



DEPARTMENT OF
MINERALS AND ENERGY
WESTERN AUSTRALIA

MINING OPERATIONS DIVISION

MINESAFE

Overloading/Load Bias?



Excessive overloading and/or load bias beyond design parameters may lead to the likely failure of critical components and instability which may seriously jeopardise safety.

It will also reduce the expected life of truck components such as engines, transmissions, tyres, bodies, suspension cylinders, hydraulics, hoist cylinders, steering systems, final drives and wheel bearings, and can result in spillage and deterioration of haulroads.

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A Tribute to Pat Gilroy

After some 20 years of devoted service to the Chamber of Minerals and Energy and to the mining industry in Western Australia, Pat Gilroy retires from his position as General Secretary and Deputy Chief Executive Officer with the Chamber.

It is not possible in a brief article such as this to do justice to the contribution which Pat has made to the industry, and in particular to improving the safety and health of all who work in the industry, but some highlights are outlined below.

Pat joined the Chamber in Kalgoorlie in November 1979. Two years later he moved to Perth and was appointed General Secretary in 1982.

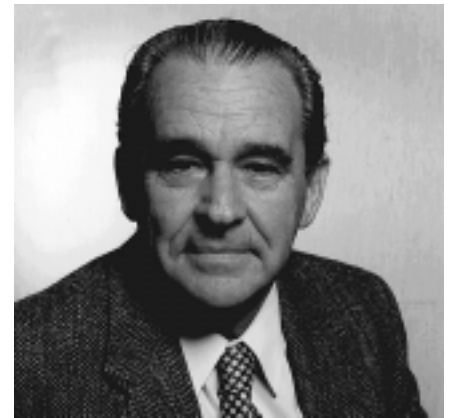
The eighties and nineties have been dynamic years for the industry and tremendous application and effort was required to keep abreast of the issues and their implications. Pat has always been more than equal to the task.

His role included support, direction and guidance on the full spectrum of issues dealt with by the Chamber, but the most important issue for Pat has been that of improvement in safety and health throughout the industry.

His vision, guidance and leadership in this field has helped place the industry in WA in a position of world leadership in a broad range of safety and health programs and systems.

Pat served as a member (nominated by the Chamber of Commerce and Industry) on the WorkSafe WA Commission, and later as an expert member, for some 13 years.

He was a foundation member of MOSHAB, and before that the Interim MOHSAB, and he played a major role in the development of



the Mines Safety and Inspection Act 1994.

In 1995 Pat was appointed Deputy Chief Executive Officer of the Chamber as well as Secretary.

Over his 20 year period with the Chamber he has been the driving force behind the teams which have organised many seminars, conferences and workshops dealing with every aspect of safety and health.

The most notable of these has been the series of MINESAFE INTERNATIONAL conferences; Western Australia 1990, 1993, and 1996, and South Africa 1998.

These conferences have been recognised as landmark conferences in terms of world mining safety and health, and the conference proceedings will stand as valuable references for many years to come.

Pat's drive and support to the Department of Minerals and Energy has been important in securing approval for Government funding for major initiatives which have enabled the Department to provide a high standard of support for the industry.

Some of the IT developments supported include AXTAT, CONTAM, MINet, EXIS, and the updates of those systems, and the MODAMS system currently under development.

Pat has organised and maintained regional industry networks, with regular meetings of managers and safety professionals across the State, to ensure effective communication to, and input from all operations. His support for and involvement in Mine Rescue and Emergency Response development, team training and competition programs has been inspirational.

Edith Cowan University has recognised his role in the safety and health field by naming the newly established Pat Gilroy/Safety

Institute of Australia Centre for Minerals and Energy Safety and Health Teaching and Research.

In retirement, Pat will not be totally lost to the industry which he has served so ably.

He is to take on the role of Chief Executive Officer with the MARCSTA Organisation. He will also continue to plan, organise and direct for the Chamber the MINESAFE INTERNATIONAL 2000 Conference to be held in Perth in September 2000. He will also undertake additional projects at the request of the Chamber.

Throughout his exceptional career of achievement in a most demanding role and environment, Pat has never sought the limelight

and has placed himself in the background as each successive milestone and success for the Chamber and the Industry has been acknowledged or celebrated.

Pat, on behalf of MINESAFE and all of its readers, we wish you all the very best for the future and record our thanks for a job well done. Others in the industry will continue to benefit from your efforts for decades to come.

It is appropriate to conclude with a quote from Shakespeare's JULIUS CAESAR:

"When comes such another?"

Guest Editorial

Mining Operations Division Customer Survey

Thanks for your feedback

On behalf of the staff of MOD, I would like to thank all those people in the mining industry who answered our customer survey of services and activities.

Copies of the survey were sent to Registered Managers to distribute to managers, supervisors and people in the general workforce involved in managing safety, occupational health or environmental matters.

A total of 1 149 completed questionnaires were returned.

The survey asked respondents to rate their satisfaction with, and quality of, the last service provided to them by MOD and sought the respondents' views on MOD's influence on safety issues, its effectiveness in the regulatory process, and the suitability of current legislation.

With regard to safety and occupational health matters, the industry indicated a very high

awareness of MOD's services and activities.

Just as encouraging was the way you rated the quality of services and your satisfaction with them (an average rating of more than 75% for both quality and overall satisfaction for the top seven services).

We are also encouraged by your endorsement of MOD's effectiveness in bringing about improvements in occupational health, safety and environmental matters. Likewise, 76% of you were very positive about the suitability and effectiveness of the current legislation, which is due for a review in the year 2000.

We hear what you're saying.

We conducted the survey to ensure that we are providing services that are needed and valued by the mining industry and your responses indicate that we are on the right track.

We have been heartened by your response - which we will use to see how we can service you better.

With that in mind, we value the criticisms just as much as the compliments and the survey results will provide us with a good benchmark.

The full results will be sent out to all Registered Managers of minesites in the next few weeks.



Robert Hopkins
Director - Mining Operations

Tyre and rim maintenance on mines is proving to be a dangerous activity!

Over a period of some four years the Department has received many reports of serious incidents (including near misses) involving tyre and rim maintenance activities carried out on mines.

There were eighteen incidents considered to be serious, twelve resulted in very serious injuries to personnel and one resulted in a fatality.

It is alarming to note that in no less than twelve incidents injuries occurred when incorrect procedures were used during the inflation of tyres. There appears to be a lack of understanding of the potential hazards associated with the explosive nature of compressed air when inflating tyres and this lack of understanding can and does lead to extremely dangerous situations occurring.

The hazards associated with tyre and rim maintenance when dealing with off-highway rims and wheels of earth-moving equipment have been recognised by Standards Australia Committee ME/63, this committee was responsible for the production of Australian Standard AS 4457-1997 "Earth-moving machinery - Off highway rims and wheels -

Maintenance and repair", published on 5 March 1997. The objective of this Standard is to assist manufacturers, suppliers, employers, repairers and users of earth-moving equipment in minimising the risk to health and safety of employees working with or otherwise near wheels and rims of earth-moving equipment. Reference to this Standard is strongly recommended when developing safe procedures for tyre and rim maintenance.



Further information regarding accidents and incidents involving tyre and rim maintenance may be obtained by reference to the Department's circulars and in particular Safety Bulletins Nos 9 and 36 and Significant Incident Reports Nos 5, 15, 72 and 83 (available on DME 's website).

Fatal Accident

In Western Australia on 14 November 1996, a fitter employed by an earthmoving contractor sustained fatal multiple head and internal injuries when a tyre explosion took place at the contractors' workshop at an open pit gold operation.

The deceased was engaged in fitting a wheel to a crane at the workshop. A tyre had been fitted to the wheel rim and inflated on the previous night shift. During the operation to fit the wheel to the crane, an explosion took place which involved the cast metal outer split rim being fractured and striking the deceased throwing him back a distance of some thirteen metres. The tyre and tube rolled some eighty metres down a hill.

Working at Heights

In May 1999, a roofing contractor replacing a shed roof fell 4.5 metres onto a concrete floor, fracturing both ankles. The person was wearing fall prevention equipment when the accident occurred.

It appears the accident was caused by incorrect use of the fall prevention equipment. He had inserted a Karabiner with the "gate facing up" into a static line and had failed to lock the gate with the screw mechanism.

As he started to descend, his weight on the rope opened the Karabiner gate and allowed the rope, which was attached to his harness, to slide out of the Karabiner and him to fall.

'Falls from heights' are one of the four major causes of accidents within both the mining and non-mining

industries in Western Australia and have accounted for twenty (7.8%) of the 256 work-related fatalities that occurred between 1988 and 1998.

In the WA mining industry there were 125 fall accidents resulting in injuries (two fatal) between 1 January 1996 and 30 April 1999.

Employers must fully appreciate the hazards involved with persons working at heights and implement formal systems of work which are supported by well structured training programs.

Employees must use appropriate fall prevention equipment when working at heights and be assessed as having been adequately trained prior to undertaking such work.

Fall protection training should include:

- ◆ Safe work practice and hazard/ risk assessment.
- ◆ Selection, fitting, use, care, maintenance and storage of fall arrest equipment.
- ◆ Procedures in the event of an emergency.
- ◆ Electrical hazards and safeguards.
- ◆ Accident/incident reporting procedures.
- ◆ Equipment maintenance and usage reporting systems

Referral to particular Australian Standards and other guidance material is highly recommended, they provide a sound basis from which safe systems of work and training programs can be developed.

Failure to deal with fall prevention hazards will undoubtedly result in further injuries and do little to stop unacceptable work practices such as that shown in the photograph.



Yes, the beam he is sitting on is suspended from a crane 6 metres above the ground.

'Welding' Electrocution - Underground in Queensland Mine

At an inquest into the death of a boilermaker working underground in a Queensland mine, the coroner was led to find 'electrocution' as the cause of death, and hand down the following rider:

" The installation of Voltage Reducing Devices (VRDs) be compulsory on all alternating current welding equipment used for commercial or industrial purposes"

Accident details

The deceased died while using electric arc welding equipment to fabricate and install an underground crib room door and framework. He was working alone at the time and was found holding the welding hand-piece, which was still energised. A partially completed weld and the presence of a 'used up' electrode in the welding hand-piece indicated a likelihood that the person received the fatal electric shock while attempting to change the electrode.

The deceased was not wearing protective gloves when found and the welding hand-piece was defective.

The atmosphere in the work area was hot and humid, parts of the crib room floor where the deceased was believed to be working (and eventually found) were wet, and his clothing was also damp or wet from sweat or water.

Welding voltage reducers

The welding voltage reducers (VRDs) recommended in the Coroner's rider are safeguards specifically designed to eliminate the risk of harmful electric shocks to persons using conventional electric arc welding equipment.

These safety devices monitor the electrical resistance of the output welding circuit and automatically apply full welding voltage only



when an attempt is made to 'strike an arc' with the electrode. Similarly, the devices automatically reduce voltage to a safe level soon after welding ceases.

In this way, full voltage is only present during the actual welding process, and not when the equipment is either left unused or when a replacement electrode is being fitted. The sensitivity of VRDs are set such that the worst case electrical resistance presented by a current path through the human body will always exceed the level required to activate the device.

Key Comments

Minesafe readers may recall (or refer to) an article in the June 1998 edition advocating the use of welding voltage reducers, and the many employers who took heed and sought to protect their workers are commended.

The need to wear protective gloves when welding is fundamental, and applies equally to an assistant holding the work-piece. Never attempt to change an electrode with a bare hand; prior to this accident a person died in New Zealand (1995) doing just that.

Use of defective equipment and inadequate maintenance is also a concern and was the direct cause of another fatality in Indonesia (1996).

Welding electric shocks are not an 'occupational hazard' as some may care to believe. Under adverse conditions such as hot, wet or humid locations and in confined spaces, risk increases significantly, as these and other accidents sadly testify.

Safety Bulletin No 23 was specifically issued to highlight the important do's and don't's regarding electric welding safety, and may be used to facilitate a self-auditing process.

While Coroners' riders and other safety information constitute non-statutory recommendations, it is often (and likely) that they will be resurrected in proceedings where an employer's 'Duty of Care' obligations may come under close scrutiny.

For further information readers may contact Electrical Engineer Denis Brown. Tel: (08) 9222 3546.

What Are They?



Clues:

- They are safety devices.
- They indicate the presence of **DANGER**.
- Some have batteries. Some don't.
- They are convenient to carry and use.
- They cost as little as \$40.
- **Every** electrician should have one.

Answer:

- ◆ *Prove that electrical circuits are de-energised.*
- ◆ *Prove that the correct isolator has been switched off.*
- ◆ *Prove that the isolator is not incorrectly labelled.*
- ◆ *Prove that the isolator has functioned correctly.*
- ◆ *Prove that the correct equipment has been selected.*
- ◆ *Prove that there are no electricity 'back-feeds'.*
- ◆ *Prove that the equipment is safe to commence work on and that they will not be risking electrocution.*

They are Voltage Testers, and electricians can use them to:

Recommendation:

If you are an electrician, make sure you have one, use it to **prove** your safety, and don't forget to 'test the tester' before and after use.

TEST BEFORE TOUCH!

Frequently Asked Questions

Do I require a WA Driver's Licence to drive a vehicle on a minesite?

There is no statutory requirement to hold such licences. The regulations generally require persons who operate plant to be competent. To establish a level of competency, employers may, and often do, adopt a site policy requiring employees to hold specific licences. Consult your employer and refer to MSIR 4.13

Does an employer have to use a drug and alcohol testing program to prove an employee is intoxicated before he or she can be sent home?

It is against the law to be adversely affected by intoxicating liquor or drugs on a mine (MSIR 4.7). The principal employer, the manager or a supervisor can instruct any employee reporting for duty to leave the mine if they believe the employee is adversely affected. Proof of intoxication is not necessary. It is an offence to remain at the mine if instructed to leave. It is also important to advise your employer if you are taking any prescribed medication which may affect your performance, as this regulation does not only apply to illegal drugs.

Do I need to have a DME health assessment every time I change jobs?

No, mine employees are only required to have a DME health assessment every five years regardless of how many different companies (or sites) they may work for. However, employers may, as part of their duty of care, request prospective employees to have pre-employment medical examinations.

Are monorail cranes required to be DME registered under MSIR 6.34?

No. MSIR 6.34(5) lists the items of Classified Plant that are to be registered and the list does not include monorail cranes.

Do the requirements in Australian Standards have to be complied with?

Only if they are specifically referenced by legislation. However, employers need as a minimum, to consider the recommendations in Australian Standards under their statutory 'Duty of Care' obligations. Refer MSIR 6.2(2)a.

THINKSAFE MINESAFE - A Safety Culture Campaign

On 8 July 1999 the ThinkSafe MineSafe campaign was launched for the WA mining industry.

MOSHAB endorsed, with strong support from the Minister for Mines, Hon Norman Moore, the development and promotion of the campaign.

This initiative builds on the established and successful ThinkSafe campaign, which uses the three-step approach to safety, - Spot the Hazard; Assess the Risk; Make the Changes.

The ThinkSafe campaign is aimed at developing a 24-hour safety culture by promoting clear, simple and constructive safety messages which enable people to recognise hazardous situations and processes, and empower them to take

appropriate action to prevent injury and harm to health.

The primary trigger for this initiative by the tripartite MOSHAB was the finding in the 1997 Report on the Inquiry into Fatalities in the Western Australian Mining Industry, of a poor safety culture in the industry.

The ThinkSafe MineSafe campaign, which is jointly funded by Government and Industry, has commenced with the issue of a series of 10 posters supported by pamphlets, stickers, and press and radio advertisements.

West Coast Eagles' star, Glen Jakovich, who has been associated with ThinkSafe since August 1996, is featured in the series of posters which draw attention to some of

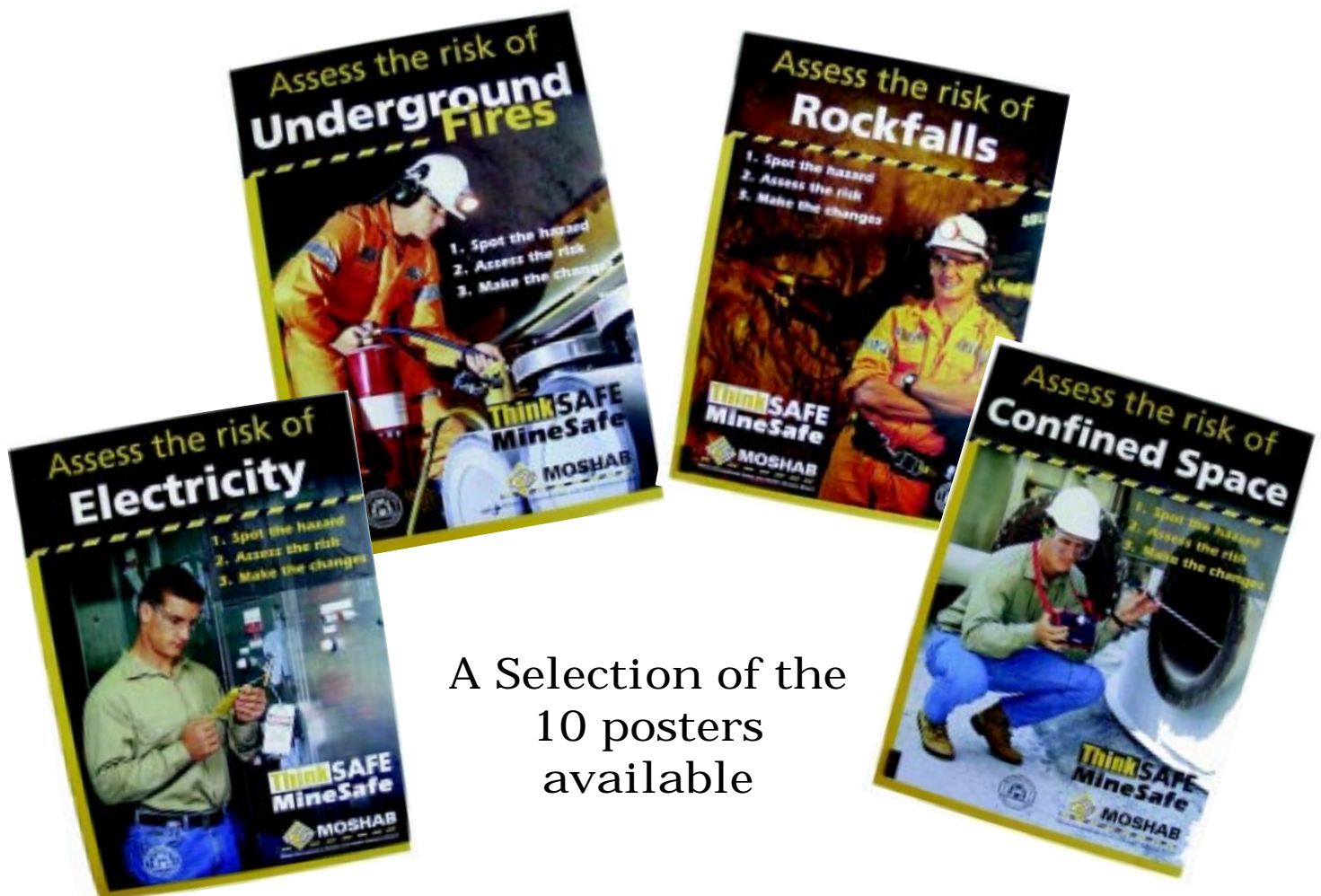
the major hazards which have contributed to serious and fatal injuries.

The series of pamphlets supporting the posters is titled Minesafety Matters. Each pamphlet identifies the hazard and outlines the steps employees should take to manage the risks from that hazard and to work safely.

The posters and pamphlets are being widely distributed to Western Australian minesites.

Issues covered with posters and pamphlets are:

Welding; Confined Spaces; Electricity; Hazardous Chemicals; Truck Driving; Vehicle Access; Old Workings; Underground Fires; Rockfalls; and Remote Boggging.



Registration of Classified Plant Simplified

Regulation 6.34 of the Mines Safety and Inspection Regulations 1995 requires that Classified Plant used on mines (including exploration sites) be registered with the State mining engineer before that plant is used.

Problems have been encountered by the industry in meeting the documentation requirements of Sub-Regulation 6.34(3) and in an effort to remove these problems the State mining engineer has issued a general exemption. The exemption is reproduced here for your information:

GENERAL EXEMPTION FROM MINES SAFETY AND INSPECTION SUB-REGULATION 6.34(3) (REGISTRATION OF PLANT)

In accordance with the provisions of MSI Regulation 1.5, I have decided to issue a general exemption to the industry from compliance with Sub-Regulation 6.34(3) dealing with the documentary requirements when applying for registration of certain plant.

This exemption is issued in order to align our requirements for the registration of plant with those of WorkSafe Western Australia and thus remove the confusion that appears to exist, particularly when dealing with itinerant plant and plant brought onto mines by contractors from time to time.

The following conditions apply to application of the exemption:

1. Submission of documentary evidence that the plant to be registered has been registered with any Commonwealth, State or Territory authority with responsibility for plant safety.
2. For pressure plant provision of satisfactory evidence that the plant has been constructed and tested in accordance with the appropriate Australian Standard when required by an Inspector of Mines.

This general exemption will remain in force until amendments to Regulation 6.34 are gazetted.

R S Hopkins
ACTING STATE MINING ENGINEER

The primary purpose of registration of classified plant is to enhance the safe operation of that plant and owners and operators should be aware that failure to register is an offence under the Mines Safety and Inspection Act 1994 and could lead to occurrences of serious accidents in the future.

For further information readers may contact

John Jance,
Principal Consulting Engineer.
Tel: (08) 9222 3262.

Company Reaches Safety Milestone

Macmahons Underground recently achieved 12 months or 600 000 hours LTI free at WMC Resources Ltd, Leinster Nickel Operations. This milestone was achieved in one of Australia's more difficult underground mines.

The achievement has been attributed to a disciplined approach

to safety systems management and a strong working relationship between the principal and the contractor.

This improvement in safety performance was accompanied by an increase in production and efficiency, and a decrease in costs, once again showing that safety and

production go hand in hand, a true loss control system.

In an effort to continuously improve the loss control performance of Leinster Nickel Operations the principal and the contractor have in place mutually agreed goals that are regularly reviewed to fine tune the system.

What's On

GOLDFIELDS MINING EXPO **KALGOORLIE, 3 - 5 NOVEMBER 1999**

The Goldfields Mining Expo is one of the largest expositions in the Southern Hemisphere. It features the very latest development in mining and resource-recovery technology and mechanisation plus a number of scene-setting seminars, breakfast meetings, workshops and product launches.

If you require further information, contact

Narelle Cooke
Goldfields Mining Expo
Telephone: (08) 9021 2970
Facsimile: (08) 9021 1402
Web: www.gmexpo.com.au

EXPLO 99 **KALGOORLIE, 7 - 11 NOVEMBER 99**

A Conference on explosive rock breaking, with emphasis on the Business of Blasting. Issues of management, profitability, productivity, explosive science, technical research, product development, mine experience, safety and the matching of drilling and explosive designs to the geology will be covered. Mine site visits and technical workshops will be offered to delegates as well as many sight seeing and social opportunities including Two-Up, the AusIMM golf day and the Conference Banquet.

Contact:

AusIMM
Telephone: (093) 96631322; or
Web: www.ausimm.com.au for registration forms

GEOMECHANICS OF OPEN PIT MINING **(IMMEDIATELY FOLLOWING EXPLO 99)** **KALGOORLIE, 12 NOVEMBER 1999**

A short course presented by Dr Phil Dight. Topics include slope failures and mechanisms, slope design, excavation characteristics and risk management.

For further information contact:

Christine Neskudla or Gillian Macmillan.
Telephone: (08) 9380 3300
Facsimile: (08) 9380 1130
e-mail: acg@acg.uwa.edu.au

MINESAFE DAY SEMINAR **PERTH, 18 NOVEMBER, 1999**

This free Seminar will include short presentations by DME, MOSHAB and Industry representatives on key issues facing the industry (eg safety culture, ground support, accident reporting, underground fires, shiftwork, risk management etc). It is aimed at miners, operators, safety & health reps, safety & health officers, supervisors, foremen and managers.

Registration is essential. A brochure with nomination form or further information is available from:

Cassie Booth
Department of Minerals & Energy
Phone: (08) 9222 3229
Facsimile: (08) 9222 3722
Email: c.booth@dme.wa.gov.au

New MOD Publications

Minesafety Matters Posters and Pamphlets -

Confined Spaces

Vehicle Access

Welding

Electricity

Hazardous Chemicals

Truck Driving

Old Workings

Underground Fires

Remote Boggging

Rockfalls

Safety Bulletin No 47: Rockfall - Dangerous Occurrence - Potential Serious Injury (May 1999)

Safety Bulletin No 48: Unloading Service Vehicles on Minesites (May 1999)

Safety Bulletin No 49: Use of compressed Air for Cleaning Purposes (June 1999)

Technical Update No 1: The "Q-System" Geotechnical Design Method was Updated in 1994

Guidelines on the Safe Design and Operating Standards for Tailings Storage (Updated May 1999)

Code of Practice: Surface Rock Support for Underground Excavations (February 1999)

New MINESAFE Magazine Committee



*L-R Standing: Patrick Burke, Denis Brown, Ian Misich, Karen Buxton and Ruth Lavander
L-R Seated: Chris Stublely and Stephen Kamarudin.*

As of 1 July, your MINESAFE magazine has an almost entirely new committee.

Sincere appreciation is extended to all previous committee members who have given their best, and in doing so, have firmly established MINESAFE as a sought after industry safety publication.

As previously, the committee invites comment from readers and will endeavour to answer questions. Submissions for publication and suggestions for improvement will also be welcomed.

Contact us anytime by phone, fax, E mail or Snailmail (addresses printed inside front cover).

Staff Changes

A big farewell goes to our two retirees - **Carmen Vetrone** and **Hugh Jones**. Carmen was extremely well known as an Employee's Inspector with the Department for 29 years! Hugh retires as General Manager, Environment after 12 years service. We wish them both all the best for the future.



New starters with MOD are **Karen Watkins** and **Russell Miners**. Karen comes from the Department's Information Services Branch and is now the Manager Information & Communications. Russell is our new AXTAT Co-ordinator.



Incident Alert

Incident

A mine official and four visitors preparing to go underground approached the surface landing of a push-button controlled shaft-winding system. The cage-conveyance was already present at the surface and the official opened both the landing and conveyance gates. As the official called his visitors to come forward, the conveyance prematurely 'took off' downwards with the gates still open and without the usual pre-start warning.

A winder-driver in the engine-house stopped the conveyance after around 60m of travel, and most fortunately nobody was injured (or worse).

Cause

Exhaustive analysis of the winding apparatus failed to reveal any hardware or software defect that may have caused the incident.

Comments and Recommendations

Push-button winders are so called because they function in the same way as an everyday building lift, and 'gate-open' switches fitted to the landing/conveyance gates are the primary interlocks provided to prevent unplanned movement whilst persons enter or exit. Clearly, these circuits need to operate in a fail-safe manner, and existing installations should be design checked and properly maintained to ensure reliable operation.

Any 'gate-open' override switches installed for emergency purposes or to facilitate conveyance 'inching' control should be examined to ensure authorised usage only and that keys are not left inserted into switches.

Persons intending to enter a push-button controlled conveyance must open the conveyance gate

before closing the landing gate behind them, and similarly, persons exiting a conveyance must open the landing gate prior to closing the conveyance gate. In this way, one set of gate interlocks remain activated and prevent conveyance movement whilst anyone is getting on or off. Arrangements with the landing and conveyance gates installed close together are preferred.

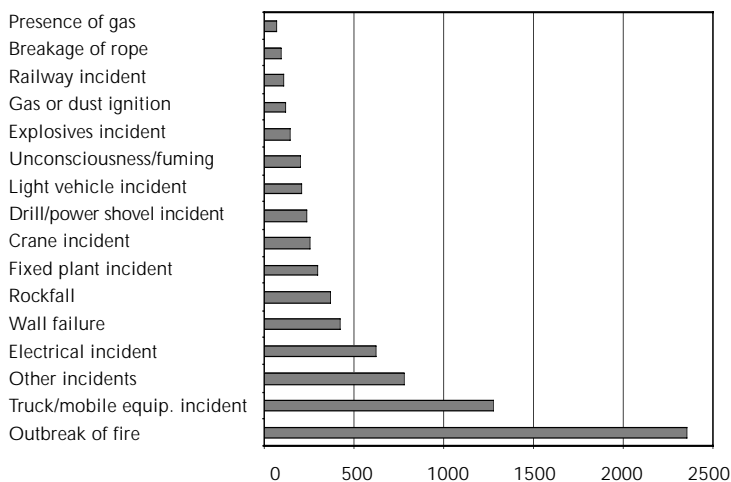
As the definite cause of this incident could not be confirmed, the mine owner elected to provide an additional level of safety by installing a user operated 'brake locking' actuator and indicator at each landing.

Falling down a mineshaft is everyone's nightmare and on this occasion only good fortune prevented the dire consequences of such an outcome.

For further information contact Denis Brown. Tel: (08) 9222 3546

Watch Out!

Number of incidents reported since 1994



Winding Incidents by Type Since 1994

