineral industry 05-06 poster and compilation may be downloaded from the Resources safety website at www.docep.wa.gov.au/ResourcesSafety

Safety awards

WA entries win prestigious national safety awards

A Western Australian group of companies and a Boyup Brook farmer have won prestigious national occupational health and safety awards, announced on 26 April in Canberra.

Employment Protection Minister Michelle Roberts congratulated the Ausclad Group of Companies and PW and CJ Bradford on winning national Safe Work Australia Awards.

'Western Australian entrants received two of the five Awards, demonstrating the serious commitment to safe workplaces that exists in this State,' Mrs Roberts said. 'I congratulate both the Ausclad Group of Companies and Peter Bradford on great wins in Australia's premier occupational safety and health awards.'

The Ausclad Group of Companies won the Best Workplace Health and Safety Management System award for its Corporate Health, Safety and Environmental (HSE) Management System.

The system demonstrates the organisation's commitment to the safety of its employees, contractors and visitors. The judges said Ausclad would be considered exceptional if it continued on its present path over the next 12 months.

Boyup Brook farmer Peter Bradford, of PW and CJ Bradford, won the Best Workplace Health and Safety Practices in Small Business award for his invention of a portable aluminium standpipe system for filling water tanks on trucks from overhead. He was nominated for the national award after winning category 3 for best workplace health and safety practices in small business in the 2006 Work Safety Awards Western Australia.

Mr Bradford is also a volunteer fire fighter and developed the standpipe after experiencing a near-miss incident. The standpipe allows mobile tanks to be filled with water from overhead, reducing the hazards associated with manual handling of hoses and working at height. The invention has potential applications in the minerals industry.

The judging panel described Mr Bradford's

invention as 'original, innovative and effective', and said it had reduced the hazards of transferring water to a significant degree.

The winning WA entrants were among 33 finalists from across Australia who competed for this year's awards, presented by Federal Minister for Employment and Workplace Relations Joe Hockey and Australian Safety and Compensation Council chairman Bill Scales.

Mr Scales said the individuals and organisations that won the Awards should be proud of the national recognition of their commitment to safety and health in the workplace. Mrs Roberts expressed the State Government's appreciation of the commitment and creativity of Western Australians.

'Ausclad is to be commended for its commitment to a safe and healthy workplace across its group of companies,' she said. 'Peter Bradford is also most deserving of this national recognition, because he saw a problem and set about doing something about it. 'Companies such as Ausclad and individuals such as Peter Bradford deserve every accolade for their contribution to the State's workplace safety and health.'

Ausclad and Peter Bradford, along with Royal Perth Hospital's Sir George Bedbrook Spinal Unit, all won Work Safety Awards Western Australia in October 2006, making them finalists in the national Awards.

The Minister encouraged businesses of all sizes to nominate for the 2007 Work Safety Awards Western Australia. 'These Awards recognise outstanding occupational safety and health management, solutions and innovation in WA workplaces which reduce the risk of work-related injury and disease,' she said.

'They provide the opportunity for innovative Western Australians to gain national recognition for their achievements, as demonstrated by the terrific wins by the Ausclad Group of Companies and Peter Bradford.'



Peter Bradford demonstrates the simplicity and practicality of his invention

Photos courtesy of Peter Bradford

2007 Work Safety Awards WA

The Department of Consumer and Employment Protection invites entries for the 2007 Work Safety Awards Western Australia.

The awards recognise outstanding occupational safety and health management, solutions and innovation in Western Australian workplaces that reduces the risk of work-related injury and disease.

There are five categories for the 2007 awards:

- best workplace safety and health management system;
- best workplace safety and health practices in small business;
- best public sector leadership for injury prevention and management;
- best solution to an identified workplace safety and health issue; and
- best individual contribution to safety and health.

Entry is only open to individuals, groups, organisations or enterprises operating within Western Australia. Entries close at 5 pm on 13 July 2007.

For more information, visit www.worksafe.wa.gov.au/wsawards

The tripartite membership of the Mining Industry Advisory Committee (MIAC) is determined by the Minister or Ministers responsible for the administration of the *Occupational Safety and Health Act 1984* (OSH Act) and the *Mines Safety and Inspection Act 1994*.

The chairperson of MIAC is determined under section 14A of the OSH Act and is a member of the Commission for Occupational Safety and Health (COSH). The Safety and Health Representatives Working Group, a sub-committee of MIAC, comprises Resources Safety officers representing the regulator, and Nicole Roocke and Gary Wood.

Plans for 2007 include:

- advice to the Minister for Employment Protection, Hon Michelle Roberts MLA, and COSH on the recommendations arising from the Resources Safety Feasibility Study;
- consideration of other legislative matters before the committee;
- development of a number of codes of practice;
- endorsement of codes of practice and guidelines; and
- implementation of a 'welcome pack' for newly elected and re-elected safety and health representatives and their mine (or exploration) managers.



Standing L to R: Gary Wood (UnionsWA), Nicole Roocke (The Chamber of Minerals and Energy WA), Martin Knee (State Mining Engineer, Resources Safety), Dr Peter Lilly (expert member, CSIRO Exploration and Mining), Rob Watson (The Chamber of Minerals and Energy WA), Henry Rozmianiec (UnionsWA)

Seated: Brian Bradley (Chairperson, Director General, DOCEP), Kathryn Heiler (expert member, NSW Fire Brigades)

Diesel exhaust emissions

Emission control

Emissions from diesel engines contain known hazards and suspected carcinogens. The Mines Safety and Inspection Regulations 1995 clearly state that atmospheric contaminants must be controlled so far as is practicable.

Several options are available for improved control of exposure to diesel engine emissions, including:

- improvements to maintenance programs;
- emissions testing;
- emission control devices; and
- underground ventilation management.

The New South Wales Department of Primary Industries has issued a draft of *MDG 29 Guideline for the Management of Diesel Engine Pollutants in Underground Environments*. This draft guideline is available at www.dpi.nsw.gov.au/minerals/safety/publications/mdg

A list of useful web resources was also provided in an article on diesel particulates in the July 2005 edition of *MineSafe* (vol. 14, no. 2).

Exposure sampling

Resources Safety introduced diesel particulates into CONTAM quotas for underground mines in 2005–06. Since then there have been a number of enquiries regarding monitoring for diesel particulates in surface mines and process plants. If monitoring employee exposure to diesel particulates becomes part of a site's ongoing atmospheric contaminant monitoring program then it should be included in the CONTAM quota requirements.

One of the reasons that exposure data is collected on the CONTAM system is to enable comparison of occupation exposures. Comparison of exposure requires that comparable sampling techniques are used. Consequently, all mines with diesel particulate samples in their quotas have been instructed to use SKC–DP sampling cassettes and the NIOSH 5040 analytical method, and to report results as measured elemental carbon. A Perth-based laboratory is now equipped to analyse the diesel particulate samples using the NIOSH 5040 method.

Asbestos

Exposure standard alert

The national exposure standard for all asbestos fibres is 0.1 fibres per millilitre (f/mL).

Previously, the exposure standard for chrysotile asbestos was 1.0 f/mL but this was changed in 2003.

All national exposure standards can be accessed at hsis.ascc.gov.au/SearchES.aspx

Guidance on management plans

The Australian Safety and Compensation Council (ASCC) has a useful table of national standards, codes of practice and guidance notes available online at www.ascc.gov.au/ascc/AboutUs/Publications/NationalStandards/Indexof

NationalStandardsCodesofPracticeandrelatedGuidanceNotes.htm

Revised ASCC (formerly NOHSC) codes of practice and guidelines for asbestos were published in 2005. *The Code of Practice for the Management and Control of Asbestos in Workplaces* [NOHSC: 2018(2005)] contains very useful guidance for the development of asbestos management plans (see Part 8).

WELDING

The second edition of Australian Standard AS 3853.2:1991 was published in October 2006, and is entitled *AS/NZS 3853.2:2006 Health and safety in welding and allied processes – Sampling of airborne particles and gases in the operator's breathing zone. Part 2: Sampling of gases*. It is available from www.saiglobal.com

Legionella risk assessment

In December last year, two workers were diagnosed with Legionnaire's disease, which may have been contracted at the Queensland mine where they worked.

The mine involved undertook a complete risk assessment to ensure that employees were protected from possible exposure to the *Legionella* bacteria, and appropriate control measures, including cleaning and testing, were put in place. Queensland Health was notified of the situation and tested potential sources of the bacteria.

The following information on Legionnaire's disease and assessing the risk at mine sites is extracted from the Queensland Department of Mines and Energy's *Mining and Quarrying Safety Alert No. 151*, issued in January this year (available from www.nrw.qld.gov.au/mines/inspectorate/safety_alerts.html).

Legionnaires' disease is a type of pneumonia caused by the inhalation of tiny droplets of moisture (mists or aerosols) that contain the *Legionella* bacteria.

The incubation period of the *Legionella* bacteria is between two and ten days. The pneumonia-like symptoms include

physical weakness and feeling tired, high fever, cough, diarrhoea, nausea and vomiting, muscle aches, chest pains, and shortness of breath.

Only a small percentage of people exposed to the bacteria become ill — most exposed people exhibit no symptoms of ill health. People 50 years or older with weak immune systems or chronic respiratory illnesses are most at risk of contracting the illness.

Medical advice should be sought immediately if infection is suspected.

People who are treated early with antibiotics will usually begin to recover within a few days. Left untreated, the illness can progress rapidly.

Possible sources of contaminated water on mines include intake air cooling plant and major compressor cooling plant. The contaminated mist can be inhaled and infect people susceptible to such health risks.

Legionnaires' disease can not be transmitted from person to person. Drinking and washing in water containing *Legionella* is not likely to result in infection.

Recommendations

Some underground coal mines have installed bulk air conditioning plants to manage thermal stress. These plants typically comprise four bulk air coolers and a cooling tower, with an automated biocide dosing system to control bacterial growth. Mines installing such plants are advised to consider the following issues as part of a risk assessment process:

- When choosing the plant installation site, consider the direction of the predominant prevailing winds, the potential for cooling tower drift and the location of underground mine air intakes. Ideally, any drift from cooling towers should be away from surface buildings, mine air intakes and areas of high human traffic.
- Prior to commissioning the plant, get a qualified person to test the water for bacteria — heterotrophic colony counts (HCC) and *Legionella*.
- Water-quality sampling should be conducted at least monthly.
- Regular maintenance should be conducted on the plant by a competent person to ensure it is operating to specification. Particular attention should be paid to operating water temperatures, the automated

Relying on self-rescuers

An investigation by the USA National Institute for Occupational Safety and Health (NIOSH) has found that oxygen self-rescuers discarded during a mining tragedy last year were operational.

The incident and its implications for Australian mining operations are described in the NSW Department of Primary Industries' *Mine Safety Report No. SA07-05* (available from www.dpi.nsw.gov.au/minerals/safety-alerts), which is extracted below.

On 2 January 2006, 12 men were trapped when there was an explosion at the Sago mine in the US state of West Virginia. The crew were arriving at work when a sealed area containing an explosive mixture of methane ignited, trapping the men with a wall of toxic gas.

Subsequent exploration found 11 of the miners deceased and another alive but in a critical condition. All had suffered from the effects of carbon monoxide poisoning.

On interviewing the only survivor, investigators discovered that, while all the miners carried oxygen self-rescuers, at least four of the units were considered unusable and subsequently discarded.

The investigation found all the units to be sound and that the discarded units may have been needlessly removed. Thorough training or more frequent retraining may have negated these circumstances.

The incident report said a number of other incidents involving self-contained self-rescuers have been documented in recent years. Users have noted:

- difficulty in breaking the initial seal;
- difficulty removing the plug from the mouthpiece;
- difficulty unravelling the breathing tube and nose clip; and
- the initial bag-filling oxygen charge has sometimes failed to activate, requiring manual inflation.

None of these difficulties constitutes failure of the unit but the possibility of their occurrence should be mentioned and allowed for in any training program.

Other points that should be addressed in training programs include:

- training units do not perform in the same fashion as a real unit;
- there is no heat produced by a training unit;
- breathing resistance is not as high in a training unit;

Occupational health news

biocide dosing system, and the presence of any nutrients or algal growth.

Shutting down the power to bulk air conditioning plants for extended periods can create an additional risk. Without power, water will stagnate and temperatures in the plant may rise to levels that promote the growth of the *Legionella* bacteria.

In addition, the automated biocide dosing system will not work without power. When recommissioned, the plants could potentially disperse contaminated water in the form of cooling tower mist.

One way to prevent this is to dump and drain the water from bulk air conditioning plants when they are shut down for extended periods. If this is not practicable, the water should be manually dosed and regularly tested for HCC and *Legionella* to ensure a healthy water supply is maintained before recommissioning.

Further information and recommendations for controlling HCC and *Legionella* in cooling towers can be obtained from Australian Standard AS/NZS 3666 Set:2006 *Air handling and water systems of buildings – microbial control*.

- units should be changed over in designated areas, rather than waiting until the user is on the verge of respiratory distress due to CO₂ build-up;
- training should include opening and donning under various difficult circumstances, such as in the dark or at least low light, dusty or smoky environments;
- practical use should be timed in an effort to simulate the pressure of an emergency situation;
- changeover from one unit to another should be practised under all possible circumstances; and
- training should include the escape system as a whole, including the location of all relevant caches, changeover stations and refill stations.

PPE - personal protective equipment

The terms personal protective equipment (PPE) and occupational health and safety (OHS) are firmly linked but are sometimes confused with one another.

Unfortunately, Resources Safety inspectors frequently observe mine employees relying solely on their PPE to protect their health against poisonous gases, fumes, dust and excessive noise levels. If this is the only form of protection used then make sure it will work!

Sometimes we find that PPE has been purchased based on price, with

no consideration given to its purpose. For example, dust masks are worn in situations where toxic gas leaks are frequent — even though a P2 filter provides negligible protection.

Another example is respirators fitted with the correct canister to purify the air that is breathed, but workers are unaware of how and when the canister should be replaced. All respirator canisters have a limited life-span based on frequency of use and the concentration of the contaminant that is present.

Selecting and using PPE

1. What is the purpose?

- Gas (single, multiple), particulates (dusts, fibres, fumes), both (welding)
- Level or concentration of contaminant (or lack of oxygen)

2. Does it fit properly?

- Fitness testing is necessary

3. When and how to clean or change?

- Clean reusable respirators before each shift
- Replace canisters according to known levels of contaminant and specified safety ratings

4. Compliance issues?

- One size does not fit everyone so companies must provide a choice of adequate and effective PPE
- Everyone who must wear PPE should understand what it does and why they wear it



PPE only works when it is worn correctly!

Hearing protection is heavily relied upon in most noisy mines and workshops.

The most common form of hearing protection in Western Australian mines is ear plugs. However, minimal protection is offered by ear plugs that have not been inserted correctly.

As a rule of thumb, if you can see more than a quarter of the earplug when you look at yourself in the mirror front-on, then you will not get the specified protection of the plug.

Take a few extra seconds to ensure the plugs are correctly inserted before entering noisy areas.

LOSS of control

An operator's perspective

The September 2006 issue of *Minesafe* (Vol. 15, No. 3) contained an article on operating grades for mobile equipment and *Mines Safety Significant Incident Report No. 139*, covering loss of control of service vehicles.

These generated feedback from a concerned driver with ten years' experience driving agitator trucks, including two six-month stints underground in the past two years. The driver was concerned that, while the recommendations in the article and report were good, in practice he rarely sees them acted upon.

Contract companies were the focus of his concerns, in terms of managers and supervisors and also some workers who may be new to the industry or only work irregularly underground and therefore are not overly familiar with the environment. His stated aim is to improve the system, not 'get on the wrong side of management and bite the hand that feeds me'.

In his correspondence, he described some of his experiences to support his disquiet with the situation at some workplaces.

In one underground mine an agitator truck had hit the wall because the service brakes were not slowing the truck. The operator had attempted to turn into a drive but was only partly successful, causing serious damage to the agitator and frame. The operator was pressured to say nothing about the brakes and complied — in any case, his employment was terminated a few weeks later.

The truck was returned to site a few months later but the concerned driver found that the service brakes were average and the park brake would not hold the truck when fully loaded on a steep gradient. After discharging his load he refused to take the truck down again until the brakes were fixed.

Another example the driver provided was that of a new vehicle with an automatic gear box, in which first gear couldn't be locked in because it was designed that way to protect the engine from over-revving. He found it was a 'nightmare' to drive because it would jump into second gear and '... take off like a rocket — unexpectedly'. The exhaust brake was

virtually non-existent under 1,400 rpm so, to go very slowly, he had to use the service brakes — another 'nightmare' given the vehicle idles at about 700 rpm. If the service brakes are not adjusted correctly then the conjunction of circumstances works against the driver and '... before you know it, the wall is all too close.'

A further problem with the vehicle was that, unless it was brought to a complete stop and the brake depressed, when changing direction the gearbox would go into neutral, even though the dashboard display indicated 'Drive' or 'First'. In his own words, 'Next you're travelling down decline in "angel gear" but not knowing it, and waiting for the exhaust brake to cut in and having to use the service brake to bring the truck to a complete stop and then start again — a big job sometimes because you're travelling too fast, it's hard braking when you're going around corners, i.e. when not travelling in a straight line, concrete bowl turning same way as corner, weight shifting, camber of decline — everything working against you.'

He notes that 'autotrucks' can be fitted with a retarder and work perfectly, although it may be a costly procedure. On manual trucks, he found that the exhaust brakes work fine because the operator can control the engine revolutions easily, using the gears and low range. He had followed up with the gearbox manufacturers, who advised that they could down-rate the gearbox and make it more suitable to the application, but they would have to get a service technician to visit the truck and do it via a computer. Apparently, management was not receptive to this suggestion.

He has also been employed by a contractor where his manager and supervisor knew very little about underground and its workings. As far as he was aware, both went underground at site only once, towards the end of the job. Prior to that, it had been a decade since they'd been underground.

The concerned driver included a number of his own recommendations in the correspondence, many of which are similar to those made over many years by Resources Safety and similar regulatory bodies:

- there should be more maintenance of vehicles by 'appropriate people' and to the highest standard;
- operators should receive regular 'proper' training by an independent

and competent person, and the operator should be passed or deemed competent by an independent and competent person — not a fellow driver; and

- managers and supervisors, specifically in contractor situations, must have a good understanding of the particular underground environment in which the mobile equipment is being used and what is expected of it, and what could happen and how to deal with it.

Regulator's response

The correspondent has described what would, with validation, be breaches of the *Mines Safety and Inspection Act (1994)* and associated regulations, including:

- Section 9 – Duties of employers;
- Regulation 4.13 – Induction and training of employees;
- Regulation 10.37 – Trackless units – maintenance; and
- Regulation 10.38 – Trackless units – braking systems.

The issues raised are significant and everyone involved in mining and associated activities should consider the wider implications for their own duty of care:

- Employers are required to provide and maintain a working environment such that (so far as may be practicable) employees are not exposed to hazards — this includes the provision of properly maintained equipment that is fit for the purpose for which it is used.
- Employees must take reasonable care to look out for their own safety and that of others — including reporting unsafe plant or conditions.
- Equipment designers and suppliers must (so far as may be practicable) ensure that plant is designed so as to be hazard-free and, if there are any limitations on its use (such as restriction on prolonged use underground or on steep gradients) these must be specified to people who may have to use the equipment.

It is simply not good enough to use equipment that may be perfectly adequate in one environment (e.g. flat, tarmac roads on surface) in another, more adverse environment (e.g. underground, on wet unmade roads and steep gradients) without ensuring that the equipment is (and will continue to be) safe to use in the adverse application.

Safety and health representatives section

Ask an inspector

Kalgoorlie-based Senior Occupational Health Inspector **Terry Siefken** is also Kalgoorlie born and bred.

Educated at the Eastern Goldfields Senior High School, Terry graduated from the WA School of Mines (WASM) in 1974 as a metallurgist.

He has a wealth of experience in the Goldfields, having worked at WASM and the Kalgoorlie Metallurgical Laboratory as a fire assayer and metallurgist for 20 years, including a five-year period lecturing in metallurgy.

Terry joined the Kalgoorlie Inspectorate in 1994, working in the Occupational Health Branch of the Mining Safety Division of the then department.

He is required to inspect mines in the region ranging from Wiluna to Esperance, and Southern Cross to the State border.

His main role is to conduct audits, particularly underground ventilation and noise at sites throughout the Kalgoorlie Inspectorate.

He has a specialist role, specifically targeting occupational health issues, covering a wide range of topics such as asbestiform minerals, arsenic, mercury, lead, nickel, fumes and gases, and toxic chemicals.

One of the areas Terry particularly enjoys is providing advice and education to staff and personnel at mine sites regarding occupational health issues.

He is also required to investigate serious incidents and accidents, and mediates between involved parties concerning complaints brought by the public, or mine site employees.

Terry sees a number of consequences of the high rate of turnover in the mining industry.

'After performing these duties for the past 12 years, I have observed two common themes in my incident investigations', Terry said.

'In the majority of fatalities and serious accidents, the underlying factors that emerge are "lack of training" and "lack of supervision".'

'The overriding concern, which has arisen after attending numerous incidents and accidents, is the "loss of corporate memory". On many occasions I have been called out to an incident, only to see a repetition of a similar situation that occurred at the same site several years before.

'Upon commenting to the personnel involved that the circumstances of this incident are almost identical to one that occurred some years ago, the response is invariably, "We were not here then".'

'Due to the high rate of turnover in the industry, many people only stay in a particular job, or at a particular site, for 18 months. As a consequence, the communal knowledge, acquired as a result of incidents and accidents that have occurred, is not retained. When the circumstances again conspire to cause a repetition of the incident, personnel do not have the experience to recognise the developing catastrophe.

'Avoiding "history repeating itself" can only be achieved through documented procedures and by providing training that can identify the potential disasters, before they happen.'



Contact us

Perth office Mineral House, 100 Plain St, East Perth WA 6004

Accident / Incident Group

Email: axtatmanager@docep.wa.gov.au
Phone: 9358 8101
Fax: 9325 2280

Certificates of Competency

Email: sljohnson@docep.wa.gov.au (Sophie Johnson)
Phone: 9358 8014
Fax: 9358 8000

Contam and MineHealth

Email: contammanager@docep.wa.gov.au
Phone: 9358 8089
Fax: 9358 8094

Dangerous Goods and Explosives

Email: dgsb@docep.wa.gov.au
Phone: 9358 8002
Fax: 9358 8000

Engineering Safety

Email: resourcessafety@docep.wa.gov.au
Phone: 9358 8060
Fax: 9325 2280

General Enquiries

Email: resourcessafety@docep.wa.gov.au
Phone: 9358 8079
Fax: 9325 2280

Occupational Health

Email: contammanager@docep.wa.gov.au
Phone: 9358 8091
Fax: 9325 3441

Publications and Promotions

Email: resourcessafety@docep.wa.gov.au
Phone: 9358 8154
Fax: 9325 2280

Regional offices

Jim Boucaut, Senior Inspector of Mines (Kalgoorlie)

Email: jboucaut@docep.wa.gov.au
Phone: 9026 3200 Fax: 9021 3612

Peter O'Loughlin, Senior Inspector of Mines (Karratha and Collie)

Email: poloughlin@docep.wa.gov.au
Phone: 9734 1222 Fax: 9734 1606

66 Wittenoom St, Collie WA 6225 (PO Box 500)

Email: collie.inspectorate@docep.wa.gov.au
Phone: 9734 1222 Fax: 9734 1606

48-52 Brookman St, Kalgoorlie WA 6430 (PO Box 10078)

Email: kalgoorlie.inspectorate@docep.wa.gov.au
Phone: 9026 3200 Fax: 9021 3612

Cnr Welcome Rd and Hedland Plc, Karratha WA 6714 (PO Box 518)

Email: karratha.inspectorate@docep.wa.gov.au
Phone: 9186 8888 Fax: 9186 8889

Safety and health representatives section

FAQs on election of safety and health representatives

Resources Safety often receives queries about the election process for safety and health representatives.

Information and the election notification form are available in the safety and health representatives section under mining on Resources Safety's website at www.docep.wa.gov.au/ResourcesSafety, and frequently asked questions are answered below.

Who can be nominated for the election?

Only employees who work at the workplace or within the group that the safety and health representative is to be elected to cover can be nominated for election for a position.

This is to ensure elected safety and health representatives will be familiar with the safety and health issues for the workplace or group.

Where a person is to be elected to represent underground miners, they must have worked for at least 12 months in underground mining operations.

What if there is only one nominee?

If there is only one eligible nomination or the number of eligible nominations matches the number of positions, then there is no requirement for an election to be held.

In this situation, the candidate is considered to be elected unopposed. However, the notification process must still be followed and a completed election notification form sent to Resources Safety (see below).

Who can conduct an election?

The legislation does not mention that a specific or particular individual needs to conduct the election, but suggests that an election could be run by the

electoral commissioner, an employer organisation or a union. However, other options are an employee from a different group in the workplace, or someone from outside the workplace.

The only requirement is that the employee and employer delegate(s) must agree on who will conduct the election.

Can the person conducting the election be a nominee?

In order to maintain the integrity and transparency of the election process, it is recommended that people wishing to nominate as a safety and health representative do not conduct the election.

A person should not be chosen to conduct the election without prior agreement as he or she may wish to nominate.

What is the notification process for the election results?

The person conducting the election must notify the result in writing to the employer, the State Mining Engineer and the person elected within seven days, specifying the day on which the election was held.

The prescribed notification form (available from the Resources Safety website) must be used to notify the State Mining Engineer.

'In-house' or superseded forms will not be accepted. Incomplete or illegible forms will be returned for completion or clarification.

Why is it important to notify the State Mining Engineer?

It is a regulatory requirement to notify the election result to the State Mining Engineer. Furthermore, the election results are updated on Resources Safety's safety and health representative database.

Only current representatives on the database will receive information packages from Resources Safety to help them in their role, including posters, guidelines and *MineSafe* magazine.

When does the term of office start?

A person who is elected as a safety and health representative holds office for a term of two years commencing on the tenth day after the election was held.

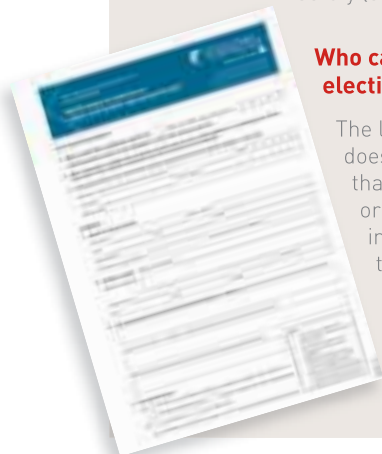
What if a job changes, the workplace moves or the safety and health representative leaves the job?

Safety and health representatives are elected for a term of two years to represent employees in an area, workplace or group determined during consultation before the election.

A safety and health representative also ceases to hold their position if he or she:

- leaves their job;
- resigns from the position;
- transfers from the area they were elected to represent; or
- is disqualified by the Occupational Safety and Health Tribunal.

In those circumstances, either the employer or the safety and health representative should notify Resources Safety so the database can be updated. The advice should be sent to ResourcesSafety@docep.wa.gov.au



Big and small don't mix

Road safety on mine sites Part 2

Part 2 of this topic concentrates on the influence of human nature in traffic management on mine sites and the interaction of heavy and light vehicles. Part 1 was presented in the December 2006 issue of MineSafe (Vol. 15, No. 4) and covered fatigue and restraint use.

The information presented is derived from a variety of sources but is not exhaustive. Instead, this themed section aims to provide discussion points for workplaces to consider when identifying and assessing the hazards associated with vehicle movements on their sites.

Big and small don't mix

Most in the mining industry are used to seeing large trucks, face shovels, bulldozers and scrapers working on mine sites.

Big may be beautiful but, like all big things, they have to be treated with respect and caution as there are fundamental hazards with such equipment.

Being large, these vehicles have blind spots and can be very hazardous and do serious damage if they accidentally come in contact with light service vehicles.

They cause even more of a mess when they accidentally contact personnel working close to them.

People like supervisors, spotters or service personnel and objects like comparatively 'small' four-wheel-drive service vehicles aren't easily visible to the driver of a 250 tonne haul truck.

To reduce the hazards when working near big mobile equipment:

- give way when confronted by large mobile equipment;
- avoid parking light vehicles close to large items;
- never leave the vehicle in the vision shadow of the big machine;
- make sure the operator of the big bulldozer, haul truck or face shovel can see you if you are on foot and working near the machine;
- avoid overtaking haul trucks — if you have to, contact the driver by radio to tell him of your intentions;
- stay alert to the dangers that big vehicles pose — especially at night; and
- sound your horn before moving.

Resources Safety has a variety of information available on this topic from the mining section of the website (www.docep.wa.gov.au/ResourcesSafety) including:

- *Mine Safety Matters* brochures on working near large mobile equipment and truck driving;
- *Significant Incident Report No. 132* – Mine haul truck runs over a light vehicle following a driver change; and
- a toolbox presentation on what can go wrong when 'big meets small', including photographs of incidents.

Resources Safety's incident database also contains many reports applicable to this topic, and a small selection is given below:

- A fitter parked his light vehicle near a parked haul truck and got out of the vehicle. The operator of the truck got into the cab and drove off over the back and right side of the light vehicle not having seen it.
 - While repositioning trailers in a contractor's yard, a front-end loader reversed into a light vehicle causing minor damage.
 - A truck was returning from the waste dump on the surface back down to the portal. A fitter's light vehicle was on its way to the surface and arrived at the portal at the same time as the truck reached the portal area. Both parties had radioed their intent to enter the portal. Neither party received the message that the other was approaching. The light vehicle was just outside the portal when they noticed each other and both locked their brakes. The truck skidded down towards the portal and hit the front of the light vehicle, pushing the vehicle
- back down into the portal some 4 metres. Both vehicles were then shut down and the fitter climbed out of the cab of the light vehicle. There was a slight injury to the lip of the driver of the light vehicle and minor bruising to his abdominal region. The light vehicle was written off.
 - At 7:15 this morning a haul truck, driven by a trainee driver, entered a corner and lost control of the truck. A light vehicle coming up the ramp stopped and immediately reversed to avoid colliding with the truck. There were two personnel in the light vehicle and two personnel in the haul truck at the time of the incident.
 - While clearing the stockpile floor, a loader reversed into a light vehicle that was parked in the vicinity. The vehicle had been used by the loader operator to get to the loader. It was unattended at the time of the incident.
 - An underground loader was driven down the decline and turned right into a stockpile area where the bucket was lowered, damaging an unoccupied light vehicle.
 - A collision occurred when a grader, working on a waste dump, reversed into a stationary light vehicle with two people inside.
 - A bulldozer collided with a light vehicle stuck on a ramp in the pit. There had been a radio communications mistake as the light vehicle driver had been using the wrong channel after changes to frequencies and other routine modifications.
 - A dump truck had to take avoiding action to not collide with a light vehicle which had stopped, without making a radio announcement, shortly after entering the pit. The crest of the pit ramp prevented the vehicle from being seen, although it was fitted with a flag.

Traffic management — the human factor

Traffic management on mine sites is managed to reduce the risks associated with vehicle and pedestrian movements, especially interactions between light and heavy vehicles, and maintaining cost effective and efficient traffic flow.

Some of the measures adopted to achieve and maintain a safe traffic system are:

- common and specialised traffic signage, markings, delineators and barriers;
- road and intersection design factors such as gradients, road surface material, visibility, type and volume of traffic;
- site or company policies or protocols for functions such as speed limits, overtaking, road rules (e.g. give way), communication and parking;
- fatigue management systems;
- various communication systems, including two-way radios, leaky feeder systems, vehicle tracking, personnel tracking, video monitoring; and
- vehicle design, modification and maintenance strategies.

A search and review of Resources Safety's incident database covering the past few years reveals a variety of problems faced when managing mine site traffic:

- A light vehicle being test-driven by a fitter tipped onto its side at the mine road entrance after skidding on the



Good advice - Stop for dump truck

gravel surface when braking at a give-way sign.

- A service truck had stopped at a stop sign waiting to cross a haul road. There was a light vehicle behind the service truck. The service truck driver flagged down a vehicle heading in the opposite direction. When that vehicle stopped, the service truck reversed to get into a better position, window-to-window, and in doing so hit the light vehicle waiting behind. There was minor damage to the bull bar of the light vehicle.
- A cleaner had completed morning duties (6 am to 10 am) and was leaving the mine site for another mine. About 1.5 km from the site, the person lost control of the motor vehicle and it rolled several times. Both the road condition and visibility at the time were excellent, and the road had been graded the previous day.

It is not known what caused the accident although the likely causes appear to be excess speed and loss of concentration. The speed limit for the road is sign-posted at 60 km/h.

- Blinded by the sun, a contract boilermaker's vehicle hit the centre island, swerved left and rolled. There were no signs of speeding, as confirmed by a witness statement from another vehicle being driven behind the person involved in the incident.

The contract boilermaker suffered minor bruising, and his site access permit was revoked as he tested positive for cannabis.

- A light vehicle descending a single access ramp to the pit met a haul truck coming up and had to turn around and move to an area where the truck could pass. The light vehicle driver had called on the radio before entering the ramp but had not received a reply.

- A water truck had to brake hard and locked up the truck wheels at a pit road intersection due to the driver being unsure as to the intentions of the driver of a light vehicle that was also approaching the intersection.
- The driver of a light vehicle failed to follow procedure by not calling up for permission to pass a truck parked in the tipping bay at the crusher.

Wherever practicable, engineering solutions should be sought to reduce the potential risks associated with road user behaviour or operator error. However, this sample of incidents confirms that not all are unique to the mine environment — many are familiar to the public road system and the 'human factor' cannot be ignored.

There is some interesting research being undertaken at Monash University's Accident Research Centre (MARC) investigating the human aspects of road safety that are applicable to road safety on mine sites.

A MARC paper published in 2004 by Michael Lennè and others (available from www.monash.edu.au/marc) reviewed recent research in applied experimental psychology and the implications for countermeasure development in road safety.

The authors' first task was to review research published in selected journals between 1998 and 2002, including research related to specific fitness-for-duty issues, such as the effects of fatigue, alcohol and drugs on driving performance. The general headings that emerged were:

- information processing and cognition;
- decision making;
- mental workload; and
- human error.

This primary review identified theories, frameworks, models and countermeasures that are used in domains other than road safety and may provide ideas for road safety countermeasure development, including behavioural, engineering and enforcement-based approaches.

The second task derived possible countermeasures from the reviewed material, and these were documented under one or more of the following headings:

- education;
- training;
- promotion/advertising;
- traffic engineering legislation;
- enforcement;
- licensing;
- vehicle design; and
- 'other'.

Lastly, the authors collated these outputs into a final set of recommendations for countermeasure development. Some of their key findings relate to:

- developments in training techniques and methodologies that have the potential to increase the effectiveness of driving training;
- opportunities for advanced simulation to support improved design and evaluation of vehicle cockpit interfaces and traffic management systems;
- tools and techniques that are being developed to support and optimise the design of human-vehicle interaction to reduce driver workload and distraction; and
- the absence of predictive models of human behaviour and error causation in the road safety domain.

What does this mean for road safety on mine sites once road design, traffic engineering, vehicle standards and maintenance are attended to?

Certainly, community education campaigns addressing the four biggest causes of road deaths — speed, drink driving, fatigue and inattention, and not wearing seatbelts — are long-term projects that do have positive flow-on effects to road-user behaviour on mine sites.

However, as Grant Dorrington, Road Safety Council Chair, stated in January this year, 'Individuals have to take responsibility when they get behind the wheel ... road safety involves every road user being responsible and complying with speed limits, not drinking and driving, wearing seatbelts, paying attention and not driving tired.'

what's NEW on the web

To find out what's new on the Resources Safety website, add www.docep.wa.gov.au/ResourcesSafety to your list of favourites and keep an eye on the billboards at the right-hand side of the homepage. The billboards link directly to significant new material and are a quick guide to what's been added recently. If you experience problems using the site or have any ideas to improve its navigability or content, please contact **9358 8154** or ResourcesSafety@docep.wa.gov.au — your input is welcome.



www.docep.wa.gov.au/ResourcesSafety



significant incident reports and safety bulletins

All significant incident reports and bulletins are available online at www.docep.wa.gov.au/ResourcesSafety in the mining section

Significant Incident Report No. 141
Released 19 March 2007

Rockfall fatality

Incident

During late 2006 an airleg miner sustained fatal injuries in a fall of ground accident while drilling blast holes in an underground stope where sidewall stripping was in progress.

The rockfall, estimated to be in the order of 4 tonnes, originated from the shoulder area between the sidewall and backs or hangingwall of the stope alongside the face being drilled.

Causes

- The fall of ground was defined by geological structures that acted as planes of weakness through the rock mass, allowing a gravity-related rockfall to occur.
- No ground support was installed in the backs immediately above the airleg miner.

Precursors

- It is understood that the general appearance of the backs and walls at the fatality site did not raise any concerns to those working in the area. However, it is believed the mining profile of the backs of the stope had changed from that noted in previous blasts. Such changes in the appearance of mining profiles are indicators of potential change to workplace stability in underground mines.

- At least two of the critical geological structures that bounded the rockfall were evident prior to the rockfall event.

Recommendations

- To prevent similar rockfalls, mine managers must ensure ground control management plans at their operations are adequate for all mining conditions and mining methods — particularly in airleg stopes where geological structure exists in the rock mass.
- Where excavation profiles or ground conditions change, standard ground control practices should be re-assessed by suitably qualified personnel to determine whether additional stabilisation measures are required (e.g. spot bolting). Proper ground support standards and work instructions must be issued for all areas being mined.
- Management strategies used to identify and treat changing ground conditions must be specified in the ground control management plan, along with the methods to be used to ensure that all stabilisation measures are completed in line with work instructions.

Mines Safety Bulletin No. 78
Released 2 March 2007

Use of explosive mortar devices for bringing down rockpass or drawpoint hang-ups

This bulletin is issued as a result of an investigation following a near-miss incident involving a mortar used to fire impact sensitive explosive charges at underground hang-ups. A previous incident resulting in a fatality occurred approximately a year ago involving a similar device.

The type of device involved is a mortar equipped with a base plate and stand which is used to fire a finned projectile containing a 2.2 kg impact sensitive booster charge at hang-ups. Further details regarding this type of device can be found in *Mines Safety Bulletin No. 76*, which should be read along with this bulletin.

Incident

During day shift, two operators were asked to set up and arm the mortar device in a draw point for firing at the end of the shift. The draw point had become blocked by large rocks that required an explosive charge to remove them.

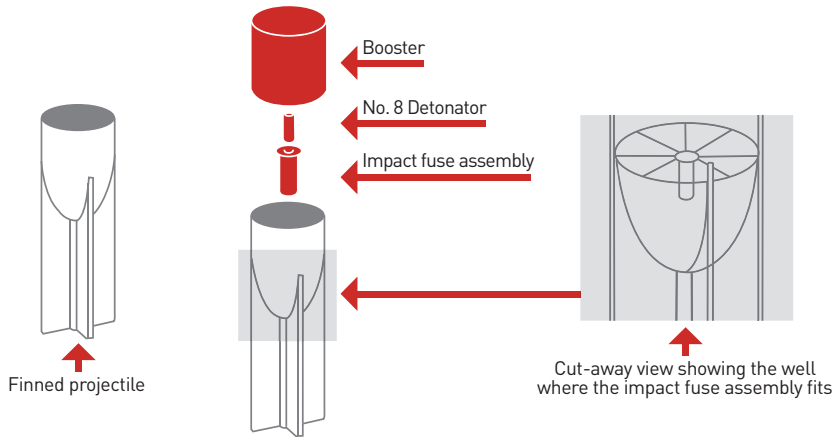
Prior to the night shift entering the mine on the same day, an operator was instructed to carry out an inspection of the draw point prior to staff re-entering the area after blasting had occurred. On entering the draw point, the operator observed that the mortar hardware unit had been destroyed during the blast. He identified hardware components scattered around the area.

The stand legs and half of the mortar barrel were found on a pile of dirt inside the stope and were later recovered with a remotely-controlled loader. A visual inspection of the mortar hardware indicated that the 2.2 kg booster had detonated in the base of the barrel; the top half of the barrel was not damaged at all.

As a result of the preliminary assessment undertaken by the operator, it was apparent that the 2.2 kg explosive booster prematurely detonated inside the mortar barrel upon initiation of the propelling charge.

Causative factors

The likely cause of this particular incident was found to be a misaligned well in the centre of the plastic



tailfin used to mount the impact fuse assembly and hold the booster charge. Misaligned wells appear more oval-shaped, rather than circular in cross-section, as they should be. The problem apparently results from a manufacturing error, not picked up by quality control processes.

It would appear that this manufacturing error has occurred in a certain percentage of finned tubes (around 5-6% of those checked). The well in the centre of the finned tube is not formed properly in the manufacturing process and when the impact fuse assembly is inserted into the well, it sits at an angle, rather than in the correct position in-line with the long axis of the projectile. This may be compounded by another fault, where the well designed to receive the impact fuse assembly is tapered, rather than cylindrical, resulting in the impact fuse standing slightly proud of its seat, rather than fitting in the correct position within it. It is thus impossible for the operator to assemble the finned projectile properly. This results in the impact fuse assembly sitting too high in the well and when the finned projectile is assembled, the detonator is forced against the booster instead of fitting comfortably inside it as it is designed to do. Forcing the detonator against the booster in this manner is potentially extremely hazardous because the detonator may be prematurely initiated by crushing either during set-up or at launch.

If a 2.2 kg booster initiates prematurely inside the mortar, steel fragments travelling at supersonic speeds may fly in all directions. The consequences are, obviously, potentially catastrophic.

The investigation also revealed a second issue that can contribute to the problem. The 2.2 kg cast boosters can slip inside their cardboard casings, and if the casing is not completely filled to the top with cast explosive during pouring at manufacture then the problem potentially worsens. When the operator assembles the finned projectile this slippage, combined with the incomplete filling of the booster, has the potential to mask the fact that the impact fuse assembly is sitting too high in the well. The booster and the casing may appear to fit flush with each other and both may appear to be sitting at the correct height in the mortar, despite the fact that the detonator fuse assembly has forced the explosive charge higher within the booster cartridge. The operator may not notice that there is a problem despite the fact that the impact fuse assembly is being forced hard up against the booster.

The damage to the mortar sustained in this near-miss incident is similar to the damage in the previous incident, in that the mortar tube was blown apart near the base with a 'petal-like' or "banana-skin" opening of the barrel where the booster charge prematurely detonated.

Precautions

Mine managers are strongly advised to consider discontinuing the use of such explosive mortar devices for bringing down rockpass or drawpoint hang-ups on each site where they are employed until the supplier has confirmed by inspection of the products supplied to the site that the manufacturing problems noted above are not likely to constitute a hazard at that site.

Mines Safety Bulletin No. 79
Released 2 April 2007

Cyclone - emergency preparation, planning and preparedness

Hazard

Recent tragic events at a rail construction camp near Port Hedland in the Pilbara region of Western Australia highlight the ferocity and damage nature is able to create in communities and mine sites in the region.

On Friday 9 March 2007 Cyclone George, a category 4 cyclone, crossed the Pilbara coast of Western Australia and caused devastation to a rail construction camp approximately 105 kilometres inland south of Port Hedland in the early hours of the morning. This resulted in two deaths and numerous injuries to rail construction personnel while they were sheltering in their accommodation units, more commonly known in the mining industry as dongas.

Heavy rainfall from the cyclone also caused substantial flooding, which made regional roads impassable and interrupted communication systems, hampering rescue operations in the area. The State Emergency Services including police and medical staff were airlifted by helicopter from Karratha to the rail construction camp to assist in the recovery.



Contributory factors

It is too early to comment on the contributory factors that caused this incident as the investigation by WA Police and WorkSafe is continuing. However, while the findings may not be released for some time, it is appropriate to issue this safety bulletin to remind workplaces in the region of the potential hazard and consequences associated with cyclones. It is important for every employer located in a cyclone sensitive region to prepare a comprehensive emergency management plan which addresses risks associated with cyclones. Preliminary findings from the investigation associated with Cyclone George have led to the following recommendations.

Recommendations

Given the uncertainty and unpredictability of damage created by individual cyclones, employers in cyclone sensitive regions are urged to apply extreme caution with regard to exposing employees to the dangers associated with cyclones.

1. In accordance with Regulation 4.30 of the Mines Safety and Inspection Regulations 1995 and Regulation 3.10 of the Occupational Safety and Health Regulations 1996, every employer must develop emergency procedures and plans in conjunction with advice from Fire and Emergency Services Authority

of Western Australia (FESA) and other regional emergency planning groups where their sites are located.

2. The emergency plans should include details for making the site safe and ensuring the safety of personnel as far as is practicable. This should include the removal or restraint of loose objects and structures and evacuation of personnel.
3. Every accommodation unit or donga and every transportable building on worksites and camps in cyclone sensitive regions should be adequately secured.
4. During the Blue and Yellow Alert Cyclone Warning phase a safe and orderly evacuation of non-essential personnel from the worksite or camp should be considered prior to high intensity cyclones passing in close proximity to the site.
5. Employees remaining on site during the cyclone should be moved to a designated appropriate shelter well in advance of the arrival of the cyclone to avoid being injured during the transfer to the shelter.
6. Where employees are required to stay on site, adequate stocks of food and other essential items should be available during the period when the site may be cut off due to high winds or flooding.

7. During the Red Alert Cyclone Warning phase when all power has to be isolated or in the eventuality of damage or interruption occurring to the power supply or telephone and internet connections, an adequate means of reliable emergency backup communication should be available on site to make contact with external emergency services should help or assistance be required.
8. Each site should continuously monitor cyclone warnings issued on radio, television or via the internet connection to the Bureau of Meteorology or FESA websites. In the event of power interruptions on site, battery powered radios should be available.

All employers in a cyclone sensitive region are requested to review their cyclone procedures as a result of this bulletin and the recommendations made above.

Additional information covered in this safety bulletin on preparing for cyclones can be found on the following websites or locations:

Bureau of Meteorology
www.bom.gov.au

Fire and Emergency Services Authority
www.fesa.wa.gov.au

Building Code of Australia
www.aib.org.au/buildingcodes/bca.htm

Do you carry out scaffolding, dogging or rigging work?

Do you operate a forklift, crane, hoist or pressure equipment?

Do you employ workers who do this work or operate this equipment?

New licence for high risk work

If you answered YES to any of these questions then you need to know that new Australia-wide licensing rules apply to this 'high risk work'.

Licences issued under the new National Standard for Licensing Persons Performing High Risk Work replace the current National Certificates of Competency, allowing licence holders to work anywhere in Australia.

The new licence is renewable every five years, and national regulations will be in place in July 2007.

In Western Australia, the new standard will take effect under the Occupational Safety and Health Regulations 1996 from 1 October 2007.

Further information is available from WorkSafe's website at www.worksafe.wa.gov.au in the certification, registration and licensing section under 'Safety at work'.

The Mines Safety and Inspection Regulations 1995 need to be amended to bring them into line with these new requirements. Updates will be provided in future issues of *MineSafe* and on Resources Safety's website at www.docep.wa.gov.au/ResourcesSafety