



DEPARTMENT OF
MINERALS AND ENERGY
WESTERN AUSTRALIA

MINESAFE

MINING OPERATIONS DIVISION

Beware of Overhead Powerlines!



“LOOK UP & LIVE”

**...Unacceptable accident rates demand
immediate attention!**

...full story page 2

Overhead Powerline Accidents

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The front cover photograph of this MINESAFE edition has been selected to show the intense energy levels likely to be released in the event of inadvertent contact with high-voltage overhead powerline conductors. Few will have witnessed these effects and many may not be aware they can result from close approach as well as direct contact.

The consequences of personal contact with powerlines or machinery affected by them are apparent and extreme.

Accidents have occurred.

The last WA mining industry electrical fatality occurred 6 years ago at a SW mineral sands operation where an electrical contractor forgot to switch off the power, ascended a power pole and contacted 22kV lines.

More recently:

12 January 2000* - a building worker was electrocuted at a Belmont construction site while handling a suspended load and parts of the crane came too close to 22kV overhead conductors. A second person was seriously injured.

19 January 2000* - an engineer was fatally injured when he entered a Coolgardie outdoor substation and came too close to 33kV terminations.

(* non-mining)

16 March 2000 - a contractor was very seriously injured at a Pilbara minesite while handling a suspended load and the crane came too close to 11kV overhead conductors.

Underlying most categories of serious accidents is usually a series of 'near-hit' incidents. Shown in the table below is an unacceptable number of powerline incidents (47) that have occurred at WA minesites in the last 5 years and the types of equipment involved.

- Incidents are occurring every month or two.
- 60% of incidents involve either haultrucks or excavators.
- Haultruck incidents are often caused by failure to lower the tray before driving away.
- Crane operations present the highest risk, due to persons handling loads.
- Powerline contacts can initiate potentially lethal tyre explosions.

COMMENT is essential for increasing awareness but this is a major hazard which demands immediate ACTION if further fatalities are to be avoided.

Responsible persons are called to review their obligations under MSI regulations 5.18 and 5.28, and ensure current work practices are adequate.

WA Powerline Contacts by Mining Machinery 1995-99

Year	Trucks	Excavator	Drills	Cranes	Misc.	Incide
1995	7	1	1	2	1	12
1996	1	1		1	2	5
1997	2	6		1	1	10
1998	4	3	2	3		12
1999	2	2		3	1	8
Total	16	13	3	10	5	47

Guest Editorial

UPDATE ON DEVELOPMENTS IN APPLICABLE TRAINING FOR MANAGEMENT & SUPERVISION ON MINES



Jim Torlach
State Mining Engineer

The *Report on the Inquiry into Fatalities in the WA Mining Industry 1997*, called for a review of the certification process for all statutory positions required under the Mines Safety and Inspection Act 1994. As a result of this review, it was established that there was a need to develop a process of training applicable to mine management and supervisors.

Similar recommendations have been made in reports of inquiries in other States.

The matter was considered by MOSHAB (Mines Occupational Safety and Health Advisory Board) and it was resolved that the most effective approach was to retain the existing certification provisions in the legislation (which are administered through the Boards of Examiners), but to introduce an additional requirement for persons to be appointed to those statutory (certificated) positions to demonstrate management and supervisory competencies.

A working party coordinated by the Chamber of Minerals and Energy reviewed the options available and recommended that the nationally accredited competency framework titled **Front Line Management Initiative (FMI Competencies)** would be appropriate.

These competencies were developed as a result of the national study and recommendations on management contained in the **Karpin Report**.

Whereas only persons holding statutory (certificated) appointments will be required by law to acquire or demonstrate the FMI Competencies at a specified level, the Chamber of Minerals and Energy member companies have resolved to make these competencies an industry standard for all supervisory and management positions.

A **Draft Applicable Training Guidance Note** was published by the Chamber and a series of workshops were held across the State to discuss the requirements and implications. The Chamber then published an updated Guidance Note, incorporating the feedback from those workshops and general industry response.

This Guidance Note explains the basis of the FMI Competencies, and the process and procedures involved

in acquiring the required competencies, or having existing competencies recognised.

The following is an extract from the first Draft Guidance Note which outlines what is meant by Applicable Training:

- *means training, competency development, or competency assessment that results in achievement or recognition of industry specified competencies for the recipient*
- *can be as a result of:*
 - (a) *formal training off the job;*
 - (b) *formal training on the job;*
 - (c) *work experience; and/or*
 - (d) *other experience*
- *is underpinned by the required skills, knowledge and attitudes.*

The purpose of Applicable Training is to effect behavioural change across the industry. It is an industry initiative to address the people management and occupational health and safety management skills across all sectors of the industry.

Applicable Training is not a 'quick fix' – the purpose is not to provide supervisors with certificates as quickly as possible. Rather, it is part of a range of long term strategies to implement the vision of an industry free of fatalities, injuries and diseases.

It is intended that in the current process of review and updating of the regulations the necessary amendments will be made to incorporate the requirements for applicable training for statutory positions. It is expected that these regulations will be in place by the end of the year. A period of at least two years from that time will be provided to enable persons to meet the new regulatory requirements.

A further proposal to require supervisors in open pit mines to have a Restricted Quarry Manager's Certificate of Competency has been deferred until the FMI Competencies are established.

Further inquiries on this subject may be directed to myself at the Department or to:

Mr L Jackson, Executive Officer Human Resources,
Chamber of Minerals and Energy

Telephone: (08) 9325 2955

Facsimile: (08) 9221 3701

Emergency Response Competition 1999

The 1999 Underground Emergency Response Competition was held on 20-21 November 1999 at the Kundana Mine near Kalgoorlie. Participating teams were Black Swan Nickel, Darlot Gold, Golden Grove, Jundee, Kanowna Belle, KCGM, Kundana, Marvel Loch, Paddington, Sons of Gwalia (Leonora), Wiluna Gold, WMC Kambalda, WMC Leinster and Yilgarn Star. Congratulations to Kundana who took out the overall first place.



BA Skills Exercise Briefing



Knot tying - Rope Rescue



Stretching a Casualty - First Aid



Team Skills in Progress



Attending a Casualty - First Aid



Overall winning team KUNDANA, led by team captain Scott Franklin with Mine-Manager and competition host Richard Scallan

Minister Presents 50,000th MARCSTA Certificate

Ryan Speirs, a driller's offsider with Boart Longyear became the 50,000th recipient of a MARCSTA Certificate of Mine Safety Induction Training. Ryan commenced work underground at Homestake's Lawlers gold mine two weeks before receiving the Certificate from WA Mines Minister Norman Moore in Perth on the 3 February 2000.



Mines Minister presents the 50 000th MARCSTA certificate to Ryan Speirs

MARCSTA (*Mining and Resource Contractors Safety Training Association*) was established some four years ago by a small group of mining contractors, to provide standardised induction training and avoid the need for contractors' employees to

undergo new basic inductions at individual minesites. The nationally recognised training is competency-based and MARCSTA has recently been granted Quality Endorsed Training Organisation status. The association now has 18 member companies and has licensed 23 private training service providers, as well as 9 in-house providers. Service providers are located in WA, QLD, NT and Tasmania. Dr J Woods of Edith Cowan University provides educational and training support to the association and over 10,000 people receive MARCSTA training each year.

Minister Norman Moore emphasised that MARCSTA has his full backing and that of the Department. He paid tribute to Pat Gilroy, the now CEO of MARCSTA and former deputy CEO of the Chamber of Mines and Energy, for the extraordinary effort he had put into improving mine safety. Pat commented that the need for initial and ongoing training is highlighted repeatedly in many mining accident inquiries.

With still a long way to go, WA has one of the best mining safety records in the world, with underground lost-time injury frequency rates plummeting towards the levels of surface rates, which is almost unheard of in world mining circles.

Potential Collapse of 'Stacker' Averted

Cooperation between mine management and MOD's *Taskforce for the Risk Management of Shiploaders, Reclaimers and Stackers* recently averted the potential collapse of a ROM stacker at a Southwest sand mine.

The stacker is a radial type, around 40 metres long with a central pivot bearing and bogies running on a steel rail and concrete perimeter beam. During a routine inspection in November 1999 an engineer discovered distorted steel plates and bolts in a critical structural connection at the pivot-bearing end of the stacker.

MOD's Structural Engineer inspected the stacker and requested that a comprehensive risk assessment and detailed structural analysis be carried out.

The stacker's operational procedures were immediately reviewed and temporary measures taken to ensure safety. Consultants were engaged and their investigation confirmed three structural problems that could have separately or in combination led to major failure and possible collapse of the stacker. Some of the problems had accumulated over several years of operation and were exacerbated by a lack of 'redundancy' in the stacker design. Further operation of the stacker was suspended until all of the faults had been rectified. Extensive repairs involving the replacement of two major structural

members and strengthening of a connection were carried out under strict engineering supervision. The risk assessment process and structural analysis is ongoing and will ensure long-term safe operation.

Persons operating similar machines should take heed and be aware that an accumulation of operational damage and uninformed maintenance practices may lead to dangerous conditions, and should arrange for periodic inspections to be carried out by a competent structural engineer.

The MOD *Taskforce for Risk Management of Shiploaders, Reclaimers and Stackers* has a wealth of available expertise and can be consulted via its coordinator, Mr Mark Butson Tel: (08) 9222 3607.



The Diamond Crystal Mine

The setting

21 November 1980 on Lake Peigneur, Louisiana (USA), Wilson Brothers Corporation, which had been hired by Texaco, had a crew drilling an oil and gas exploration hole. Also on this 550 hectare lake was Jefferson Island, home to the pristine *Live Oak Gardens* botanical park. Contrasting with this natural beauty were many oil and gas wells dotting the lake's perimeter.



Scenic view of Lake Peigneur

Signs of trouble on the surface

The night-shift drilling crew had some problems with vibration and jumping of the rod string and decided to stay on until the day crew arrived at 6:00am. By 6:30am, the drilling rig started to tilt slightly. Suspecting that the rig was collapsing under their feet, both crews decided to abandon the platform and head for shore, some 2-300 metres away.

From the shore, a short time later, workers watched in amazement as the huge derrick and platform fell and sank out of sight into a lake thought to be no more than 2.5m deep. The waters of Lake Peigneur then slowly started to turn, eventually forming a giant whirlpool. It was as if someone had pulled the plug out of the bottom of a giant bath.

At that time, Leonce Viator Jr. was fishing in the northern end of the lake; "I thought it was the end of the world," Viator told newsmen. Viator was saying his prayers when one of the barges in front of him was swept into the whirlpool. "It swallowed it in seconds,"

he said, "like a big fish eating its lunch." He had to use every bit of power his outboard could provide to keep himself from the whirlpool. Once on shore, Viator watched as more barges were sucked into the maelstrom, followed by trees, docks, and other debris ripped from the shore.

In total, the whirlpool sucked down the \$8 million Texaco drilling platform, a second drilling rig that was nearby, a tugboat, 11 barges from the canal, a barge loading dock, 30 hectares of Jefferson Island and its botanical gardens, parts of greenhouses, a trailer, trucks, tractors, a car-park, and trees. Added to this, a natural gas fire broke out where the well was being drilled.

Who pulled the plug ?

By now you must be wondering what could cause such mayhem in such a shallow lake. Quite simply: Texaco was drilling on the edge of a salt dome, a prospective target for an oil/gas reservoir. About 400m below the lake was the Diamond Crystal salt mine, hollowed out by decades of mining. The mine contained a network of 24m high corridors, some as wide as a four lane highway. The mine had 297 employees and operated around the clock in three 8-hour shifts per day, 7 days a week.

Texaco's drill penetrated the roof of the room and pillar mine; the lake waters then flowed into the workings and began to dissolve the mine pillars. The resulting collapse of ground above the mine worked its way though to the surface (or, at least, to the bottom of the lake) which

enlarged the original hole and allowed more water to cascade down into the mine, which in turn, dissolved more salt, etc.

Lake Peigneur was connected by the Delcambre Canal to the Gulf of Mexico, some 20km away. The ever-emptying lake scoured the base of the canal; reversing the hydraulic gradient between the lake and ocean. The water in the canal then began to flow from the Gulf of Mexico to the lake, allowing more water to pour into the mine. A 16m high roaring waterfall (reportedly the highest ever to exist in Louisiana) formed where the canal poured into the crater that led to the mine. Even a tugboat running at full throttle could not overcome the force of the gulf waters rushing toward the lake and was dragged backwards into the crater (the crew leaped safely onto the canal bank).

The location of the mine below the drill rig was indicated on only one of several plans that Texaco was using to guide its drilling operation; other charts did not show the full extent of the mine workings. Texaco never directly contacted or worked with the Diamond Crystal mining operators to resolve the conflict in data. Diamond



The nearby Avery mine - showing typical working dimensions

Crystal was given opportunity to object to the issuing of a drilling permit when it was first informed of the proposed drilling operation, yet it did not do so. Even after this notification, Diamond Crystal failed to contact Texaco.

Emergency response underground

The first signs of trouble in the mine came just after the oil rig disappeared (at about 8:10 a.m.) when a mine electrician, heard an unusual noise. As he looked up, a muddy stream of water, more than 0.5m

Lake Peigneur Disaster

deep, was rushing toward him; the noise he heard was the sound of fuel drums banging together as they were carried along by the stream.



A raging torrent cascades down into the mine

He shouted a warning to the shift foreman, and began to flash the mine's lights in a warning pattern that the 51 men below ground knew to mean "Get out of the mine, now!". (Luckily, the mineworkers had had a safety drill on the previous Saturday, so they knew exactly what to do.) Workers on the 1,300-foot level phoned the driver of the shaft conveyance to lower it immediately, and also notified the foreman on the 1,500-foot level to evacuate the mine.

The 1,500-foot level maintenance foreman had to drive to several remote areas to pick up miners who had not seen the evacuation signal. He took them to 1,300 foot level, where they and others waited as the eight-man shaft conveyance crawled back and forth to the surface. It seemed to take forever, but everyone was out of the mine by 9 a.m.

It is understood that, at its worst, the back-pressure from the displacement of air by the inrush of water was sufficient to prevent the shaft conveyance from being lowered into the mine.

*"Mistakes are the portal of discovery"
by James Joyce*

The aftermath

After two days of water pouring in, the mine was totally engulfed and all its equipment destroyed. Astonishingly, there was no loss of life.

Eventually, the land above the mine stabilized and life returned to normal. The *Live Oak Gardens* was rebuilt (on its remaining land) and the environmental catastrophe that was anticipated at the time of the accident never materialized. The torrent of water dredged the Delcambre Canal up to a metre deeper (and, of course, Lake Peigneur was now 450 metres deeper!) Eventually 9 of the barges popped back up like corks; the drilling rigs and tug were never to be seen again. The Diamond Crystal Mine closed and all but a handful of the 297 employees were suddenly unemployed.

Federal mine safety experts found it impossible to determine who was to blame; mainly because all of the evidence went down the drain. Of course, a disaster like this leads to endless lawsuits. In the end, Texaco and Wilson Brothers agreed to pay \$32 million to Diamond Crystal and \$12.8 million to the Live Oak Gardens in out-of-court settlements.

Closing comments

This disaster demonstrates that failure to adequately assess all aspects of a mining or engineering project can produce catastrophic results. The complete operating environment must be fully considered and investigated during all stages of a project to minimise the risk of unexpected (but foreseeable) events.

The total lack of communication between Texaco and Diamond Crystal, and inadequate investigative work led to financial disaster for both the drilling and oil companies.

Article sources

www.ripvanwinkle.com/; home.nycap.rr.com/useless/texaco/; and ft.k12.la.us/chs/la_studies/ParishSeries/IberiaParish/

WA experience

Drilling holes from the surface into underground mines, and mining into pre-drilled boreholes (eg for ventilation and services requirements) are common occurrences in many mines. Normally these operations are well planned, suitably controlled and do not present a high risk. However, there have been instances where drill holes have unintentionally penetrated underground workings (and vice versa). Mostly due to good fortune, these incidents have not created serious safety concerns. Had any borehole collars been located in a water course, or had there been a major aquifer system above the underground workings, outcomes similar to those at Diamond Crystal could have resulted.

WA's most significant inundation of an underground mine (caused by intersecting a borehole) occurred at the Hebe Colliery near Collie on 30 March 1965. In this case, the borehole had been drilled by the then State Electricity Commission a few months earlier. When the mine workings intersected the drill hole, water poured in from several aquifers, taking with it some unconsolidated silts, clays and sands. It was estimated that 5,000,000 gallons per day cascaded into the Hebe mine via the borehole.

The mine was ultimately abandoned on 6 April 1965 when all available pumps in the region could not keep pace with the inrush and the highest of the hastily built sandbag dams was over-topped.

Mine management reported that it was fully aware of the proximity of the borehole and had made necessary compensation to the design of the underground workings. Whether it was inaccurate mine plans or borehole coordinates that led to the flooding remains unclear.

The Hebe mine never reopened and fortunately again, there was no loss of life or serious injury.

Mobile Equipment Fires Underground

Most will agree that an outbreak of fire in the close confines of an underground mine can present a major hazard and readily threaten the lives of all persons below-ground; yet the number of incidents occurring below-ground in WA continues to rise.

There is no such thing as a 'minor fire' in an underground mine, they are all 'serious fires'. Given enough fuel and time to propagate in a forced ventilation environment, every small fire can escalate into a 'raging inferno' that is totally out of control.

Situations can rapidly develop, in which the chance of survival or rescue is tenuous to say the least. Disasters have occurred: **177** miners perished in the South African Kinross gold-mine in 1986, and **91** in 1972 at the USA Sunshine mine, when fire swept through underground workings.

In WA, the vast majority of underground fires arise from defects associated with diesel-engined mobile equipment, and for this category alone Fig 1 shows a disturbing upward trend in recent years.

In the 12 months to June 1999, there were **120** mobile equipment fires reported, equating to an unacceptable average of 10 fires/month and a 13% increase over the previous year. In many of these instances, only prompt action to extinguish the initial outbreak prevented more serious outcomes.

Analysis of 415 mobile equipment fires reported in the years 1995-99 indicated the major vehicle component categories responsible, which are shown in Fig 2.

The majority of fires (47%) originate in vehicle engine compartments, and are largely caused by fuel or oil leaks spraying on to hot parts such as turbochargers, exhaust manifolds etc.

Electrical defects account for 27% of fires and generally arise from wiring short circuits and overload conditions.

Batteries, starter motors and the unprotected heavy duty cabling in between are other major contributors.

Braking systems were responsible for another 13% of fires and primarily involved parking brakes not being fully released. Front brakes cause more fires than rear brakes and retarders caused a further 3% of fires.

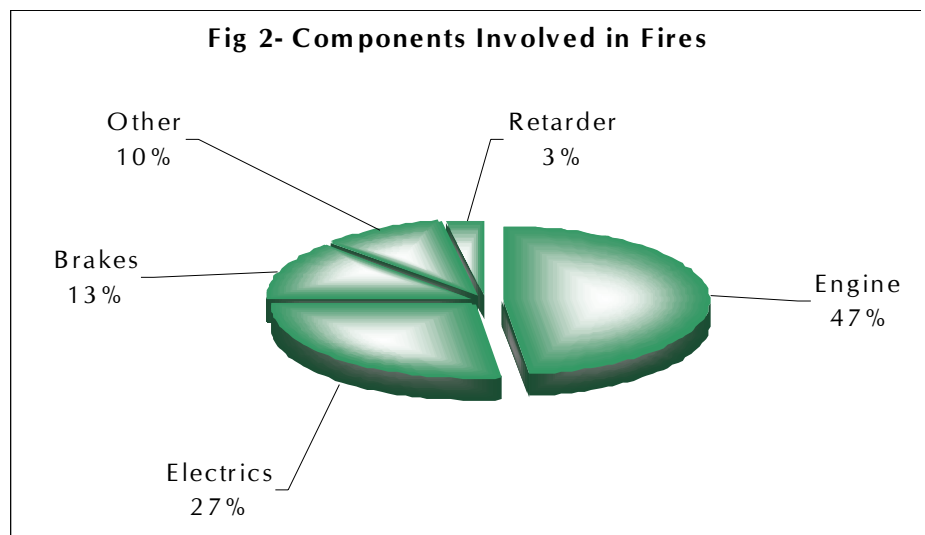
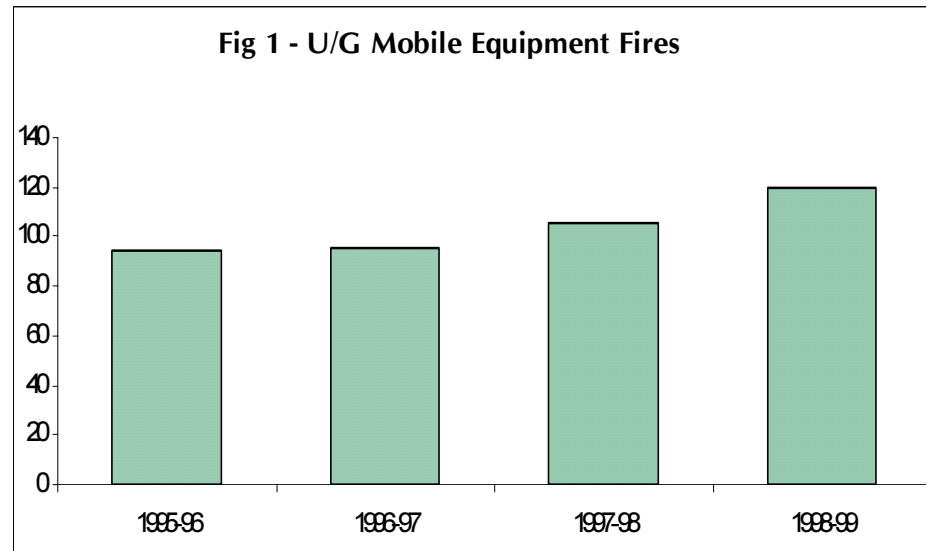
The remaining 10% of fires could not be categorised due to inadequate information which emphasises the need to provide complete details when reporting fires. To do this effectively, incidents must be thoroughly investigated to determine the cause of the fire, whether flames actually

ensued and the source of ignition.

Under the Mines Safety and Inspection Act 1994 all fires are reportable and specific forms are available for this purpose. MINESAFE also recommends that manufacturers of mobile equipment be made fully aware of all fires that occur and any deficiencies that become apparent.

For further information, readers may refer to the following MOD Guideline which includes provisions for addressing mobile equipment fires underground:

Purchase, Operation and Maintenance of Underground Diesel Engined Mining Equipment.



Hamersley Iron Wins Road Safety Award

Hamersley Iron won the Private Sector Category of the recent 1999 Insurance Commission of Western Australia Awards for Road Safety, with its Driver Awareness Program.

The Hamersley Iron 'Driver Awareness Program' is a presentation package, designed to work within the organisation as well as with the public. It is used to educate employees, contractors and public road users about hazards that can be expected while driving in the Pilbara.



Dampier - Tom Price access road

The program was compiled in conjunction with Hamersley Iron employees and uses photographs of actual vehicle accidents to increase authenticity. Hamersley Training Officer (Health and Safety) Mitch Talbot said the program was designed to raise awareness of hazards and caution people to drive with regard to the prevailing conditions. Early indications are that the program is improving road accident statistics.

"While the Driver Awareness Program was initiated primarily to address safety issues on the Railway Access Road between Tom Price and Dampier, it also promotes awareness of safe driving issues on all roads and in all conditions," Mr Talbot said.

The unsealed Access Road is 280 kilometres long and is designed

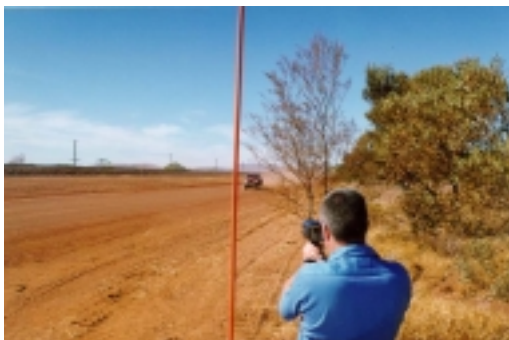


specifically to allow the maintenance of Hamersley Railway assets. The road is a private road but is open to the public via the Access Road permit system. Permits can be obtained from the Karratha Tourist Bureau and the Shell garage in Tom Price.

An information brochure about the Access Road has been produced and distributed to hotels, caravan parks, tourist bureaus and hire car

companies in the area. It provides information on the purpose of the road, rules and regulations, what to do when overtaking or passing in the opposite direction and a helpful hints section. In addition, a video guide has been produced and can be viewed by Access Road permit applicants.

As the open road speed limit of 110 kph was found to be excessive for vehicles



Monitoring road traffic speed

using the Access Road it was reduced to 90kph and the Company conducts random speed checks.

All major road/rail crossings have flashing lights that indicate when a locomotive is approaching, and minor rail crossings (used for maintenance purposes) have locked gates restricting access to authorised personnel only.

As an additional safety measure, the road on both sides of the rail crossings has been bitumenised to reduce dust levels and increase visibility. The company is continuing its program of work to improve the general Access Road conditions, remove potential hazards and provide better signage.

Western Australia's Road Safety Council considers that awareness of road safety in the workplace will contribute significantly to lowering the



Road built for access to railway assets

number of deaths and injuries on WA roads. The Council recently created the Workplace Road Safety Taskforce which consists of key government and industry representatives, and will report to the Council on new workplace road safety initiatives.

Further information on workplace road safety activities and practical initiatives can be obtained from Transport's Office of Road Safety, 441 Murray Street, Perth (Tel: 9320 9508).

Battery Isolators - Safety Alert

MINESAFE draws readers' attention to a hazard that could arise with the use of certain types of vehicle battery isolator and padlocking arrangements.



This isolator is now switched on

Battery isolating switches are standard accessories for heavy mobile plant and equipment such as haultrucks, dozers and boggers, and are increasingly being retro-fitted to smaller plant items such as 4WDs, compressors and lighting towers. Their purpose being to provide a nominated isolation point which can be secured in the 'off' position

The potential hazard originates from the minimal degree of actuator

rotation that will cause some battery isolators to 'switch on' and the tolerance in certain pad-locking arrangements that allow this to occur. As illustrated, with minimal effort and actuator movement, the isolator illustrated could be operated to the 'on' state even though a substantial padlock had been attached.

Although the likelihood of a person casually interfering with a padlocked isolator may be low, the possible consequences of such action can be severe. It is also conceivable that inadvertent mechanical impact to the

locking hasp could easily produce the same outcome.

There is a variety of battery isolator/padlocking arrangement types and this safety alert will not apply to them all. However, responsible persons need to ensure that relevant staff are advised of the issue and immediately arrange for all battery isolators currently installed in the workplace to be checked for safe operation.

The effectiveness of safety isolations need to be proved, using whatever practical (but reliable) means

available; in the case of a 4WD, trying the ignition or lights and 'tooting' the horn would suffice.

When satisfied that an isolation is effective, a personal DANGER tag or OUT OF SERVICE tag (as appropriate) is required to be attached in addition to any padlock.



Typical mobile plant battery isolator

CONTAM Upgrade

CONTAM is MOD's database for recording any employee exposure to atmospheric contaminants such as silica, asbestos or solvents that may be present on minesites. Some readers may be familiar with the sampling pumps, filters and badges worn for this purpose.

The current database has been recording information for 13 years and is being upgraded to:

- Link with MOD's AXTAT and MINEHEALTH databases.
- Accommodate new job and location codes that reflect industry change.
- Include exploration drilling.

The upgrade will provide better data access, manipulation and storage for future health studies. Benefits to industry include:

- Improved industry feedback with annual reports and graphs being sent out to mine managers.
- Electronic submission of results and access to Company data and industry trends.

Implementation of the new system will be progressive and commence 1 July 2000. Prior to this date new 'Sample Record Sheets', location codes, job codes and a CONTAM procedures document will be sent to all Mine Ventilation Officers.

The information will be included with the third quarter 'Quota Allocation Forms' sent out in May.

Ventilation Officers must note to use the new forms and codes when submitting the third quarter results, in order to avoid them being returned for re-submission.

The changes outlined have been successfully trialed in industry and processes are in place for a smooth transition.

Any enquiries regarding the new system may be directed to MOD Occupational Hygienist Hayden Wing on 9222 3228.

What's On



A New Century: A New Vision: A New Direction – for Occupational Health and Safety in the International Mining Industry
3-8 September 2000
Perth, Western Australia

Organised by



DEPARTMENT OF
MINERALS AND ENERGY
WESTERN AUSTRALIA



Chamber of Mines of South Africa

Minesafe is one of the world's major occupational safety and health forums for the international mining industry.

Speakers will include representatives from the following national and international organisations:

- National Institute For Occupational Safety and Health, USA
- Ontario Mining Association
- Alcoa World Alumina
- AngloGold Ltd
- Health & Safety Executive, UK
- She Pacific Pty Ltd
- Clayton UTZ
- Chamber of Mines of South Africa
- International Council on Metals and the Environment
- Department of Minerals & Energy WA
- International Labour Office, Switzerland
- Board of Certified Safety Professionals, USA
- Western Metals Ltd
- Aon Risk Services Pty Ltd
- CSIRO Exploration & Mining
- Andersen Legal
- Massachusetts University of Technology
- Swedish Mining Association
- Beijing Medical University
- Australian National University
- Zinkegruvan Mining AB

Further speakers to be added progressively.

Limited exhibition space remains.

With the emphasis of the program focussed on the future occupational safety and health concerns of the industry and the training of its workforce at all levels to meet the challenges predicted, many of the national and international speakers will introduce new concepts and propose different approaches and solutions to their management.

The Organising Committee will receive abstracts until 31 March 2000 and the final program will be determined by the end of April.

Enquiries to Paula Sinclair, Minesafe International
Locked Bag N984, Perth, Western Australia 6844
Tel: (61 8) 9325 2955 Fax: (61 8) 9221 3701
email: p.sinclair@mineralswa.asn.au

Further information and draft program can be found at the website www.mineralswa.asn.au/minesafe

WA CERTIFICATE OF COMPETENCY EXAMINATIONS

- First Class Mine Manager's
- Underground Supervisor's
- Quarry Manager's
- Restricted Quarry Manager's

7 AUGUST 2000 Mining law examinations - Perth only

(Applications close on 7 July 2000)

23 OCTOBER 2000 Mining law and practical examinations - Statewide

(Applications close 22 September 2000)

Contact Alan Sheppard at DME on 9222-3683 or 9222 3269 for application forms.

Application Fee is \$100 (plus GST)

New Publications

Significant Incident Report No 104:

Dislodgement of a crane load above a person – Serious Accident.

Significant Incident Report No 105:

Failure of a galvanised Grade 80 Chain Sling.

Significant Incident Report No 106:

Operator trapped by suction hose.

Staff Changes

Rob Mallinson, District Inspector, has resigned from the Kalgoorlie Office.

Kate George, new Assistant Environmental Officer Kalgoorlie.

Antony Mehanni, new Systems Co-ordinator.

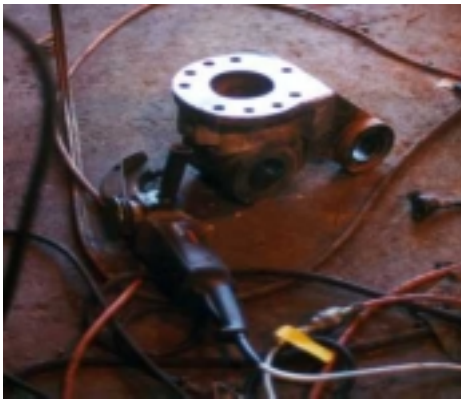
Natalie Najman, new Director's Secretary.

Incident Alert

Incident

Two maintenance fitters were injured when the abrasive wheel of an angle grinder shattered and ejected fragments about the workshop. Both employees were hospitalised, one with serious abdominal injuries and the other with lacerations to the groin.

The angle grinder was being used to level the flange of a jumbo drill swing-clevis that had deformed during welding and the wheel failed when raised from the work-piece after 15 minutes usage.



Swing-clevis workpiece and angle grinder

Causes

To facilitate 'flat face' grinding of the clevis, guarding had been removed from the 180mm angle grinder and an oversized 230mm abrasive wheel installed using incorrect fixings. The machine operated at 8500rpm and the maximum rating of the wheel was 6800rpm. Failure of the wheel resulted from unsustainable centrifugal forces exerted by the increased speed and bending stress imposed on the wheel by the incorrect fixings.

Comments and Recommendations

Accidents involving angle grinders are not uncommon and persons must be mindful of the extreme hazards presented by machines that are incorrectly used or assembled. The peripheral speed of a 230mm wheel rotating at 8500rpm is 368Kph and has an obvious potential to inflict serious injury. Abrasive wheels are marked with a MAXIMUM SAFE SPEED and it is vital to check the nameplate speed of the machine to ensure this rating is not exceeded.

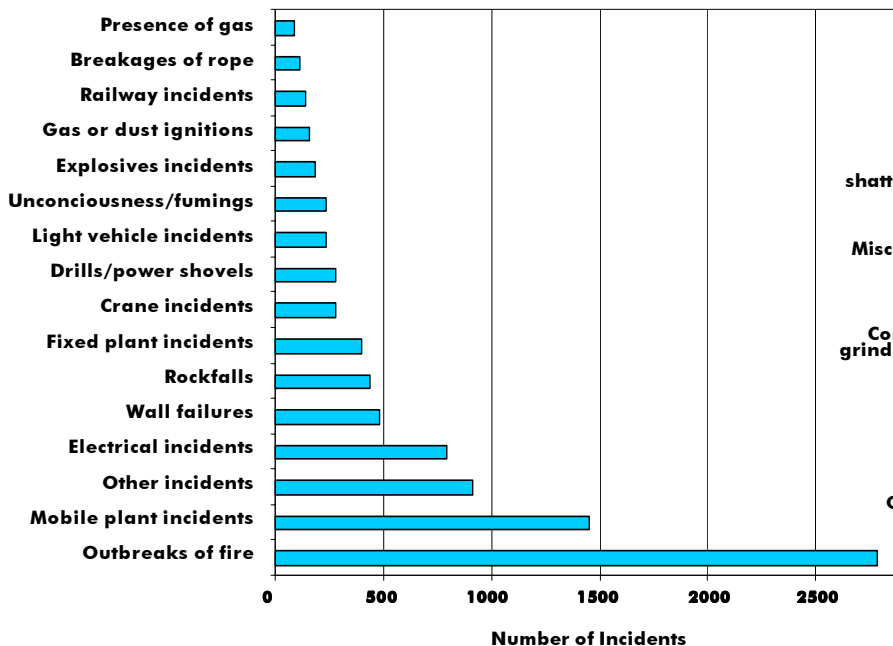


Remains of fractured grinding wheel

Removal of guarding purposely designed to deflect fragments exploding from a disintegrating wheel is pure folly. Guarding must remain in place and be properly aligned. Other persons in the workplace must be considered. The profile of grinding wheels and the means for securing them vary; follow manufacturers' instructions when installing them and do not interchange unlike components or improvise. Considering the every day industrial usage of angle grinders and a series of other safety-related issues, MINESAFE urges all users to undertake a review of current equipment and work-practices. Further information may be referenced in Australian Standard AS1788.

Watch Out!

Number of incidents reported since 1994



Portable grinder incidents by type since 1994

