DEPARTMENT OF
MINERALS AND ENERGY
WESTERN AUSTRALIA

MINING OPERATIONS DIVISION

MINESAFE

View from front

View from rear

...Now take a look from the driver's seat and take heed !

...see inside cover

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Inside ....

39 Heavy mobile plant collisions with light vehicles in 3 years

The only thing that is odd about this MINESAFE's front cover photographs is that the excavator driver ran over his own vehicle.

Employers and employees must recognise that collisions between heavy mobile plant and light vehicles present a very obvious major hazard, occur frequently, and need to be eliminated if 'forseeable' dire consequences are to be avoided.

There have been 39 collisions reported in the last 3 years, involving all types of heavy mobile plant, including haul-trucks, loaders, dozers, excavators, scrapers, road-trains and even drills.

Apart from extensive damage to the light vehicles involved, the single most common factor in all of these accidents is quite simply, that the mobile plant equipment operator could not see the light vehicle, and had no chance of avoiding a collision.

Not all of the light vehicles involved in these accidents were parked up, two-thirds had drivers in them, and most sustained injury.

Sample: *A haultruck and a utility collided when their paths converged on the ramp. The truck driver was completely unaware of the impact and the ute was dragged along until it finally became untangled.*

Anyone doubting how extensive the damage can be, should take a look at the photograph provided by WMC - Mt Keith, showing a tray-top that was purposely driven over by a haultruck and then placed in the middle of a haulroad as a constant reminder.

Most accidents result from not giving way, parking too close, following too closely, overtaking, and failing to establish radio contact.

REMEMBER – Be seen, be heard, be vigilant and be careful!

The product of a simulated accident serves as a permanent reminder at Mt Keith

Mobile Plant Collisions with Light Vehicles 1997 - 1999

Year	Trucks	Loaders	Dozers	Other	Total	*Occupied
1999	6	1	2	1	10	6
1998	10	3		1	14	10
1997	9	2	2	2	15	8
Total	25	6	4	4	39	24

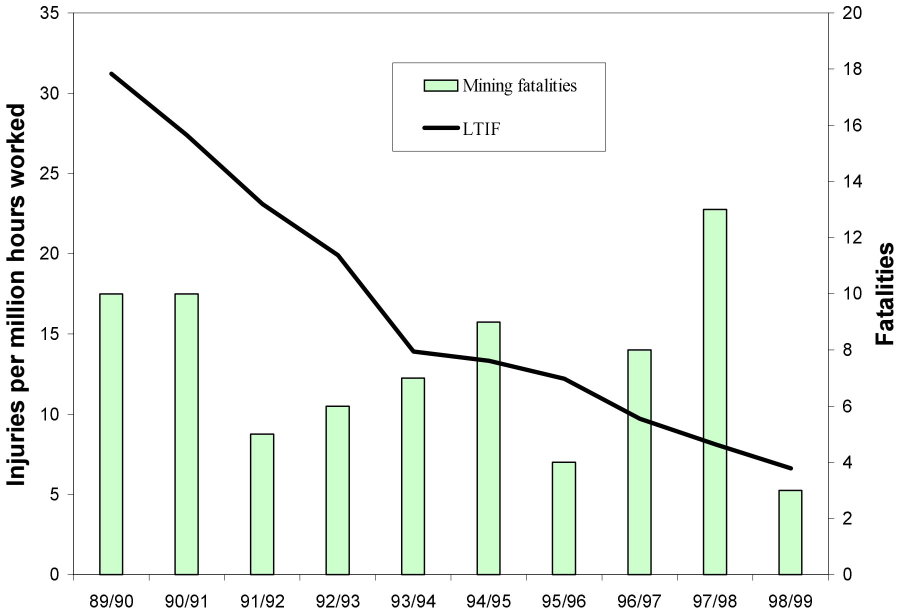
*Occupied = Accidents involving person(s) inside light vehicle.

Guest Editorial

SUSTAINED MINING INDUSTRY SAFETY IMPROVEMENTS HAUNTED BY SPECTRE OF FATALITIES

Those engaged in the mining industry are to be highly commended for the great efforts they have made over many years to reduce the toll of work-related injury.

Indeed, the latest accident and injury statistical digest published by the Department of Minerals and Energy, *"Safety Performance in the Western Australian Mineral Industry 1998/99"* indicates that this improvement continues to be sustained.



Over the decade from 1989/90 to 1998/99, the Lost Time Injury Frequency Rate (lost time injuries per million hours worked) declined from 31.2 to 6.6. Over the period 1997/98 to 1998/99, the number of serious injuries fell from 289 to 258, while minor injuries went down from 437 to 329.

Creditable as this performance may be, the mining industry is still haunted by the spectre of fatalities at work. The Department believes that a zero fatality rate is possible in WA mining and the industry has demonstrated that this is achievable by recording a period of almost eleven months without a single fatal accident. However, the permanent eradication of deaths at work still seems to elude us.

We all try hard! Time after time, we think we have got it right, but are disappointed. We have systems in place to manage "safety" (whatever that may be!), but still we have incidents, damage, near misses, injuries and deaths.

The systems, in themselves are not enough. No system can hope to cover every eventuality or possibility – life is too variable for that! What we need to do is to recognise the importance of the human element. We need to be aware that people vary, and that this can be a good thing for an organisation. The conventional view has long been that a reliable and predictable, consistent and invariable organisation with a "system" to manage its operations is likely to perform better than one with more variability. Evidence is mounting to suggest that this may not be the case, at least, as far as the "big picture" is concerned.

A strict system alone may not encourage the kind of mindset which allows the individual members of the operating team to detect unpleasant surprises (which the system is designed to prevent) before they result in serious consequences. In an alternative type of culture, where everyone is constantly aware that system failures can occur at any time, and in forms that have never occurred before, the "collective watchfulness" that results allows the organisation to cope better when failures do occur.

Near misses are an important learning tool in this regard. The "free lessons" which these provide can give managers key information to prevent repeats. This information is only of use if it is made available by those involved. The only way in which the necessary "reporting" culture can be developed is to foster mutual trust so that people are prepared to confess their mistakes, errors and blunders.

Mistakes are not a moral issue warranting punishment – everyone makes them from time to time! The trick is to ensure that the lessons are learned and remembered, so that the mistakes are not repeated to the extent where a fatality, serious injury or catastrophic failure results.

Martin Knee - Acting Director
Mining Operations Division

Backfilling of underground voids

Introduction

The tragedy at the Bronzewing gold mine on 26 July 2000, where some 18 000 m^3 of backfill burst from a stope, inundating workings and likely costing the lives of three underground workers, provides a stark reminder of the high potential hazards that can be associated with stoping systems that use mine fill, particularly where the fill is placed hydraulically.

The circumstances surrounding this accident are under investigation and will be the subject of a detailed report. Therefore it would be inappropriate to make further comment at this stage.

The following information is provided for general guidance and does not specifically relate to the above accident.

Why use backfill?

Backfilling of underground voids is a common practice worldwide and many mining operations rely on it for their viability. The technique is especially common in the base metals sector of the industry where it primarily offers a means of supporting the relatively large excavations that this kind of mining creates.

Stope filling can also contribute to the efficiency and economy of ventilation conditions underground. Environmental benefits also result by returning to the ground much of the mined out material, with the consequent reduction in the amount of waste that would necessarily be stored in surface dumps.

The bottom line is that the practice of back-filling stopes remains, and will continue to remain, a viable and, at times, essential component in many mining methods.

Backfilling methods

The variety of backfilling techniques in use is wide, ranging from the familiar dumping of dry mullock, (waste rock), to the placing of fine material by hydraulic means and consolidating it by the addition of binders such as cement, cement extenders or calcium silicate (flocculant).

The principal difference in the various methods is the importance of the role that water plays in the general scheme of things.

Dry dumping of mullock obviously does not involve the use of large quantities of water and is therefore inherently more stable and unlikely to create an inrush to the workings.

However, if water is used to transport and place the fill material the situation radically changes. An obvious major hazard can arise, if for whatever reason, water pressures in a filling stope become high enough to burst the retaining structures. Although this should never happen, the fact is that it has, on many occasions.

As in most other aspects of mining, the operating workforce can contribute greatly to the elimination of hazards.

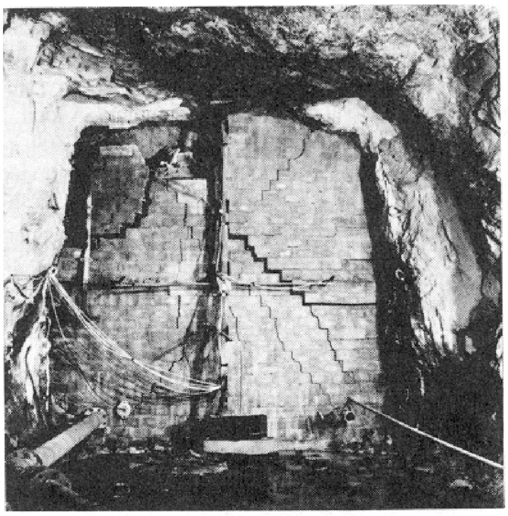
Systems operation and control

A feature of hydraulic backfilling which is often overlooked is that once the fill material leaves the preparation plant it is usually never seen again as it passes through pipes or boreholes to its destination where it remains contained within the excavation. Its presence, its behaviour and its condition must be inferred from pressure readings on bulkheads, flow meters in pipes, seepage rates through fill walls and volume calculations at the fill plant.

Quite clearly, the responsibility for the correct design of the fill, the plant, the fill placement system and retaining structures rests with mine management. However, the workforce also has an important role.

The involvement in the safety of the process by the workforce starts with the fill plant operator. The composition of the fill material must be rigorously kept to the design specification. This can be especially difficult when problems with the equipment are experienced, and there will always be a temptation to allow control measures to slip whilst other difficulties are being dealt with. It must be recognised that the placement of the wrong "mix" even for a short time can create a significant hazard underground.

The underground fill operators may have the duty of inspecting fill walls or bulkheads and possibly taking readings of whatever instruments may be in use. This is the formal means whereby the "vital signs" of the fill process are monitored, and is the area most likely to give warning of impending trouble.



Failed backfill bulkhead during tests at Mt Isa Mines. (Photo sourced from Grice A.G,1998. Fill research at Mt Isa Mines Ltd; Innovations in Mining Technology, pp15-22 (Balkema Rotterdam).

It is a boring, repetitive job but one which is also very demanding in terms of observation and attention to detail. Again any oversight on the part of the operator can have dire consequences for the underground workforce and the enterprise as a whole.

Other people working underground have a duty to themselves and to their colleagues to be aware of the fill process in use at the mine and of the possible consequences of something going wrong. The bogger operator who sees backfill material on the haulage and does not tell the supervisor could be placing himself and his mates in very great danger. The sampler who observes water coming from a crack in a bulkhead and decides that this has nothing to do with him and ignores it is similarly remiss.

The instances portrayed are merely examples intended to convey a basic message for all workers to be ever vigilant and spot **'changes'** in the underground environment which cannot be readily explained, and to **'ask the question'** of someone who knows.

The **THINKSAFE MINESAFE** message: *"Spot the hazard, assess the risk, make the changes"* is most pertinent.

"Underground mining is not inherently more dangerous than any other human activity but is merely less forgiving of ignorance, negligence or foolhardiness".

Anonymous.

Air blast hazards in U/G mines

The tragic consequences of an air blast, caused by a major rockfall in the block cave operation at the North Parkes Mine in NSW on 24 November 1999, have served to remind industry of the high levels of risk attached to this hazard.

It is not appropriate to further discuss this event here at this stage, as a comprehensive inquiry is in progress and will result in a full report when completed.

However, the diagram published by the Regulatory Authority and shown below, illustrates the main features and gives an indication of the magnitude and extent of the air blast which resulted from the collapse of the cave back.

energy developed by a plug of material falling rapidly through several hundred metres is very large, and air compression high. This effect is analogous to the destructive airwave which precedes major avalanches in snowfields.

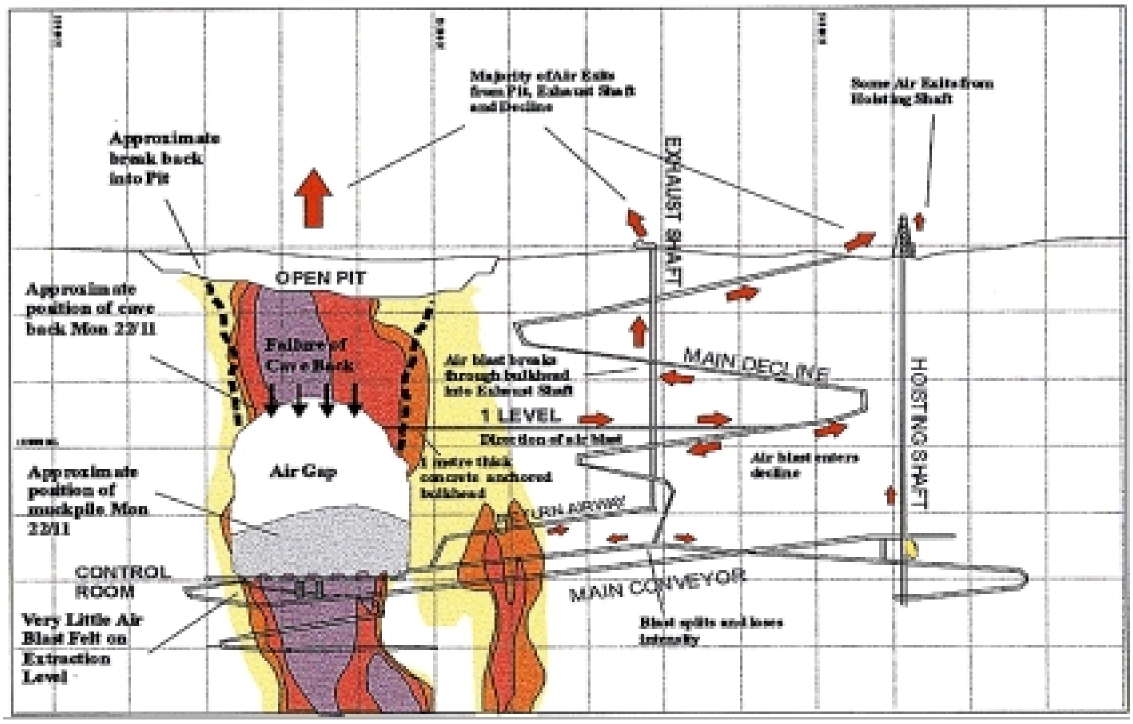
Moreover a further hazard results when a descending plug passes any level connections into such a pass. There is a powerful induction of air which may draw persons in the vicinity into the pass.

The major air blast hazard in underground mines is presented by substantial rockfalls, commonly within stope voids, or from hang-ups suddenly collapsing in the goaf in underground coal-mines.

There has been a long history of damage, death and injury in the collective global mining industry's experience of this hazard, and although major disasters normally receive substantial publicity at the time of the event, much of the experience is not documented and published. There is a tendency to lose sight of the issue over a period of time.

This is an important matter for underground mines operating on even a moderate scale of exposure in terms of voids, or with extended systems of passes transferring ore, waste or fill material.

Appreciation of the risk is not simply a matter for technical staff.



Air Blast Hazards in Underground Operations

Any sudden major displacement of air in the confines of underground mines can cause serious injuries. It is self evident that the greater the air volume displaced and the more rapid the displacement, the more serious the consequences.

A simple example of the hazard is air displacement from an ore waste or fill pass, resulting from a substantial plug of hung material releasing suddenly. The kinetic

Falls in stope voids may result from crown or rib pillar failures, or simply from hanging-wall and stope back collapse. Depending upon the size and geometry of the void and of the rockfall, and also the number and size of connected openings, the resulting air blast may be relatively minor to substantial and damaging.

Extensive hang-ups of broken rock in open stopes will obviously present a hazard at the extraction horizon, (draw points etc), both from rock ejection, and also the air blast potential.

The hazard also needs to be fully understood at operator and front line supervisor level.

All underground mining operations should review the potential for this type of hazard to occur, ensure that any identified risks are fully understood, and build the necessary protective measures into the risk management system for the mine.

A regular process of review must also be incorporated throughout the mine life.

Introduction

Continuing MINESAFE's disaster series, herein are the brief details of an explosion which occurred at the Gramercy Alumina Refinery, in Louisiana, USA, on 5 July 1999 at 5.17am, resulting in catastrophic damage, and injuries to 29 persons.

Gramercy Digestion plant - before explosion

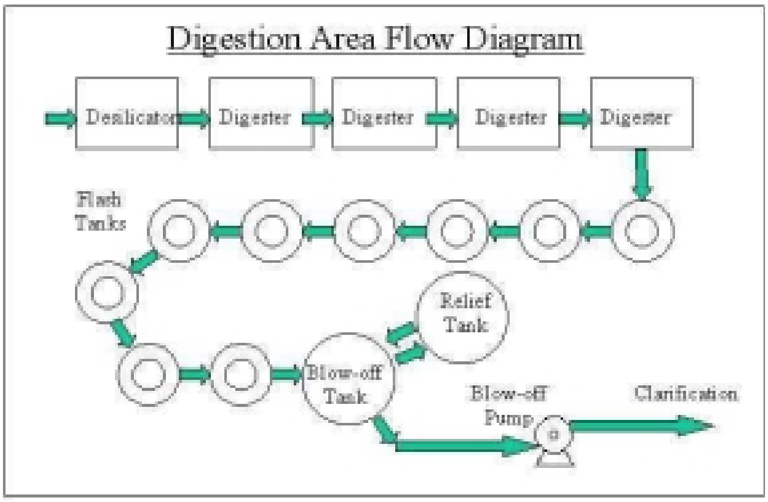
Prior labour relations breakdown

Ten months before the disaster, workers at the plant began strike action after contract negotiations between the Company and Union failed. To maintain production, the Company implemented a pre-existing arrangement and brought in replacement contract workers, and management provided 'on-the-job' training. Four months into the dispute, union members offered to return to work and recommence negotiations, but were 'locked out' by the Company. The replacement workforce continued to operate the plant up until the explosion occurred some 6 months later.

Plant and process description

Alumina is refined from bauxite using the Bayer Process, and in the digestion area where the accident occurred, involves elevated process temperatures and pressures.

Referring to the diagram showing only the digestion section, a slurry of bauxite and caustic soda first passes through the desilicator vessel where it is agitated under high temperature and pressure to remove unwanted silica. The slurry then passes through a series of four digester pressure vessels, where more steam is added, and elevated temperatures and pressures are maintained to leach the alumina from the bauxite. The slurry liquor is then depressurised through nine flash tanks, a blow-off tank and a relief tank. Pressurised steam relieved at each flash tank is piped via heat exchangers and used to reheat return liquor (not shown).



Protection against over-pressure

With tank volumes up to 24 388 cu ft and pressures around 500 psi, over-pressure protection was critical.

Pressure transmitter controls were provided to protect the desilicator and digesters, and arranged to shut off slurry and steam flows if pressure limits were exceeded during normal operations. Override switches in the control room were available to facilitate maintenance.

Each flash tank was protected by a series of spring-loaded pressure relief valves connected through manifolds and piping which discharged to the relief tank. Again, to facilitate maintenance, each relief valve could be isolated by manually operating upstream and/or downstream blocking valves. A definite minimum number of relief valves were necessary for safe operation.

Disaster strikes in just 34 minutes

At 4.43am on 5 July, all processing areas of the plant experienced a total power outage due to a fault in No2 switchhouse.

Battery-powered instruments in the digestion control room continued to function and register several alarms. Electrically-driven pumps stopped feeding slurry through the digestion circuit, but gas-fired boilers in the power house continued to deliver steam, and pressure began to build up in the desilicator and digesters.

Endeavouring to control the situation, the control room operator reduced steam flow and closed a back-pressure control valve which prevented slurry moving from the digesters into the flash tanks. This action was contrary to standard procedure for power outages. Loss of return liquor flow through the heat exchangers caused additional heat to remain in the flash tanks and the system pressures increased further.

Ten minutes after the power failed, the digestion supervisor arrived in the control room and immediately re-opened the back-pressure valve and switched on the pressure transmitter override switches, to avoid serious blockages and settling in tanks.

Realising that caustic slurry may spray from the heat exchangers, the supervisor sent 3 operators (without protective clothingl) to manually close the respective vent valves.

Gramercy Digestion plant - after explosion

While closing the valves, all three operators were sprayed with caustic liquor. After rinsing their faces and necks they returned to the control room, and were sent back to close the last valve which was still spewing slurry. The men returned to the heater deck and while contemplating how to close the last vent valve, the digestion area violently exploded around them.

One operator had his goggles blown off, his face sprayed with hot caustic slurry, and is now blind. The second operator was knocked to the ground by the blast, sprayed with caustic, and suffering extensive third degree burns, crawled along the floor until he found a stairway down to

Total destruction of digestion plant area

ground level and assistance. The third operator was also knocked down and sprayed with caustic, and being unable to determine his location 'just yelled until help arrived'.

Three other employees investigating the power failure, were all completely blown out of a switchroom, one received caustic burns to 80% of his body and another was 50% burned.

A supervisor in a maintenance trailer received leg, ankle and rib fractures when blasted against an internal wall and struck by a length of angle-iron that was propelled through it.

Many others suffered injuries.

As shown in the photographs, the explosion totally demolished the whole digestion section and surrounding plant areas. Large portions of blow-off tanks, flash tanks, pipes, valves and structural supports were blasted hundreds of feet in all directions. The dome of flash tank No6 weighed 7600 pounds and was found 3000 feet away.

In the towns of Gramercy and Lutcher some 3 miles away, homes, buildings and cars received structural damage, glass breakage and residue fallout from more than 400 000 pounds of sodium hydroxide that the explosion released into the atmosphere.

What went wrong?

The accident occurred just 34 minutes after the power failed and resulted from the build up of excessive pressure in process vessels. Five tanks ruptured, exploding and releasing superheated liquor into the atmosphere.

Investigators from the Mine Safety and Health Administration (MSHA) authority found:

- The pressure transmitter controls for the digesters could not function because they had been switched off shortly before the explosion.
- The pressure relief system for the flash tanks failed because several relief valves had been blocked out (isolated) and relief pipes had excessive scaling. Twenty inch sections of relief piping were later found to be blocked solid.
- During 'plant upsets', liquor had frequently passed through the (steam) pressure relief system, clogging pipes and valves, which the company was aware of and failed to maintain. One bank of relief valves for flash tank No7 had been blocked out for months prior to the accident.
- There were no status indicators in the control room to show the positions of the relief valves and blocking valves
- A 36 inch overflow pipe between the blow-off tank and relief tank was 75% blocked with scale, greatly restricting its ability to release the excess pressure.
- Management condoned pressure vessels exceeding their maximum allowable working pressures. Records showed that No7 flash tank had continuously exceeded its rating since 26 June 99.
- Employees had not been adequately trained, many did not even have a superficial understanding of the digestion system, and were unable to operate without constant supervision.
- The likely cause of the power failure was - unsecured current transformer wiring which sagged and faulted against electrical substation bus-bars.

4WD vehicle buried amidst debris

Comments and discussion

Taking into account that around 61% of Australia's alumina production and 20% of the world's alumina supply is refined in Western Australia, the lessons to be learned from the Gramercy explosion are particularly relevant.

Clearly, management and workers at the Gramercy Refinery failed to identify and remedy the hazardous conditions and work practices, that lead to what can only be described as an extremely serious and foreseeable accident.

The above fundamental will apply equally to a range of mineral processing plants other than alumina refineries, where high temperatures and pressures are involved, and demand the highest standards of plant equipment and operating integrity.

Another specific fundamental, is the absolute necessity for hazardous pressure plant to fail to a safe condition in the event of power outages, which can, do, and should be expected to occur.

In the last 12 months, DME Mining Operations Division inspectors, have on 2 occasions, suspended operations at large complex processing plants for up to 4 weeks, where life threatening situations arose due to pressure control failures, following power outages.

Experience continues to demonstrate that many hazards associated with complex treatment plants can only be identified and controlled by adopting a detailed risk management approach. Guidance on risk management is in abundance. There is a suite of Australian Standards provided for the purpose, and these now include a new AS61508-1999 series titled – *Functional safety of electrical, electronic, programmable electronic – safety reated systems.*

MINESAFE acknowledges, and directs those wishing to read the full report to: http://www.msha.gov/minefire/gramercy/report/reportdept.htm

Exploration Safety Video

Mineral Exploration – A Safe Start"

That's the title of a new video released by the WA Chamber of Minerals and Energy, which deals with the key safety and health issues associated with mineral exploration. Topics covered include legislation, communications, drilling, transport, living and working outdoors, manual handling, personal protective equipment and incident reporting.

Video cover - look out for it

The intention and purpose of the video is to supplement company induction and training programs. Although it was developed for, and is ideally suited to new starters in the exploration industry, it can also serve as a good refresher for experienced exploration workers.

The idea of producing a video originated some 2 years ago from the *Exploration Safety Information Group* (ESIG). Though many safety-related videos were available, none specifically addressed the mineral exploration industry or highlighted the particular safety issues associated with exploration. The ESIG group identified this shortfall, sought and obtained the Chamber's endorsement of the video, and with funding provided by member companies of the *Exploration Council*, coordinated its production. The final product was completed in March this year and officially launched on 29th June by Mines Minister Norman Moore.

Although the video was produced in WA, its content applies Australia-wide.

Drilling in the middle of nowhere

Available in both local and international formats, the 20 minute video can be purchased for $150 from the Chamber by contacting:

Telephone: (08) 9325 2955
Facsimile: (08) 9221 3701

or Emailing:
chamber@mineralswa.asn.au

The ESIG group was formed in early 1998 when WA-based safety personnel from several exploration companies identified a real need to discuss and share safety information specific to mineral exploration. The ESIG group is an independent body, and members currently represent the interests of 7 exploration companies and 2 consultancies. Meetings are convened every 2 months, and on an informal basis pursue the following objectives:

- Establishing an effective exploration safety network.
- Sharing of accident and incident safety information.
- Raising safety awareness in the exploration industry.
- Developing safety initiatives that will benefit the exploration industry as a whole.

The ESIG group has also been involved with initiating collaborative auditing of airborne geophysical contractors. Anyone interested in obtaining further information about the group are invited to Email either:

Ian Brown -
browni@newcrest.com.au

Lee Kennedy -
Lee.Kennedy@expl.riotinto.com.au

Typical exploration camp in outback Australia

"Our country is rich in valuable resources, but the vast scale of our harsh remote interior makes finding these mineral reserves a challenging and potentially hazardous occupation. Everyone involved in the on-going search for mineral deposits needs to adopt a 24-hour a day commitment to safety and health. This video will provide valuable information about how to work safely in some of the world's most rugged terrain.

Sir Arvi Parbo

Face Value of Mining Experience

A key area of concern identified by the 1997 MOSHAB "*Prevention of Mining Fatalities Taskforce*" was ground support and the design of underground mines. It was generally perceived that the level of knowledge and understanding of these issues within the underground mining workforce needed to be improved.

Some of the comments received by the 'Taskforce' included:

- *" Too many are young and inexperienced - particularly in ground support matters"*
- *"A lack of competent Jumbo operators results in employment of inexperienced operators"*
- *"Lack of training and very few experienced operators available"*
- *"People need to be trained to qualitatively assess rock mass behaviour"*
- *"Lack of standards for rockfalls, geotechnical issues and planning"*

In response, the underground mining industry has placed a great deal of effort into addressing these issues, and while the results of those efforts are quite positive, it has to be recognised that the gaining of experience is often a longer term issue.

To address the issue of standards, MOD prepared and issued the following MOSHAB approved guidelines:

- *Geotechnical considerations in underground mines*; and
- *Barring down in underground mines*.

However, most will agree, guidelines alone cannot provide the sole solution to every problem in all circumstances. A degree of mining experience and knowledge is essential, if the worker at the mine face is to properly determine the appropriate course of action, as and when required.

The following statement, also received by the Taskforce, emphasises and summarises a clear underlying industry desire for mining experience:

"We need to develop the miner from base up (ie. start as an air legger) so that they can learn skills on how to read the ground, correct rockbolting etc.".

Inferred in the above comment,is that gaining meaningful experience is not easily achieved. It can take several years of exposure to a variety of mining tasks and environments before one can rate oneself as being 'experienced'.

However, it must also be accepted that a person is not necessarily experienced just because they were *"there when it happened"*, *"saw it first hand"*, or *"worked in that mine"*. Experience levels of mine workers must be measured by the degree of understanding and knowledge the person has gained.

Gaining experience can, however, be fast-tracked by increasing one's level of knowledge on the subject matter. Undoubtedly, a sound understanding of the issues will accelerate progress towards developing 'experience'.

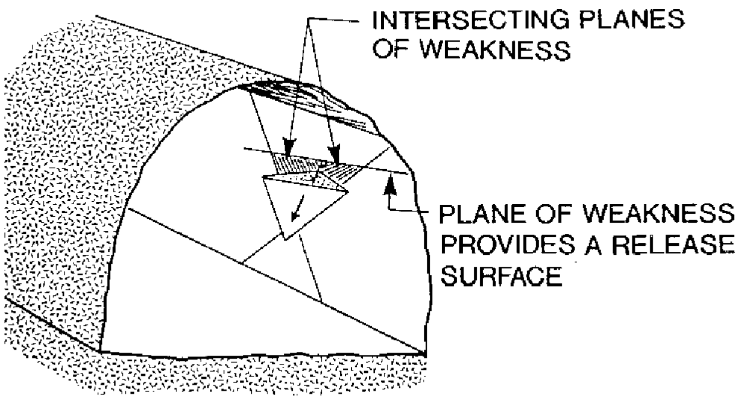
Gaining knowledge is commonly achieved through discussion with others, from personal observation, reading relevant literature, and attending educational programs.

In regard to training, one 'experienced' miner (after attending an Australian Centre for Geomechanics (AGC) training course on ground control issues and hazard identification), declared:

" There were so many good photos and illustrations of different ground conditions that this course is probably worth five years of learning underground".

An experienced miner would know the importance of scaling loose rocks on sidewalls and be better able to assess whether scaling is necessary

The need for employers to actively pursue, encourage and facilitate the processes which acheive adequate employee skills and knowledge in the workplace cannot be over-emphasised.



Experience will tell whether a rockbolt should be installed in the unstable wedge, or whether it should be scaled and where it should be scaled from. An experienced miner will also look at the shape of the wedge and know where best to install a bolt and how many to install.

MOD's Electrical Inspectors

Service to-date

As of the 1st July 2000, a long-standing inter-agency mine electrical inspection agreement between the Department and Office of Energy comes to an end.

The agreement provided for OOE (and former SECWA) electrical inspectors to be appointed as Special Inspectors of Mines, and undertake the Department's regulatory responsibilities for electrical safety on mine-sites.

Mine managers, electrical engineers and supervisors, will be more than familiar with this past arrangement, and no doubt be appreciative of the excellent service provided to-date.

'Mick' Hayhow – MOD Electrical Inspector Kalgoorlie inspectorate (ph 9021 9418)

Changes implemented

Change is inevitable they say, and Gandhi said - *"You must be the change you wish to see in the world."*

In the light of those words, and after much deliberation, the Department has moved to bring the electrical safety inspection function back 'in-house'.

'Bob' Anderson – MOD Electrical Inspector Collie & Karratha inspectorate (ph 9734 1222)

Electrical accidents in the WA mining industry increased 39% last year (237 incidents) and now rank as the third highest reportable incident category, raising much concern and flagging the need for change. What, where and how these accidents occur is clear, and under the new regime will be pursued with vigour to reverse the upward trend.

Roger Parrin – MOD Electrical Inspector Perth/ Kimberley inspectorate (ph 9222 3546)

From an industry perspective, it will be 'business as usual' for the Kalgoorlie, Collie and Perth inspectorates, just contact the friendly, and possibly familiar faces on display. Mines in the Karratha inspectorate will be serviced on a fly-in/fly-out arrangement by Bob Anderson from MOD's Collie office.

Acknowledgment

On DME's behalf, sincere appreciation is extended to the OOE staff members who alway gave there best to mining industry safety.

Thankyou!

Denis Brown

MOD Electrical Engineer

Update on CONTAM changes

CONTAM is MOD's database for the recording of any mining industry employee exposure to atmospheric contaminants that may be present in the workplace, and is being upgraded.

In the March edition, MINESAFE advised readers about the planned changes, benefits, and measures to facilitate a smooth transition to the new system. To further assist, the following key issues are highlighted:

- Information packs with full details have been prepared and will be mailed directly to mine sites.
- A new 'Workforce Survey' will be undertaken in August 2000 to gather up-to-date data on the number of employees, their employment categories, and the contaminants they could be exposed to. The new data will assist with determining the amount and type of contaminant sampling necessary, and help identify safety issues. The last survey conducted in 1995 provided valuable information. Further details are contained in the information packs.
- Personnel involved with conducting contaminant sampling are requested to complete and return the *'Registered Sampler Form'* provided in the information pack, as these details are essential for entering returns into CONTAM.
- Providing sufficient interest is registered, free information seminars, where individuals can have their questions answered, will be held as follows:

Perth, 24th July 2000, 9-12.00 noon, Department of Minerals & Energy, Level 9 Theatrette, 100 Plain Street

Kalgoorlie, 28th July 2000, 9-12.00 noon, Curtin University Seminar Room, 55 MacDonald Street

Ventilation Officers will find these seminars particular helpful and are encouraged to attend.

All persons wishing to attend either seminar must advise either Hayden Wing (ph. 9222 3228) or Lindy Nield (ph. 92223677).

What's On

Minesafe INTERNATIONAL 2000

A New Century: A New Vision: A New Direction – for Occupational Health and Safety in the International Mining Industry

3-8 September 2000 Burswood Resort, Perth, Western Australia

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

Details from: Paula Sinclair (ph 08 9325 2955) or visit 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

Mining law examinations - Perth only - 7 AUGUST 2000

(Applications close on 7 July 2000)

Mining law and practical examinations (Statewide)
23 OCTOBER 2000 (Applications close 22 Sept. 2000)

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

Application Fee is $100 (plus GST)

**ROCK SLOPE DAMAGE CONTROL (BLASTING)
AUSTRALIAN CENTRE FOR GEOMECHANICS**

Perth, 24-25 August 2000

The course objective is to examine the mechanisms and possible extent of damage to the rock structure behind the face from blasting, and the influence that has on the stability of pit walls. The course is aimed at blast designers and those responsible for drilling and blasting operations. Presenters: George Boucher (Consulting), Tim Hagan (T Hagan Blasting), Peter O;Bryan (O'Bryan & Assoc).

For further information contact: Josephine Ruddle
Ph: 08 93803300, Fax: 08 9380-1130

**ENGINEERING ROCK MECHANICS
WASM CURTIN UNIVERSITY (Kalgoorlie 17-20 July 2000)**

This course aims to provide a broad understanding of the principles of rock mechanics for design of mining and civil engineering projects. The 4-day course will be presented by Professor John Hudson.

For further information contact: Ernesto Villaescusa, WASM
Ph: 08 90886155, Fax: 08 90886151,
email:villaee@wasm.curtin.edu.au

MOSQUITO CONTROL COURSE, October 2000

The Health Department of WA will hold its next mosquito control course at Mandurah from 23 to 27 October 2000. Many places on the 4½-day live-in course are already filled, but a quick response may get you into this popular and instructive training course. The course would benefit mining company staff seeking an all round knowledge of West Australian mosquitoes and mosquito control issues, including the minimisation of the health impacts of Ross River virus and Australian encephalitis. The training program includes lecture and practical sessions.

Intending participants should immediately contact:

Dr Mike Lindsay

Mosquito – Borne Disease Control Section
Health Department of Western Australia

PO Box 8172 PERTH BUSINESS CENTRE WA 6849

Ph: 9385 6001 Fax (08) 9383 1819

Email mike.lindsay@health.wa.gov.au

New Publications

Significant Incident Report No 107: Multiple Fuming and Gas Explosion

Safety Bulletin No 51: Overhead Powerlines

Safety Bulletin No 52: Operation of Water Trucks in Open Pit Mines (Quarries) - High Risk Incidents

Safety Bulletin No 53: Particulate Emissions from Low Sulphur Diesel Fuel and their Health Effects

Safety Bulletin No 54: Blast Initiation with Safety Fuse

Safety Bulletin No 55: Potential hazards associated with mine fill

Guidelines:

Mines Safety and Inspection Act 1994 – General Duty of Care in Western Australian Mines

Guide to the Mines Safety and Inspection Act 1994

i Election of Safety and Health Representatives

ii Safety and Health Representatives and Committees

iii Resolution of Issues

Western Australian Mining Industry Safety Performance 1998/1999 (Statistical Digest and Poster (A3 or A2))

Staff Changes

Two Kalgoorlie officers have 'moved on':

David Humphreys, Co-ordinating Environmental Officer has joined Murrin Murrin operations; and District Inspector, Rod Young, has moved to Bronzewing Gold Mine.

Farewell to long-term District Inspector Jim Griffin who officially retires this month.

Incident Alert

In the past four years the mining Inspectorate has received 20 reports relating to on-highway type road watering trucks running out of control while being operated in quarries. Ten of the accidents ended up with the vehicle rolling over, and drivers sustained injuries on seven occasions.

Causes

Investigations identified two prime causal factors:

- The truck braking systems were inadequate for the duty; and
- The training of the water truck operator was less than satisfactory.

Comment and Recommendations

All plant must be fit for purpose, MSI regulation 13.2 specifically requires that vehicle braking systems be capable of effectively stopping and holding the vehicle fully loaded under set operating conditions.

While on-highway water trucks may be suitable for use in shallow open pits such as bauxite and mineral sands operations, experience keeps demonstrating that these units, and modified versions of them, are less than adequate for service in deep open pits where the following conditions demand a higher rating:

- haul roads are steep and extended, and their surfaces are generally rough.
- trucks normally descend fully loaded and return on the freshly watered road.
- movement of water in the vehicle's tank, even with baffles, tends to cause instability.
- the duty is continuous, and interaction with other mining plant is frequent.

The appropriate plant for this type of service are the robust off-highway units which are purposely designed to operate under these heavy conditions.

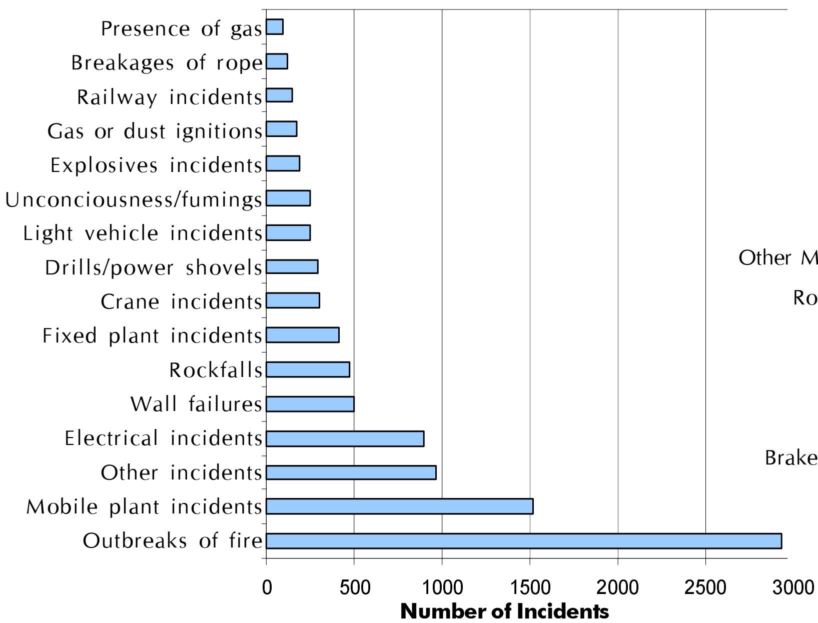
To be regarded as competent under the provisions of MSI regulation 4.13, water truck operators must fully understand the rules for safe operation, and know how to respond in the event of brake failures, steering failures or engine failures.

Operators must also be mindful of the dangers when attempting gear changes whilst travelling down steep grades, and the consequences of not utilising retarder systems during those trips. Several accidents have arisen on this account.

For further information, refer MOD Safety Bulletin No 52.

Watch Out!

Number of incidents reported since 1994



Mobile Equipment
Loss of Control 1999