DEPARTMENT OF MINERALS AND ENERGY WESTERN AUSTRALIA

MINING OPERATIONS DIVISION

MINESAFE

Abandoned Mines

"STAY OUT & STAY ALIVE"

says Martin Knee - MOD General Manager (Mining Safety).

(see pages 6 and 7)

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Inside

REPORTING AND DEALING WITH 'SERIOUS' INJURIES

Instances where accidents at minesites involving 'serious' injuries have not been properly reported and dealt with, indicate a need to remind some managers about statutory provisions under sections 76 and 81 of the *Mines Safety and Inspection Act 1994.*

First, where a person suffers injury in an accident at a mine and the injury appears to be serious, section 76 requires the manager to give notice of the accident by the fastest practicable method of communication as soon as it is reasonably practicable to do so.

The notice is to be given to:

- the district inspector for the region; and
- if the injured person requests, to the trade union of which the person is a member.

For the purposes of section 76, an injury is defined as being 'serious' if it:

- results in the injured person being disabled from following his or her ordinary occupation for a period of 2 weeks or more; or
- involves unconsciousness arising from inhalation of fumes or poisonous gases or asphyxiation due to lack of oxygen or displacement of oxygen by an inert gas; or
- results from an accident, including fuming, arising out of the use of explosives or blasting agents.

Although the above definition of 'serious' injury is not ambiguous some judgment is required when managers assess whether an injured person may or may not return to normal duties within two weeks. Where any doubt exists, a prudent response would be to make the report and ensure compliance. On receiving the report the District Inspector will make his own assessment of the circumstances and determine an appropriate course of action.

Secondly, section 81 of the Act requires that a person must not disturb a place at a mine where an accident causing death or serious injury has occurred except with:

- a view to saving life or preventing injury to any person; or
- the permission of an inspector or, in the case of a fatal accident, the permission of the coroner.

The clear intention of section 81 is to prevent interference with, or destruction of evidence which may be available at the scene and which may be required for the proper investigation of the accident. For the purposes of section 81 it is acceptable to assume the definition of 'serious' injury given in section 76.

Again, if there is any doubt concerning whether the injury is 'serious', a prudent course of action would be to avoid disturbing the site until the District Inspector has had the opportunity to decide whether he wishes to conduct an investigation or whether he wishes some other course of action to be taken. In any event, he will advise if the site may be disturbed at the time at which the report is made.

Guest Editorial

EXPOSURE, HEALTH AND SAFETY DATA ~ THE EXCITEMENT

The health of all those in the mining industry remains the single most important issue, and justifiably is a concern to each individual who works for any mining or drilling company, or a contractor.

It is the role of the employer to ensure that those working in the mining industry are not adversely affected, either through injury, or due to longer-term disease, as a result of their working conditions. It is the role of the regulator to monitor the performance of the industry operators, to provide advice and information, and to apply corrective action where necessary to see that those obligations are met.

As part of the strategy to minimise disease and injury the Department collects accurate data on workplace exposures, on specific health effects and all injuries to persons resulting in any time away from their normal duties. To this end, over the years there has been exhaustive data collection, with the resultant potential now to assess the performance of the mining industry in WA. The workplace atmosphere contaminants system (CONTAM) is important, as the Department will be able to review trends and over time link work group exposures, to the health outcomes being collected in the Health Surveillance database (MineHealth). What may not be noticed on an individual by individual basis, could become an obvious association when the combined data is critically reviewed. This will be a powerful tool, and a first worldwide.

The Accident Statistics database (AXTAT) is equally important, with trends and details of the types of injuries, their location, and the circumstances of the event indicating appropriate strategies for safety intervention, and active management.

The collection of data is vital. However the quality of this data is also paramount, so that in the long term, appropriate interpretation is possible for the benefit of the mining community, and ultimately the people of Western Australia.

Your responsibility is to provide sound data. Our responsibility is to respond with accurate and timely data interpretation, and information dissemination. This will allow each employer to implement management strategies and so minimise illness and injury.

The 'excitement' of this activity derives from the huge amount of information that is available. How best to harness it for the benefit of a healthy workforce and good working environment on all mining and exploration sites, is the challenge, both for the industry and the Department.

Dr Brian Galton-Fenzi
Mines Occupational Physician

PRODUCT SAFETY ALERT

Urgent attention is drawn to manufacturing defects associated with SPANSET 3053 (fall-arrest) safety lanyards:

- The return webbing at the end of one lanyard had been folded back and glued but not stitched; and
- The rivets intended to secure the hook safety latch of another lanyard had been inserted but not crimped.

Both lanyards were issued new the previous week. The unstitched lanyard had been attached to a static-line at 10 metres and came free when tugged. The rivet defect was revealed by an equipment survey.

The need to check all lanyards currently in use and any stores stock items is apparent. Further information provided by the manufacturer has been included separately.

Accidents — How often....??????

Many readers would be aware of the need to undertake risk assessment of workplace hazards and that risk management principles are embodied in both prescriptive and 'Duty of Care' provisions of mining legislation.

Risk management process

The familiar steps of a risk management process are:

- Establishing the context for the assessment
- Hazard identification
- Risk analysis
- Risk evaluation
- Risk treatment
- Monitor and review the controls, and any changes that increase risk
- Communication and consultation throughout the process

Probability of an accident

'Risk analysis' necessitates an estimation be made of both the likelihood and consequences of a given event, in order to assign a risk rating. While the possible consequences of an accident are usually apparent, the likelihood of such an outcome is commonly less obvious. The latter is often a 'best guess' by the persons responsible and largely dependant on their level of experience and/or their ability to find and interpret statistics.

To help overcome this uncertainty, the accompanying Table shows the *'average time between events'* for the most common types of accidents and incidents occurring in the WA mining industry for the five years prior to July 1999.

Using MOD's revised accident/ incident statistics database software (AXTAT) it will be possible to conduct more detailed analysis of some of the generalised accident/incident categories, to reveal the specific types and frequencies of risk controls that fail and lead to accidents.

Reference documentation

Information on the subject of risk management and the risk assessment process is readily available, and well documented in the following Australian Standards:

- *AS/NZS 4360:1999 Risk Management*
- *AS/NZS 4804:1997 Occupational health and safety management systems-General guidelines on principles, systems and supporting techniques*
- *AS/NZS 3931:1998 Risk analysis of technological systems-Application guide*

Furthermore, a MOSHAB guideline is scheduled for release in December 1999 and is intended for use by Safety & Health representatives and committees to assist in implementing and communicating risk management practices.

Any questions or suggestions of other ways to present accident data that may be useful to industry will be welcomed and can be directed to Stephen Kamarudin at MINESAFE on Tel: (08) 9222 3543.

Type of Event	Average Time Between Events (days)
Breakage of Rope	19.0
Compressed Air Explosions	63.0
Crane Incidents	7.0
Derailment	35.8
Drill/Power shovel Incidents	7.4
Dust Ignition	49.2
Electrical Incidents	3.4
Explosives Detonation	83.3
Explosives Incidents NOC	16.6
Explosives Misfires	80.4
Fixed Plant Incident	5.9
Gas Ignition	19.9
Incidents Not Otherwise Categorised	4.4
Inrush of Water	55.1
Light Vehicle Incidents	8.4
Miscellaneous Injuries	5.8
Outbreak of Fire	0.8
Powerline Contact	35.1
Presence of Gas	26.2
Railway Incidents NOC	29.3
Rockfall	27.7
Truck/Mobile Equipment All Incidents	1.4
Truck/Mobile Equipment Collision	5.0
Truck/Mobile Equipment Contact with Person	36.5
Truck/Mobile Equipment Over Edge	18.3
Truck/Mobile Equipment Roll Over	7.8
Truck/Mobile Equipment NOC	3.2
Unconsciousness/Fuming Incidents	8.8
Wall failure	4.2
Winding Incident	70.2

Active Noise Cancelling Headphones

The technology of active noise cancellation (ANC) is still a current hot research topic in acoustics.

Active noise cancellation uses electronically generated sound to cancel unwanted noise.

In its simplest form, a control system drives a speaker to produce a sound wave that is an exact mirror image of the offending sound (the 'disturbance'). In this way, the speaker 'cancels' the 'disturbance', and the net result is no sound at all. In practice, of course, active noise control is somewhat more complicated. It may seem counter-intuitive to say that adding more sound to a system can reduce noise levels, but this is what actually happens.

The idea of active noise control was conceived in the 1930's and more development work carried out in the 1950's. However, it was not until the advent of digital technology that active noise control became a real and practical proposition.

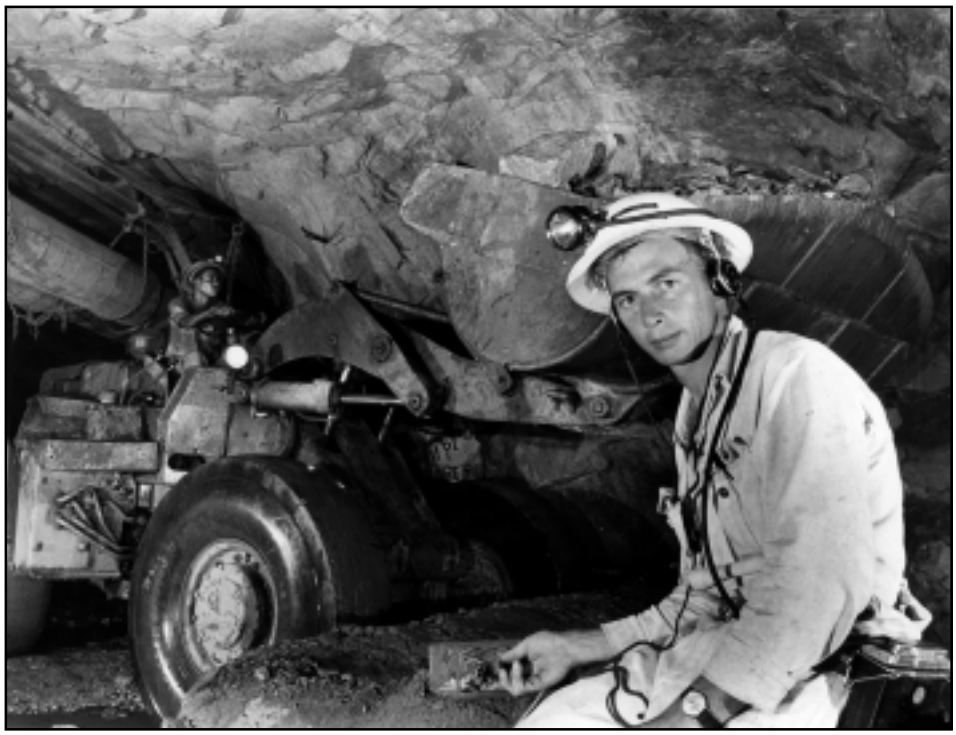
The technology works best with low frequency noise (0-500Hz) from repetitive sources such as gas and diesel engines, compressors, electrical transformers etc. Coincidentally, these frequencies are the most difficult to cancel with conventional noise control methods unless bulky and often expensive sound absorbing material is applied. Medical studies have also determined that low frequency noise causes extreme discomfort, fatigue and contributes to hearing loss.

ANC technology has also been applied to headphones (ear muffs) and works in the same way as noise cancellation at the source, except that the noise is cancelled at the wearer's ears. Headphones in their wireless version include all electronics such as microphones, speakers, a noise cancellation module and a battery module integrated within and therefore allow for the ultimate in mobility comfort and safety. However, it should be noted that any noise with a frequency content above 500 Hz will be attenuated by the headphones in the same way as in any conventional hearing protector cup.

The ANC headphones are commercially available and have been trialed in mines. The phones proved successful in providing up to 30 dB attenuation of noise within the critical 30 to 500 Hz frequency bandwidth. Unfortunately, the somewhat higher cost of ANC headphones as compared with the price of conventional earmuffs discourages wide usage in industry. However, it is anticipated that future advances in electronic noise cancellation technology will undoubtedly extend headphone operating frequency range to suit any specific application and also improve affordability.

As previously mentioned, ANC technology is not new. Depicted in the accompanying photograph is a young Mr Bob Hopkins (MOD Director) testing out a pair of ANC ear-phones as 'far back' as 1969 when employed at the Mufulira mine on the Zambian Copperbelt. Bob was also interested at the time in seeing whether ANC technology could be adapted to count the number of buckets tipped down the ore pass, as well as the benefits of hearing protection.

Contact Jerry Wilczewski on Tel: (08) 9222 3128 for further information.



MOD Director, Mr Bob Hopkins at the Zambian Mufulira Mine trying out ANC headphones in 1969.

Abandoned Mines --

Abandoned mine workings are part of the heritage of Western Australia and the other States and Territories. In the early days of mainly small scale mining in WA, the abandonment process was not always well performed and even where this **was** done properly, deterioration over many years has led to potential hazards being created as precautions put in place at the time of abandonment gradually age or become less effective.

Most current mining operations are located in areas of the State where mining was carried on in former times and consequently, abandoned sites can lie relatively close to accommodation and working areas. It is well worth considering the implications of going exploring in old worked areas! Particularly if you are new to the industry or have never worked underground (like many people currently employed in mining), you may not be aware of some of the problems which may occur. While the temptation may be great, the hazards are very real!

On both a State and national scale, mine openings (caved stopes, shafts, adits and tunnels) are the most frequently encountered abandoned mine problems. When many older underground mines were abandoned, the entries into them were not adequately sealed. Unstable or open portals and shafts on the ground surface can be very hazardous. Dangers and hazards within the mines may include poisonous or explosive gases, oxygen deficiencies, flooded sections, unstable roofs, hard-to-see vertical shafts, venomous fauna and disorienting mazes of mine workings. These problems are compounded by the **total** darkness within underground mines.

Abandoned mines are nothing like naturally formed caves which are attractive to recreational and professional explorers, and should never be mistaken for caves. Old mines and shafts conceal a multitude of potentially lethal hazards. There is potential for people to be killed or seriously injured in abandoned mines. The safest thing to do is to stay completely out of them.

Un-capped shaft with sinkhole in foreground.

Hazards - Keep Away and Stay alive!

Occasionally, adventurous (or foolhardy) people enter abandoned mines. Some are injured or do not make it out because they fall victim to one or more of the many specific hazards associated with abandoned mine sites:

Vertical or Near-Vertical Mine Openings

Falling down vertical or near-vertical openings is the most common cause of death and serious injury in abandoned mines. Darkness, loose debris, and false floors can hide vertical openings. Weathered rock at the edge of an opening can break away and slide into the open hole under the weight of a person.

Deadly Gases and Oxygen Deficiency

Lethal concentrations of methane, carbon monoxide, carbon dioxide, hydrogen sulphide, sulphur dioxide and several other gases can accumulate in underground workings. Pockets of still air with little or no oxygen can be encountered, due to the fact that the process of oxidation of certain minerals can literally consume a significant proportion of the oxygen normally present in the atmosphere. By the time persons feel ill, they may no longer be able to react in an appropriate fashion to remove themselves from the hazard.

Rock Falls

Old mine workings can cave in at any time! The effects of blasting and weathering can destabilise once-competent rock over time.

Unsafe Structures

Underground or surface support

timbers, ladders, buildings, pumps, tanks, and other mining related structures may seem safe but can easily crumble or collapse under a person's weight. Do not be fooled by appearances!

Unstable Explosives

Although explosives are supposed to be removed or disposed of on mine closure, the inspectorate occasionally encounters deteriorated explosives which have been left in place on abandoned operations. Unused or misfired explosives may be deadly. Because old explosives containing nitro-glycerine may become unstable, minimal vibrations from a touch or footfall can trigger an explosion.

Highwalls

Vertical or near-vertical faces (also called highwalls) from which material was extracted are common features of open pit mines and quarries. These highwalls can be unstable and prone to collapse. Do not climb near or on highwalls.

Dumps, Stockpiles and Spoil Heaps

Waste dumps, ore stockpiles or spoil banks from surface and underground mines and natural slopes at abandoned open pit mines may sometimes become unstable. The most common causes of landslides or slips include the following: steep slopes; saturation of slopes by water from mine sources or natural aquifers and the inherent instability of the disturbed materials. Walking on the surface of such piles can cause a slip even in apparently stable material.

Water Hazards

Many abandoned mines become flooded. Shallow water can conceal sharp objects, drop-offs, and other hazards. Scuba diving in pools which have accumulated in old mines can be very dangerous due to the potential hazards of underwater rock falls or becoming caught on abandoned equipment.

Radioactivity

Some of the materials that were mined, may have contained minerals such as uranium and thorium, which are radioactive and many mines worked for other minerals may contain the radioactive gas, radon. Similarly, in more recently abandoned operations, radioactive sources originally used in instrumentation (such as density gauges) could be encountered. Because the effects of radiation exposure are cumulative through a lifetime, any exposure may potentially increase harmful effects on your body.

Mines Are Designed for the Short-Term

Mines were constructed and maintained to be safe only while they were in operation. When the miners departed in search of more lucrative deposits, they often left mine openings uncovered and removed the water pumping and ventilation systems. Support structures, timbers, and ore pillars may have been removed or left to deteriorate.

Rescues

Mine rescues are extremely hazardous. Mine rescue teams, despite their extensive training, are at significant risk every time they enter an abandoned mine and the way to ensure that they do not have to put their safety at risk unnecessarily is to stay out of abandoned workings. The tragic and unfortunate reality is that many rescues from abandoned mine workings may turn into body recovery exercises.

Martin Knee
MOD General Manager - Mining Safety

Old mineshaft effectively sealed with concrete capping.

Shotcrete - Facts and Myths

Shotcrete, or as it is more correctly called, sprayed concrete, has become a feature of many mining operations in Western Australia during the past five years and it would seem, is set to become even more important in the future. During 1998 around $18 million was invested in this method of rock support in W.A. mines alone. In the recently released 'Code of Practice on Surface Rock Support for Underground Mines' shotcrete is identified as one of the means whereby rock surfaces may be made safe.

As underground workers we can reasonably ask, how does shotcrete work? If we look carefully at what this material is, and what it is supposed to do, our conclusions can differ greatly. To begin with, even the highest quality shotcrete mixtures rarely exceed 60 MPa in compressive strength, however, more often than not application in mines achieves approximately half that. Given that the weakest rocks in our mines normally start at 80MPa, why then do we try to support them with a material that is significantly weaker? The answer is actually quite complicated.

When a rockmass is blasted it is damaged. Some of this damage is desirable; it forms the hole we are trying to make. We are however, not as good at blasting as we would like to think and the rock surrounding the excavation also suffers damage. In particular, the rock surface gets shattered, eventually forming the 'scats' that are so familiar to underground workers.

If a surface such as this is sprayed with concrete before it can deteriorate, the shotcrete behaves like a 'glue' which binds the surface cracks and any potentially loose rock that could otherwise develop into 'scats' *(see photo of shotcrete core sample)*. In this way, shotcrete works in conjunction with the remaining strength of the rockmass and in some instances can make the rock 'skin' more durable than the undamaged natural surface would be. The addition of fibres, usually made of steel, to the concrete enhances this effect whilst imparting other useful properties to it.

Core sample of shotcrete showing penetration and adhesion of cracks in rock surfaces

In addition to the binding mechanism, the concrete skin prevents *'atmospheric weathering*' (this is when a rock surface starts to look 'old'; it starts to crack and various mineral salts can deposit, giving it a different colour and 'furry' deposits that may form). Concrete is usually more resistant to this kind of attack than many natural rocks, particularly ores. The result is less degradation of the rock.

Whilst the beneficial effects of concrete are well documented, there is an aspect of shotcrete which would seem to belong more in the realms of mythology than in the world of technology. Miners in the deep South African gold mines refer to shotcrete as *'lo siment'* and attach what may seem to be religious beliefs in the material. The writer has worked with many development team leaders *(leading hands),* who would not allow their crews to work in a heading where '*lo siment'* had not been applied. They don't know why the shotcrete works, nor indeed do they care. Bitter, and often fatal experience has convinced them that when '*lo siment'* has been applied, their chances of being 'hit' by a local seismic event is reduced to an acceptable level.

When the writer studied the quality controls for applying this '*siment'* he was more than a little concerned by the findings. Application was by the so-called 'dry' method. The only problem was that it wasn't really dry! The very wet sand and the bagged cement were mixed together up to two hours before application, thereby **ensuring** that cement hydration was well advanced by the time that the material was sprayed. Being a 'dry' application, it is very difficult to gauge the thickness of the coating being placed. The outcome, in terms of thickness, varied between **5mm** and **75mm**. Theoretically this was, in shotcrete terms, totally inadequate. However, it did work! The writer can personally testify to this. He, together with a team leader and a driller were partially buried in a rockburst. No one was seriously hurt. We merely needed to change our respective underclothes! *'Lo siment'* had **not** been applied. That was enough for my indigenous associates, and in their minds, that was the reason we had been buried.

Patrick Burke
MOD Manager- Engineering Services

New Dangerous Goods Transport Regulations

At last, Western Australia has the same laws for the transport of dangerous goods by road and rail as other States in Australia. The new regulations, the *'Dangerous Goods (Transport) (Road and Rail) Regulations 1999'* came into effect on 9 June 1999.

The new regulations are based on the Commonwealth *'Road Transport (Dangerous Goods) Regulations'* and give legal force to the 6th edition of the *'Australian Dangerous Goods Code for the Transport of Dangerous Goods by Road and Rail'*.

A major outcome of the new legislation is the introduction of an on-the-spot penalty infringement system (PIN). Major players in the transport industry have desired a PIN system for some time in order to maintain an even playing field and keep unsafe operators out of the industry. The introduction of these new laws make it much clearer to determine where responsibility lies in handling the transport of dangerous goods, and who could incur fines.

Under the new legislation, infringements include driving without a dangerous goods licence; failing to properly secure a load of dangerous goods; failing to carry shipping documentation; and failing to segregate incompatible goods. The legislation provides for fines of up to $600 (individuals) or $3,000 (corporations) per infringement.

But does this apply to minesites? That depends on whether the dangerous goods are:

a) Transported to or from the minesite in bulk

When bulk dangerous goods are received or consigned by the minesite, Part 10 of the regulations – *Transfer of Dangerous Goods in Bulk* applies. This part deals with the duties of the transferor, prime contractor, rail operator, vehicle driver, occupier and/or owner. It is also worth noting that the legal obligation for designation of the good as a dangerous good rests with the manufacturer/producer. Various minesite products such as flotation concentrates have the potential to be classified as dangerous goods.

b) Transported within the minesite in bulk (no use of public roads)

The regulations have been written to specifically exclude minesites, farms and other company premises with the exception of those items noted in a) above.

Should you require further information on any of these issues please contact Stephen Kamarudin on Tel: (08) 9222 3543.

'The Bottom Line'

The incidence of light vehicle accidents on minesites is unacceptable, raises serious concern and warrants immediate attention. As many as 3 accidents have occurred in the same week; these and many others could have easily proved fatal.

Detailed below is just a selection of light vehicle accidents reported to the Department this year:

- A driver sustained fractured ribs and back injuries after a head on collision with another light vehicle.
- A driver sustained cuts and bruises when a light vehicle rolled over on the road from the mine to the village.
- A driver sustained neck and chest injuries when a light vehicle was driven through water at excessive speed and rolled over.
- A light vehicle rolled over when driven over soft ground on the mine access road. Inclement weather had caused the road surface to deteriorate.
- Two light vehicles collided head on while negotiating a blind turn and resulted in one vehicle rolling over.
- While returning to camp along the rail access road, the driver of a light vehicle lost control on a sweeping bend, causing the vehicle to roll over.
- While travelling around a stockpile in opposite directions, two light vehicles collided after braking and skidding on the slippery road surface.
- A driver sustained knee injuries when he lost control in slippery conditions and the vehicle slid sideways into a windrow and rolled onto its side.
- A light vehicle rolled over when the driver lost control on a wet road and struck a windrow.
- Two light vehicles collided head on at a blind bend in the road.

And the **'BOTTOM LINE'** is:

- Drivers of light vehicles need to **slow down, drive to road conditions** and **wear seat belts**.
- Employers need to **ensure adequate road maintenance** and enforce **safe driving practices**.

Frequently Asked Questions

Q 1 ***In the last Minesafe you said that mono-rails are not required to be registered by DME; but do they still have to be load tested?***

A 1 Yes. Australian Standard AS1418 still applies under MSIR 6.33(b) and specifies the tests to be carried out prior to use.

Q 2 ***Are mobile electric generators and engine-driven welder/generators required to be connected to a grounding earth-stake?***

A 2 No, but there are requirements and conditions under which certain parts are to be electrically bonded together. Refer AS2790, AS3010.1 and WA Electrical Requirements

Q 3 ***Can we use rock-bolts as a means for earthing pneumatic ANFO loaders?***

A 3 Yes, providing the rock-bolt provides an adequate discharge path to ground and prevents the build-up of electrostatic charge. Sample testing of rock-bolts using an electrical test instrument should be periodically carried out and readings less than 1 megohm may be considered safe. Testing of some rock-bolts installed in basalt strata have produced readings as high as 25 megohms.

Q 4 ***I know petrol driven engines are not allowed to be used underground in a mine, but what about two-stoke engines?***

A 4 Two-stroke fuel is essentially petrol with a very small amount of oil added to it and is not allowed to be used underground. Only diesel engines powered by automotive grade diesel fuel may be used underground and must be registered by the district inspector before being used. These restrictions do not apply at the surface of a mine. Refer MSIR 10.48 and 10.50.

A New Geotechnical Advice Document - Open Pit Mines

A new MOD publication dealing with geotechnical considerations in open pit mines has been completed.

The publication provides more information to better explain the requirements of MSI Regulation 13.8. Its purpose is not to introduce new standards, but to assist mine managers achieve compliance with the statutory provisions relating to geotechnical issues in open pit mining.

The publication generically describes most of the geotechnical considerations applicable to open pit mines within the diverse mining industry in Western Australia. It is recognised that not all the issues covered in the publication will directly apply to all sites, and conversely, there is likely to be specific issues relevant to some mines that have not been included.

In April 1999, a draft copy of the publication was widely distributed to open pit mining representatives directly and via the Chamber of Minerals and Energy, seeking industry comment by July 1999. Approximately 25% of recipients returned suggestions for improvement.

The publication was prepared by MOD Geotechnical Engineer Dr. Ian Misich and will be available in hard copy and on DME's homepage: www.dme.wa.gov.au

What's On

VENTILATION COURSES
PERTH, DECEMBER 1999

Surface Ventilation Technicians Course (13-15 December) for those who have been or wish to be appointed to the role of Technician Officer assisting the Surface Ventilation Officer.

Surface Ventilation Officers Course (16-17 December) for persons who have been or wish to be appointed to the statutory role of Ventilation Officer.

For further information contact:

Christine Williams
IFAP

Tel: (08) 9310 3760

TAILINGS MANAGEMENT AND DECOMMISSIONING
PERTH, 6-7 DECEMBER 1999

Addresses the issues facing site personnel involved with the day to day management of tailings storage facilities to comply with relevant operating standards and decommissioning requirements.

Structured around different case studies, this is a practical course aimed at operations, site supervisory personnel and environmental officers.

For further information contact:

Gillian Macmillan, Australian Centre for Geomechanics

Tel: (08) 9380 3300
Fax: (08) 9380 1130

Staff Changes

Hayden Wing has come from Melbourne to join the Mining Operations Division. He is an Occupational Hygienist and will be managing the new Contam system when commissioned. (Dustmask at the ready)

Jenny Oosterhof, Occupational Hygienist, is taking maternity leave. Minesafe wishes Jenny, husband John and baby 'Eva' well.

New Publications

Significant Incident Report 102

Fatal Methane Gas Explosion - South Africa (August 1999)

Significant Incident Report 103

Hazards Associated with Dehydration (August 1999)

PUBLIC NOTICE

Plutonic Operations Limited – a subsidiary of Homestake Mining Company – wishes to notify the public that an Amdel density gauge which contains a low level radiation source has been discovered to be missing from its decommissioned Paddy's Flat Operation at Meekatharra.

The radiation source is housed in a cylindrical shaped protective lead casing with a square faceplate (240mm x 240mm) at one end. The source housing weighs approximately 42 kilograms and displays an inscription identifying it as a radiation source. Further identifying marks on the gauge include the Serial Number (6946GF) and the Gauge Number (218).

The instrument poses no threat to personal health and safety and can be handled safely provided it remains intact. However, no attempt should be made to dismantle or tamper with it.

Notification of the disappearance of the gauge has been made to the Radiological Council of WA, the Department of Minerals and Energy and the Shire of Meekatharra.

Plutonic Operations Limited continues to investigate the issue and to co-operate with relevant government authorities in an effort to relocate the gauge. If you have any knowledge of the whereabouts of an object matching the description provided herein, please contact:

Plutonic Operations Limited Attn:
David Tucker, Level 10, 2 Mill Street, Perth, WA 6000
Phone: (08) 9212 5735 Fax: (08) 9324 1582
E-mail: david_tucker@homestake.com.au

Incident Alert

Incident:

A process pump failed in circumstances that caused it to be driven in reverse at a speed exceeding 6000 rpm. The drive pulley and impeller burst due to the excessive speed and the pulley guard was destroyed when impacted by fragments of debris.

Details:

The pump was the first of a 2 stage high pressure condenser feed arrangement transferring from one pressurised heated vessel to another. The first stage pump was a 1500 rpm fixed speed and the second stage pump was a variable speed (VVVF).

The operator who was running-up the pumps was unaware that the first stage pump had not started. The head developed by the second stage pump was insufficient to overcome the pressure difference and allowed steam from the high pressure vessel to back-flow through the second stage pump and drive the first stage pump as a turbine. The first stage pump rapidly accelerated in reverse and failed within 20 seconds.

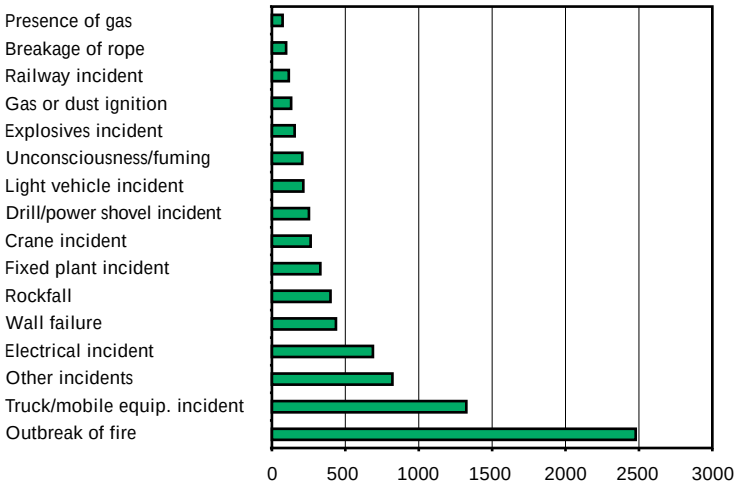
Comment and recommendations:

The incident demonstrates a clear need to assess and deal with the risks associated with pumps that transfer between pressurised vessels.

A safe option to avoid similar occurrences is to install an anti-rotation device at the input drive shaft of the pump. These mechanisms can be provided to suit either direct coupled or V-belt driven units

Watch Out!

Number of incidents reported since 1994



Fixed Plant Incidents by Type Since 1994