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# Mechanical Compendium - Notices to Mines and Manufacturers

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MDG 30

Produced by Mine Safety Operations Division,  
New South Wales Department of  
Primary Industries

April 1997



**NSW DEPARTMENT OF  
PRIMARY INDUSTRIES**

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## FOREWARD

Over the years the department has issued various written communiqués to the industry to provide advice and direction on issues that affect safety in the coal mining industry. These communiqués are in the form of advice notices and formal requirements eg. Specifications, general approvals and exemptions, etc. It is to be noted that published information such as Significant Incident Report, Safety Alerts, Summaries of Accident/Incident Investigations, etc, are not included within the scope of the above communiqués.

This **Compendium** is a collection of all those previously issued communiqués specifically related to issues that in some way have had an impact on the mechanical engineering activities of the coal mining industry and which are still current. Communiqués that affect both underground and open cut coal mining sectors jointly and individually have been included.

The **Mechanical Compendium** provides the means whereby previously issued circularised information can be easily accessed in both printed and computerised forms and has been made available to any person/coal mine/company or organisation that may have a need to access this information.

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The compilation of information contained in this document relies upon material and data derived from a number of third party sources and is intended as a guide only in devising risk and safety management systems for the working of mines and is not designed to replace or be used instead of an appropriately designed safety management plan for each individual mine. Users should rely on their own advice, skills and experience in applying risk and safety management systems in individual workplaces. Use of this document does not relieve the user (or a person on whose behalf it is used) of any obligation or duty that might arise under any legislation (including the Occupational Health & Safety Act 2000, any other Act containing requirements relating to mine safety and any regulations and rules under those Acts) covering the activities to which this document has been or is to be applied.

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# SECTION A

NOTICES TO COLLIERY MANAGERS AND  
MANUFACTURERS

File No.: M75/3230  
Date: 1970s

Dear Sir,

PRESSURE PACK STARTING OF DIESEL ENGINES

Ether based pressure pack sprays are becoming available for starting diesel engines and it has been observed that they are being used in some coal mines in the State.

In this regard I wish to draw to your attention to the requirements of General Rule 5A, Coal Mines Regulation Act, 1912, as amended which requires diesel engines to be installed and used with safeguards approved by the Chief inspector.

To date the use of pressure pack sprays has not been approved for starting diesel engines and as a consequence it is requested that any such practice be discontinued or not be permitted as the case may be.

Yours faithfully,

M. J. MUIR  
Chief Inspector of Coal Mines



File No.: Not Available  
Date: 8th August 1978

Dear Sir,

In 1975 I wrote to all colliery managers and equipment manufacturers requesting that arrangements be made on all shuttle cars to ensure that discharge chains could not be operated accidentally in the reverse direction.

This request followed an accident in which a machineman sustained the loss of his left foot when the discharge chain of the shuttle car in which he was standing was reversed. The machineman was assisting to transfer timber onto the lifting jacks of a continuous miner.

Regrettably last April a shiftman had his left foot amputated under almost identical circumstances on a shuttle car recently delivered to a colliery. The shiftman was assisting to erect ventilation ducting.

This type of accident is clearly avoidable and your co-operation is required to ensure that lockouts are provided to prevent the inadvertent operation of shuttle car discharge chains in the reverse direction.

Inspectors of Mechanical Engineering will be following up this matter and would be pleased to supply further information if required.

Your faithfully,

M.J. MUIR  
Chief Inspector of Coal Mines

File No.: M80/6224  
Date: 24 April, 1981

Dear Sir

COAL MINES REGULATION ACT, 1912

Recently a driller was fatally injured when using a hydraulic drill and a 1 200 mm (4'0") long, 27 mm diameter auger drill rod to drill a roof bolt hole.

Investigation revealed that as drilling started the drill rod broke away from the hole collar just after entry. Due to a slight bend in the drill rod and the high speed of rotation (about 750 R.P.M.) the drill rod bent almost at right angles as a result of centrifugal force. This happened in a fraction of a second before any defensive action could be taken by the driller. He was struck heavily about the head by the flailing-drill rod and died soon afterwards from his injuries.

More recently a similar accident occurred involving a 925 mm (3'0") long hexagonal drill rod which was being withdrawn after boring through a half round timber. Again the driller suffered serious injury.

Tests have been carried out at the Department's Londonderry Center using a similar 1 200 mm auger drill rod with a very slight bend fastened in the chuck of a radial drill and rotated at 750 R.P.M. In a fraction of a second the rod bent at an angle approaching 80° near the chuck. The test was video taped and it is available for instruction purposes. It demonstrated the dangerous situation which could arise by the rotation of a slightly bent auger drill rod at high speed before the tip is adequately supported.

Managers have also to ensure that the normal functions of the drilling equipment cannot be altered in use, this requires a pressure limitation system so that the drill can never be fed pressure in excess of that which it requires for normal operation.

In order to prevent a recurrence of this type of accident it is imperative that all drilling personnel be advised as follows:-

- (1) DO use the shortest possible starting drill.
- (2) DO ensure that drill rods are straight, if bent do not use.
- (3) DO NOT apply full speed rotation until the drill bit is adequately collared.
- (4) DO NOT apply full speed rotation of follow-up drill rods until properly entered in the hole.
- (5) DO NOT retract drill rod at full speed rotation unless satisfied that it is straight.

Yours faithfully

M.J. MUIR  
Chief Inspector of Coal Mines

File No.: M81/2756  
Date: 14th July, 1981

The Colliery Manager

Dear Sir

COAL MINES REGULATION ACT 1912

An accident occurred recently on the surface of a colliery when the operator of a fork lift truck leaned sideways to improve his view of the load on the forks and he fell off the machine.

The peculiar characteristics of this type of machine with its limited vision for the driver and its low margin of stability demand a measure of skill and respect on the part of drivers. Indeed, other cranes and hoists in common use on the surface of collieries also require some skill from operators to ensure they are operated in a safe manner.

In order to assist in the safe use of cranes and hoists at collieries I recommend purchase of the publication "A Guide for Crane and Hoist Drivers" issued by the Department of Industrial Relations at a cost of \$3.00 (postage \$1.20) which may be purchased from the-

Government Information Center  
Sales and Publication Section  
P & O Building  
55 Hunter Street SYDNEY NSW 2000

Yours faithfully

M.J. MUIR  
Chief Inspector of Coal Mines

File No.: M80/4740  
Date: 29th June, 1981

**COAL MINES REGULATION ACT 1912**

Recently a man was fatally injured underground at a colliery when he was struck by a jet of oil under accumulator pressure of 20 MPa (3000 psi) which escaped from a broken hydraulic fitting which was part of an American Bosch hydraulic diesel engine starting system on a personnel car.

The primary cause of the accident was the failure of the accumulator supporting brackets which allowed the accumulator to fall into the vehicle driving mechanism. This caused a high pressure hose swivel coupling to be subjected to unusually high external stresses. The workman was attempting to reposition the accumulator when the coupling failed and released the high pressure oil.

As a consequence of this accident and in order to prevent a recurrence you are requested to attend to the following matters on all vehicles fitted with a similar hydraulic starting system:-

- (1) (a) Inspect accumulator mounting brackets preferably by crack detection methods and replace any defective brackets.
- (b) American Bosch standard pressed steel brackets are considered to be inadequate for prolonged use under arduous conditions and they should be inspected at periods not exceeding six (6) months and defective brackets should be replaced.
- (c) Consideration should be given to replacing all Bosch brackets with more substantial brackets to your own design.
- (2) Inspect to ensure that all hoses and hose fittings are as recommended by American Bosch i.e.
  - (a) pipe fittings shall be steel JIC 37°
  - (b) hose ends shall be steel JIC 37° female swivel
- (3) Attach a warning notice in a conspicuous position on, the machine advising "Do not disconnect any high pressure line until hydraulic pressure is completely exhausted".

Yours faithfully

M.J. MUIR  
Chief Inspection of Coal Mines

File No.: M80/5088  
Date: 14 July, 1981

The Colliery Manager

Dear Sir,

COAL MINES REGULATION ACT, 1982

In February, 1978, the Design Requirements for Flameproof Diesel Engines and vehicles issued by this Department under the provisions of the above Act for the guidance of diesel equipment manufacturers were amended to require a drain cock on the exhaust conditioner to allow the low water engine shut down to be tested each shift. Previously the drain cock was located adjacent to the low water shut down float vessel and the water was drained from this vessel to ensure that the low water shut down system stopped the engine. However, several fires occurred as a result of overheated conditioners due to blockage of the hose connecting the float vessel to the conditioner. This problem was overcome by locating the drain cock on the conditioner so that the connecting hose would be flushed each shift.

In order to eliminate the possibility of fires from this cause you are requested to remove the drain cock from those machines where they are located at the float vessel and install a drain cock on the exhaust conditioner for the purpose of testing for low water engine shut down. The latter cock should be located in a position which will ensure that there is sufficient water remaining in the conditioner to maintain the flame trap when the engine is shut down.

Yours faithfully,

**M J MUIR**  
CHIEF INSPECTOR OF COAL MINES

File No.: Not Available  
Date: 28th January, 1982

Colliery Manager

Dear Sir

**Underground Use of Abrasive Cutting Discs**

It has come to my notice that there is an increasing use of compressed air operated abrasive cutting discs underground. Indiscriminate use of such discs could lead to a hazardous situation if they are used in an uncontrolled situation and on material which produces incendive sparks.

You are hereby requested to ensure that the use of such discs is restricted to a minimum, is not within the area defined as a "gassy place" and is only carried out on your written authority.

Yours faithfully

M.J. MUIR  
Chief Inspector of Coal Mines

File No.: M78/2861  
Date: 24th May, 1982

Colliery Manager

Dear Sir

Coal Mines Regulation Act, 1912.

As from 15th July, 1982, it is required that all man transport pods used with Noyes Multi-Purpose Vehicles be modified to include provision for access and supports within the compartment for a stretcher.

I have been advised that the original equipment manufacturer will be able to assist with providing this facility. Should an alternative means be undertaken you are requested to liaise with the local Inspector of Mechanical Engineering with regard to acceptability.

Yours faithfully

M.J. MUIR  
Chief Inspector of Coal Mines

File No.: M83/4076  
Date: 5th December, 1983

Dear Sir

BRAKE FAILURE - AUTOMATIC HAULAGE

It was recently reported to me that, in a New South Wales coal mine, the brakes on an automatic drift winder failed to apply at the end of a wind.

As you are aware:-

- \* Automatic winders, whether shaft or drift, have brakes which are applied by spring or gravity and which are held off, during winding, by hydraulic or pneumatic pressure.

The following matters arose from the investigation:-

- \* In the particular winder concerned the brakes were held off by hydraulic pressure.
- \* To apply these brakes a solenoid energised - spring return spool valve was isolated from its power supply permitting the spring to return the spool and open the pressure line to its hydraulic reservoir.
- \* To ensure reliability the colliery had installed three such valves, any of which was capable of releasing oil pressure and permitting brake application.
- \* Each of these spool valves had been tested daily for operation and had given no evidence of failure to work.
- \* At the end of one particular wind all three spool valves failed to operate and consequently the brakes on the winders were not applied.

An inspection of the spool valves which failed to operate did not reveal any damage or reason for the failure.

The matter was then taken-up with the supplier of the valves who has advised that spring return spool valves may stick and not return under spring pressure in certain circumstances. The selection of spool valve type and capacity is accordingly quite critical to ensure reliable operation.

My Inspectors have reported that spool valves are used on most shaft and drift winders in New South Wales and that a proportion of such valves are inappropriately chosen for their specific application.



Accordingly I require that you:-

- (1) Check whether your colliery uses spring return spool valves in the braking system of any rope haulage.
- (2) If so check that the valves are appropriate for their service and if not replace them with valves which are not subject to failure as indicated.
- (3) Notify me in writing of what action you have taken in this matter.

If you have any question relevant to the above please contact Mr P Torr (02) 240 4248.

Yours faithfully

M.J. MUIR  
Chief Inspector of Coal Mines

File No.: Not Available  
Date: 30th July, 1984

Dear Sir

COAL MINES REGULATION ACT 1982  
COAL MINES REGULATION (TRANSPORT -  
UNDERGROUND MINES) REGULATION 1984

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Diesel powered locomotives and vehicles which were approved for use at your mine under the requirements of the Coal Mines Regulation Act, 1912, as amended are without further application hereby approved under the 1982 Act. Such approval may be evidenced by the production of the original approval document.

The original conditions of approval shall apply except where such conditions have been superseded by requirements of the Regulations made pursuant to the 1982 Act.

Yours faithfully

M.J. MUIR  
Chief Inspector of Coal Mines

File No.: Not Available  
Date: 3rd August, 1984

Dear Sir

**REVERSING ALARMS**  
**COAL MINES REGULATION ACT, 1982**

Resulting from several accident investigations it has become apparent that the driver's vision is severely restricted when reversing certain types of free-steered, pneumatically tired vehicles used in underground coal mines.

The type of vehicles which have been found to be deficient in this respect are those which are generally driven in one direction only and the driver sits at the front e.g. Noyes D.M.C., Noyes M.P.V., Domino P.E.T., Domino Myne Bus.

Accordingly, I require that such vehicles shall be fitted with an alarm, audible to persons in the immediate vicinity, which shall be fitted to sound automatically whenever this type of vehicle is driven in reverse. This does not apply to vehicles which are driven equally in both directions e.g. shuttle cars, scoop trams.

The installation of such alarms shall be completed by 31st December, 1985.

Should further information be required, please contact the local Inspector of Mechanical Engineering.

Yours faithfully

M.J. MUIR  
Chief Inspector of Coal Mines

File No.: Not Available  
14th November, 1984

Dear Sir,

INVESTIGATION OF ACCIDENTS AND DANGEROUS  
OCCURRENCES

Your attention is drawn to the requirement of Sections 89 and 90 Coal Mines Regulation Act 1982, and in particular to the requirement that the place where a dangerous occurrence or an accident happens shall not be disturbed for a period of two days or until the place has been visited by an Inspector and a check inspector.

The specified list of serious bodily injuries and dangerous occurrences is contained in the Coal Mines Regulation (Notification and Investigation of Accidents and Dangerous Occurrences-Underground Mines) Regulation 1984, and special attention is directed to the dangerous occurrences which include the new clauses

- (n) "the arcing external to the casing, of any electrical equipment in a hazardous zone; and
- (o) "an underground creep".

The notification of dangerous occurrences has generally followed the requirements of the Regulation except in regard to arcing in a hazardous zone. It should be noted that arcing on trailing cables is reportable because it is considered that cables form part of the defined electrical equipment.

You are therefore asked to pay particular attention to this matter and ensure that notification is given forthwith and that the place is left undisturbed for the specified period.

Yours faithfully,

R. J. Kininmonth,  
Senior Inspector of Coal Mines

cc. To all Coal Mine Managers and all Inspectors

File No.: Not Available  
Date: 5th November, 1982

Dear Sir

COAL MINES REGULATION ACT, 1912

It is requested that the Colliery Mechanical Engineer be informed that the following engineering standards have been withdrawn by the Standards Association of Australia.

- (a) AS CM2-1956 - Construction and Maintenance of Colliery Cage Shackles and Bridle Chains.
- (b) AS M3-1951 - 1.5% Manganese Steel for Colliery Tub, Skip or Mine-Car Drawbars, Shackles and Couplings and Detaching Hooks.

Regulation 62(b)(ii) of the Sixth Schedule requires that all shackles and chains used in the raising and lowering of personnel are constructed and maintained in accordance with AS CM2. For the purpose of continuance in compliance with this Regulation, this standard and the associated AS M3 will continue to be recognised.

Yours faithfully,

J.G. Bailey  
Acting Chief Inspector of Coal Mines

File No.: M82/3805  
Date: 20th March, 1985

Dear Sir

REGISTRATION OF BOILERS AND PRESSURE VESSELS

Please be advised that the requirements to keep a register of numbers allocated for Boilers and Pressure Vessels as required under, the Mechanical - Underground Mines and Open Cut Mines Regulations made pursuant to the Coal Mines Regulation Act, 1982 will be satisfied by the adoption of the registered number issued by the Licensed Boiler Inspector.

The Colliery Manager will be required to issue a copy of the Certificate of Inspection to the local Inspector of Mechanical Engineering. The registration number will be entered into the register at the District Office, and the issue of an additional boiler or pressure vessel number will cease.

As boilers and pressure vessel annual inspections are conducted by the Licensed Boiler Inspectors the register will be updated to record the registration number shown on the certificate. To assist in this would you please arrange for the Licensed Boiler Inspector to note on the certification the original number issued by the Department of Mines.

Yours faithfully,

M.J. MUIR  
Chief Inspector of Coal Mines

File No.: M85/6095  
Date: 19th March, 1986

Dear sir,

**DIESEL ENGINE EXHAUST GAS CONDITIONERS  
COAL MINES REGULATIONS ACT, 1982**

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Resulting from investigations carried out recently it has been brought to my attention that there are deficiencies in the design and compliance of some diesel engine exhaust gas conditioners manufactured to a National Mine service Company of USA design.

The conditioners causing concern are in the majority, fitted to older diesel machinery supplied by Fox Manufacturing (e.g. Diesel Man Cars, Bulk Stone dusters) and have never been granted a diesel engine exhaust gas conditioner approval.

Modifications which meet the requirements of the Department have been submitted by Fox Manufacturing and the B.H.P Illawarra Group of Collieries, and these modifications have been approved.

Accordingly, I require that such exhaust gas conditioners be modified to an approved design by 30th September 1986.

Should further information be required please contact the local Inspector of Mechanical Engineering.

Yours faithfully,

**M.J. MUIR**  
Chief Inspector of Coal Mines

File No.: M86/0308  
Date: 9th February, 1987.

Dear Sir,

CONTINUOUS MINING MACHINES

As a result of investigations of a number of reported dangerous occurrences, I require the following features to be incorporated on all continuous miners.

New Machines

- (1) An emergency stop switch is to be fitted to the machine on the side opposite the driver, so as to allow for stopping of the traction and cutter motors.
- (2) Those hydraulic control levers which are not self-centering are to automatically return to the off position whenever the hydraulic pressure drops below working level.

Existing Machines

As from 31st May, 1987, similar provisions are to be made on continuous miners undergoing major overhaul.

Yours faithfully,

M.J. MUIR  
Chief Inspector of Coal Mines



File No.: M87/0188  
Date: 20th February, 1987.

Dear Sir,

Loop Take-Ups - Underground Conveyors

In recent years, there have been several serious accidents and many minor incidents associated with the use of handwheel operated winch take-ups used on underground conveyors.

Accordingly, I now require that, from 1st July, 1989, no manually operated take-up winch is to be used underground if it is possible for the tensioning device to spin freely when under tension.

Should you wish to seek further information, please contact the Inspector for Mechanical Engineering for your district.

Yours faithfully,

J. G. Bailey  
Acting Chief Inspector of Coal Mines

File No.: Not Available

Date: Not Available

Copy Sent to All Southern and Western District Mines

Attention: - MINE MECHANICAL ENGINEER IN CHARGE

Dear Sir,

I seek to draw your attention to a recent incident at a mine which has highlighted a potential hazard that may exist at your mine also.

The sequence of events was as follows:-

1. The mine concerned ordered the supply of 72 UNC grade 8 bolts, 38 mm x 100 mm, from J. Blackwood and Sons, Newcastle.
2. On receipt of same, began to install the bolts on the suspension of a 190 tonne Wabco truck. While undergoing final specification tensioning, two of the bolts elongated. The bolts were removed from service and tensile tested. Tests indicated a tensile strength of 745 MPa which is consistent with AS2465-1981 Grade 5.
3. J. Blackwood and Sons were contacted and it was revealed that they had sub-contracted the manufacture of the bolts to K.C. Harris, Maitland. K.C Harris manufactured the bolts to BS 1768-1963. This standard was superseded by AS147 which was withdrawn in 1980.

The bolts were therefore manufactured to a superseded standard, however the bolt heads carried the identification marks of AS2465-1981 Grade 8 bolts.

From the above it can be realised that if the sub-standard bolts been used in another application, the results may well have been catastrophic.

The fact that your mine may not deal with the companies involved in this incident does not ensure that a similar situation cannot arise with other suppliers and site contractors.

You are advised to pay particular attention to supply and usage of high grade bolts to ensure a similar situation does not occur at your mine.

If you have further enquires on this matter please contact the Inspector of Mechanical Engineering nominated to your mine.

Your faithfully,

Ron Smith  
Senior Inspector of Coal Mines

File No.: M87/287  
Date: 23 April, 1987

SHUTTLE CAR WHEEL RIM.

Recently an incident occurred where the outer split rim on a shuttle car wheel sprang off with force and narrowly missed nearby personnel.

The investigation concluded that the rim had released because of a 300 mm long crack through the root of the hub retaining groove. Further investigation has revealed that three failures have also occurred on the inner rim where similar sized sections had also failed.

Checks conducted on a total of thirty rims resulted in cracks being identified in these critical areas on twelve rims.

Would you ensure that all shuttle car wheels in service at the mine are thoroughly checked for cracking and that steps are taken to remove any faulty units from service.

Should you wish to seek further information, please contact the Inspector for Mechanical Engineering for your district.

Yours faithfully,

J. G. Bailey  
ACTING CHIEF INSPECTOR OF COAL MINES

File No.: M86/0549  
Date: 31st August, 1988

The Manager

Dear Sir,

Re: ELECTRIC POWERED SHUTTLE CARS

Your attention is drawn to gazetted Notice dated 21st July, 1986 (copy attached) whereby all mobile apparatus approvals for electric powered shuttle cars, which do not have an approved traction drive mechanical brake system installed by 31st January, 1991, will be revoked.

It has been reported that a number of shuttle cars have undergone a major overhaul over the past 12 months without an approved brake system being installed.

You are advised that the date nominated in the Notice was selected to enable shuttle cars to be upgraded in conjunction with a major overhaul.

The status regarding the revocation of approvals after the 31st January, 1991, remains and extension of time or exemptions will not be considered.

Yours faithfully,

J. G. Bailey  
Chief Inspector of Coal Mines

DEPARTMENT OF INDUSTRIAL RELATIONS

Coal Mines Regulation Act, 1982  
Approval of Item

Approval No.: MDA860549  
File No.: M86/0549  
21st July, 1986

ELECTRIC POWERED SHUTTLE CARS

IT is hereby notified that the Chief Inspector of Coal Mines, in accordance with the requirement of clause 6(8) of the "Coal Mines Regulation (Approval of Items) Regulations, 1984" revokes all mobile apparatus approvals for electric powered shuttle cars which do not have an approved for electric powered shuttle cars which do not have an approved traction drive mechanical brake system installed by 31st January, 1991.

The requirements for an approved traction brake system are:

1. The mechanical brake assembly shall be of the fully enclosed oil immersed friction disc type.
2. A brake assembly as per (1) shall be installed in place of each mechanical brake assembly fitted to the shuttle car, which does not comply with the requirements of (1).
3. The brake assembly as per (1) shall be installed in place of each mechanical brake assembly fitted to the shuttle car, which does not comply with the requirements of (1).
  - (a) service brakes,
  - (b) emergency brakes, and
  - (c) parking brakes.
4. The emergency and park brake shall be fail ie. application on loss of system pressure.
5. Provision shall be made to ensure that the shuttle car cannot be driven with the park or emergency brake applied.
6. Provision shall be made to avoid the inadvertent release of the applied park or emergency brake.

M. J. MUIR  
Chief Inspector of Coal Mines

File No.: M86/0349  
Date: 26th September, 1988.

Dear Sir,

Re : LOAD HAUL DUMP VEHICLES.

I have been made aware of a potential hazardous situation which exists for the drivers of articulated load haul dump vehicles. The hazards identified are the inadvertent entry into the driver's compartment of either :

- (a) Loose materials on the ground such as roof bolts, W-straps etc. being projected into the compartment from the rotating front wheel on the driver's side of the vehicle; or
- (b) Loose materials such as timber props, etc. either being jammed into the compartment from the ground/ ribside or floating loosely in water filled areas.

As a result of investigations by my staff in relation to (a) above involving a commonly used type of LHD diesel powered vehicle, the vehicle manufacturer advised the coal mining industry of the availability of a door which could be retrofitted to the compartment access opening. The design of the door has subsequently been found to be inadequate for all situations which could arise from the alternative hazard source (b) referred to above.

Consequently, I require that all diesel or electrically powered articulated diesel or electrically powered load haul dump vehicles be fitted with an appropriate means of protecting the driver from being injured below hip level caused by entry into the compartment of materials from any source by 1st January, 1989.

Driver protection for type of vehicle will be deemed satisfactory provided that either :-

- (a) The original manufacturer/agent of the vehicle has received written endorsement for the design from the Senior Inspector of Mechanical Engineering.
- (b) The mechanical engineer in charge at the mine has received written endorsement for any alternative design from the Local Inspector of Mechanical Engineering.

Rules and schemes covering the use of articulated load-haul dump vehicles must also be amended to cover the following matters :-

1. The vehicle shall not be used if the driver protection is damaged to an extent whereby its ability to protect the driver is impaired.
2. Loose materials which are visible to personnel in the vicinity where the vehicle is to operate are removed prior to and in the course of operation of the vehicle. Loose material includes any extraneous material which may be in the roadway but excludes material stored securely and safely outside the vehicles wheel path.

A copy of this notice shall be displayed for a period of not less than 28 days so as to allow the employees at the mine reasonable opportunity to view its contents and thereafter be retained for perusal by the employees if so required.

Yours faithfully,

J. G. Bailey  
Chief Inspector of Coal Mines

File No.: M86/308  
Date: 23rd November, 1988

Dear Sir,

Re: CONTINUOUS MINER CANOPIES

Further to the circular letter issued on the 18th March, 1988, which covered the material and welding specifications to be used in the fabrication and repair of continuous miner canopies after 1st June, 1988, the following determination is made in relation to canopies with rear hydraulic cylinder support.

In accordance with the provisions of Clause 6 (8) of the "Coal Mines Regulation (Approval of Items) Regulation, 1984", all approvals previously issued for protective canopies for continuous mining machines which incorporate hydraulic cylinder(s) at the rear of the canopy for the purpose of providing the principal means of structural support from a fall of roof are revoked as from 1st August, 1989.

Yours faithfully,

J. G. Bailey  
Chief Inspector of Coal Mines



File No.: CM88/0551  
17th October, 1988

Dear Sir,

SYNTHETIC - WEBBING LIFTING SLINGS

In accordance with the provisions of Clauses 36 and 37 of the "Coal Mines Regulation (Mechanical - Underground Mines) Regulation, 1984" and Clause 25 of the "Coal Mines Regulation (Mechanical - Open Cut Mines) Regulation, 1984", I hereby notify that the requirement for the use of synthetic-webbing lifting slings used in the construction of buildings or structures shall be as follows:-

1. Flat synthetic slings currently in use are prohibited from further use as from 1st November, 1988.
2. Flat synthetic slings not previously used and exposed to sand and grit may be used provided they are Teflon coated up to their lifting eyes and their safe working load is reduced by 50%.
3. Spanset (round) slings are required to have their safe working load reduced by 50%.
4. Slings are not to be subjected to contact with particulate matter.
5. Storage, Care & Maintenance
  - 5.1 Adequate care is extremely important to maintain long economic use and safe working;
  - 5.2 When the slings are procured the correct material must be obtained for the particular uses and conditions in which the slings are used;
  - 5.3 Slings with soft eyes or terminal attachments should be matched to the hooks or other lifting devices for which they are used;
  - 5.4 Constant care must be exercised to ensure serviceability. Webbing and attachments must not be excessively worn or deteriorated;
  - 5.5 A competent and responsible person must inspect the slings periodically. Worn or damaged slings should be repaired by the sling manufacturer or his nominee and when repaired shall comply with A.S1353 - Synthetic webbing flat slings;
  - 5.6 Slings should be thoroughly examined throughout their length for chafes on surface, cross or longitudinal cuts in webbing, damage to selvages, deterioration of stitching or damage to eyes at attachment points of connections;

- 5.7 Chafe is the most noticeable cause of weakness when old slings are compared with new slings. In extreme cases webbing faces become so worn that outer yarns of the weave are severed. In ordinary use some breakage of surface fabrics (as opposed to yarns) is inevitable. If not excessive, this is not critical;
- 5.8 Any substantial chafe, particularly local, must be viewed critically;
- 5.9 Although high tenacity polyamide yarn has some resistance to alkalis and high tenacity polyester has some resistance to acids, in both cases a moderate concentration of acids or alkalis increases with evaporation. For this reason after being in contact with acids or alkalis, slings should be washed thoroughly in water prior to storage;
- 5.10 Chemical attack is shown by local- weakening or softening of the webbing material which lets the surface fabrics be plucked or rubbed off;
- 5.11 All synthetic slings should be stored above the floor level in a weatherproof area free from contact with sand, grit, other abrasive materials and from direct sunlight.

These requirements have been based on those adopted by the Department of Industrial Relations and Employment on the 9th September, 1988, and may be subject to amendment as a result of further investigations being conducted by that Department.

Yours faithfully,

J. G. Bailey,  
Chief Inspector of Coal Mines

File No.: Not Available  
Date: Not Available

TO ALL MANAGERS

Dear Sir,

Diesel Exhaust Analysis

Recent experience has shown some cases of a considerable discrepancy between the statutory 28 day exhaust gas analysis when done by detector tubes and the results obtained from laboratory tests.

While I appreciate that the 28 day test is meant to serve as a ready means of determining the condition of exhaust gases, it still needs to be reasonably accurate if it is to serve any purpose.

The cause of the noted discrepancies has been found to be:-

- (1) Clogged cooling coils
- (2) Improperly maintained or incorrectly used pumps
- (3) Inaccurate tubes
- (4) Samples taken contrary to the requirements. Particularly the statutory load test.

Please ensure that the attached procedures are followed with regard to the proper maintenance and use of the gas testing equipment.

Yours faithfully,

M. J. MUIR  
Chief Inspector of Coal Mines

NOTES ON THE USE OF GAS DETECTOR TUBES FOR  
TESTING UNDILUTED DIESEL EXHAUST

1. A cooling coil should be used with the detector tubes to ensure that the exhaust gas sample drawn into the tube is within the temperature range specified by the manufacturer.

The cooling coil should be checked and cleaned on a regular basis to prevent blockage by soot.

District Mechanical Inspectors can advise, if necessary, on suitable designs for cooling coils.

2. Check the gas detector pump for leaks prior to use by placing an unbroken tube or a finger over the inlet of the depressed pump, release the pump. If it returns to its normal position, this indicates a leak and the fault should be repaired or the unit replaced.
3. Make sure that the detector tube and gas sample are between 10° and 30°C as the calibrated scale is only valid between these limits. The shelf life of the tubes is two years at a storage temperature below 25°C. Ideally title tubes should be kept in the dark and stored in a refrigerator.
4. The statutory load test should be conducted by operating the engine at maximum revs. (i.e. FULL THROTTLE) and then by application of hydraulics etc. the engine speed reduced by at least 200 r.p.m. while still maintaining full throttle. Only after achieving this, is the exhaust tested. THIS ENSURES THAT ENGINES ARE CHECKED UNDER AN OPERATING CONDITION OF FULL FUEL INPUT. (Tests conducted only at maximum revs. are unacceptable).

Further information may be obtained from Mr. G. Fawcett, Mine Safety Section, Joseph Street, Lidcombe 2141, Telephone (02) 646 1644.

File No.: M84/5008  
Date: 9th May, 1989

The Manager

Dear Sir,

RE: SLOPE HAULAGE SYSTEMS

Approval of slope haulage systems incorporate requirements for dual overspeed protection. These protection systems are as follows:

1. Overspeed of the Winding Apparatus.

This protection system should be set to operate at a speed marginally in excess of the maximum operational winding speed.

2. Overspeed of the Control Car.

This protection system should be set to operate at a speed marginally in excess of the winder overspeed protection system.

Approval of control car conveyances requires that the overspeed device be checked three (3) monthly as part of the Section 103 Scheme for the mine. Would you please ensure that the winder overspeed device is also included in the Scheme to be checked at the same interval.

Whilst not specifying the overspeed switch settings for the slope haulage system, it is suggested that the winder overspeed system set point be up to 10% of maximum winder operating speed with the control car overspeed system set point be up to 5% in excess of the winder overspeed system set point.

In addition your attention is drawn to the need for winding apparatus brake paths to be kept clean and uncontaminated. Section 103 Schemes are to incorporate inspections of brake paths and winder drum pits at appropriate intervals to ensure that contamination of brake paths is avoided.

Yours faithfully,

J. G. Bailey  
Chief Inspector of Coal Mines

File No.: M85/0931  
Date; 28th June, 1989

Dear Sir,

Re: DIESEL ENGINED POWERED EQUIPMENT - UNDERGROUND COAL MINES.

The Joint Coal Board in a letter dated 8th June, 1989, advised the industry that a study of their statistical information revealed that an unacceptable number of scalding injuries have occurred when personnel remove radiator caps from pressurised diesel engine cooling water systems.

Whilst the need to remove the radiator cap of a cooling water system under conditions of high water temperature and pressure should really be avoided, it is considered that safety would be improved if a safe means of relieving the pressure in the cooling system was available.

Clause 2.5(d) of Australian Standard 3584-1988 entitled "Diesel Engine Systems for Underground Coal Mines" states the following:

Each radiator filler and pressure cap shall be secured to prevent accidental loss when removed from its operating position and shall be arranged so that excess pressure can be released safely.

All new diesel engine powered equipment, delivered after 1st January, 1990, and all equipment used in underground coal mines in New South Wales after 1st July, 1990, shall comply with the requirements of the above clause. In addition, a notice is required to be affixed to the equipment adjacent to the radiator cap stating that pressure should be relieved prior to removal of the radiator cap.

Yours faithfully,

R.W. Scott,  
Acting Chief Inspector of Coal Mines

File No.: M85/0931  
Date: 27th July, 1987

The Mechanical Engineer in Charge

FLAMEPROOF DIESEL EQUIPMENT

Dear Sir,

It has been brought to the attention of the Inspectorate that approved flameproof equipment fitted to diesel engines is being modified and in some instances replaced by un-approved replicas.

You are advised that the use of modified or alternative flameproof components of a diesel engine system used in underground coal mines requires to be approved under Regulations pursuant to the Coal Mines Regulation Act, 1982.

In addition you should be aware that Australian Standard AS3584- "Flameproof Diesel Engine Systems for Underground Coal Mines" was published in 1988. This document reflects the views of a committee comprising New South Wales and Queensland Coal Mining Inspectorates, original equipment manufacturers and industry representatives. It is intended that any future designs for flameproof diesel engine systems be assessed for approval under this Standard. It is therefore recommended that you avail yourself of the document. Any queries in regard to the content details or application should be referred to the Inspector of Mechanical Engineering for the Mine.

Yours faithfully,

J. G. Bailey  
Chief Inspector of Coal Mines

File No.: CM88/00522  
Date: 12th September, 1989

Dear Sir,

**RE: ARCING OF SHUTTLE CAR TRAILING CABLES**

The promulgation of the Regulations pursuant to the Coal Mines Regulation Act 1982 included for the requirement that the arcing, external to the casing, of any electrical equipment in a hazardous zone be classified as a Dangerous Occurrence. Since the introduction of the requirement that this matter be classified as reportable under the Regulations, it has become evident that the number of arcs associated with the use of shuttle car cables warranted detailed review.

This review has concluded that shuttle car cables contributed to 62% of all reportables under the above classification with 61 and 27 reportables occurring for the years 1987/88 and 1988/89 respectively. Further analysis established that 38% of these were caused by inadequacies in the design and/or maintenance aspects of the shuttle car cable reeling mechanism.

The main recurring factors responsible for the mechanical failures have been identified as:-

1. Build up of fines in the reeling compartment slowed or stopped the drum from turning.
2. Indexing chain becomes loose and is eventually displaced from the sprockets.
3. Indexing unit becomes loose thus allowing the chain to become displaced.
4. Either the indexing or drum sprockets are displaced from the shaft.
5. Insufficient high torque pressure does not allow the cable to be picked up whilst reeling in.
6. Insufficient low torque pressure allows the drum to over-run while reeling out throwing a slack loop.

In order to achieve a reduction of arcs initiated by mechanical deficiencies in the cable reeling mechanism it is strongly recommended that the following matters be addressed at the mine.

1. Regular cleaning of the compartment, cleaner roadways and redesign of the compartment to remove all protrusions on which fines could accumulate.
2. Provide means to adjust chain drives.



3. Support indexing unit both ends and check tightness of mounting bolts regularly.
4. Improve design of mounting sprockets on shafts by using splined shafts or as interim solutions weld the sprocket to the shafts or weld the key into the keyway.
5. Fit a pressure gauge in the driver's compartment so that he may be aware of a reduction in high torque pressure. The gauge could be red-lined at the desired pressure.
6. The gauge mentioned in 5 is a part solution for this problem however a cable reeling system incorporating a constant pressure in both reeling-in and reeling-out mode is preferred.

In addition it is recommended that all matters associated with the trailing cable aspects of shuttle cars be reviewed constantly. This will enable the development of improved practices with the aim of reducing the number of incidents and consequently improve the efficiency of the operation.

Yours faithfully,

J. G. Bailey  
Chief Inspector of Coal Mines

File No.: C89/0204  
Date: 17th July 1989

ATTENTION: MECHANICAL & ELECTRICAL ENGINEERS IN CHARGE

Dear Sir

Re CLEANING/DEGREASING AGENTS

Your attention is drawn to the "loose" use of Australian Standard No AS 1940-1982 - "SAA Flammable and Combustible Liquids Code" by some manufacturers in the labeling of cleaning and degreasing agents.

To explain further, the standard defines a flammable liquid as follows:-

Clause 1.3.24.1 "Flammable Liquid" - any Class A or Class B liquid having a flashpoint of not more than 61 °C.

Some manufacturers are conveniently forgetting the rest of the standard and if their detergent/degreaser has a flash point of higher than 61 °C are labeling their goods "NON FLAMMABLE" where in actual fact the flash point of their product could be as low as 75 °C.

Several fires have occurred with people confidently assuming the various materials labeled "NON FLAMMABLE" are safe to use on hot engines when in actual fact they will ignite.

It is recommended that you insist your detergent/degreaser supplier provide the flash point temperature of the liquid on the container label and that your maintenance personnel are aware of possible problems.

If further information is required, please contact the writer.

Yours faithfully,

R L SMITH  
Inspector of Mechanical Engineer

File Reference No.: CM88/00551  
13th October, 1989

SYNTHETIC - WEBBING LIFTING SLINGS

Following my previous letter reference CM88/00551 dated 17th October, 1988 considerable test and investigative work has been conducted which has led to the enclosed list of revised requirements.

In accordance with the provisions of Clauses 36 and 37 of the "Coal Mines Regulation (Mechanical - Underground Mines) Regulation, 1984" and Clause 25 of the "Coal Mines Regulation (Mechanical - Open Cut Mines) Regulation, 1984", I hereby notify that the requirement for the use of synthetic-webbing lifting slings used in the NSW coal mining industry shall be as follows:-

1. Companies using both flat and round slings are required to reduce their safe working load by 50% until further notice;
2. Additional requirements for flat synthetic slings are:
  - 2.1 They have not been previously used before 1st November, 1988 and must not have been in contact with sand or grit.
  - 2.2 Protective sleeves or coating must be provided up to the lifting eyes. The following is recommended:

MATERIAL TO BE LIFTED

COVER

Glass  
Concrete  
Steel

Leather; Poly-Urethane  
Poly-Urethane; PVC; Rubber  
Leather; Poly-Urethane; PVC;  
Rubber

Aluminum

Leather; Any soft material

3. All slings that are twelve (12) months or more in age are required to be re-certified by the manufacturer for any further use. The re-certified slings are required to be tagged and logged by the manufacturer at the time of re-certification. The tag is to indicate the period of further use of the sling.
4. All slings which carry this re-certification shall also be subjected to the 50% reduction of safe working load.
5. Companies using slings shall ensure that all slings are not subjected to contact with particulate matter.
6. Storage, Care & Maintenance
  - 6.1 Adequate care is extremely important to maintain long economic use and safe working;

## Notice A33 continues

- 6.2 When the slings are procured the correct material must be obtained for the particular uses and conditions in which the slings are used;
  - 6.3 Slings with soft eyes or terminal attachments should be matched to the hooks or other lifting devices for which they are used;
  - 6.4 Constant care must be exercised to ensure serviceability. Webbing and attachment must not be excessively worn or deteriorated;
  - 6.5 A competent and responsible person must inspect -the slings periodically. Worn or damaged slings should be repaired by the sling manufacturer or his nominee and when repaired must comply with AS 1353;- Synthetic webbing.
  - 6.6 Slings should be thoroughly examined throughout their length for chafes on surface, cross or longitudinal cuts in webbing, damage to selvages, deterioration of stitching or damage to eyes at attachment points of connections;
  - 6.7 Chafe is the most noticeable cause of weakness when old slings are compared with new slings. In extreme cases webbing faces become so worn that outer yarns of the weave are severed. In ordinary use some breakage of surface fabrics (as opposed to yarns) is inevitable. If not excessive, this is not critical;
  - 6.8 Any substantial chafe, particularly local, must be viewed critically;
  - 6.9 Although high tenacity polyamide yarn has some resistance to alkalis and high tenacity, polyester has some resistance to acids, in both cases a moderate concentration of acids or alkalis increases with evaporation. For this reason after being in contact with acids or alkalis, slings should be washed thoroughly in water prior to storage;
  - 6.10 Chemical attack is shown by local weakening or softening of the webbing material which lets the surface fabrics be plucked or rubbed off;
  - 6.11 All synthetic slings should be stored above the floor level in a weatherproof area free from contact with sand, grit,. other abrasive materials and from direct sunlight.
7. The above directions supersede the previous one dated 17th October, 1988.
  8. These requirements have been based on those adopted by the Department of Industrial Relations and Employment Industry Plant Consultative Committee on the 25th January, 1989. The committee includes the Department of Industrial Relations & Employment (NSW), Federated Engine Drivers and Fireman's Association of A/Asia NSW Branch and the Master Builder's Association of NSW

Yours faithfully,

J. G. Bailey  
Chief Inspector of Coal Mines

File No.: C89/1048  
Date: 31st October, 1989

Dear Sir,

Re: F.R.A.S. Materials Used in Conveyor Systems

In accordance with the provisions of Clause 28 of the "Coal Mines Regulation (Belt Conveyor) Regulation, 1984" it is a requirement that approved materials are used for the following applications in conveyor systems in underground coal mines or in a confined space in an open cut mine or on the surface of an underground mine.

- (a) conveyor belting;
- (b) lagging on a pulley, idler or drum conveyor system; or
- (c) non-metallic scraper blades or skirting material.

As a result of investigations conducted by Inspectors of Coal Mines it has become apparent that there is a need to clarify the situation with regard to approved materials for categories (b) and (c).

In both applications the material type and its application as defined in the above Regulation are issued to the manufacturer/supplier and are also published in the Government Gazette. Approval documents incorporate the following typical conditions which are required to be complied with:-

- (1) A copy of the approval is issued to each purchaser for any of the above items.
- (2) Each approved item is marked with the MDA approval number as follows:-
  - (a) Conveyor belting or skirting material - at maximum intervals of 10 metres with at least the month and year, in letters at least 20 mm. high.  
  
NOTE In the near future skirting material will require marking at 1 metre intervals in lieu of the present 10 metres.
  - (b) Pulley, idler or drum lagging - in letters at least 5 mm. high visibly located so that the designation cannot be easily obliterated during use.
  - (c) Scraper blades - in letters at least 20 mm. high visibly located so that the designated letters cannot be easily obliterated during use.

Please ensure that a system is in place at the mine such that only approved materials are used where required on the above defined conveyor systems and that the relevant approval documents are available.

Yours faithfully,

R.W. Scott  
Acting Chief Inspector of Coal Mines

File No.: CM84/05009  
3rd November, 1989.

Dear Sir,

Re: ROLLOVER PROTECTIVE STRUCTURES

In accordance with the previously issued provisions for rollover protective structures to protect the operators of off-road machinery or vehicles used at open cut coal mines or on the surface of underground coal mines the following standard is deemed to be acceptable as an alternative to Australian Standard "Protective Structures for Operators of Earthmoving Machines"- AS 2294 as in force on 1st January, 1988 for rollover protective structures:-

UNITED STATES SAE J1040 - APR88 entitled "Performance Criteria for Rollover Protective Structures (ROPS) for Construction, Earthmoving, Forestry and Mining Vehicles".

Please be advised that there is no intent to cause obsolescence of Rollover Protective Structures in use at a mine which comply with previously issued criteria.

It is understood that the Australian Standard is under review and the above SAE Standard has been included as part of this review process.

Yours faithfully,

R.W. Scott  
Acting Chief Inspector of Coal Mines

File No.: C89/1052  
Date: 6th November, 1989

Dear Sir,

**RE: FIRES ASSOCIATED WITH UNDERGROUND CONVEYORS**

The Coal Mines Inspectorate has carried out a review of fires involving underground coal mine conveyor systems as reported under the Coal Mines Regulation Act. The review covered a 15 year period from 1973 to 1988 and established that a total of 105 fires had been investigated.

The major cause of the fires, as identified by the investigation, have been categorised in the table below.

<b>Category</b>	<b>Cause</b>	<b>% of Total</b>
1	1. Collapsed idler bearing	46
2	2. Friction due to drive brake	21
3	3. Excessive temperature of drive system	15
4	4. Friction due to conveyor belt	8
5	5. Slip at drive pulley	4
6	6. Collapsed pulley bearing	5
7	7. Belt carcass breaking down and building up on idlers	1
8	8. Cause not ascertained	1

Whilst there are many ways to reduce or eliminate these fires the following comments are offered which are considered to cover some of the more important aspects:-

1. Ensure that idlers are rated for the duty they are exposed to, particularly with regards to belt speed, peak load, shaft deflection, bearing rating and dust and water sealing of bearings.

2. Ensure that changes in grade are gradual to reduce localised loading.
3. Vee return idlers improve belt tracking and also improve access for cleaning.
4. The use of fire and water resistant grease for the lubrication of idler bearings should be considered when purchasing idlers.
5. As far as possible maximise the clearance between the return belt and the floor to facilitate cleaning and reduce the potential for build up of combustible material around return idlers.
6. Provide a cover over the motor, coupling, brake and gearbox sloped so that any coal dust or spillage is deflected away from the drive area.
7. When purchasing new conveyor structure check that there is sufficient allowance for belt drift as there are many cumulative items that adversely effect belt tracking in numerous underground installations.
8. When purchasing new drive heads consideration should be given to specify fully enclosed oil immersed brakes.
9. When purchasing new conveyor belting include in the specifications:-
  - (a) The belt when installed and running should not move more than 50 mm. either side of centre.
  - (b) An appropriate tear test which should establish that the belt carcass will not easily breakdown.

It is to be noted that there have been major conveyor belt fires at coal mines and at ship-loading terminals in NSW In all such cases known to the Inspectorate the conveyor belt material was not F.R.A.S. (Fire Resistant and Anti-Static.) However it is suggested that procedures for purchase of approved conveyor belt be reviewed in order to establish if adequate provisions exist to verify that the material supplied complies with the F.R.A.S requirements.

The purpose of this circular is to provide the coal mining industry with statistical data and advice which may lead to a reduction in the incidence of reportable fires on conveyors being achieved. Should further advice in relation to any aspect of this circular be required please contact Mr. W. Koppe, Inspector of Mechanical Engineering on (02) 240 4248.

Yours faithfully,

R W Scott  
Acting Chief Inspector of Coal Mines



File No.: Not Available  
Date: 9 January, 1986

TO ALL MINE MANAGERS

FIRE INVOLVING DE GREASER

Dear Sir,

Recently a fire occurred on a D10 dozer when the engine area was being cleaned with a degreaser/solvent supplied from a suitably modified wash down truck.

When the degreaser/solvent touched a hot surface, the substance ignited resulting in a fire.

Investigations revealed that the substance used was an extremely effective degreaser/solvent with a kerosene base and 6% of water emulsifiers.

The boiling point of this substance was stated to be 89° C and more importantly the liquid had a flash point of 34° Celsius. This is an extremely low flash point and it would be quite normal to find a substantial part of the engine area in excess of this temperature after a normal operating shift.

The degreaser/solvent had been used at the mine workshop for a considerable period. The application of the degreaser/solvent as a field degreasing agent on the wash -down truck was a new application.

The wash down truck operator had not been made aware of the dangers associated with using the degreaser/solvent.

The operator had not been given sufficient instruction and training in relation to the use of this solvent.

The operator had not seen, nor had explained to him the safety data sheet relevant to the degreaser/solvent.

Managers should be aware that for any new substance it is their responsibility to obtain a complete safety data statement and to examine this information for potential hazards.

## Notice A37a continues

The Manager must then ensure that the safety data and identified hazards are passed on to all personnel who are to use, or supervise the use of, the substance and that those persons are fully trained in the safe use of the substance with the emphasis being placed on safety-procedures and potential hazards.

Similarly, if a substance which has been used at the mine for a particular purpose is to be used for some other purpose, the potential dangers associated with the new-use should be examined and personnel given appropriate training and instruction.

Yours faithfully,

W N BURTON  
Senior Inspector of Coal Mines

File No.:CM87/645  
Date: 21 November, 1989

Dear Sir,

**FIRES CAUSED BY INCORRECT LABELLING OF DETERGENT/DEGREASER  
CONTAINERS**

Several fires have been caused on items of plant by the use of a detergent/degreaser on hot engines where the container label states that the contents are "non flammable". This is a dangerous misrepresentation of the Australian Standard No AS1940-1982 "SAA Flammable and Combustible Liquids Code", which in part defines a flammable liquid as follows:

"Clause 1.3 - 24.1 "Flammable Liquid" - Any Class A or Class B liquid having a flashpoint of not more than 61° C.

The liquids used are in fact "Combustible Liquids" with a flashpoint higher than 61° C. One could have a flashpoint as low as say 70° C and when sprayed on to a surface hotter than this, it would behave immediately as a flammable liquid.

Attempts are in progress to make mandatory the printing of the words "COMBUSTIBLE LIQUID" and "FLASHPOINT" temperature on container labels for all such liquids.

As an interim safety measure, managers are urged to:

1. insist that this information be printed by suppliers on all similar liquid containers;  
and
2. make staff aware of this potential hazard and take appropriate action to prevent accidental misuse of these substances.

Yours faithfully,

J.G. Bailey  
Chief Inspector of Coal Mines

File No.: Not Available  
30 January 1990

WHEEL RIMS - HAZARDS

Dear Sir

Haulpack wheel rims sometimes crack in service. Such cracks are harmless if they occur in the welds between parts of the rim - all that happens is the tyre goes flat.

However, if the crack develops in the gutter section (or lock ring groove) no air will leak out. This can be extremely dangerous because the wheel nuts and cleats will hold the crack together until an attempt is made to remove the nuts.

Once sufficient nuts have been removed to reduce the clamping force, the contained pressure (in excess of 200 tonnes) will cause the tyre to explode with disastrous consequences.

People have been killed through this at mine sites around the world.

The probability of these cracks developing has become greater with the introduction of larger haul trucks due to their higher rim port stress levels.

If a crack develops while the rim is in service it cannot be seen until the tyre is removed. The only safe way to prevent this type of tyre explosion is to:-

**DEFLATE THE TYRES TO LESS THAN 35KPa (5 PSI) BEFORE STARTING TO REMOVE WHEEL NUTS.**

Total tyre deflation is not recommended due to difficulties in handling and rim component retention.

Danger also exists if an attempt is made to inflate a tyre mounted on a rim which has a cracked gutter section.

**BEFORE ANY ATTEMPT IS MADE TO INFLATE AN EARTHMOVER TYRE, THE RIM MUST BE THOROUGHLY CLEANED AND INSPECTED FOR CRACKS.**

Please ensure all personnel involved with tyre and rim maintenance/installation are aware of the above recommended procedures to reduce the risk of accident due to this hazard.

Yours faithfully

A P MORGAN  
Senior Inspector of Coal Mines

File No.: M85/1478  
4 April, 1990

The Manager

Dear Sir,

Re: WINDER ROPE LIFE EXTENSIONS

As you are aware, the Coal Mines Regulation Act 1982 limits the nominal acceptable period of service for friction winder head ropes to 2 years whilst friction winder balance ropes are limited to 3 years. Both these periods are, however, subject to extensions of time at the discretion of the Chief Inspector of Coal Mines, usually subject to certain conditions as deemed appropriate.

To allow for uniformity this Department has generally granted these extensions for a period that will result in their expiry on the 31st January annually. This allows Mines to utilise, what was in the past, the traditional Christmas shutdown period to change out ropes.

As a result of this the Inspectorate is often inundated with numerous extensions of rope life requests in December and January of each year.

A great many of these requests are- improperly submitted with not enough consideration being given to the lead time required for processing of the necessary documentation, nor with the correct references to File Numbers where available. Failure to provide current Engineering data and test results combined with statutory inspection copies is an added problem-

In an attempt to alleviate these problems and hence provide the most efficient service possible, the Department has formulated a new procedure for processing rope life files. Combined with certain recommendations that follow in this letter for attention by you at Colliery level, it is also envisaged that, over a period of time, sound statistical data relating to rope life history and performance levels will be accumulated.

This information may, in the future, be able to provide engineering support to those Mines who wish to leave ropes in service for periods in excess of five years. This new procedure will also apply for the recording of service histories of winding and haulage ropes as referred to in Clause 16 of the Shafts and Roadways - Underground Mines Regulation.

The overlying point that must be realised is that correct references must be made to file numbers on ALL communications relating to a rope or set of ropes. The only communication where this will not be possible will be the initial notification from the Mine to the Inspectorate relating to the fitting of a new rope. The Department will inform the Mine of the new file number upon receipt of the Manager's notification.

A flow diagram is attached summarising the new procedure to be followed. By way of explanation the following points are made.

- (1) Upon deciding to change a rope, identify the most worn and/or damaged sections and select three of these sections for sampling and non-destructive testing.

(A) : FOR THE OLD ROPE(S)

- (2a) Remove the old rope(s) and cut out as selected suitable length samples to allow for a full report to be done on the strength and condition of each section. Identify each section for future reference detailing the defects existing within that sample at the time of removal, as observed by N.D.T. and visual examination.
- (3a) Obtain tests reports referenced to your identification system and prepare a summary for submission to the Inspectorate and for your own files.
- (4a) The Inspectorate will attach this information to the appropriate file then close this file and retain it for future reference.

(B) : FOR THE NEW ROPE

- (2b) Upon fitting the new rope(s) notify the Inspectorate in accordance with Clauses 12(3) and 16(3) of the Shafts and Roadways - Underground Mines Regulation.
- (3b) Arrange an initial N.D.T. to be carried out and forward the results to the Inspectorate.
- (4b) The Inspectorate will initiate a new file for the new rope(s) and attach this notification to the file.  
An acknowledgment of receipt of the notification will then be sent to the Mine detailing the new file number that must be used in any future correspondence relating to the new rope(s) during their period of usage.

With reference to requests for extensions of rope life, the following information must be supplied with the Manager's communication:

- (i) File Number
- (ii) Details of the rope(s) concerned, including dates of installation.

- (iii) Number of duty cycles and tonnage handled (where possible).
- (iv) A copy of a N.D.T. report not more than 2 months old.
- (v) Copies of recent Section 103 Inspections for ropes and winder apparatus; specifically the six most recent daily, weekly and monthly reports.
- (vi) Any relevant additional- data, ie., re-anchoring dates, lubrication used.
- (vii) The period of extension required.
- (viii) The proposed date of the rope change-out.

To assist in these submissions it is suggested that each mine develop a standard performa to tabulate the above requirements for any submissions to the Inspectorate.

In all cases it should be recognised that incomplete applications will be returned to the Mine for correction, leading to delays in the assessment of that particular application.

Your assistance in the introduction of this new procedure is greatly appreciated.

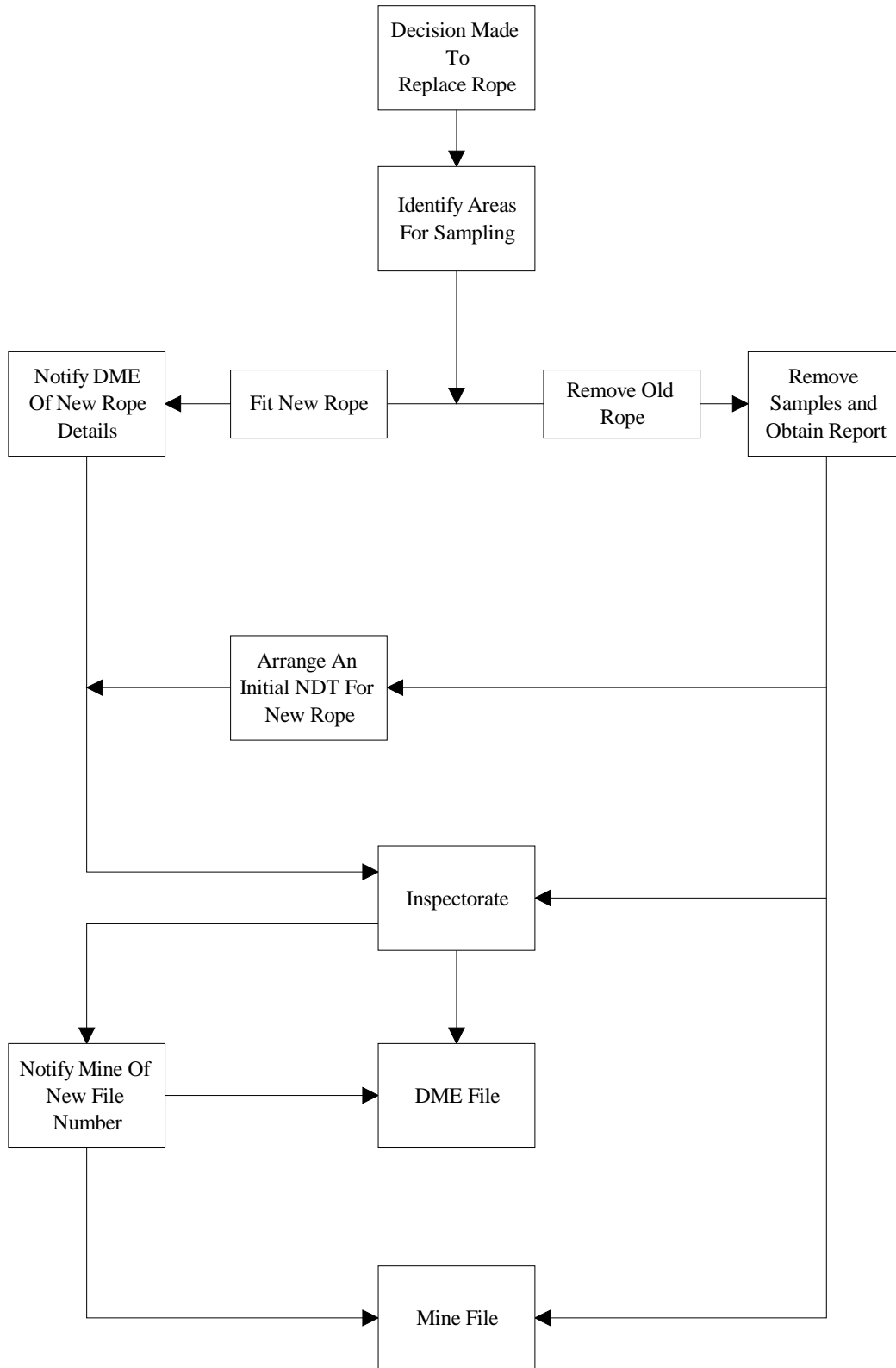
Should you require further assistance or clarification, please contact your local Inspector of Mechanical Engineering.

Yours faithfully,

J.G. Bailey  
CHIEF INSPECTOR OF COAL MINES

APPENDIX 1 - flow diagram attached

APPENDIX 1 - FLOW DIAGRAM





File No.: M79/4220  
Date: 4 April, 1990

Dear Sir,

**RE: AUSTRALIAN STANDARDS FOR SHAFT WINDING EQUIPMENT**

Your attention is drawn to the publication of the following Australian Standards covering equipment used in association with vertical and slope haulage winders.

AS3637 - Underground Mining Suspension Equipment

Part 1            General Requirements  
Part 2            Detaching Hooks  
Part 3            Rope Cappings  
Part 4            Draw bars and Couplings  
Part 5            Rope Swivels and Swivel Hooks  
Part 6            Shackles and chains

AS3751 - Underground Mining - Slope Haulage - Couplings, Drawbars and Safety chains.

\*            Denotes this standards is still only in draft form.

The above documents cover material and design aspects considered to be appropriate for this equipment and it would be anticipated that new or replacement equipment would be purchased in accordance with these standards unless a valid reason can be made to use alternative standards. The latter appear to be related primarily to replacement equipment.

Of importance to note is that the standards include "Recommendations for Inspection and Maintenance" which has been included to provide guidance in matters covering:-

- (a)    Inspection - frequency and type
- (b)    Permissible imperfections.

It is requested that, where applicable, existing procedures for Inspection and Maintenance at the mine as nominated within the mines Section 103 Scheme for testing and examination of mechanical apparatus be reviewed in conjunction with the above referred recommendations. Should the review indicate that the 103 Scheme be amended, it is suggested that the matter be discussed with the local Inspector of Mechanical Engineering.

Yours faithfully,

J.G. Bailey  
CHIEF INSPECTOR OF COAL MINES

File No.: M79/5365

Date: Not Available

Dear Sir,

COAL MINES REGULATION ACT

CANOPIES - PROTECTIVE DEVICES

I refer to the requirements of General Rule 49, Section 54 under the provisions of the above Act, requiring a protective canopy or another device on any vehicle, any part of which is designed to carry a person, while in operation in the mine. The Regulation takes effect on 28th March, 1980.

The canopy or device shall be of a type approved by me in respect of the vehicle or class of vehicles as a canopy or device that will prevent any person being carried in that part of the vehicle from being injured in the event of falls of supports or debris.

The protective canopy for a continuous mining machine is required to have a minimum structural capacity to support elastically a static uniform load of 8 200 kilograms or a force equivalent to a static load of 105 kilopascals distributed uniformly over the greatest plan view area of the canopy, whichever is the lesser. All types of canopy shall be load tested in the presence of an Inspector of the Coalfields Branch before consideration will be given to approval. An acceptable method of testing is that set out in informational Report 1002, "A Testing Procedure for the Certification of Underground Protective Cabs and Canopies" by US Department of the Interior. This provides for the test load to be distributed within the middle ninth of the structures plan view area. A dial indicator will show the maximum and permanent deflections of the structures top caused by the loading. The measured permanent deflection shall be less than 10 per cent of the recorded maximum deflection. It should be noted that rectangular hollow sections due to their lack of ductility should not be used in the construction of continuous miner canopies.

There is no specification provided in General Rule 49 for canopies or other devices used on machines other than continuous mining machines. However, before consideration will be given to approval, all types of canopy or device shall also be load tested in the presence of an Inspector of the Coalfields Branch. The test load shall be one (1) tonne distributed over a width of 300 mm at the centre of the maximum span and again the measured permanent deflection shall be less than 10 per cent of the recorded maximum deflection.

Yours faithfully,

M J MUIR  
Chief Inspector of Coal Mines

File No.: Not Available  
Date: 21st October, 1976

EYE PROTECTION

Dear Sir,

General Rule 48, Coal Mines Regulation Act, 1912,  
as amended

In accordance with the provisions of General Rule 48 (2) of the Coal Mines Regulation Act, 1912, as amended the following are specified as conditions and/or sites at which eye protection aid as specified in the General Rule is required to be worn at the colliery:

- (1) At all sites where persons are engaged in:
  - (a) use of a hammer and cold chisel.
  - (b) chipping metal.
  - (c) oxy and electric welding and cutting operations.
  - (d) all operations involving a grinding wheel.
  - (e) all metal machining operations.
  - (f) use of explosive powered tools.
- (2) All persons involved in cleaning down storage batteries.
- (3) All persons involved in pressure spray application.

Should there be any other conditions or sites that you consider require mandatory use of eye protection aids at your colliery please advise.

Yours faithfully,

M J MUIR  
Chief Inspector of Coal Mines.

File No.: M80/5439  
Date: 28th May, 1984

Dear Sir

COAL MINES REGULATION ACT, 1982 (MECHANICAL-UNDERGROUND MINES)  
REGULATION 1984, CLAUSE 40 (TRANSPORT-UNDERGROUND MINES)  
REGULATION 1984, CLAUSES 9(a) & 28(a)

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The above regulations require that any diesel engine and diesel engine driven equipment shall not be used underground unless it has been approved. This requirement relates to all such equipment whether it was in use prior to the application of the above Act or otherwise.

I am anxious that these requirements should be effectively applied with a minimal disruption to the industry. I believe that this can be best achieved if my officers meet with representatives of the organisations which have or will supply flameproof diesel engines and diesel powered equipment to the coal industry with a view to developing workable procedures.

Accordingly I request that one or more of your representatives attend a meeting with officers both of my Department and of Londonderry Test Centre. I propose that this meeting should commence at 10.00 a.m. at the Londonderry Test Centre on 14th June, 1984. Please advise Mr Leo Roberts on (02) 240 4248 if you will be represented and if so by whom.

No formal agenda will be prepared as I expect the meeting to cover a wide range of subjects including:-

- \* The mechanism for approving, or otherwise, existing equipment.
- \* Action needed to cope with what will become a backlog of approval applications.
- \* Details required for approval applications.
- \* The need for approved workshops.
- \* An Australian Standard for flameproof engines.

In order to gain maximum benefit from the provisions of the new regulations in reducing delays and paperwork without any sacrifice in safety I have decided that the principles outlined below should apply. In some instances detail associated with these principles is yet to be decided and input by people attending the meeting will be welcomed.

COAL MINES REGULATION ACT, 1982 (MECHANICAL-UNDERGROUND MINES)  
REGULATION 1984, CLAUSE 40 (TRANSPORT-UNDERGROUND MINES)  
REGULATION 1984, CLAUSES 9(a) & 28(a)

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New Equipment (See attached Application Guides)

- (1) For a new type of engine which is destined for use underground the prototype engine and associated drawings will be subjected to gas emission and dimensional checks. If the engine is in compliance with design rules a 'Certificate of Inspection' will be issued.
- (2) The diesel engine with its associated flame proofing equipment and exhaust system shall be subject to a 'Diesel Engine System' check and approval allocation. This approval will be a 'type approval' based on the specific configuration tested. A D.E.S. approved unit can be used in any application provided that the engine-ancillaries configuration is unchanged.
- (3) The equipment will be subject to a 'Diesel Engine Vehicle' check and approval allocation whether the equipment is a vehicle or otherwise. Once a DEV approval is granted the equipment may be used in any New South Wales coal mine without further reference to the Department and subject only to approval conditions and to the Coal Mines Regulation Act, 1982.

A DEV approval will be issued to the supplier of the equipment.

EXISTING EQUIPMENT

Due to the wide variety of existing items of diesel equipment used underground and the inevitable alterations which have been made to many of these units the following proposals will be dependent upon the assistance which can be offered by equipment suppliers and the results of investigations by Inspectors of Mechanical Engineering.

- (1) Where a supplier has made a number of units which are sufficiently similar to justify a type approval such an approval will be issued subject to checks of the equipment concerned. This approval will be issued to the equipment supplier and will be for all practical purposes a DEV approval.
- (2) Where relatively few units of a piece of equipment exist the equipment will be inspected and an approval will be issued to the colliery manager for the equipment to be used in his mine.

Change-over Status

- (1) If all the various items of diesel equipment currently being produced were to be presented for DEV approval at short notice our testing station would inevitably cause delays to approval because of the volume of work.

COAL MINES REGULATION ACT, 1982 (MECHANICAL-UNDERGROUND MINES)  
REGULATION 1984, CLAUSE 40 (TRANSPORT-UNDERGROUND MINES)  
REGULATION 1984, CLAUSES 9(a) & 28(a)

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Accordingly, manufacturers are advised that, providing an application for DEV approval is lodged prior to 31st August, 1984, such vehicles will be inspected and if they are satisfactory will be issued with a limited approval pending either issue of a DEV approval or advice that the equipment will not qualify for DEV approval.

More specific requirements are currently being documented and pending their completion, please address any enquires to Mr Leo Roberts on (02) 240 4248.

Yours faithfully

M J MUIR  
Chief Inspector of Coal Mines

File No.: M85/0931  
Date: 6 July, 1990

Dear Sir

RE: DIESEL ENGINE POWERED EQUIPMENT - UNDERGROUND COAL MINES

In reference to our letter dated 28 June 1989, relating to requirement for pressure release caps to be fitted to the cooling system for diesel vehicles used in underground coal mines, advice has been received from some local Inspectors of Mechanical Engineering that as at the end of June this type of cap is not yet available for all types of vehicles,

You are requested to review this situation as it pertains to your range of vehicles and take whatever action is necessary to enable the mines to comply with the requirements of the above referenced letter.

Should further clarification of this matter be required please contact Inspector of Mechanical Engineering, Mr W Koppe on 901 8551.

Yours faithfully

L J Roberts  
SENIOR INSPECTOR OF MECHANICAL ENGINEERING



File No.: C89/0426  
5th February, 1990

Dear Sir,

HYDRAULIC OIL FOR BREAKER LINE SUPPORTS

As a result of investigations conducted into the fluid used in the hydraulic system of Breaker Line Supports it has been concluded that the use of mineral oil should be approved.

Consequently a general Notice of Approval has been issued for publication in the Government Gazette. A copy is attached for your information and the conditions pertaining to the use of mineral oil should be noted.

Would you please advise all users of Breaker Line Supports accordingly together with advice as to whatever is required to ensure compliance.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

File No. Not Available  
Date: Not Available

Dear Sir,

**R E : - DIESEL ENGINE GAS TESTING**

Consideration is being given to allow some coal mines to be granted exemption from having to carry out 28-day diesel engine gas tests. A condition of this, however, would be the need to carry out Laboratory gas tests at an increased frequency, possibly every three months.

This course of action has been proposed because of the inconsistencies involved in the results gained using Drager type gas tube analysis systems.

To allow the Inspectorate to compile data on the results obtained from Laboratory gas tests, it is required that all future test results be recorded regardless of the readings achieved.

Should an engine fail emission standards initially, a FAIL report should be submitted indicating the readings achieved.

Upon re-testing, another report is required, showing not only the gas readings but also a brief summary of the work required to rectify the problem.

To aid in identifying FAILED tests a bold stamp with the word FAILED should be applied across the certificate, similarly please stamp RE-TESTED on any certificates showing re-test results.

You are requested to institute these new procedures immediately.

Your faithfully

L.J. Roberts,  
SENIOR INSPECTOR OF MECHANICAL ENGINEERING

## Notice A46 continue

File No.: C89 /0426  
Date: 5th February, 1990

Dear Sir,

### HYDRAULIC OIL FOR BREAKER LINE SUPPORTS

Following your request for an exemption from the use of an approved fire resistant fluid in the hydraulic system of Breaker Line Supports, a detailed investigation of the matter has been undertaken with the manufacturers - Voest Alpine and the Coal Mining Inspectorate.

The results of the investigation have concluded that the use of mineral type hydraulic oil would constitute less of a hazard in the operation in this type of equipment than the possible reduction in reliability that may occur with the use of fire resistant fluids.

Consequently the use of mineral hydraulic oil in Breaker Line Supports is acceptable provided that additional temperature controlling devices to the unit in the hydraulic tank be installed to the hydraulic pump and hydraulic track-drive motors. The manufacturer has agreed to this proposal and can upgrade existing units when they are made available.

Clause 32 of the Coal Mines Regulation (Fire Control - Underground Mines) Regulation, 1984 requires that hydraulic oil used "in self advancing roof supports" be approved. A copy of the general approval for the use of mineral oil in Breaker Line Supports which is to be gazetted is attached for your information. Please note that the approval is subject to a number of conditions for the use of mineral oil.

For your information it has been determined that Breaker Line Supports are not categorised as longwall or shortwall faces and consequently no action under clause 34 of the Coal Mines Regulation (Mechanical - Underground Mines) Regulation, 1984 is required.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering

File No.: M86/0308  
Date: 17th May, 1990

Dear Sir,

RE: REMOTE CONTROL OF CONTINUOUS MINERS

The Coal Mining Inspectorate has recently been involved in the approval of the installation of radio systems on continuous miners to provide for remote control operation of these machines.

It has become-apparent that differing criteria have been utilised for the introduction of this type of technology on machines currently being modified for various coal mines by equipment manufactures. The different philosophies encountered have varied from complete radio remote control only to provision of dual operation systems comprising remote and conventional manual control systems.

Consequently it is considered necessary to specifically identify some of the issues which should be considered in the introduction of remote control.

The issues involved are as, follows:-

1. System for control of the operation of continuous miners which are required to be duplicated ie. retention of the existing manual controls with the installation of a radio remote control should be provided with the following features:-
  - (a) The selection of either mode of control shall be designed with an effective interlock to prevent the inadvertent operation of any controls associated with the unselected mode.
  - (b) Visual indication shall be provided at each mode of control to indicate which mode has been selected.
  - (c) A single means of isolating both modes of control shall be provided.
2. The Mechanical Design Guidelines for the Construction of Continuous Miners issued on 11th May, 1989 do not specifically relate to remote controlled machines. Consequently the guidelines should be reviewed to ascertain if any alterations or additions to the mechanical safety features should be considered with operation by remote control eg. installation of an additional emergency stop switch on the driver side of the machine to duplicate the switch nominated in Section 1.5 to de-energise the traction and cutter drives.
3. The requirements for remote control systems incorporated in Section 5 of AS2595.1 - 1985: "Electrical Equipment for Coal Mines - Electrical Requirements for Underground Mining Machines and Accessories - Part 1 - EQUIPMENT FOR USE IN EXPLOSIVE ATMOSPHERES" should be complied with.

All continuous miners fitted with remote control delivered to mines after 1st July, 1990 shall be in accordance with these requirements where applicable.

Yours faithfully,

B.R. McKensey  
Chief Inspector of Coal Mines

File No.: C90/0164  
Date: 2 August 1990

Dear Sir

**RE: OPERATOR PROTECTION SKID STEER LOADERS**

The Coal Mining Inspectorate has become aware of four (4) fatalities and a number of serious injuries which have occurred in other industries to operators of Skid Steer Loaders. As a result of reviewing the nature of these accidents it has been concluded that pre-emptive measures should be taken to avoid the occurrence of similar serious injuries in the coal mining industry.

For the purpose of clarification a Skid Steer Loader is a self propelled machine that is steered by using variation of speed and/or direction of rotation between wheels on opposite sides of the machine on fixed axles. Attachments or implements are fastened to a lift arm with normal access to and from the operator compartment via the front attachment point.

The serious injuries which have occurred, which this letter seeks to address, are those which have been caused by the inadvertent movement of lift arm or attachment/implement (a bucket is normally fitted) whilst the operator is in the process of entering or leaving the compartment.

In order to provide protection for operators of this type of equipment, it is required that ALL Skid Steer Loaders operating on the surface or underground of a coal mine or any location which is administered by, the Coal Mines Regulation Act, 1982 such as "declared plant" be fitted with the following protection system:-

**Means shall be provided to prevent the lift arm or the attachment/implement from moving whilst the operator is in the process of entering or exiting the operator compartment**

This requirement is issued pursuant to clause 28 of the Coal Mines Regulation (Mechanical - Open Cut Mines) Regulation, 1984 and Clause 42 of the Coal Mines Regulation (Mechanical - Underground Mines) Regulation 1984 and shall take effect from 1st January 1991.

It is recommended that the design of this feature also incorporates the additional function of park brake application. Note that for loaders fitted with a combination park/emergency brake the conventional means of brake actuation shall be retained.

Your attention is also drawn to the requirement for seat belts to be fitted and worn for all vehicles, with ROPS installed, operating on the surface of a coal mine. This requirement was incorporated in gazetted notices covering protection for vehicle operators which have been issued previously.

Should further information on this matter be required you are advised to contact the Inspector of Mechanical Engineering for the mine.

Yours faithfully

B R McKensey  
CHIEF INSPECTOR OF COAL MINES

File No.: CM88/00551  
Date: 21st December, 1990

Dear Sir,

**Synthetic - Webbing Lifting Slings**

Following my previous letter reference CM88/00551 dated 13th October, 1989 considerable investigative work has been conducted which has resulted in a number of revisions including the factors of safety required for the use of these slings. The requirements previously referred to were in terms of Australian Standards which have now been extensively revised. The previous requirements are hereby withdrawn and replaced by the following:-

**Requirements**

In accordance with the provisions of Clause 36 of the "Coal Mines Regulation (Mechanical - Underground Mines) Regulation, 1984" and Clause 25 of the "Coal Mines Regulation (mechanical - Open Cut Mines) Regulation, 1984", I hereby notify that the requirement for the use of synthetic-webbing lifting slings used in the NSW coal mining industry shall be as follows:-

1. From 1st January 1991 all new slings purchased for use in coal mines shall comply with Australian Standard AS1353.1- 1990 Flat synthetic-webbing slings Part 1: Product specification.
2. Synthetic webbing slings already in use prior to 1st January 1991 and not complying with AS 1353.1-1990 may continue in service subject to a safe working load of 50% of their original rating and the other conditions as listed in the previous letter reference CM88/00551 dated 13th October, 1989.
3. Round slings although not mentioned in the above Australian Standard shall be manufactured to the same factors of safety and show the same colour coding as flat webbing slings to avoid confusion.
4. All slings whether manufactured to the new or old standard AS1353 shall be periodically inspected and tested in accordance with Clause 11.5 of AS1353.2-1990 Flat synthetic- webbing slings Part 2: Care and use from the 1st January, 1991, with the yearly inspection and testing carried out by the sling manufacturer.
5. All slings conforming to AS1353.1-1990 shall be maintained and used in accordance with AS1353.2-1990.



6. End fittings for new slings shall comply with Australian Standard AS3585-1990 End fittings for flat-webbing slings.
7. Any further revision of the before mentioned three Australian Standards shall automatically apply.

It should be noted that the Occupational Health and Safety Act No 20, 1983, Part III, Division 1 places responsibilities on the manufacturer, supplier and employer/s to ensure that lifting gear is safe and without risk to health, and this responsibility includes compliance with current relevant Australian Standards.

These requirements have been based on those adopted by the NSW Work Cover Authority for the Construction Industry and for General Industry in accordance with their letter dated 27th July, 1990.

Yours faithfully,

B.R. McKensy  
CHIEF INSPECTOR OF COAL MINES

File No.: C89/1052  
Date: 15 January 1991

Dear Sir,

Re: FIRES ASSOCIATED WITH UNDERGROUND CONVEYORS

In November 1989 a letter was circulated which summarised the causes of fires on underground conveyors for the 15 year period 1973 to 1988. These fires were classified as reportable and were investigated under the requirements of the Coal mines Regulation Act. The summary indicated that 105 fires had been reported for the period which averaged 7 fires/annum. The 1989 letter also incorporated a range of measures for consideration by mine management to effectively reduce or eliminate the incidence of conveyor fires.

This letter is to advise that over the past 18 month period the incidence of fires on conveyors has now increased to an average rate of 12 fires/annum. This rate of increase is considered to be unacceptable and your attention is drawn to the employers responsibilities under the Occupational Health and Safety Act, 1983:- Part 3 - General Provisions Relating to Health, Safety and Welfare at work particularly in relation to this matter.

Statistics show the major cause of fires on underground conveyors continues to be collapsed bearings in conveyor idlers/rollers. Due to the frictional heat generated by the collapsed rollers and the moving conveyor belt, increased temperatures are created such that any build up of fine coal adjacent to the roller soon becomes ignited.

The effectiveness of existing systems adopted by management at the mine to control the hazards associated with the operation of conveyors need to be reviewed as it is evident from statistics that an improvement is necessary. In particular the quality of the existing inspections conducted in accordance with Clause 27 of the Coal Mines Regulation (Belt Conveyor) Regulation, 1984 should be critically assessed. It is to be noted that Subclause (6) of the Regulation requires a person making such examinations pursuant to this Clause shall when finding a situation of danger, immediately inform the senior mining official on the shift. For the purpose of this subclause it is considered that where either the conveyor belt, pulleys or idlers are in contact with a build up of coal fines or spillage then this should constitute a situation of danger for which remedial action should be taken.

It is also considered that a condition of danger exists if idlers or pulleys with defective bearings are left in service for extended periods of time. The practice at some mines of changing idlers at weekly intervals is not considered satisfactory as the longer a defective bearing is in service the higher the probability that a fire could result.

The installation of conveyor drive motors, couplings and brakes below overhead conveyor belting without an effective means of preventing spillage collecting around the drive components is considered unsatisfactory and potentially dangerous particularly where open brakes or other drive components can quickly generate surface temperatures to a level at which a build up of coal will ignite. Generally surface temperatures should not be allowed to exceed 150 degrees Centigrade.

The summary of conveyor fires has been updated and is listed below.

**SUMMARY OF CONVEYOR FIRES FROM 1973 TO 12/90.**

Cause	No. of Fires
Collapsed/seized idler bearing	46
Friction due to drive brake	24
Excessive temperature of drive system	18
Friction due to jammed idlers	9
Friction due to conveyor belt	8
Collapsed pulley bearing	6
Slip at drive pulley	4
Belt carcass breaking down and building up on idlers	2
Miscellaneous	4
<b>Total</b>	<b>121</b>

It is requested that the safety aspects associated with the operation, inspection and maintenance of the underground system of conveyors at the mine be reviewed so that the potential for a fire to occur is eliminated.

Yours faithfully

R W Scott  
Acting Chief Inspector of Coal Mines

File No.: C90/0232  
Date: 15th February, 1991

Dear Sir,

RE: FAILURE OF COMPRESSED AIR VALVE

In March 1990 a machineman suffered a fractured jaw, ruptured larynx and a hairline vertebrae fracture when struck in the face and throat by parts of a valve installed in an underground compressed air service line.

The investigation conducted following the occurrence found that the 100 mm gate valve failed whilst the machineman was endeavouring to shut off the air line supply. The resultant reaction which occurred during closure of the valve stem to the valve body seat caused the screwed bonnet section of the valve to be forcibly ejected from the valve body. The reason that the valve bonnet was ejected was concluded to be caused by the poor quality thread form of the mating parts together with insufficient depth of thread engagement.

It is recommended that the type of valve purchased for use in mine compressed air services be reviewed to ensure that the design and quality are appropriate for the duty. As a guide it is suggested that gate valves for compressed air services up to and including 100 mm comply with Australian Standard AS1628-1977. Whilst this standard specifically covers bronze gate valves for water services up to 1700 kPa pressure it is considered that the standard is also appropriate for use with compressed air services.

Should you require further information please contact the Inspector of Mechanical Engineering for your mine.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

File Nos.: M84/6206 and M86/6192

Date: 13th May, 1991

Dear Sir,

**RE: DOMINO PET TYPE FREE STEERED VEHICLE**

From a review of back injuries, associated with the use of diesel powered equipment it has been identified that the manual effort required to convert the Domino PET vehicle from a materials transporter to a personnel carrier has been the cause of back and arm strain lost time injuries. As a consequence of this review the approval for use of any Domino PET vehicle in an underground coal mine is amended in accordance with the following notification:-

"The Chief Inspector of Coal Mines in accordance with the provisions of Clause 8 of the Coal Mines Regulation (Approval of Items) Regulation, 1984, hereby amends all approvals issued pursuant to Clause 28(a) of the Coal Mines Regulation (Transport-Underground Mines) Regulation, 1984 for DOMINO PET VEHICLES with the following requirement as an additional condition of use.

A mechanism shall be fitted to the vehicle by 1 January, 1992 to assist with the conversion of the vehicle from operation as a materials transporter to a personnel transporter.

It is to be noted that this new requirement does not apply to any such vehicles dedicated to sole use either as a materials transporter or personnel carrier provided that the locking mechanism is welded so that the position is permanently fixed.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

File No.: M91/0055  
Date: 9th October, 1991

Dear Sir,

Re: Continuous Miner Protective Canopies

The protection of continuous miner drivers against injury from falls of roof through the provision of canopies is well known within the industry. However it is to be noted that over the past few years it has been considered necessary to review the criteria used for the assessment and subsequent approval of protective canopies as required under the Coal Mines Regulation Act, 1982. As a result of the latest review new canopy designs submitted for approval are assessed in conjunction with the Mechanical Design Guidelines for Continuous Miner Canopies issued in May 1989.

Following the issue of the Guidelines local Inspectors of Mechanical Engineering have identified some canopy designs previously approved which may not afford the same degree of protection as that provided by "new generation" canopies. It was then determined that a review of the inspectorate's records of reportable "buried continuous miners" should be undertaken. This category of occurrence having been reportable since the Regulations were promulgated in 1984. The review indicated that a total of 145 occurrences were investigated for the 6 years to 1990 and that in excess of 90% of these occurrences were associated with the pillar extraction process.

Consequently it has been determined that the approval for some canopy designs should be revoked in order to further minimise risk of injury to continuous miner drivers. A copy of these notices of revocation of approval are attached. It is to be noted that continuous miners fitted with the canopies nominated are to be replaced within 6 months where the machine is mining pillars and 2 years where the machine is in development of panels.

Those designs for which approval has been revoked may be resubmitted for assessment and approval if it is established that they comply with the intent of the Guidelines.

It is possible that additional revocation notices may be issued for other previously approved canopies where similar styles are identified during inspections-

It is recommended that any replacement canopy complies with the following:-

- (a) The minimum requirements of the Mechanical Design Guidelines for the Construction of Continuous Miner Protective Canopies.

- (b) The strength of the canopy shall be as determined by the Manager of the mine to protect the continuous miner operator from a fall of material from above the machine as required by clause 32(1) of the "Coal Mines Regulation (Mechanical - Underground Mines) Regulation, 1984".
- (c) Clauses 15 to 18 inclusive of the Occupational Health and Safety Act No 20, 1983, Part II 1, Division 1.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

File No.: CM88/00522  
Date: 18th November, 1991

The Mine Mechanical Engineer

Dear Sir

Re: Constant Pressure Cable Reeling on Shuttle Cars

The purpose of this notice is to clarify the reason for the change from the high-low torque method to the preferred constant pressure cable reeling on shuttle cars and to explain the background and present status of this system.

Arcing about a shuttle car cable is the most frequently reported Dangerous Occurrence.

One such instance of arcing results from the formation of a slack loop of cable on the drum. This is produced when a shuttle car, driven away from the anchor point, is brought to rest but the momentum in the drum causes it to run on for a turn or so. Such a loop, when caught on any protrusion, causes violent cable failure accompanied by a flash.

The over-run can be reduced by increasing the low-torque pressure. Inadequate high-torque pressure is readily detected, by the car catching up with the cable. The low-torque pressure is usually neglected as it does not create an obvious problem. The manufacturers, recommended low-torque pressure is about 400 psi but in practice this pressure has been found as low as 100 psi.

As lack of low-torque pressure causes excessive drum over-run, tests were carried out to determine what low-torque pressure is required to prevent over-run. The tests showed that even at the recommended 400 psi the drum over-run was almost a full turn, allowing a slack loop to be formed. It was not until low-torque pressure was set at 750 psi that a loop was no longer formed and over-run was only 1/4 of a turn.

As 750 psi is close to the pressure usually recommended for the high torque valve, it became clear that the next step was to replace the two valves and shuttle valve with a single relief valve which acts in both directions.

In June 1989 a number of cars were fitted with single relief valves and their behaviour was monitored. The valve used was the main relief valve off a continuous miner, set at 725 psi. This valve was found to generate too much heat in the hydraulic oil especially in high production panels (eg., 100 cars per shift).



Some hydraulic firms have since developed single relief valves designed for this specific purpose. These have been on test since July 1990 with very good results.

By June 1991 about 72 of these valves had been fitted - about 50% by Joy Manufacturing to new cars or during rebuilds. The others have been fitted at other workshops during overhauls or individually at coal mines.

Although the main original aim of this conversion was to prevent arcing on shuttle cars' cables caused by drum overrun, other side benefits have resulted in the elimination of cable "whip", increased reliability and negligible maintenance. All feed back to date has been positive and some mines have completed the conversion on all their shuttle cars.

During this conversion it is important to realise however that single relief valves produce best results when used in conjunction with high efficiency cable reel motors. Low efficiency motors (eg., gear motors) may produce slightly higher operating temperatures and cable tension while reeling out.

Should you require further advice in relation to this matter please contact the local Inspector of Mechanical Engineering.

Yours faithfully

L J Roberts  
SENIOR INSPECTOR OF MECHANICAL ENGINEERING

File No.: Not Available  
23rd October, 1991

Dear Sir,

Re: Standards and Guidelines Applicable to Colliery Mechanical Engineering

In order to ensure the safe operation of mechanical equipment it has long been accepted that minimum standards should be set. Whilst there are numerous Australian Standards covering mining equipment there are still many areas where standards do not apply. A number of these areas are now covered by mechanical design guidelines. This letter is provided to assist you and your engineering personnel by providing a list of standards and guidelines.

Enclosed please find a list of:-

- (1) Australian Standards commonly used for mechanical engineering,
- (2) Mechanical Design guidelines which address many of the safety aspects of mining and related equipment.

It should be noted that there have been some recent changes in Australian Standards which include the following:-

1. AS3637.6 Underground Mining - Winding suspension equipment Part 6: Shackles and chains has now been issued. This supersedes the previous Departmental requirement for chains for transporting persons reference M84/5010 dated 26-6-85.
2. AS3584 Diesel engine systems for underground coal mines is a revision of the 1988 edition, and specifies requirements for flameproofing, the limits of surface temperature, and exhaust gas emissions of diesel engine systems for use in underground coal mines. Test methods are included for explosion testing of the diesel engine system and its components, and for the hydrostatic testing of assemblies.

Copies of design guidelines are available from the Department of Mineral Resources - Coal Mining Inspectorate and Engineering Branch.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering

File No.: C91/0374  
Date: 10 February, 1992

RE: OZONE PROTECTION ACT 1989

Your attention is drawn to legislation enacted by Parliament to provide for a system of controls on substances which on dispersion to the atmosphere contribute to the depletion of the ozone layer. This Act is known as the Ozone Protection Act, 1989.

This Act makes provisions for the making of Regulations with respect to any matters that are required to give effect to the Act. Such Regulations may only be made on the recommendation of the Minister for Environment and only after consultation with Ministers including the Minister for Natural Resources.

A Regulation entitled the "Ozone Protection Regulation, 1991" has been subsequently promulgated with a general commencement date of 31 March 1991 and a commencement date of 30 September 1991 covering general restrictions on sale, purchase and use of controlled substances.

The aforementioned legislation applies to all mines and it is recommended that steps be taken to comply with this legislation if not already done so. For guidance in this regard the categories which would apply at most mines would include foam production; solvent usage; aerosols, vehicles, commercial and industrial air conditioning; commercial and domestic refrigeration; halon filled fire extinguishers and fire suppression systems.

Copies of the Act and Regulation can be purchased from:

Government Information Service  
Goodsell Building  
Chifley Square  
SYDNEY 2000  
Phone nos. (02) 228 8922 or (008) 463 955

Yours faithfully

B R McKensey,  
CHIEF INSPECTOR OF COAL MINES

## Notice A60

File No.: C91/0374  
14th May, 1992

All Mine Managers

Dear Sir,

RE: OZONE PROTECTION ACT

As a consequence of the introduction of the Ozone Protection Act a major implication for the industry has arisen whereby fire suppression systems utilising halon gas as an extinguishant for new installations is no longer permitted.

The impact of this restriction for the industry appears to relate particularly with the use of such fire suppression systems with major items of equipment associated with surface coal mining and handling facilities such as draglines, shovels, winders, etc. which have machine room type enclosures.

Systems employing acceptable alternative extinguishants eg. CO<sub>2</sub> give rise to a range of risks which are different to those associated with the use of halon gas.

The purpose of this letter is to alert the industry of the need to thoroughly review the potential hazards associated with the installation and operation of alternative systems. Any such review should utilise a systematic approach to identify, assess and control risk and include a mechanism whereby the performance of controls that have been adopted is monitored.

Should further advice on this matter be required please contact either Inspector of Mechanical Engineering Mr R Smith located in our Singleton Office (Phone (065) 721 899) or myself (Phone (02) 907 8550).

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

File No.: C89/1052  
18th November, 1991

To all U/G MME's

Dear Sir,

**RE: UNDERGROUND CONVEYOR SYSTEM FIRES**

Further to the recently issued Conveyor System Survey Report please find attached a summary of the conveyor fires investigated over the two (2) year period to 30 June, 1991.

A total of 18 fires were reported of which 10 were classified as having been initiated from faulty return idlers.

This information is provided to continue the current awareness program of conveyor safety which is being undertaken by the Inspectorate.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

File No.: Not Available  
Date: 19 July, 1988

Contractors Equipment on a Coal Mine Site  
Inspection - (Cranes)

As a result of a crane structural failure and the subsequent investigations highlighting shortfalls in external inspection procedures associated with mobile cranes etc., the mines in the Singleton North West area were encouraged to ensure contractors carried out regular inspections.

This was done by the individual mines notifying the various contractors of the inspection procedures required to be carried out by the contractor prior to that contractor's equipment being allowed on the mine site.

An example of a typical notification letter is attached for your information.

R L SMITH  
Inspector of Mechanical Engineering

L Roberts  
G Jervis  
J Bout  
R Hoerndlein

File No.: Not Available  
Date: 13 July 1988.

The Manager,  
<name>  
<address>

Dear Sir,

MOBILE EQUIPMENT USAGE ON SITE

The Coal Mines Regulation requires inspections to be carried out on equipment being operated on a minesite to ensure they can operate safely and are within their designed limits

My Section 103 submission to the department was made on the basis of equipment having external inspections carried out on a regular basis to the satisfaction of some statutory body.

It has been brought to my attention this is no longer a requirement for a large range of plant, some of which we hire on site. This includes, but is not limited to plant such as mobile cranes man lift baskets, all types grader backhoes compactors etc.

In the past, the above types of items of plant have come under general coverage of registered plant, which is no longer acceptable in the terms of my submission as, this covers only a roadworthiness check and not operational conditions.

All equipment must comply with, and operate under the Construction Safety Act 1912, No. 38; and the relevant amendments to this Act as a minimum requirement. In conjunction with this Act, a scheme called a 103, must be implemented to carry out weekly and annual inspections to ensure the equipment's integrity including pressure vessels inspections on units of 30 litres or more of capacity.

Annual Inspection

Inspection to be carried out annually to ensure mechanical integrity of the equipment by recognised professional personnel in this field.

Proof of this inspection must be available with the unit or previously supplied to (MINE) for computer file entry against a specific plant number.

Weekly Inspection

Inspection to be carried out on a weekly basis to ensure the operational integrity of the unit ie. visual inspection of components and testing of aids required for the operation of the unit.

Proof of this inspection must be available with the unit prior to commencement of work.

These requirements will be effective as of 1 September 1988 and will be a prerequisite of any equipment coming onto a minesite.

Yours faithfully

Mechanical Engineer in Charge.



## Notice A62 continues

File No.: Not Available

Date: 25 October 1988

### ATTENTION: MECHANICAL ENGINEER IN CHARGE

Dear Sir

As a result of an incident at a coal mine site, serious shortfalls were identified in external inspection procedures currently used by operators of hired mobile cranes and hoists.

At the last district meeting of Mechanical Engineers in Charge a monthly inspection form was discussed. It was agreed by those present to use this form as a monthly record of inspection when referenced to Section 103, Coal Mines Regulation Act, 1982. The final inspection form is attached for your reference.

It is suggested that each mine site adopt the form as part of the mine 103 Scheme, that you notify your regular crane / hoist hiring company of this fact and provide that company with copies of the inspection sheet.

It is intended that where mines adopt the inspection sheet it will be common across all those mines, ie. one current monthly inspection sheet -carried within the crane/hoist cabin, which. may go to several mine sites within the month, would be acceptable to the Inspectorate when referenced to the mine's 103 Scheme.

Adoption of the "common" monthly inspection sheet will reduce individual mine paper work, maintenance personnel time and enhance the safety of mobile crane/hoists within the NSW coal mining industry and elsewhere.

Should further information be required, please contact the District Inspector of Mechanical Engineering, Mr R L Smith on(065) 72 1899.

Yours faithfully

A P MORGAN  
Senior Inspector of Coal Mines

File No.: C93/0168  
Date: 26th May, 1993

Dear Sir,

**RE: DIESEL ENGINE EXHAUST EMISSION TESTING**

A program to audit the "undiluted and unconditioned" exhaust gas emissions from the mine fleet of diesel engine powered equipment is to be introduced for the District underground coal mines. The audit testing will be conducted by the Department's Mine Safety Group under the control of either the District Inspector or the Inspector of Mechanical Engineering for the mine under provisions of Sections 59 and 60 of the Coal Mines Regulation Act, 1982. There will be no charge levied by the Department for any costs associated with this audit process.

The purpose of the audit program is to more adequately demonstrate to the employees of the mine that the quality of the exhaust emissions from diesel engines is being maintained than may currently be apparent under the provisions of Clauses 23 and 37 of the Coal Mines Regulation (Transport - Underground Mines) Regulation, 1984.

It is proposed that the scope of the program would entail auditing at least one mine per annum in each of the Southern and Western Inspectorial Districts.

Would you please arrange for the mine employees to be made aware of the contents of this letter.

Yours faithfully

T. Abbott  
Senior Inspector of Coal Mines

Same letter also signed by A.P. Morgan

File No.: C91/0330  
Date: 10th June, 1992

Dear Sir,

**RE: HAULAGE OF COAL/MATERIALS VIA HIGHWAY TYPE TRUCKS AND  
TRUCK TRAILER COMBINATIONS**

In May 1991 a truck driver suffered a fractured femur when he fell from the top of a semi-trailer truck onto the ground. The accident occurred after the truck driver had covered his load prior to departure from the site onto the public highway. The truck driver was walking from the rear of his load towards the front of the trailer where the ladder is located. As he walked along the edge of the truck body, he removed loose lumps of coal that were outside the coal tarpaulin cover with his feet when he slipped and fell to the ground.

Accidents of a similar nature have occurred at coal mines whilst covers are being fitted and it is also known that accidents have also occurred during removal of covers at the delivery point. The potential for such accidents to result in fatal injuries is evidenced by the attached Abstract of Investigation for an accident of this type which occurred in the USA

In the interest of safety at coal mines alternatives to the manually operated cover systems commonly used, which require an operator to access the top of the tray body, should be investigated. It is requested that you advise the District Inspector for the Mine of the results of the investigation which should incorporate positive steps to reduce any risk of injury to personnel carrying out this activity at the mine site that is considered to be unacceptable. This is requested to be completed by 1 November 1992.

For your information systems are understood to be available where covers can be fitted and removed without the need for the driver to access the top of the truck trailer. In fact a system is known to exist whereby the truck driver can operate the cover mechanism remotely from within the cabin. A copy of photograph illustrating this system is attached which illustrates this system. This system is perceived to satisfy the recommendation incorporated in the US Abstract to prevent this type of accident.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

File no.: Not Available  
Date: 6th September, 1993

Letter to all Diesel Vehicle Manufacturer

Dear Sir,

**RE: MAINTENANCE FOR FLAMEPROOF DIESEL ENGINES**

For some years manufacturers and industry representatives have requested that workshops be approved for maintenance of flameproof diesel engines. The first step in such an objective is to have a document which specifies requirements of this activity.

A draft proposal has been issued by Standards Australia for comment and you are invited to participate in this process. A copy is attached and should you wish to participate and you are strongly encouraged to do so please forward any comments or endorsement to Standards Australia.

It is to be reiterated that provisions do not exist under the current legislation to approve of workshops to repair/maintain mechanical apparatus. However endorsement under a QA System or registration by the National Association of Testing Authorities (NATA) would be considered appropriate.

Yours faithfully,

L.J.. Roberts  
Senior Inspector of Mechanical Engineering

File Reference No.: C92/0874  
16th December, 1992

Attention: Mr. G.S. Miller - National Marketing Manager  
Company: A. Noble & Son Ltd

Dear Sir,

**RE: RESIN SOCKET CAPPING FOR WINDING ROPES.**

In reference to your request, dated 3 December 1992, seeking approval/endorsement of resin capping of winder wire ropes as an alternative to the existing white metal system in use at coal mines, I can advise that the alternative system appears to be suitable for use. This determination has been based on information provided in your submission, the results achieved with the use of resin capping at the Londonderry Testing Station for the destructive testing of wire rope samples and the Inspectorate's field experience with this type of termination for guy/boom stay wire ropes.

It is to be understood that acceptance of the resin capping process is confined to polyester resin type material supplied under the "WIRELOCK" trade name, as accepted by British Coal Corporation. Its use shall be confined to the applications as nominated by British Coal "Notes Guidance for the Resin Capping of Wire Ropes". The procedures contained in the Notes of Guidance shall be utilised to determine the competence of persons appointed to make such cappings as required under Clause 21(2) of the Coal Mines Regulation (Shafts and Roadways - Underground Mines) Regulation, 1984.

Please note that Clause 21 (6) of the above Regulation does not permit the use of non-metallic capping with ropes used in systems for transporting persons. In order to permit the use of "WIRELOCK" for this type of application it would be necessary for the mine to obtain an exemption from this Clause. This letter may be used as a basis to justify the granting of such an exemption.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering

File No.: M85/1478  
Date: 3 March, 1992

Dear Sir,

**RE: WINDER ROPE LIFE EXTENSIONS**

Further to the letter issued on 4 April, 1990 detailing the procedure for extending the service life of friction winder head and balance ropes beyond the period as nominated by the Coal Mines Regulation (Shafts and Roadways) Regulation 1984 the following information is also requested to be provided with any request:

- (ix) A favourable report from an independent wire rope expert advising that the rope is satisfactory for continued use for a nominated period.
- (x) Written certification by either the Mine Mechanical Engineer or Mine Manager stating that the rope is satisfactory for continued use for a nominated period.

This additional information has also been incorporated in an updated version of the original letter.

Your assistance in complying with these new requirements will assist with processing of any future requests.

Should you require further assistance please contact your District Inspector of Mechanical Engineering.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

attach:

File No.: M85/1478  
Date: 3 March, 1992

Dear Sir,

Re: WINDER ROPE LIFE EXTENSIONS

As you are aware, the Coal Mines Regulation Act 1982 limits the nominal acceptable period of service for friction winder head ropes to 2 years whilst friction winder balance ropes are limited to 3 years. Both these periods are, however, subject to extensions of time at the discretion of the Chief Inspector of Coal Mines, usually subject to certain conditions as deemed appropriate.

To allow for uniformity this Department has generally granted these extensions for a period that will result in their expiry on the 31st January annually. This allows Mines to utilise, what was in the past, the traditional Christmas shutdown period to change out ropes.

As a result of this the Inspectorate is often inundated with numerous extensions of rope life requests in December and January of each year.

A great many of these requests are improperly submitted with not enough consideration being given to the lead time required for processing of the necessary documentation, nor with the correct references to File Numbers where available. Failure to provide current Engineering data and test results combined with statutory inspection copies is an added problem.

In an attempt to alleviate these problems and hence provide the most efficient service possible, the Department has formulated a new procedure for processing rope life files. Combined with certain recommendations that follow in this letter for attention by you at Colliery level, it is also envisaged that, over a period of time, sound statistical data relating to rope life history and performance levels will be accumulated.

This information may, in the future, be able to provide engineering support to those mines who wish to leave ropes in service for periods in excess of five years. This new procedure will also apply for the recording of service histories of winding and haulage ropes as referred to in Clause 16 of the Shafts and Roadways - Underground Mines Regulation.

The overlying point that must be realised is that correct references must be made to file numbers on ALL communications relating to a rope or set of ropes. The only communication where this will not be possible will be the initial notification from the Mine to the Inspectorate relating to the fitting of a new rope. The Department will inform the Mine of the new file number upon receipt of the Manager's notification.

A flow diagram is attached summarising the new procedure to be followed. By way of explanation the following points are made.

- (1) Upon deciding to change a rope, identify the most worn and/or damaged sections and select three of these sections for sampling and non-destructive testing.

(A) : FOR THE OLD ROPE(S)

- (2a) Remove the old rope(s) and cut out as selected suitable length samples to allow for a full report to be done on the strength and condition of each section. Identify each section for future reference detailing the defects existing within that sample at the time of removal, as observed by N.D.T. and visual examination.
- (3a) Obtain tests reports referenced to your identification system and prepare a summary for submission to the Inspectorate and for your own files.
- (4a) The Inspectorate will attach this information to the appropriate file then close this file and retain it for future reference.

(B) : FOR THE NEW ROPE(S)

- (2b) Upon fitting the new rope(s) notify the Inspectorate in accordance with Clauses 12(3) and 16(3) of the Shafts and Roadways - Underground Mines Regulation.
- (3b) Arrange an initial N.D.T. to be carried out and forward the results to the Inspectorate.
- (4b) The Inspectorate will initiate a new file for the new rope(s) and attach his notification to the file.

An acknowledgment of receipt of the notification will then be sent to the Mine detailing the new file number that must be used in any future correspondence relating to the new rope(s) during their period of usage.

With reference to requests for extensions of rope life, the following information must be supplied with the manager's communication:

- (i) File Number
- (ii) Details of the rope(s) concerned, including dates of installation.
- (iii) Number of duty cycles and tonnage handled (where possible).
- (iv) A copy of a N. D. T. report not more than 2 months old.
- (v) Copies of recent Section 103 Inspections for ropes and winder apparatus; specifically the six most recent daily, weekly and monthly reports.



- (vi) Any relevant additional data, ie., re-anchoring dates, lubrication used.
- (vii) The period of extension required.
- (viii) The proposed date of the rope changeout.
- (ix) A favourable report from an independent wire rope expert advising that the rope is satisfactory for continued use for a nominated period.
- (x) Written certification by either the Mine Mechanical Engineer or Mine Manager stating that the rope is satisfactory for continued use for a nominated period.

To assist in these submissions it is suggested that each mine develop a standard proforma to tabulate the above requirements for any submissions to the Inspectorate.

In all cases it should be recognised that incomplete applications will be returned to the Mine for correction, leading to delays in the assessment of that particular application.

Your assistance in the introduction of this new procedure is greatly appreciated.

Should you require further assistance or clarification, please contact your local Inspector of Mechanical Engineering.

Yours faithfully,

L J Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

File No.: Not Available  
Date: 3 November, 1993

TO: ALL COLLIERY MANAGERS

Dear Sir,

RE: IN-SEAM AUGERING - IGNITION HAZARD IN UNDERGROUND  
COAL MINES

Interest has been shown at several underground collieries in NSW in the use of large diameter in-seam augers. A report prepared by the University of NSW studied the use of a 900 mm nominal diameter auger in coal. The report concluded:

- i) The use of an auger for in-seam boring must be regarded as having the potential to cause a methane ignition.
- ii) The chances of the several events required for an ignition occurring simultaneously should be amenable to risk assessment.
- iii) Doubtless, some application will be found to involve negligible risk. However, where significant risk does arise it might be capable of being managed through machine design modifications and imposing a strict operating specification.

I accept these conclusions and now advise that use of in-seam auger equipment in underground Coal Mines, even for trial purposes must be preceded by a thorough risk assessment. Such an assessment will need technical input from the Coal Mines Inspectorate as well as suitably qualified engineers with international expertise in the design of rock cutting systems.

If you are contemplating the use of in-seam augers please liaise with your District Inspector of Coal Mines so that a risk assessment program can be initiated with the minimum of delay.

Yours faithfully

B R McKensey  
Chief Inspector of Coal Mines

File No: C93/0157  
Date: 6 April 1994

Dear Sir

**RE: ANTI-FRICTION BEARING CAGE MATERIAL**

For your information investigations conducted into reportable fires which have occurred in underground coal mines have indicated that a large percentage of these fires have initiated from excessive heat generated by anti-friction bearings fitted to conveyor pulleys and idlers that have or are in the process of failure. The investigation process has identified that in many cases the bearings were fitted with non-metallic cages. This material is generally polyimide which when subjected to excessive heat will melt and may extrude from the bearing assembly and provide a source of heat which could possibly ignite coal dust. Whilst it is accepted that bearing lubricant could also initiate a fire it would seem to be appropriate to consider the additional risk which may be present when such cage material is used in lieu of the conventional metallic cages.

Enquires have revealed that British Coal have for reliability reasons prohibited the use of polyimide caged bearings in electric motors. The reliability of such bearings is suspect when:

1. Contamination of the grease occurs.
2. Speeds exceed 500rpm.
3. Temperatures exceed 120 degrees Celsius C (grease without additives).
4. Temperatures exceed 100 Celsius (grease with additives).
5. Axial shock loads to shaft can occur.

It is recommended that this matter be taken up with your bearing supplier in order to assess whether the continued use of such bearings in the underground environment is warranted.

Yours faithfully

B.R. McKensy  
Chief Inspector of Coal Mines

File No.: C90/0018  
Date: 19th July, 1993

Dear Sir,

**RE: VIBRATION RELATED BACK INJURIES**

Please find attached final report entitled "Whole Body Vibration in Underground mining" prepared by the Centre for Safety Science of the University of New South Wales. The report was included as a presentation at the Third Mechanical Engineering Safety Seminar held in April.

This report is the culmination of a research project undertaken by the University which has been sponsored by the Department of Mineral Resources. The project was initiated to investigate the nature and extent of vibration induced back injury to mobile equipment operations in both the underground and open cut coal mines in New South Wales.

A report on the initial stage of the project which was made available to industry in May 1991 qualified the extent of back injuries in the NSW Coal Mining industry for a 4 year period. The report also identified the direction that the 2nd stage of the project should undertake.

The final report which incorporates the 2nd Stage's findings concluded that vehicle and seating design together with operating speed and roadway surface quality are all factors which can contribute to head, neck and back injury to vehicle operators.

This report should act as a catalyst for the industry and vehicle manufacturers to focus on development of a strategy. to improve the ride quality for operators of rubber tyred vehicles in both underground and open cut coal mines.

In addition a copy of a paper presented by Mr. J. Savery at the Safety Seminar is also included as it provides further evidence to support the need to improve vehicle operator comfort as an occupational health and safety issue.

Your faithfully,

B.R. McKensy  
Chief Inspector of Coal Mines

File No.: : C93/0083  
Date: 25 January, 1994

Dear Sir,

**RE: UNDERGROUND CONVEYOR STOP SWITCHES**

It has been brought to the attention of the Coal Mines Safety Advisory Committee that some underground coal mines have embarked on a program to install wire rope lanyard switch systems on conveyors as an alternative to the more common used distance spaced switches. Whilst the committee members support the intent to increase the accessibility of personnel in being able to activate a stop switch they have agreed that the following statement should be issued to industry in relation to conveyor stop switches.

1. Clause 24(1) of the Coal Mines Regulation (Belt Conveyor) Regulation, 1984 requires that all belt conveyors be provided with an easily accessible means of stopping the belt at distances not more than 20 m apart.

This requirement is normally complied with by the installation of fixed belt switches.

Note: The purpose of this provision is not clearly identified.

2. Part 4.8.7.1 of the Australian Standard AS 1755 - "Conveyor Safety Code" requires all conveyors and conveyor systems to be provided with manual emergency stop controls. This is a mandatory requirement of the Standard.

In addition conveyors may be equipped with manual normal stop controls for the purpose of production or other stopping functions.

Lanyards are considered to be suitable for both of the above functions.

For the purpose of clarity the definition for each type of stop control referred to in AS 1755 has been reproduced below:-

Emergency stop control - a device which stops a conveyor system in the shortest practicable time.

Stop control - a normal stop control which is electrically wired directly in the circuit or in the starting control circuitry, resulting in a fail safe immediate or sequence stopping of the conveyor system.

3. It is considered that stop switches currently installed on underground conveyors are utilised for both functions ie. normal and emergency stop controls. Clearly the requirement of Clause 24(1) has been met however the requirements of AS 1755 have not.

4. AS 1755 requires that emergency stop controls be uniform for the complete conveyor installation and for all conveyors that comprise a conveyor system.

Note: This is interpreted to mean that all such switches in an underground mine conveyor system must be of the same type.

Appropriate signage is required at each switch.

5. The degree of guarding required by AS 1755 to protect personnel from injury is at a level which is in excess of that considered appropriate for underground coal mines.

Note: Guarding to AS 1755 may give rise to other potential hazards eg. accumulation of fines around a return belt roller.

6. Where lanyards are installed for emergency stopping of conveyors they must be installed correctly.

For guidance the Australian Standards AS 4024 - "Safeguarding of Machinery" Part 6.3.7 and AS 1755 - "Conveyor Safety Code" Part 4.8.7 should be adopted. In particular AS 4024 Part 6.3.7.4 partially states the following:

"A pull on the wire in any direction, or breakage or slackening of the wire, shall bring the machine to rest."

This is of critical importance for conveyor installations.

AS 1755 is to be reviewed by Standards Australia and the Committee suggests that coal mines give consideration to active participation in this process. The Committee's view is that the mining industry should have a Conveyor Standard which is appropriate for both underground and surface operations and which is not encumbered with requirements that are specific for the needs of other industries.

Yours faithfully,

B.R. McKensy  
Chief Inspector of Coal Mines  
& Chairman, Coal Mines Safety Advisory Committee

File No.: C93/0246  
Date: 29th November 1993

Dear Sir,

Re WINDER AND HAULAGE ROPE CAPPINGS

Subsequent to the Significant Incident Report No 93/5 issued in September 1993 relating to the systematic failure of a drum winder, it has been determined that the efficacy of winding rope attachments should be reviewed. This is of particular concern where the rope attachment is of the wedge cappel type design which was involved in the above referred incident. The type of lubricant used between the wedge and limb components was identified to be a critical element in the attachment's capacity.

The SIR included recommendations regarding the mechanical strength, friction factor and an indication that destructive testing should be considered for such components. Whilst these issues are undoubtedly currently being pursued it is appropriate that a formal program be adopted to at least establish that rope/attachment assemblies satisfy the requirements of a proof load test. Testing conducted on the assembly type involved in the incident resulted in non-conformance as slippage occurred at the proof load setting. Such proof load testing will not be detrimental to any componentry which would affect its future use providing that it satisfied the requirements of the standard. The scope of the test program specified herein is to cover all types of winding rope attachments used in shaft and drift haulage systems.

Consequently in order for the mine mechanical engineer to demonstrate compliance with the requirements of Clause 21 of the Coal Mines Regulation (Shafts and Roadways - Underground Mines)

Regulation, 1984, I require that the following criteria be met, where applicable, for each winding apparatus at the mine:

1. All winders and rope haulages which use a single rope capped with a split wedge type rope cappel for the transport of a conveyance shall have the rope/attachment assembly proof load tested by 1st April 1994.
2. All other winders including friction winders and rope haulages not included in the above shall have the rope/attachment assembly proof load tested by 30th June 1994.

Note: Where multi-rope friction winders are in service it is only considered necessary to conduct the test on one (1) rope/attachment assembly.

## Notice A72 continues

In order that the test program be conducted in an uniform manner the following matters shall be observed:

- (a) For drum winders the proof loading shall be applied to the capped rope assembly as normally used on the winder. The assembly shall not be disassembled between removal from the winder and the proof load test. It is suggested that the test be conducted prior to the normal destructive rope testing as required by the regulation. Therefore additional rope should be removed when the rope with the assembled capping is removed to ensure that 2m of rope is available for the destructive test to be carried out after completion of the proof load test.
- (b) For friction winders a spare capping and wire rope of the size and type used on the winder shall be assembled by the personnel who normally carry out this work at the mine. This assembly shall then be proof load tested.
- (c) All proof load testing shall be conducted by an approved Testing Authority.
- (d) Proof load testing of each assembly shall be to 2.5 times the safe working capacity of the capping in accordance with AS3637.1.

The rate of application of the load shall be identical with that used for destructive testing of ropes and the relevant Australian Standard for tensile load tests.

- (e) Any movement of the rope relative to the capping shall be progressively measured and recorded as the load is increased. In addition other dimensions shall be measured and recorded in accordance with the capping manufacturer's procedure.

The type of lubricant used and the surface finish of mating components shall be also recorded where applicable.

- (f) A dimensional check of the capping relative to the design drawing shall be conducted.
- (g) A design check of the capping in relation to its application shall be conducted by a suitably experienced person.
- (h) The mine mechanical engineer is to forward the results of each test to the inspector of mechanical engineering.

In addition to the above test program it is also intended to arrange for the ultimate testing of some rope/attachment assemblies. A decision on this matter will be finalised after completion of the proof load testing. However the option is available for ultimate load testing to be conducted in lieu of proof load testing. This should be discussed with the inspector of mechanical engineering.



Whilst reference has been made to the requirements of the Coal Mines Regulation Act, the obligations of employers under Section .15 of the Occupational Health and Safety Act, 1983 to ensure the health, safety and welfare of their employees also need to be considered in determining a response to the above advice regarding ultimate load testing.

Information on detailed results of investigation and testing completed to date are available upon receipt of written request to Mr. W. Koppe at the above address.

Also please find enclosed Guide for Recording of Rope Capping Details prepared to assist the mine mechanical engineer to ensure that a quality records system is maintained for rope cappings.

Yours faithfully

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

GUIDE FOR RECORDING ROPE CAPPING DETAILS

An auditable system of recording the manufacturing, inspection, testing and maintenance details of each rope capping should be available at the mine. The system shall generally include but be not limited to the following records:-

- (a) manufacturer's identification and date of manufacture,
- (b) the Individual unique identification number of each rope capping,
- (c) the safe working load,
- (d) date of proof load test and a record of results,
- (e) rope type that capping is suitable for,
- (f) rope diameter that capping is suitable for,
- (g) details of design check,
- (h) record of heat treatment(s),
- (i) record of last metallurgical examination,
- (j) requirements stipulated by the manufacturer,
- (k) type of lubricant to be-used (if applicable),
- (l) If applicable, date of removal of incorrect lubricant which may be imbedded in the surface of the cappel. The method shall be as recommended by the manufacturer.

NOTE: Some of the above are required by AS 3637.1 - 1989.

File No.: Not Available  
29 January 1992

Dear Sir

**RE: FLAMEPROOF DIESEL ENGINE SYSTEMS**

As you are aware legislation has been promulgated which enables "Accredited Assessing Authorities" to issue approvals under the Coal Mines Regulation Act, 1982. An integral part of the criteria which is currently being finalised whereby such authorities can be accredited to issue approvals for mechanical apparatus on behalf of the Chief Inspector of Coal Mines is the provision of a competent person category.

A competent person is someone formally recognised by the Inspectorate as possessing the relevant expertise to assess the suitability of mechanical apparatus against specified design/performance criteria such as Australian Standards for subsequent approval.

With the issue of the inaugural mechanical certificates of competency it is proposed to conduct an evaluation of this alternative form of assessment whilst the requirements for AAA's are being finalised. Consequently from the 1 March 1992 all applications for supplementary approval of Diesel Engine Systems (MDA DES) will be required to be assessed by a person classified as competent in this approval category prior to lodgement of the formal application. All such assessments for approval will need to demonstrate compliance with the current issue of AS3584- Flameproof Diesel Engine Systems for Underground Coal Mines.

The effectiveness of this alternative arrangement will be monitored to identify if changes are required to be made prior to incorporation of the competent person concept as an integral part of formally accrediting authorities to issue approvals for mechanical apparatus.

Should clarification be required for any aspect of the above please contact Mr. W. Koppe (Phone No: 901 8551).

L.J. Roberts  
Senior Inspector of Mechanical Engineering

File Ref: C94/0285  
Date: 2 August, 1994

To: Mr. Frank Jones  
Director of Mines

Dear Sir,

Re: SAFE OPERATION OF ELEVATING WORK PLATFORMS

In May 1992 whilst a contract tradesman was installing electrical conduit at an open cut mine workshop building he was fatally injured when he fell 18 m onto a concrete floor. He had been elevated to his worksite in the work platform of a "cherry picker" when he apparently climbed out of the platform to continue with his work activity when he fell. He was not attached to the work platform by a safety belt at the time of the accident.

For your information and direction you are advised that there is an Elevating Work Platform Association of Australia. One of the objectives of the Association is to set safety and educational standards for the industry they represent. Under this charter the Association has published a booklet entitled "SAFE WORK PRACTICE FOR ELEVATING WORK PLATFORMS". A copy of this booklet is enclosed to assist the coal mining industry in raising the safety issues related with the operation of this type of equipment.

Further copies at a nominal charge may be obtained from the:

Elevating Work Platform Association of Australia  
Private Bag 938  
NORTH SYDNEY 2059

Tel: (02) 957 5792 Fax: (02) 956 7004.

The association have a Training and Instruction Programme which is available for non-members of the association as well as members.

It is recommended that a system be put in place if not already available at the minesite to ensure that all mine and contract employees who are or will be required to operate such equipment are trained to a degree comparable to that provided by the above Association and have been so endorsed.

You are also advised that any power operated system attached to large mobile earthmoving equipment for the purpose of providing safe access to operators and service personnel is not considered to be an elevating work platform. This has been determined on the basis that the design criteria does not provide for personnel conducting work related activities whilst onboard the device. However certain aspects of the booklet are considered to be appropriate for inclusion in any formal training provided to those personnel required to operate such equipment.

Yours faithfully,

B.R. McKensey  
Chief Inspector of Coal Mines

File No: C94/2081  
Date: 30 November, 1994

Dear Sir

**RE: OPERATION OF MINING EQUIPMENT BY REMOTE CONTROL**

Standards Australia have recently published AS4240-1994 : "Remote Controls for Mining Equipment". This standard was prepared by Technical Committee EL/23, Electrical Equipment in Coal Mines and is applicable to the design and use of remote controlled equipment in both the underground and open cut sectors of the coal and metalliferous mining industries.

The publication of this standard should be of significant interest to those underground coal mines in NSW that currently operate or intend to introduce the types of remote controlled mining equipment covered by this standard. Such equipment includes continuous miners, breaker line supports, longwall roof supports and shearers.

It is recognised that some types of the above listed equipment have been in operation in NSW coal mines for some years, however the introduction of remotely controlled continuous miners has only occurred relative recently. Whilst the installation of remote control systems to continuous miners may remove some of the more traditional hazards associated with these machines alternative types of hazards have been identified through risk assessment processes and from in service operational experience.

The Department has endeavoured to ensure that any such hazards are identified and controlled by recommending that "Operability Risk Assessments" be conducted prior to the introduction of remotely controlled continuous miners. Whilst there have been some mishaps that have been brought to the attention of the Coal Mining Inspectorate no major events have yet been reported by any NSW coal mines . However there have been two(2) fatalities associated with the operation of this equipment in underground coal mines in other states. Brief details of these are:

- (a) A cable handler was pinned between the rib and the conveyor boom of the continuous miner (a copy of the Significant Incident Report issued by the Western Australian Inspectorate is attached), and
- (b) Whilst endeavouring to avoid being injured by a rib spall a miner driver was caught by the cutter drum.

Fatalities have not been limited to the use of this particular type of remotely controlled equipment as on two (2) known occasions operators of LHDs in underground metalliferous mines have been fatally injured.

It is recommended that all coal mines operating such equipment undertake a review of the design and operational aspects of their systems by using the Australian Standard to assess their efficacy in the provision of a safe working environment. It would be expected that equipment manufacturers would actively participate in this review under the ambit of the provisions of the Occupational Health and Safety Act, 1983.

## Notice A75 continues

A copy of AS4240 has been attached to all copies of this letter specifically addressed to all managers of underground mines. Adoption of the Standard should be considered by all sectors of the industry as the "best practice" guide for such types of equipment.

The distribution of this and all future letters of advice and direction of this type has been expanded to include Chief Executive Officers of coal companies, mine workplace OHS Committee Chairpersons, other relevant mines statutory personnel and employee representatives.

Yours faithfully

Bruce McKensey  
Chief Inspector of Coal Mines

DEPARTMENT OF MINERALS AND ENERGY WESTERN AUSTRALIA

SIGNIFICANT INCIDENT REPORT No. 42

REMOTELY OPERATED MACHINERY - FATAL ACCIDENT

**INCIDENT**

A miner died from injuries sustained when crushed between the slow conveyor of a remotely operated coal cutting machine and the side wall of a heading.

The accident occurred while the machine was tramping in reverse under remote control operation. The deceased was in the process of releasing the machine's trailing cable from overhead support pulleys. He was crushed when the machine suddenly slewed from the intended direction of travel.

**CAUSE**

Investigations as to what caused the machine to slew in an uncontrolled manner are still being investigated. However, it is apparent that the deceased was working in close proximity to the rear of the machine at the time.

**COMMENTS AND PREVENTATIVE ACTION**

Accidents of this type can be prevented by rigidly adhering to a system of work which positively identifies danger zones around machinery and safe operating positions for all persons in the vicinity.

In general, it is considered vital that work methods be determined from a detailed assessment of all safety risks involved, and take into account the very real possibility of unplanned machine movement which may arise from component failure,, ground conditions, or operator error.

Comprehensive guidelines relating to the design of remotely operated mining equipment are currently being developed by Standards Australia and are expected to be finalised by mid-1994.

G. J. Dodge  
Acting State Mining Engineer  
1 February, 1994  
FMV8240P:M



File No.: C93/0195  
Date: 24th June, 1993

Dear Sir,

**RE: SHAFT WINDING SYSTEM APPROVAL**

The Coal Mines Regulation (Shafts and Roadways) Regulation, 1984 under Clause 7 requires that any mechanically operated winding or rope haulage apparatus used for transportation of personnel through any shaft or roadway be approved.

The attached Notice - "Specification of Requirement of Approval - Powered Winding System", which was gazetted on 18th June 1993, requires that a documented Risk Assessment be provided with any application for approval of a powered winding system or any variation to an existing approved system. This requirement specifically covers winding systems operating between the surface and underground and includes:

- (a) shaft sinking projects, and
- (b) winders whose prime function is the transportation of materials as personnel have to be transported to perform duties such as shaft inspections and accompany materials that are being transported.

The Notice is to be displayed on the mine notice board for a minimum of 30 days to permit its contents to be viewed by employees at the mine.

Yours faithfully,

L J Roberts  
Senior Inspector of Mechanical Engineering for Chief Inspector of Coal Mines

DEPARTMENT OF MINERAL RESOURCES

COAL MINES REGULATION ACT, 1982  
POWERED WINDING SYSTEM

Papers: C93/0195

Date: 1 June 1993

It is hereby notified that the Chief Inspector of Coal Mines, pursuant to the provision of Clauses 6(6) and (7) of the Coal Mines Regulation (approval of Items) regulation 1984 as amended specifies as being required to be approved generally any powered winding system or any modification or extension to any powered winding systems and which is used to transport persons or materials between different levels from the surface to underground of an underground coal mines where any of the following criteria are met:

- 1) the powered winding system is composed of items or apparatus which fall within the scope of interpretations contained in Part 1 Coal Mines Regulation (Shafts and Roadways) Regulation 1984, as amended,

and

the powered winding systems falls within the scope of interpretation of either the Coal Mines regulation (Electrical - Underground Mines) Regulation 1984 as amended or the Coal Mines Regulation (Mechanical - Underground Mines) 1984 as amended.

- 2) the powered winding system is modified or extended to effect changes to the controls or ratings or means of protection from any hazard associated with the safe operation and the maintenance in safe working order of the powered winding systems.

Approvals issued under this provision shall be based on a documented risk Assessment which shall be provided by the applicant at the time of application for approval. the risk assessment is required to identify all of the hazards to health and safety which arise out of the operation of the powered winding system and to rank the assumed risk associated with each hazard after protective measures have been considered or adopted.

Any document Risk Assessment which is provided in pursuance of approval under this provision may be the subject of an independent audit of the methodology used to assess the risks.

A.A. Reczek  
Senior Inspector of Electrical Engineering  
for the Chief Inspector of Coal Mines

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for the Chief Inspector of Coal Mines

File No.: C93/0094  
Date: 20th October, 1994

All Mine Managers

Dear Sir,

Re: CUTTING AND WELDING EQUIPMENT USED AT ALL PARTS OF ALL  
COAL MINES AND ASSOCIATED COAL PREPARATION PLANTS

In accordance with Occupational Health and Safety requirements for the use of cutting and welding processes in general industry it is considered appropriate for the attached Notices of Specification and Requirement to be adopted by the coal mining industry.

It is to be noted that the only specific requirements in the existing regulations for cutting and welding practices on the surface of mines relates to the standard for the manufacture of gas cylinders.

The rationale for these Notices is based on the following:-

1. Flash back arrestors are recommended for general industry use by Australian Standard AS 1674.1 and by the Welding Institute of Australia as stated in their Health and Safety in Welding WTIA Technical Note 7.
2. Incidents that have occurred at Australian Mines which have or could have resulted in serious injury.
3. Electric shock from the use of welding equipment and fires from the use of cutting equipment are still occurring hence the Australian Standards for Fire Precautions and Electrical Safety have been specifically included to ensure compliance with the minimum standards for general industry.
4. Recent approvals for welding and cutting underground have already included these requirements as conditions of approval.
5. Reference to the DIN standard has been included because it is the only known technical documentation for flash back devices.

Note: The Workcover Authority Londonderry Occupational Safety Centre should be contacted if testing to the DIN standard is required.

6. Australian Standard AS2745-1984 - Electrical Welding Safety which is referred to in Clause 35 of Part 5 of the Coal Mines Regulation (Coal Preparation Plants) Regulation 1991 has been superseded by AS1674.2-1990 “ Safety in welding and allied processes - Part 2: Electrical”.
7. A minimum standard is considered necessary in order to ensure safe work places.
8. Flash arrestors and non return valves should be selected so they do not hinder the normal flow of gas.

In addition to the above mandatory requirements a Guide-line for Cutting and Welding has been prepared to assist the Management of Mines and Declared Coal Preparation Plants in formulating a scheme for the safe use of this equipment. A copy of this document Reference No. MDG 25 is enclosed.

Yours faithfully,

B R McKensey  
Chief Inspector of Coal Mines

File No. CM88/00522  
Date: 13th November, 1991

The Mine Mechanical Engineer

Dear Sir,

Re: SHUTTLE CAR CABLE ARCS

A summary of all reportable shuttle car cable arcs for the two (2) year period from 1 July 1989 to 30 June 1991 has been extracted from the Inspectorate's records and is enclosed for the purpose of information.

Review of the records for the period resulted in identifying that shuttle car cable arcs contributed to:

- (a) 65% of all reportable "Arcs in Hazardous Zone;"
- (b) 33 1/3% of all reportable Dangerous Occurrences at Underground Coal Mines.

For further information regarding the review refer to Appendix I.

It is acknowledged that there has been a downward trend in the number of this type of occurrence over the last five (5) years as shown in the Table below

YEAR	NO. OF S/C CABLES ARCS
1986/87	65
1987/88	61
1988/89	33
1989/90	49
1990/91	37

However, whilst it is noted that the number of cable arcs caused by mechanical aspects of the cable reeling mechanism have also reduced roughly in proportion to the above trend, instances of deficient mechanical maintenance practices continue to occur.

Attached as Appendices II and III are detailed of the summaries for each of the last two (2) years. It is to be noted that the "Sub-System" Category shown in these summaries has been included as a means of classifying the main "contributory factor" for each incident. For description of each the "Sub-System" categories refer Appendix IV and for collation of shuttle car arc reportables in this category refer Appendices V and VI.

The information contained herein is not totally related to mechanical engineering matters and as such it is requested that it be made available to the Manager.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering

File No.: M88/0612  
Date: 31st January, 1990

The Manager

Attention: The Mechanical Engineer In Charge

### **Improvements To Shuttle Cars**

As you are aware the Coal Mining Inspectorate has issued Mechanical Design Guidelines for the Construction of Electric Powered shuttle cars, the operative version being dated 12 September 1989. The intent of these guidelines is to ensure that industry has shuttle cars which operate not only efficiently but safely. You are advised that Joy Manufacturing have just completed building a Model 15SC Shuttle Car which meets virtually all the requirements of the new guidelines as they currently exist.

This shuttle car is fitted with powered brakes, a constant pressure cable reeling system, tandem wheel stud safety clamps, a load locked hydraulic cylinder for boom raise, modified hungry boards outrigger brackets, modified cable reeling hairpin and compartment. The development of this shuttle car has been the result of continuing involvement with the Inspectorate to ensure that reportable incidents involving shuttle car operations are minimised, whilst operator availability is maximised. To allow Mine Management and Engineers the opportunity to inspect this machine, Joy Manufacturing have agreed to allocate one or two days at Moss Vale to show interested parties the new shuttle car. The proposed dates will be early in February 1990 and expressions of interest should be made to Mr. Gerry De Velde of Joy Manufacturing no later than 7th February who will co-ordinate the visits.

It is suggested that at least one representative from each Mine participate in the proposed visit as many of the features on display are those which your local Inspectors of Mining, Mechanical and Electrical Engineering are requesting to be fitted on your existing shuttle cars, and have in fact been successfully trialed individually at several different mines.

Yours faithfully,

R.W. Scott  
Acting Chief Inspector of Coal Mines

File No.: Not Available  
Date; 27 February, 1995

Dear Sir,

**Definition of FIRE BELOW GROUND**

Inconsistent reporting of outbreaks of fire below ground is a concern to the Inspectorate.

The Coal Mines Safety Advisory Committee has considered the issue and resolved that the following definition is consistent with the intent of the legislation.

**A fire is an unplanned burning or combustion, manifested by the evolution of light and heat.**

I hereby direct that for the purpose of Clause 6(b), Coal Mines Regulation (Notification & investigation of Accidents and Dangerous Occurrences - Underground Mines) Regulation, 1984 an outbreak of fire is so defined.

Yours faithfully

B R McKensey  
Chief Inspector of Coal Mines



File No.: M80/1566  
Date: 3rd June, 1982

Colliery Manager

Dear Sir,

Use of Venturi Ventilators

Venturi ventilators are being increasingly used to prevent methane accumulations, to assist ventilation and for gas drainage purposes. They are not regarded as being mechanical contrivances designed to assist ventilation under the terms of General Rule 3, Section 54, Coal Mines Regulation Act, 1912, as amended, but it is considered that their use should be controlled.

The following guidelines for use of such venturi ventilators are hereby brought to your attention for appropriate action.

1. The term "venturi ventilators" means all types of air ejectors or blowers or air movers, other than fans, operated by compressed air used for the purpose of ventilation, gas drainage or pressure equalisation in chambers.
2. No venturi ventilator shall be used underground unless it is so designed and installed so that the ratio of induced air to compressed air is at least 5:1.
3. No person other than a deputy, or an official of the mine authorised by the Manager, or a person instructed by such a deputy or official and under his supervision, shall start, stop, remove or alter any venturi ventilator.
4. A deputy or authorised official shall not start, or cause to be started, a venturi ventilator unless he is satisfied that it shall be safe to do so.
5. Care shall be taken to ensure that all venturi ventilators are sited so as to prevent any possible of air recirculation.
6. Venturi ventilators, including any attachments or protective coating are made of electrical conducting materials and so connected to earth to prevent the accumulation of electrostatic charges.
7. Noise levels shall not exceed 90 decibels under any operating conditions.
8. The compressed air inlet to the airmover shall be fitted with an isolating valve and precautions taken to prevent the entry of oil and fine material.

9. The supplier shall provide technical data for each venturi ventilator supplied with details of the gap setting, induction ratios and performance curves for varying air pressures.
- 10 Exposed aluminium or light alloys shall not be permitted.

M .J. MUIR,  
Chief Inspector of Coal Mines

File No. C89/1048  
Date: 11th may, 1995

Dear Sir,

**RE: SPLICING OF FRAS CONVEYOR BELT**

At the meeting of the Southern and Western District Mine Mechanical Engineering held on 10th May 1995 the matter of splicing material identification was mentioned.

For the clarification of all Underground Coal Mine Mechanical Engineers the following information is provided:-

1. Splicing Materials  
Australian Standards for Textile Reinforced and Steel Cord Conveyor Belting, AS1332-1991 and AS1333-1994 respectively, under Clause 3 requires splicing materials to be identified by use of coloured interleaves.
2. Splicing Steel Cord Belting  
Australian Standard AS3552-1980 is a guide to splicing and is intended to be used by personnel involved in supervision of belt splicing activities.

It is recommended that consideration be given to the adoption of the above references for all conveyor belt splice related activities at the mine.

You are also advised that for the purposes of Clause 17 of the Coal Mines Regulation (Belt Conveyor) Regulation, 1984, hot or cold splice joints are approved if the splice materials are identical with those used in the construction of the approved conveyor belt. Splice joints utilising alternative materials would require the issue of a discrete approval.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering

File No.: C95/0232  
Date: 14 June, 1995

Dear Sir,

**Re: Roof Bolter Leg Thrust Control Levers Guarding**

Over a period there have been a number of accidents resulting in serious injury caused by inadvertent operation of the leg thrust control. The most recent resulted in the operator sustaining a fractured cheek bone in March of this year.

In each case the fault has been traced to the control lever accidentally being activated by contact with the ground or equipment.

In the past it was stipulated to have the handle shorter than the leg and to provide a shroud to protect the controls. The shroud on the machine involved in the accident was not adequate and it was still possible for the control to be pushed into the "on" position if for example the bolter was accidentally dropped.

In the interest of safety you are advised to consider your design of the existing control shroud and improve it so that is effective even if the bolter is mishandled o dropped.

Yours faithfully

L.R. Roberts  
Senior Inspector of Mechanical Engineering

File No.: C93/0298  
Date: 19th September, 1995

Dear Sir,

**RE: MACHINE MOUNTED DRILL INJURIES**

The injuries to persons resulting from the use of machine drilling rigs has recently been reviewed by Inspectors of Mechanical Engineering. Coal Mining Inspectorate and Engineering Branch, Department of Mineral Resources.

**1 Summary of Review**

- 1.1 The use of machine mounted drilling rigs as a replacement for hand held rigs has resulted in a significant reduction in back injuries.
- 1.2 Different but more serious accidents can occur with machine mounted drill rigs.  
Refer  
  
Appendix A - Selected case histories of injuries associated with machine mounted drill rigs for NSW Coal Mines.  
  
Appendix B - Significant Incident Report - Operator Injured by Drilling Rig - NSW Coal Mines.  
  
Appendix C - Abstracts of Investigations of Fatalities at USA Coal Mines, (slide No.22, slide No. 23, and slide No. 25) associated with rubber tyred or track mounted drilling rigs.  
  
Appendix D - Safety Notice Information Bulletin No. 49 dated March 1994, as issued by J.H. Fletcher & Co.  
  
Appendix E- U.S Bureau of Mines; Notice to underground Mine Operators and Users of Fletcher Roof Bolting machine, dated March 1994
- 1.3 A general guideline which addresses the foregoing safety issues is not available.
- 1.4 Some types of injuries are common to both hand held machine mounted drill rigs. (Refer Appendix F).

**2. Recommendations :-**

- 2.1 The enclosed information should be reviewed by mine management and relevant proactive measures taken at all locations where this type of equipment is used.
- 2.2 The enclosed information should be displayed on the Colliery Notice Board and other relevant locations at each mine where this type of equipment is utilised.
- 2.3 Senior management of coal mines where this type of equipment is used should assist in the drafting of a safety guideline for the design and operation of machine mounted drilling rigs by contacting Inspector of Mechanical Engineering, Mr R. Hoerndlein; contact number (042) 268 342 or fax (042) 268 343.

B.R. McKensy  
Chief Inspector of Coal Mines

## APPENDIX A

### NSW Coal Mines

#### Selected Case histories - Injuries Associated With Machine Mounted Drill Rig

1. Operator received three broken ribs when crushed by drill rig on continuous miner. A piece of coal between the drill rig and the apron plate was restricting the drill mast movement. The operator reached down to remove the coal and accidentally bumped the controls.

The location of the operator at the time of the accident was not part of the normal bolting routine. A guard to prevent accident contact with the controls had not been provided.

2. Operator crushed by drill rig on continuous miner. Whilst the drill rig was not positioned a cylinder end became disconnected from its mounting and the rig fell injuring the operator.

Poor design of the cylinder mounting contributed to this accident.

3. Operator crushed by drill rig on continuous miner. During the bolting cycle the operator was crushed when the rig moved unexpectedly.
4. Operator's hand injured when caught by rotating chuck. Continuous miner mounted drill rig.

Chuck did not have a smooth surface so could catch operators hand. Operator touched rotating part.

5. Operator's gloved hand caught by rotating drill steel resulting in loss of lower part of finger. Track mounted drill rig.

Glove may have provided surface for drill steel to catch. Operator touched rotating part.

6. Operator fractured right ulna when struck by bent rotating drill steel. During drilling excessive thrust was applied to drill resulted in bending of drill steel. Continuous miner mounted drill rig.

Investigations are continuing but excessive thrust is readily available to the operator. Control circuit design allows undesirable operational functions to be inadvertently used. Operator technique appears to have been inconsistent with that recommended by manufacturer.

## **OPERATOR INJURED BY DRILL RIG**

**INCIDENT:** A drill operator was injured when the rotation-motor assembly shot forward while he was working on the guides of the boom.

**CIRCUMSTANCE:** The operator was in the process of picking up the rear of the uncoupled lead drill rod when the drill rotation slide assembly inadvertently moved forward quickly. The movement resulting in the amputation of the operators left finger.

### **INVESTIGATION:**

1. The drill consisted of a mobile rubber tyred vehicle containing an electric motor which provided power to hydraulic power pack for drilling operations.
2. Although the operator was positioned on the drill guide the electric power driving the hydraulic pump to the drill rig had not been isolated.
3. The controls provided for drilling operations remained in the set position once selected and required manual effort to alter them.
4. If the power was removed and then re-established the rig would operate as previously set.
5. The drill feed control was not proportional over its full operating range. It varied from inch control to fast movement for a short movement of the control lever.
6. The operator was able to reach and activate controls by coming in contact with them with his foot or other parts of his body.

### **RECOMMENDATIONS:**

Management should ensure that drill rigs in use at their mines comply with the following.

1. All controls shall ensure that drill rigs in use at their mines comply with the following.
2. Restoration of power shall not cause a hazard as stated by Australian Standard AS2671: Fluid Power-Hydraulic System and Components. When restarting power, resetting of control to achieve motion is required.
3. Where possible/practical controls should not be in a position where the operator can come in contact with them while working on parts of the machine which may move.
4. Controls should be guarded to such as extent that they can not be accidentally bumped by an operator or activated by falling roof or rib material.

B.R. McKensy  
Chief Inspector of Coal Mines



## APPENDIX C

### ABSTRACT OF INVESTIGATION

Date: August 15, 1989

Slide Number: 22 Fatal Case Number: 31  
Accident Classification: Machinery  
Type of Mine: Coal - Underground  
Location: Kentucky

Age of Victim: 34  
Total Mining Experience: 14 years, 1 month  
Total Experience at this Mine: 3 years, 1 month  
Total Experience at this Job: 3 years, 1 month  
Number Employed at Mine: 70  
Number Working at Time of Accident: Unknown  
Time of Accident: 1.10pm  
Mining Height: 42 to 48 inches.

A roof bolting machine operator was crushed between the ATRS/canopy and the mine roof while repairing a twin-head roof bolting machine. he was attempting to free the left side (off side) de-energization device (panic bar) which had been accidentally depressed and fouled by a pile of gob as the machine was being trammed forward. The victim asked the other roof bolter operator to energise the machine, unaware that the drill head boom lever was also depressed. When the machine was energised, the boom raised causing the fatal injuries.

Means of Prevention: Always remove yourself to a safe location when re-energising machinery to prevent accidental contact with moving parts.

### ABSTRACT OF INVESTIGATION

Date: August 28, 1989 (Died August 30, 1989)

Slide Number: 23 Fatal Case Number: 35  
Accident Classification: Machinery  
Type of Mine; Coal - Underground  
location; Virginia

Age of Victim: 26  
Total mining Experience: 6 1/2 years  
Total Experience at this Mine: 2 months  
Total Experience at this job: 3 weeks  
Number Employed at Mine: 25  
Number Working at Time of Accident: 7  
Time of Accident: 8.15pm  
Mining Height: 46 inches

A roof bolter (victim) was drilling a hole on the right rib side a dual head roof bolting machine. A second roof bolter was marking the position of the first hole to be drilled on the left side. The second roof bolter moved the drill boom and got his drill steel, and noticed that the roof bolter (on the right rib side) had not changed position for some time. He found the roof bolter's head pinned between the drill head and the mine roof

Means of Prevention: Do not place yourself in an unsafe position when operating equipment.

**ABSTRACT OF INVESTIGATION**

Date: December 13, 1989

Slide Number: 25 Fatal Case Number: 67

Accident Classification: Machinery

Type of Mine: Coal - Underground

Location: Kentucky

Age of Victim: 26

Total Mining Experience: 3 years

Total Experience at this Mine: 2 years

Total Experience at this Job: 2 years

Number Working at Time of Accident: 7

Time of Accident: 9.00am

Mining Height: 28 inches

A roof bolter was bolting in face area. He had positioned himself on top of the boom and was trying to unclog the dust collector hose. He struck the control lever and was crushed the boom and the time roof.

Means of Prevention:

1. Always select a safe place from which to work
2. Work on suspended or raised equipment must not be preformed until the equipment is lowered to the ground or fully and securely blocked against movement.

**APPENDIX D**

**IMPORTANT SAFETY NOTICE  
INFORMATION SHEET No.: 49**

March 1994

**TO:** ALL OWNERS AND OPERATORS OF MODEL HDDR WALK-THRU ROOF BOLTER  
**FROM:** J. H. FLETCHER & Co.  
**SUBJECT:** PINCH ZONE

There have been two fatal accidents to operators of HDDR roof bolters. These accidents resulted because both operators attempted to operate the HDDR from an unsafe position.

Model HDDR roof drills incorporate a tilting mast. Generally, depending upon specifications, the mast can titled either 45 degrees towards the rib. This feature is used for installing angle and horizontal bolts.

J.H. Fletcher & Co. requests that all operators be immediately informed that placing one's body in the location of the drillhead and mast could result in being crushed by the machine through unintentional activation of the feed actuator handles.

There is no need or operational function which requires a HDDR operator to be positioned beyond the working platform, but if for some unforeseen reason the operator must enter this area the electric motor driving the hydraulic pump must be de-energised to prevent any accidental activation of control handles.

To prevent serious injury or death, J.H. Fletcher & Co. requested that a copy of this Safety Notice be provided to each present operator, future operator and be posted in a conspicuous location for all potential to review.

J.H Fletcher & Co. will distribute additional training which emphasises the serious consequences for roof bolters who attempt to operate the HDDR from an unsafe position. Until this material is distributed, please consider this an immediate, serious concern, and alert all operators and potential operators to this bulletin, its contents and the consequences of unsafe operating techniques.

J. H. Fletcher & Co. requests that you take immediate steps today to notify all roof bolting personnel regarding the serious and fatal consequences which can result when the HDDR is operated from an unsafe position.

If you have any questions, please call Douglas Hardman, Manager of Engineering or David Copper, Safety Director at 304/525-7811.

**APPENDIX E**

**U.S Department of Labour**

March 7, 1994

**NOTICE TO UNDERGROUND MINE OPERATORS AND USERS OF THE FLETCHER ROOF BOLTING MACHINES, MODELS HDDR-13, HDDR-15, and HDDR-17.**

Your mining operation has been identified to us as a user of a type and model of a Fletcher roof bolting machine that was recently involved in two fatal mining accidents. We at the Mine Safety and Health Administration (MSHA) have prepared this notice to make you aware of the circumstances of the accidents.

On February, a fatal accident occurred about 5.25pm when a roof bolting machine operator was caught between the drill motor and the frame of the roof bolting machine while installing rib bolts. The miner had 14 years of mining experience and 5 months on this job.

The victim was operating the left side of the Fletcher Double Boom (model HDDR-13-DC) roof bolting machine. In order to reach and remove the drill steel from the rib hole, he leaned over the machine and positioned himself between the frame of the machine and the drill head. The accident occurred when he inadvertently engaged the fast feed lever with his left hip or caplamp battery, caused the drill motor to rapidly move towards the rib crushing him between the frame of the machine and drill motor.

The investigation into the circumstances of this accident found that the roof bolting machine operator may be regularly required to move drill steel from a rib hole necessitating this fatal manoeuvre. We also found that inserting resin cartridges in the hole may require similar body movements. Recognising this, the mine operator immediately implemented interim measures for prevention and is continuing its study into suitable long-term corrective actions. MSHA is also continuing its investigation into accident and corrective measures. The corrective measures taken at the mine of the accident were:

- removing the extensions to the drill controls;
- installing guards around the control levers to reduce the possibility of their being inadvertently activated;
- extending the length of the panic bar towards the pinch point area;
- raising a hose guard on the inbye side of the drill platform; and
- comprehensive training of the roof bolt machine operators so that they are more aware of the hazards

Another mine operator has installed man-in-position controls that remain activated for continued operation of the machine. These are foot switches that are kept depressed while the machine is being used and install roof bolts.

Another very similar accidents occurred on March 5, where the roof bolt operator was crushed while retrieving a struck drill steel from the hole. The accident is still under investigation and the information is preliminary,

We at MSHA want you to be aware of circumstances of these accidents so that you can evaluate your operation and determine whether similar hazards exist. Upon the completion of MSHA's investigation, we will further advise you of our findings.

Marvin. W. Nichols, Jr  
Administrator  
for Coal Mine Safety and Health

**APPENDIX F**

**INJURIES COMMON TO HAND HELD AND MACHINE MOUNTED DRILL  
RIG**

- (a) Numerous operators hand injuries as a result of falling stone.  
Causal factors were that the controls were located too close to the drill for machine mounted rigs and the absence of guards over the controls.
  
- (b) Numerous eye injuries from drill cutting.  
Casual factors were that controls were too close to the drill, the splash guard at chuck was not fitted or not effective, the seal between chuck and drill was worn or of poor design and eye protection was not worn.

**Notice A85**

File Number: C93/0382

Date: 20/9/95

Londonderry Occupational  
Safety Centre  
132 Londonderry Road  
LONDONDERRY NSW 2753

Attention: Mr D. Ng

Dear Sir,

RE: AS3584 - Diesel Engine Systems for Underground Coal Mines

Please be advised that for the purposes of Clause 1.4.21 of the above Australian Standard that the Londonderry Occupational Safety Centre is deemed to be an acceptable Testing Authority subject to the following:

1. The scope of testing in AS3584 to be carried out will be confined to the terms of the National Association of Testing Authorities Registration for the facility.
2. The Department 's Mine Safety Group is deemed to be a suitable facility to conduct the measurement and analysis of the diesel exhaust emissions obtained whilst the engine is being subjected to load testing on an engine dynamometer.
3. The use of an alternative facility for exhaust emission measurement facility will be subject to authorisation by the Chief Inspector of Coal Mines.
4. This authorisation shall remain in force whilst the facility has NATA registration or as otherwise notified by the Chief Inspector of Coal Mines.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Coal Mines  
for CHIEF INSPECTOR OF COAL MINES

Dear Sir,

**RE: ACCIDENTS TO MAINTENANCE PERSONNEL**

Two (2) accidents have occurred recently in other mining jurisdictions one of which resulted in the death of a fitter. Both accidents occurred whilst major maintenance activities were being carried out on Face Shovels.

The details of the accidents that occurred are attached in the form of Significant Accident/Incident Reports as received from the Western Australian and P.N.G. Inspectorates. Please note the original reports have been retyped for clarity. The purpose of disseminating these reports is to reinforce the awareness that **this type of work can be hazardous and that safe work procedures are required.**

No comment is offered in relation to the comments/recommendations incorporated in the attached reports however it is noted that the P.N.G. Report suggests that the manufacturer's procedure for removal of crowd links did not provide sufficient detailed information. It is assumed that the manufacturers of the shovels concerned will be provided written advice to operators of their equipment in NSW Coal Mines of these incidents and their outcomes in accordance with the requirements of the Occupational Health and Safety Act, 1983.

Incidents of this nature have also occurred in NSW coal mines albeit that none have occurred recently. However a fatality occurred in an open cut mine in 1984 whilst maintenance activities of a similar nature were in progress. The precis for this accident was as follows:

“A fitter/welder was assisting to change the hinge pin for a shovel boom. An hydraulic jack was utilised to relieve the load on the pin and a crane was supporting the boom. A chain sling was wrapped around the lower end of the boom. leg. During the installation of the replacement pin the sling broke and struck the fitter/welder about the head inflicting injuries from which he died instantly.

You are requested to bring the contents of this circular letter to the attention of the appropriate personnel at the mine. Whilst the incidents referred to occurred at open cut mines operations is also has relevance to underground mines and their associated surface operations.

Yours faithfully,

B R McKensey  
Chief Inspector of Coal Mines

**DEPARTMENT OF MINERALS AND ENERGY  
WESTERN AUSTRALIA**

**SIGNIFICANT INCIDENT REPORT No. 52**

**ROPE POWER SHOVEL MAINTENANCE - FATAL ACCIDENT**

**INCIDENT**

A maintenance fitter received fatal injuries during a check for a broken shaft in the swing drive transmission on rope power shovel. This check necessitated the removal of an inspection cover, located in a tight (confined ) space, because of the adjacent hoist drum, and the fitter was observing the rotation of the shaft whilst the upper part of the shovel was being moved laterally by a bulldozer pushing against the bucket of the shovel.

**CAUSE**

The brake on the hoist drums were inadvertently released when the swing drive were released. Both brakes were operating by a common switch. During the lateral movement of the upper part of the shovel the hoist drum rotated, under the action of gravity on the bucket of the shovel, and a rope anchor block on one of the hoist drums trapped the deceased's head in the confined space.

**COMMENTS AND PREVENTATIVE ACTION**

- (i) All work in confined spaces should be properly scrutinised within the guidelines provided by Australian Standard AS2865 - Safe Working in Confined Space.
- (ii) Proper isolation and tagging procedures must be followed when carrying out any work on equipment with particular emphasis on those isolation and tagging procedures where it is necessary to operate or move the equipment or move the equipment to allow for the work to be carried out.
- (iii) All recommendations supplied by the manufacturer/supplier of equipment, related to the operation and maintenance of their equipment, should receive proper considerations.

J M Torlach  
STATE MINING ENGINEER

28 December 1994

EMV594UF:R

**SAFETY AWARENESS SAVES LIVES**



**Papua New Guinea**

**DEPARTMENT OF MINING AND PETROLEUM  
MINES DIVISION INSPECTION AND ENGINEERING BRANCH**

**SIGNIFICANT ACCIDENT REPORT**  
**REPAIR SPECIALIST INJURED ON FACE SHOVEL**

MINE: OPEN PIT COPPER MINE

NATURE OF ACCIDENT:

A Face Shovel which required major structural checking and repair/refurbishment was being dismantled.

Manufacturer's personnel were contracted to carry out this work.

The L.H. crowd link had been successfully dismantled. Using the same procedure, the R.H crowd link (weight 1.4 tonne) unexpectedly moved and fell from the journal on the hoist frame. The crowd link end fell on to the stiff leg causing the Supervising Engineer to fall.

The Supervising Engineer sustained head and lower back injuries.

Obvious damage to the shovel was limited to the stairtreads and handrails on the stiff leg.

**CAUSE OF ACCIDENT:**

Although dismantling of the crowd links is a difficult and hazardous operations, the Manufacturer's written procedure does not detail the operation step by step, thus leaving the door open for unsafe and dangerous practices.

In this accident, sound engineering practice and common sense were ignored and no means of restraining the crowd link was utilised prior to removing the retainer and bolts.

It was purely by chance that the accident did not occur whilst removing the L.H crowd link.

**EFFECTIVE ACTION REQUIRED:**

1. The procedures for all dismantling activities on this type of Face Shovel shall be reviewed and revised by the Shovel manufacturer.
2. These procedures shall be sufficient detailed to minimise deviation by dismantling personnel.
3. These procedures shall be communicated to all Companies involved in operation and maintenance of this type of Face Shovel.
4. Procedures involved in the removal of crowd links shall be treated on a top priority basis.

File No.: C94/0497

Date: 31/01/95

Dear Sir,

**RE: SUMMARY OF MINE WINDER SUMMARY**

Attached is a summary of the reportable occurrences associated with winding operations at underground coal mines for the 10 year period from 1984 to 1994. Whilst not every underground coal mine in NSW operates mine winders the document has been distributed to every underground mine as such infrastructure may be envisaged in the future.

You are encouraged to bring the document to the attention of all relevant personnel at the mine.

It is to be noted that subsequent to the preparation of this summary that the Inspectorate has received notice of a further 2 reportable dangerous occurrences. Whilst similar in nature to those included in the summary they are occurring relatively regularly and reinforces the need for the highest level of safety management to be in place for all aspects of mine winding operations including design, installation, commissioning, inspection and maintenance.

Yours faithfully

B.R. McKensy  
CHIEF INSPECTOR OF COAL MINES

File No.: Not Available  
Date: 2 November, 1995

The Manager,  
All Open Cut Coal Mines.  
NSW

Dear Sir,

The Coal Mines Inspectorate is concerned with the upward trend in the number of fires reported on mobile equipment in Open Cut Mines in NSW for 1994/1995. (refer to report titled "Overview of Mine Fires in NSW Coal Mines 1989-1995" recently distributed).

The Department has completed an analysis of these fires for the period 1994/1995 and can now provide the following summary for your consideration, ie,

Total number of fires analyzed	61
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These were:

Mechanical related	41
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Electrical related	20
--------------------	----

A further breakdown of causal factors shows the following:

Fires caused by faulty design by manufacturer	Electrical	4
	Mechanical	4
Fires caused by maintenance shortfalls	Electrical	16
	Mechanical	37*

\* includes 9 caused by unsafe hot work procedures)

From analysis of these incidents it would appear that there may be some anecdotal evidence that the standard of inspections and maintenance activities may be detrimentally affected by current continuous operating conditions prevailing in the industry, ie.

**operating 7days/24hrs/364 days per annum**

This information is provided to Managers for their consideration in assessment of current practices and development future policies in the inspection and maintenance arena on mobile surface mining equipment to eliminate the occurrences of such fires with the resultant dangers to personnel and loss of production.

W. R. FLETT  
Senior Inspector of Coal Mines; Northern District  
for the  
Chief Inspector of Coal Mines

## Notice A89

File No.: C93/0382  
Date: 21, May 1996

Dear Sir,

### RE: FLAMEPROOF DIESEL ENGINE SYSTEMS

Following discussions held with representatives of Original Equipment Manufacturers of diesel engine powered machines it was agreed in principle that AS3584-1991-“Flameproof Diesel Engine Systems for Underground Coal Mines” should be used as the benchmark for systems manufactured for the NSW Coal Mining Industry.

It was further agreed that all newly manufactured diesel engine systems supplied to the industry after 1 June 1997 be assessed and tested to AS3584. This will require the issue of new approvals for most of the existing approved DES packages.

This decision will not affect the status of diesel engine systems that are in service at the 1 June 1997. However it is recommended that a risk assessment strategy be adopted by the -mine in order to determine whether an upgrading program should be undertaken to strive for compliance with the published standard.

Any risk assessment strategy undertaken should incorporate the full range of issues associated with the inspection, maintenance and repair of diesel engine flameproofing for machinery currently in service. For your information issues considered to be integral with such flameproofing include not only flamepaths as normally associated with electrical apparatus but surface temperatures and exhaust emissions.

It is to be noted that as a result of investigations conducted into recent events that occurred at Endeavour and Myuna underground coal mines that quality of maintenance inspections was not to a level which was considered to be satisfactory. For example examination of the item of diesel equipment which was in the panel (but not within the zone) where the ignition occurred at Endeavour Coal Mine identified that there was a significant gap in the flamepath joint between the exhaust manifold and the adjoining pipe.

You will no doubt appreciate that such conditions should not be accepted where flameproof equipment is expected to operate in a hazardous zone.

Such situations are under your control as mine managers and it would be expected that maintenance and inspection systems are in place to ensure such situations are identified and rectified.

You are reminded that any approval issued for diesel engine powered machinery requires the integrity of the flameproofing to be maintained.

Your cooperation is solicited to ensure that any diesel engine powered machinery is maintained to be flameproof in accordance with the outcomes of either this letter or any subsequent risk assessment.

A copy of the gazettal notice which is being published that requires diesel engine systems to comply with the requirements of AS3584 as previously stated is attached for your information.

Please contact your local Inspector of Mechanical Engineering should you require further information regarding this matter.

Yours faithfully,

B.R. McKensey  
Chief Inspector of Coal Mines

New South Wales  
Department of Mineral Resources

Sydney

Coal Mines Regulation Act, 1982, as amended

**NOTICE SPECIFYING AMENDED CRITERIA FOR APPROVAL OF  
FLAMEPROOF DIESEL ENGINES**

File No. C93/0382  
Date: 20 May 1996

It is hereby notified that the Chief Inspector of Coal Mines pursuant to the provisions of Clause 6 of the Coal Mines Regulation (Approval of Items) Regulation, 1984 and for the purposes of Clause 40 of the Coal Mines Regulation (Mechanical - Underground Mines) Regulation, 1984 AMENDS existing criteria for assessment of Flameproof Diesel Engines for approval in accordance with the following requirement:-

“All Diesel Engine Systems newly manufactured and installed in any underground coal mine in NSW after 1 June, 1997 are required to be in compliance with Australian Standard AS3584-1991 - ‘Diesel Engine Systems for Underground Coal Mines’ for approval assessment purposes.”

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

**Notice A90**

File No.: M87/0959  
Date 1st May, 1996

Dear Sir,

RE: CRANE MAN LIFT BOXES

Please be advised that the document entitled "Requirements for Use of Man Lift Box Suspended from a Crane" distributed under cover of letter dated 13 November, 1989 has been revised for the second time. The first revision was issued in February, 1992.

Revisions have been made to replace original design testing requirements with the recently published Australian Standard (Revised sections are 4.1, 4.3 and 5.2(a)). Copies of the revised document may be purchased \$30 by sending your order to the following address:

Information and Promotion Branch  
Department of Mineral Resources  
PO Box 536  
ST LEONARDS NSW 2065

Attention to:  
Manager Customer Service  
phone: (02) 9901 8269  
fax: (02) 9901 8247

Would you arrange for circulation of this letter to the appropriate personnel at your mine.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for CHIEF INSPECTOR OF COALS

File No.: C91/0130  
Date: 9 January, 1996

Dear Sir,

RE: TESTING OF UDILUTED DIESEL ENGINE EXHAUST EMISSIONS.

Please find enclosed a copy of MDG 29 GUIDELINE FOR DIESEL AND OPERATOR ENVIRONMENT TESTING IN UNDERGROUND COAL MINES.

The guideline includes provision for collection of emission test results and development of a computerised data base. This should assist in improving the quality in how diesel equipment is managed. For further information on this feature refer to attachment schedule.

The proposed new underground regulations do not include any specific requirements for diesel engine emissions. The Regulations however permit the Chief inspector to specify the limits, frequency and test methods.

It is recommended that the guideline be introduced on a 8 to 12 month trial basis following by a review involving the user of the guideline. The review should result in a code of practice which is more flexible then the present regulation and should encourage best practice.

Your co-operation in the implementation of this guideline MDG29 on a trail basis would be appreciated.

Would you please advise your local Inspector of Mechanical Engineering by 1<sup>st</sup> February if you are willing to undertake to trial this guideline for a period of 8 to 12 months.

L.J. Roberts  
Senior Inspector of Mechanical Engineering



SCHEDULE OF FURTHER INFORMATION  
FOR  
TESTING OF UNDILUTED DIESEL ENGINE EXHAUST EMISSIONS

- 1 This guideline was originally intended for the approved diesel emission testing laboratories so that consistency would be achieved in the test procedure, documentation and data presentation.

It became apparent that it would also be a useful document to build on to replace the present regulations and to assist with the management of exposure to emissions.

Information which may be obtained from use of the guideline:-

- 1.1 Permits identification of new engines which have emissions of carbon monoxide or oxides of nitrogen that are substantially at variance with the original type approved engine;

The ability to eliminate poorly set up engines has emission control benefits and may increase the service life between overhauls.

- 1.2 Could result in the ability to assist in predicting when engine overhauls are required;

- 1.3 Could assist in simplification of colliery record keeping by providing a trend analysis record in graphical form for each engine;

- 1.4 Permits trend comparisons to be used to identify cleaner engine types and also problem engine types across the N.S.W Underground Coal Mines;

- 1.5 Fits in with the proposed amendments to AS3584 Diesel Engine Systems for Underground Coal Mines which will permit better comparison between dynamometer testing and in vehicle testing at colliery locations;

- 1.6 May allow possible reduction in frequency of raw exhaust testing to be considered based on historical evidence.

Would assist in changing test frequency to hours run rather than the present elapsed time basis.

- 1.7 May be used to provide more detail to the N.S.W- Minerals Council for addition to their "Guideline For Minimising Exposure to Emissions in Underground Coal Mines".

Note: - Individual mine information will not be identified or disclosed to any third party however generic mine information will be available to all.

2 The costs for the 8 to 12 month trial of the system will be free of charge to the participating mines but after the trial the review should identify the necessary fees to achieve cost recovery for the operation of the system.

3 The proposed new Regulations covering diesel emissions as drafted by the Joint Safety Review Committee should lead to a code of practice covering the full range of management and control procedures which collieries will wish to use to ensure the safety of employees.

It is considered that ideally a consensus approach in conjunction with the coal mining industry should be used to review the foregoing guideline and develop it into a code of practice. The code of practice should be developed during the introduction of the new legislation.

4 The management of general body pollutants emanating from diesel engines should also be considered for inclusion in any code of practice.

It is recommended that the maximum permissible concentration of pollutants from diesel engines should in general be the same as those proclaimed by the National Occupational health and Safety Commission and published by Worksafe.

5 The management of noise emanating from diesel equipment could be assisted by using the mobile laboratories to conduct noise tests in conjunction with gas tests. This is currently included in the guideline but will not be initially included in the trial.

6 The mine sites do not have to change the way they currently manage their diesel equipment.

## Notice A92

Our Ref: C95/0236  
For further information contact:L J Roberts  
Phone No.: 9901 8550

Dear Sir

**RE: MDG 31 - DESIGN GUIDELINES FOR CONSTRUCTION OF FEEDER  
BREAKERS**

Please be advised that the above guideline has been published and is now available for purchase from the Department's Information and Promotion Branch ( Phone No. 02 9901 8269 ).

As the document has now become available it is considered appropriate to implement the following:

1. Revoke the long standing requirement for Feeder Breakers to have a Certificate of Examination prior to being taken underground. This is to take effect on 1 January 1997.
2. Invoke the provision for the Chief Inspector under Clause 42 of the Coal Mines Regulation (Mechanical - Underground Mines) Regulation to specify design standards for mechanical apparatus in respect to Feeder Breakers.
3. Issue a Gazettal Notice nominating **MDG 31 - Design Guidelines for the Construction of Feeder Breakers** as the design standards (refer 2). Implementation of this requirement is to apply to all Feeder Breakers supplied to underground coal mines in NSW after 1 January 1997.

All underground mines being supplied with a Feeder Breaker after the above date need to be assured that MDG 31 has been utilised in the design of the machine. It is suggested that Clause 5.2 of Appendix B in MDG 31 be incorporated as a requirement in any specifications prepared for the purchase of this type of machinery as a means of obtaining this assurance.

Yours faithfully

B R McKensy  
CHIEF INSPECTOR OF COAL MINES

attachments:

- Requirement for Certificate of Examination issued December 1984.
- Notice revoking the previous requirement issued November 1996.
- Gazettal Notice specifying design standard for Feeder Breakers issued November 1996.

# SECTION B

GENERAL EXEMPTIONS AND LIMITED TIME  
APPROVAL

File no.: Not Available  
Date: 8th June, 1984

Dear Sir,

NOTICE TO THE OWNER OF

Order Under Section 174(5)  
Coal Mines Regulation Act, 1982

---

On and from 30th June, 1984, the Manager of the above mentioned colliery is hereby exempted from the need to comply with the requirements of Clause 10(1)(a) of the Coal Mines Regulation

An approved fire extinguisher with a minimum Standards Association of Australia rating of 10 B:E shall be installed and ready for use on the locomotive until 30th June, 1986 when an approved fire extinguisher with a minimum Standards Association of Australia rating of 80 B:E shall be installed and ready for use.

A copy of this notice shall be posted on the Colliery Notice Board for at least 28 days.

Yours faithfully,

M.J. MUIR  
Chief Inspector of Coal Mines

File No.: Not Available  
Date: 8th June, 1984

Dear Sir,

NOTICE TO THE OWNER OF

Order Under Section 174(5)  
Coal Mines Regulation Act, 1982

---

On and from 30th June, 1984, the Manager of the above mentioned colliery is hereby exempted from the need to comply with the requirements of clause 39(1) of the Coal Mines Regulation (Mechanical - Underground. Mines) Regulation 1984 insofar as the requirement applies to external parts of any machinery, equipment or other item underground before 30th June, 1984 and subject to the following requirements:-

Items of equipment containing exposed aluminium or light metal alloys presently in use underground may continue in use until 30th June, 1986, provided they are coated without undue delay and maintained coated with an approved coating or otherwise exempted by the Chief Inspector.

A copy of this notice shall be posted on the Colliery Notice Board for a period of at least 28 days.

Yours faithfully,

M. J. MUIR  
Chief Inspector of Coal Mines

File No.: Not Available  
Date: 25th June, 1984

Dear Sir

NOTICE TO THE OWNER OF

Order under Section 174(5)  
Coal Mines Regulation Act, 1982

---

In pursuance of Section 174(5) of the Coal Mines Regulation Act, 1982, No. 67, 1 hereby order that Clause 22(2) of the Coal Mines Regulation (Shafts and Roadways - Underground Mines) Regulation 1984, which requires that chains referred to in subclause (1) of, the above clause "shall be manufactured from specified material" shall not apply until 30th June, 1985, subject to the following requirements:-

- (1) All such chains shall be cleaned and examined at intervals not exceeding one year.
- (2) Any cuts or nicks found during such examination shall be dressed out.
- (3) When any chain link has its cross sectional area reduced from original dimensions, whether by wear or dressing, by more than 10% the chain shall be discarded.
- (4) Where any chain link has suffered damage or is deformed the chain shall be discarded.

A copy of this exemption Shall be posted on the Colliery Notice Board for a period of at least 28 days.

Yours faithfully

M. J. MUIR  
Chief Inspector of coal Mines

File No.: Not Available  
31st May, 1985

The Manager

Dear Sir

Coal Mines Regulation Act 1982  
Coal Mines Regulation (Ventilation-Underground Mines) Regulation 1984  
Clause 5, Use of Auxiliary Fan of an Approved Type

---

In order to ensure your compliance with Clause 24(1) of the above mentioned Regulation any unapproved auxiliary fan in use underground at the present time is hereby approved as and from the 29th December, 1979.

Please note that this approval will only be current to 31st December, 1985. In the meantime, an assessment of the above named apparatus at your mine will be made by my officers so that this approval can, subject to appropriate condition be confined.

During this period the afore mentioned equipment should continue to be operated in a safe manner, in accordance with the Act and Regulations and the Manager's Rules for inspection and testing.

A copy of this approval letter should be posted on the Colliery Notice Board for a period of at least 28 days.

Yours faithfully

M J MUIR  
Chief Inspector of Coal Mines



File No.: M84/0687  
Date: 17th December, 1985

Dear Sir,

Coal Mines Regulation Act, 1982  
Coal Mines Regulation (Ventilation-Underground Mines) Regulation, 1984  
Clause 5, Use of Auxiliary Fan of an Approved Type

---

Please be advised that the. time limited approval, issued on 31st May, 1985 for any unapproved auxiliary fans which were in use underground at that time, is hereby extended to 31st December, 1986.

In the meantime, an assessment of the above named apparatus at your mine will be made by my officers so that this approval can, subject to appropriate conditions, be confirmed

During this period, the afore-mentioned equipment should continue to be operated in a safe manner in accordance, with the Act and Regulations and the Manager's Rules for inspection and testing.

A copy of this approval letter should be posted on the Colliery Notice Board for a period of at least 28 days.

Yours faithfully,

M. J. MUIR  
Chief Inspector of Coal Mines

File No.: Not Available  
Date: 18 March, 1988

Dear Sir,

NOTICE TO THE OWNER OF

Order Under Section 174 (5)  
Coal Mines Regulation Act 1982

---

On and from 1st July, 1986 the Manager of the above mentioned colliery is hereby exempted from the need to comply with the requirements of Clause 39 (1) of the "Coal Mines Regulation (Mechanical - Underground Mines) Regulation 1984" insofar as the requirement applies to the external parts of any machinery, equipment or other item which was in use underground before 30th June 1984, subject to the following requirements:-

- (1) No aluminium or light metal alloy as specified shall be taken into a "hazardous zone" unless:-
  - (a) it has been approved for use in a hazardous zone or
  - (b) it was being used underground prior to 30th June 1984 and is maintained coated with an approved coating and is protected, by virtue of its position within a machine, from accidental impact with other metal
- (2) Small items such as valve wheels, containers and any unprotected aluminium are excluded from this exemption.
- (3) Other items containing exposed aluminium are to be maintained coated with an approved coating.
- (4) This exemption will apply only until 30th June, 1988.

A copy of this exemption shall be posted on the colliery notice board for a period of at least 28 days.

MJ MUIR  
Chief Inspector of Coal Mines

Department of Industrial Relations  
Industry Guidelines for the  
Use of Aluminium Underground

NEW INSTALLATIONS

1. Aluminium is not permitted where a reasonable alternative can be found. An applicant to use aluminium must first demonstrate "no reasonable alternative".
2. Where no reasonable alternative exists:-
  - (a) for apparatus of a portable nature, normally kept in possession of a person, then this apparatus may be approved to be taken and used underground subject to being protected or enclosed other than during actual use, so as to prevent contact with other metal.
  - (b) for other apparatus, approval may be given provided that the aluminium is covered by an approval metal spray coating and is protected by a substantial guard, so arranged e.g. by the use of limit switches that the guard must be in place for the equipment to carry out its function.
  - (c) and (a) or (b) cannot be applied, e.g. a diesel engine fuel pump, then approval may be given for installations in which the aluminium component is well protected by reason of its location in the apparatus

EXISTING INSTALLATION

By letter dated 8th June, 1984, I exempted collieries from the need to remove aluminium prior to 30th June, 1986, on condition that all aluminium items were maintained coated with an approved coating.

I have now decided to issue a further exemption for two years ending 30th June, 1988 for the use of exposed aluminium underground with respect to items of equipment excluding:-

- . items used in a hazardous zone
- . small single items, e.g. valve wheels, containers etc.

Note that no exposed aluminium is to be underground from 1st July, 1988, unless its use has been specifically approved.

MJ MUIR  
Chief Inspector of Coal Mines

File No.: Not Available  
Date: Not Available

Dear Sir,

NOTICE TO THE OWNER OF

Order under Section 174(5)  
Coal Mines Regulation Act, 1982

---

In pursuance of Section 174(5) of the Coal Mines Regulation Act, 1982, No. 67, I hereby order that Clause 11(e) of the Coal Mines Regulation (Belt Conveyor) Regulation 1984, which requires that in any underground roadway in which a belt conveyor is used a minimum clearance of 300 mm from the floor to the underside of the return belt shall be provided, shall not apply to belt conveyor drive heads and boot ends, subject to the following requirement:-

The immediate vicinity of belt conveyor drive heads and boot ends shall be maintained clear of any spillage.

A copy of this notice shall be posted on the Colliery Notice Board for a period of at least twenty-eight days.

Yours faithfully,

M.J. MUIR  
Chief Inspector of Coal Mines.

File No.: Not Available  
Date: 8th June, 1984

Dear Sir,

NOTICE TO THE OWNER OF

Order Under Section 174(5)  
Coal Mines Regulation Act, 1982

---

On and from 30th June, 1984, the Manager of the above mentioned colliery is hereby exempted from the need to comply with the requirements of:-

Clause 6 Coal Mines Regulation (Electrical - Underground Mines) Regulation 1984

Clause 6 Coal Mines Regulation (Electrical - Open-Cut Mines) Regulation 1984.

Clause 6 Coal Mines Regulation (Mechanical - Underground Mines) Regulation 1984.

Clause 6 Coal Mines Regulation (Mechanical - Open-Cut Mines) Regulation 1984

insofar as such clause precludes the appointment of electrical or mechanical trades apprentices.

A copy of this notice shall be posted on the Colliery Notice Board for a period of at least 28 days.

Yours faithfully,

M.J. MUIR  
Chief Inspector of Coal Mines

File No.: Not Available  
Date: 8th June, 1984

Dear Sir,

NOTICE TO THE OWNER OF

On and from 30th June, 1984, the Manager of the above mentioned colliery is hereby exempted from the need to comply with the requirements of Clause 29 of the Coal Mines Regulation (Belt Conveyor) Regulation, 1984 insofar as the said clause applies to those belt conveyor systems installed prior to 30th June, 1984 which systems shall be maintained so as to operate in a safe manner and in accordance with the Act, Regulations and any Rules and schemes thereunder.

A copy of this notice shall be posted on the Colliery Notice Board for a period of at least 28 days.

Yours faithfully,

M.J. MUIR  
Chief Inspector of Coal Mines

File No.: Not Available  
Date: 26th June, 1984

Dear Sir

NOTICE TO THE OWNER OF

Order Under Section 174(5)  
Coal Mines Regulation Act, 1982

---

In pursuance of Section 174(5) of the Coal Mines Regulation Act, 1982, No. 67, I hereby order that Clauses 17, 18 and 19 of the Coal Mines Regulation (Mechanical - Underground Mines) Regulation 1984, in so far as they embrace pressure vessels having a capacity of 0.03 cubic metres or less, shall be excluded from the requirements of the Regulations, subject to:-

- (i) The mine-mechanical engineer shall ensure that every such pressure vessel is designed and manufactured so as to be adequate for its ultimate duty and is maintained in a safe condition.
- (ii) Any such pressure vessel which has sustained permanent deterioration shall be forthwith destroyed.

Yours faithfully

JG Bailey  
Chief Inspector of Coal Mines

File No.: Not Available  
Date: 26th June, 1984

Dear Sir

NOTICE TO THE OWNER OF

Order Under Section 174(5)  
Coal Mines Regulation Act, 1982

---

In pursuance of Section 174(5) of the Coal Mines Regulation Act, 1982, No. 67, I hereby order that Clauses 17, 18 and 19 of the Coal Mines Regulation (Mechanical-Open Cut Mines) Regulation 1984, in so far as they embrace pressure vessels having a capacity of 0.03 cubic metres or less, shall be excluded from the requirements of the Regulations subject to:-.

- (i) The mine mechanical engineer shall ensure that every such pressure vessel is designed and manufactured so as to be adequate for its ultimate duty and is maintained in a safe condition.
- (ii) Any such pressure vessel which has sustained permanent deterioration shall be forthwith destroyed.

Yours faithfully

JG Bailey  
Chief Inspector of Col Mines



Date: Not Available  
Date: 8th June, 1984

Dear Sir,

NOTICE TO THE OWNER OF

Order Under Section 174(5)  
Coal Mines Regulation Act, 1982

On and from 30th June, 1984, the Manager of the above mentioned colliery is hereby exempted from the need to comply with the requirements of Clause 12 of the Coal Mines Regulation (Transport - Underground Mines) Regulation 1984 subject to the following conditions.

- (a) This exemption only applies to those locomotive roadways in existence prior to 30th June, 1984.
- (b) This exemption is subject to any requirement of the District Inspector to achieve compliance in any part of such exempted roadways by reason of the creation or continuance of a situation of apprehended danger.
- (c) A copy of this notice shall be posted on the Colliery Notice Board for a period of at least 28 days.

Your faithfully,

M.J. MUIR  
Chief Inspector of Coal Mines

File No.: CM84/0687

Date: 16th June 994

Dear Sir

NOTICE TO THE OWNER OF

Order Under Section 174 (5) Coal Mines Regulation Act, 1982

Pursuant to the provisions of Section 174 (5) of the Coal Mines Regulation Act, 1982, I hereby order that all Coal and Shale mines in New South Wales are exempted from the need to comply with the requirements of Clause 17(5) of the Coal Mines Regulation (Mechanical - Underground Mines) Regulation 1984 and Clause 17(5) of the Coal Mines Regulation (Mechanical - Open Cut Mines) Regulation 1984 which both state as follows:

"The manager of a mine shall forward to the district inspector within 14 days after the date of the inspection a copy of the certificate of inspection issued in respect of a boiler or pressure vessel in use at the mine".

This general exemption applies from 30th June 1994 and is conditional only for those mines where a quality record system that satisfies the requirements of Section 4.15 of Australian Standard AS 3902 - 1987: "Quality systems for production and installation" in relation to the retention of copies of the certificates of inspection for boilers and pressure vessels is in operation at the mine.

A Copy of this notice shall be posted on the Colliery notice board for 28 days.

Yours faithfully

B. McKensey  
Chief Inspector of Coal-Mines

File No.: CM84/0687

Date: 16th June 1994

Dear Sir

NOTICE TO THE OWNER OF

Order Under Section 174 (5) Coal Mines Regulation Act, 1982

Pursuant to the provisions of Section 174 (5) of the Coal Mines Regulation Act, 1982, I hereby order that all Underground Coal and Shale mines in New South Wales are exempted from the need to comply with the requirements of Clauses 21 (b) and 35 (b) of the Coal Mines Regulation (Transport - Underground Mines) Regulation 1984 which states as follows:-

"Fuel is taken underground only in a container of a type approved by an Inspector of Mechanical Engineering."

This general exemption applies from 30th June 1994 and specifically only for those containers used to transport diesel fuel underground which:

- a) have a capacity of 200 litres or less; and
- b) are manufactured from steel; and
- c) comply with the specifications for closed (non-removable) head type 1 containers as required in Australian Standard AS2905- 1986.

A copy of this exemption shall be posted on the Colliery notice board for 28 days.

Yours faithfully

B. McKensy  
Chief Inspector of Coal

# SECTION C

USE AND APPROVAL OF ITEMS  
(REQUIREMENTS)

File Reference No.: M79/5365

Date: Not Available

Dear Sir

**COAL MINES REGULATION ACT**

---

I refer to the requirements of General Rule 49, Section 54 under the provisions of the above Act, requiring a protective canopy or another device on any vehicle, any part of which is designed to carry a person, while in operation in the mine. The Regulation takes effect on 28th March, 1980.

The canopy or device shall be of a type approved by me in respect of the vehicle or class of vehicles as a canopy or device that will prevent any person being carried in that part of the vehicle from being injured in the event of falls of supports or debris.

The protective canopy for a continuous mining machine is required to have a minimum structural capacity to support elastically a static uniform load of 8 200 kilograms or a force equivalent to a static load of 105 kilopascals distributed uniformly over the greatest plan view area of the canopy, whichever is the lesser. All types of canopy shall be load tested in the presence of an Inspector of the Coalfields Branch before consideration will be given to approval. An acceptable method of testing is that set out in Informational Report 1002, "A Testing Procedure for the Certification of Underground Protective Cabs and Canopies" by US Department of the Interior. This provides for the test load to be distributed within the middle ninth of the structures plan view area. A dial indicator will show the maximum and permanent deflections of the structures top caused by the loading. The measured permanent deflection shall be less than 10 per cent of the recorded maximum deflection. It should be noted that rectangular hollow sections due to their lack of ductility should not be used in the construction of continuous miner .canopies.

There is no specification provided in General Rule 49 for canopies or other devices used on machines other than continuous mining machines. however, before consideration will be given to approval, all types of canopy or device shall also be load tested in the presence of an Inspector of the Coalfields Branch. The test load shall be one (1) tonne distributed over a width of 300 mm at the centre of the maximum span and again the' measured permanent deflection shall be less than 10 per cent of the recorded maximum deflection.

Yours faithfully

M.J. MUIR  
Chief Inspector of Coal Mines

M81/8543  
27th January 1983

Dear Sir

**APPROVAL OF F.R.A.S. CONVEYOR BELTING**

---

Further to my letter dated 12th January, 1982, covering proposed amendments to test criteria to be applied regarding approval of fire resistant anti-static conveyor belting used in underground coal and shale mines in New South Wales the following determinations have been made.

Manufacturers and Agents

All applications for approval of F.R.A.S. conveyor belting after 1st January, 1983 shall be subjected to evaluation for fire resistance by the Propane Burner Gallery Test in addition to the testing required by Australian Standard 1332 -1982 -Conveyor Belting with Textile Reinforcement for class S covers.

The prime means of establishing fire resistance will be the Gallery Test details of which have been submitted to the SAA Rubber Committee R U/2.

The laboratory flame test in the standard will be used as a means of reference for quality assurance purposes.

All belt specifications approved under the revised test criteria will be issued with MDA 250 upwards numbering sequence in order to enable the industry to differentiate between belting previously approved.

Conveyor belting supplied for use in underground coal mines from 1st January, 1984, will require to be approved in accordance with the revised test criteria.

Colliery Managers

The requirements of conveyor belting approved under Regulation 263 of the Sixth Schedule of the Coal Mines Regulation Act have been revised to improve resistance to flame. A system for approval of amended requirements was introduced on 1st January, 1983.

You are advised that all previously approved belting in service and spare stocks retained at collieries will not be affected by the amendments to the approval criteria and the original approvals will still apply for these materials. The installation of belting approved under the revised criteria should be programmed to be installed as soon as practical after 1st January, 1984.

Yours faithfully

JG Bailey  
Chief Inspector of Coal Mines

File No.: Not Available  
Date: Not Available

Dear Sir

**DIESEL ENGINE EXHAUST GAS WATER CONDITIONER**

---

Please be advised that as of 1st April, 1983, the following additional condition of approval shall be incorporated in previously issued approval documents for EXHAUST GAS WATER CONDITIONERS:-

"The static level of water in the conditioner applicable to the normal operating level as approved shall be permanently marked on an external surface of the conditioner in a visible position."

A copy of this letter shall be attached to every copy of conditioner approval documentation issued in association with equipment fitted with diesel engines for use in underground coal mines in New South Wales.

Yours faithfully

M.J. MUIR  
Chief Inspector of Coal Mines



File No: M82/9089  
Date: 15th November, 1984

**DEPARTMENT OF INDUSTRIAL RELATIONS**

**COAL MINES REGULATION ACT 1982  
APPROVAL OF ITEMS**

---

IT is hereby notified that the Chief Inspector of Coal Mines, in accordance with the requirements of Clause 6(5) of the 'Coal Mines Regulation (Approval of Item) Regulation 1984' directs that all hoses, when used in connection with compressed air equipment or for stone dusting, shall be approved.

Approval of such-hoses is hereby satisfied if the hose is made in accordance with Australian Standard 'AS2660-1983 INDUSTRIAL HOSE AND HOSE ASSEMBLIES - AIR/WATER - FOR UNDERGROUND COAL MINES.

M.J. MUIR  
Chief Inspector of Coal Mines

File Reference No.: M84/0687  
Date 5th December, 1984

To All Managers

COAL MINES REGULATION (APPROVAL OF ITEMS) REGULATION 1984

Breaker feeders, ratio feeders and machines designed to perform a similar function to such feeders are not considered to be vehicles. Accordingly, as detailed in Clause 8 of the Coal Mines Regulation (Approval of Items) Regulation 1984, 1 require that breaker feeders, ratio feeders and machines designed to perform a similar function to such feeders shall have a "certificate of examination" before being taken underground. This requirement shall relate only to such equipment first taken underground subsequent to 1st January 1985.

Yours faithfully

M.J. MUIR  
Chief Inspector of Coal Mines

**Notice C5 continues**

File No.: M84/6121  
26th October, 1984

The Manager  
Klockner Becorit (Australia) Pty Ltd 28 Salisbury Road  
HORNSBY 2077 26

Dear Sir

Re APPLICATION FOR APPROVAL OF KLOCKNER BECORIT  
FEEDER/BREAKER

I have to advise that the current policy of this Department is not to approve machines such as your feeder/breaker. It is a requirement of the Coal Mines Regulation Act that mobile machines ie. machines that move whilst carrying out their normal functions, be approved, however it is considered that your feeder/breaker does not fall into that category and hence is not required to be approved as a machine. It is still a requirement that all electrical apparatus fitted to the machine be approved and documentary evidence of this should be supplied to the customer with the machine.

With regard to mechanical requirements you are advised that all feeder/breaker units are required to have automatic parking brakes irrespective of the intended grade and these must be capable of holding the machine on a grade of 1 in 3. The tramming control must be so located that the driver can see the extent of the machine and that he cannot normally run over his own feet by accident. There is also a requirement that there be no exposed aluminium on any apparatus used below ground.

Yours faithfully

A A RECZEK  
Senior Inspector of Electrical Engineering  
for Chief Inspector of Coal Mines

**DEPARTMENT OF INDUSTRIAL RELATIONS**

File No.: M85/1478  
4th May, 1987

FRICION WINDER ROPE LIFE

The following statement was made by M. J. Muir, Chief Inspector of Coal Mines on the 13th December, 1982 covering the policy with regard to the maximum life of ropes installed on friction winders.

"Until such time as I have seen results of a representative number of ropes physically checked against NDT results then I have no wish to place sole reliance on NDT.

Accordingly 5 years will be the maximum.

As Londonderry do not appear to have the personnel to carry out such a check program then interested mining companies may wish to have such work done by an independent testing facility."

Please ensure that all requests for extensions of rope life in accordance with the requirements of the Coal Mines Regulation Act, 1982 are reviewed in accordance with this policy.

Please note that it has been generally accepted practice to schedule rope life extension date to be 31st January of each year. This is to enable ropes to be changed during the Christmas shutdown period. Unless otherwise advised by the District Mechanical Inspector this date will continue to be utilised. Special circumstances warranting a change to this procedure are to be submitted with the recommendations to extend rope life in accordance with the Shafts and Roadways Regulation.

P. R. Torr  
Senior Inspector of Mechanical Engineering

Copies to:       IME Mr. Russell  
                      IME Mr. Hoerndlein  
                      IME Mr. Bout  
                      IME Mr. Jervis

File No.: M85/3824  
Date: 21st January, 1988.

Dear Sir,

Re: USE OF APPROVED DIESEL POWERED FREE STEERED VEHICLE

Your attention is drawn to the fact that water based diesel engine exhaust gas conditioners are tested for approval as a flameproof for a maximum operating slope of 15 degrees.

In order to ensure that the performance of the conditioner to act as a flametrap is not impaired, I now require that all approvals for diesel powered free steered vehicles issued under Clause 28(a) of the Coal Mines Regulation (Transport-Underground Mines) Regulation, 1984 be modified by the addition of the following condition of approval:-

"The maximum grade for operation of the vehicle shall be as follows:-

In the line of the vehicle axis - 1 in 4 Across the travel direction - 1 in 8"

Please note that Diesel Engine Vehicle type approvals issued since mid 1986 have included the above approval condition.

In addition you are advised that the use of a vehicle in conjunction with rope haulage assistance for any purpose should be discussed with the local Inspector of Mechanical Engineering.

Yours faithfully,

J.G. Bailey  
Chief Inspector of Coal Mines

## Notice C10

File No.: M87/0959  
Date: 13th November, 1989.

Dear Sir,

Re: Crane Man Lift Box

Please find attached document entitled "Requirements for Use of a Man Life Box Suspended from a Crane". The requirements are issued in accordance with the provision of the Coal Mines Regulation Act, 1982 and shall come into effect from 30th June, 1990.

These requirements have been based on relevant existing legislation eg. Construction Safety Act, 1912 and current practices used at open cut coal mines.

It should be noted that man riding in special purpose built equipment such as "cherry pickers" is not included in these requirements.

The assistance provided by the Open Cut Coal Mine Mechanical Engineers in the preparation of the document is gratefully acknowledged.

Should advice in relation to any aspect of the attached be required you are requested to contact Mr. L. Roberts, Senior Inspector of Mechanical Engineering on (02) 240 4248.

Yours faithfully,

J. G. Bailey  
Chief Inspector of Coal Mines

File No.: M84/6051  
Date: 10th November, 1989.

Dear Sir,

Re: CATERPILLAR 3300 SERIES DIESEL ENGINE

In reply to your letter, dated 19th October, 1989, it is confirmed that the classification of the Caterpillar 3300 series Diesel Engine cylinder head/cylinder block joint as a fixed joint as defined by AS3584-1988 is accepted.

As fixed joints do not require flamepaths to be provided within specified criteria, the modifications to the cylinder head spacer plate acknowledged by Chief Inspector of Coal Mine's letter dated 27th April, 1984 are no longer deemed necessary.

Would you please ensure that all organisations supplying new or repaired Caterpillar 3300 Series Diesel Engines for use in underground coal mines are advised accordingly.

Yours faithfully,

L.J. Roberts  
Senior Inspector Mechanical Engineering  
for Chief Inspector of Coal Mines

## Department of Industrial Relations

### COAL MINES REGULATION ACT, 67/1982 -NOTICE OF APPROVAL

---

Approval No.: MDA Exia 1480  
File No.: M84/6246  
Date: 23rd January, 1986

It is hereby notified that the Chief Inspector of Coal Mines, pursuant to the provisions of Clause 6 of the Coal Mines Regulation (Approval of Items) Regulation 1984, and for the purposes of Clause 27 of the Coal Mines Regulation (Electrical - Underground Mines) Regulation 1984, has approved as being intrinsically safe for the purposes of the said Clause 27 of any Integrating Sound Level Meter (herein referred to in this approval as the said apparatus) known as Type 2225 manufactured by Bruel & Kjaer, Denmark and supplied in New South Wales by Bruel & Kjaer Australia Pty. Ltd., Concord. The said apparatus shall be designed, constructed and tested in accordance with the schedule attached to the approval documents.

Accordingly, the said apparatus may be used as portable apparatus in any part of a coal or shale mine subject to compliance with the requirements of the Coal Mines Regulation Act, 67/1982.

#### Apparatus

An integrating sound level meter designated Type 2225. The sound level meter comprises of a hand held control readout unit with integral microphone assembly and operating from replaceable drycell batteries.

#### Drawings

2225 Service Manual	February, 1980
2225 Circuit Diagram	15th July, 1985
Fuse Mounting Details	15th July, 1985



Conditions

- (1) A copy of the approval documents shall be provided with each such said apparatus supplied to a coal or shale mine in New South Wales.
- (2) Any repair to the said apparatus that may affect its explosion protected properties shall be carried out only at a workshop registered for the purpose.
- (3) The manufacturer shall on his own responsibility carry out tests and examinations as are necessary to ensure that the said apparatus provides satisfactory operation in service.
- (4) The sound level meter shall be operated only from Ever ready Type 1015, 915 or E91 1.5 Volt batteries, or their equivalents
- (5) The sound level meter shall only be taken underground in suitable carrying cases containing no exposed aluminium or aluminium alloy, and the instruments shall be stored in these carrying cases at all times when not in actual use.

Marking on Apparatus

The Approval No. MDA Exia 1480 and the manufacturers name or mark are to be inscribed in a durable manner in a prominent position on the apparatus.

CHIEF INSPECTOR OF COAL MINES

**DEPARTMENT OF INDUSTRIAL RELATIONS**

Coal Mines Regulation Act, 1982  
Notice of Approval

---

Approval No: MDA 801566  
File No: M85/1566  
Date: 4th July, 1986.

AIR VENTURI VENTILATION DEVICE

IT IS HEREBY NOTIFIED that the Chief Inspector of Coal Mines, for the purposes of Clause 55 of the "Coal Mines Regulation (Ventilation - Underground Mines) Regulation, 1984" approved the air venturi ventilation devices listed below:-

Supplier: SENIOR ENGINEERING GROUP (AUST) PTY. LTD.

Units: JETFLOW AIRMOVER MODEL NOS. 40, 704, 100 and 200

Accordingly, the four types of air venturi ventilation devices may be used in coal and shale mines in New South Wales subject to compliance with the requirements of the Coal Mines Regulation Act, 1982 and associated regulations and the following conditions:-

- (1) The number MDA 801566 and the supplier's name or mark shall be permanently attached to or marked on each device.
- (2) The airmover shall have provision for the connection of an earth lead.
- (3) Noise levels measured at 1 metre shall not exceed 85 dB (A) under any condition of service.
- (4) The unit is to be used underground only in accordance with a system approved by the District Inspector.
- (5) A copy of this approval shall be provided with each airmover supplied to an underground coal or shale mine.

P. R. TORR,  
Senior Inspector, Mechanical Engineering  
for Chief Inspector of Coal Mines

[Published in Government Gazette no. 152 of 17th October, 1980]

Department of Mineral Resources  
Sydney, 25th September, 1980.

COAL MINES REGULATION ACT, 1912 - NOTICE  
Paper No.: M 79-4900  
Component Approval No.: MDCA 0503

THE Chief Inspector of Coal Mines hereby advises that the Aluminium Bronze Protective Coating known as Catalogue No. 75 manufactured in New South Wales by Comcoat, Lidcombe, has been tested and examined alloys for the purposes of exposed aluminium and aluminium alloys for the purposes of Regulation 12c (b) of the Seventh Schedule to the Coal Mines Regulation Act, 1912.

Accordingly, the said protective coating may be used to protect exposed aluminium and aluminium alloys in any coal or shale mine of New South Wales subject to the following conditions:

- (1) The minimum thickness of the protective coating shall not be less than 0.5mm and the coating shall be applied strictly in accordance with the manufacturer's instructions.
- (2) The protective coating shall be examined at periods not exceeding six months and suitably replaced if found to be defective.
- (3) It is not intended to allow the use of the protective coating on approved apparatus unless such coating is covered by approval of the apparatus to which it is applied.

M.J. MUIR  
Chief Inspector of Coal Mines.

[Published in Government Gazette No. 193 of 18th December, 18th December, 1981]

Department of Industrial Relations  
Sydney, 29th October, 1981.

COAL MINES REGULATION ACT, 1912 - AS AMENDED  
NOTICE  
Paper No.: M 79-4900  
Component Approval No.: MDCA 0773

THE Chief Inspector of Coal Mines hereby advises that the Nickel Alloy Protective Coating known as Catalogue No. 45, has been tested and examined and found to be suitable for providing protection of exposed aluminium and aluminium alloys for the purposes of Regulation 12c (b) of the Seventh Schedule to the Coal Mines Regulation Act, 1912.

Accordingly the said protective coating may be used to protect exposed aluminium alloys in any coal or shale mine of New South Wales subject to the following conditions:

- (1) The minimum thickness of the protective coating shall not be less than 0.5 mm and the coating shall be applied strictly in accordance with the manufacturers instructions.
- (2) The protective coating shall be examined by users of the coated on approved apparatus unless such coating is covered by approval of the apparatus to which it is applied.
- (3) It is not intended to allow the use of the protective coating on approved apparatus unless such coating is covered by approval of the apparatus to which it is applied.
- (4) A copy of the approved document shall be supplied with each item of apparatus on which the coating is used.

J.G. Bailey  
Acting Chief Inspector of Coal Mines

[Published in Government Gazette No. 193 of 18th December, 17th October, 1980]

Department of Mineral Resources  
Sydney, 25th September, 1980.

COAL MINES REGULATION ACT, 1912 - NOTICE  
Paper No.: M 79-4900  
Component Approval No.: MDCA 0502

IT is hereby notified that the Chief Inspector of Coal Mines hereby advises that the Stainless Steel Protective Coating known as Catalogue No.: 70 manufactured in New South Wales by Comcoat Lidcombe, has been examined and tested and found to be suitable for providing protection of exposed aluminium and aluminium alloys for the purposes of Regulation 12c (b) of the Seventh Schedule to the Coal Mines Regulation Act, 1912.

Accordingly, the said protective coating may be used to protect exposed aluminium alloys in any coal or shale mine of New South Wales subject to the following conditions:

- (1) The minimum thickness of the protective coating shall be applied strictly in accordance with the manufacturer's instructions.
- (2) The protective coating shall be examined at periods not exceeding six months and suitably replaced if found to be defective.
- (3) It is not intended to allow the use of the protective coating on approved apparatus unless such coating is covered by approval of the apparatus to which it is applied.

M.J. MUIR  
Chief Inspector of Coal Mines

SUMMARY OF DIESEL DYNAMOMETER TEST RESULTS FOR DES APPROVAL

	DES No.	Engine Type	Max. Approved Power Rating (kW)	Max Power R.M.P	NO Load (R.P.M)	Fuel Consum. (kg/hr)	Efficiency kWh/kg	Min. Vent. air m <sup>3</sup> (sec)	CO <sub>2</sub> % in Raw Exhaust at max. power	CO p.p.m	NOx p.p.m.	inlet VAC m.m.Hg	Exhaust PRESS m.m.Hg
Venier	1	Hino EH700	63	2400		15.2	4.1	3.8				16	30
Hurslet Taylor	3	MW50916-4	38.2	2500								26	14
Noyes	4	CAT 3306 NA	84	2100		25.4	3.3	5.0				28	26
Fox	5	Cummins N855-R2NA	130	2100		38.0	3.4	7.8				12	19
Moxon	6	Hino EC 100	65	2400		16.9	3.8	3.9				8	24
Domino	7	MWM D916-6	75	2500		21.1	3.6	4.5				27	35
Paccar	8	CAT 3306 NA	84	2150	2260	25.4	3.3	5.0				25	22
Paccar	9	CAT 3304 NA	63	2200	2250	18.6	3.4	3.8	10	210	700	30	22
Fox	10	CAT 3208 NA	120	2800	3015	33.8	3.6	7.2	9	680	600	28	46
Noyes	11	Kubota D750-AH	7.1	2200	2950	1.9	3.7	3.5	8.8	440	290	8	6
Fox	12	Perkins 4.236	37	2350	2460	11	3.4	3.5	7	350	420	33	97
Hexham Eng	13	CAT 3306 PCTA	176	2200	2385	53.2	3.3	10.6	8.8	60	370	34	28
Domino	14	MWM D916.4	45.2	2550	2630	12.5	3.6	3.5				34	39
Paccar	15	CAT 3306 NA	97.4	2100		27.9	3.5	5.9				26	35
Domino	16	MWM D916.3	32.2	2400	2460	9.5	3.4	3.5	9.3	260	400	20	66
Noyes	17	CAT 3304 NA	68.3	2210	2300	20.9	3.3	4.1	9.9	140	640	20	20
PJB	18	Kubota V1702-B	22.3	2600	2800	7.6	2.9	3.5	10.5	160	450	15	30
Domino	19	MWM B916-4	40	2550	2640	12.3	3.3	3.5	8.5	170	400	32	64
Domino	20	MWM D932-12	170	2270	2310	50.7	3.4	10.2	8.3	240	520	10	64
PJB	21	CAT 3306 PCTA	170	1830	1860	43.1	3.9	10.2	10.5	160	740	15	26
Hexham Eng.	23	KIA ZB-41	50	2500	2800	14.6	3.4	3.5	10.5	160	510	20	10
Baldwin	24	3306PCTA	192	2150	2330	49.9	3.8	11.5	8.8	70	700	30	14

<sup>1</sup> Note: Emission levels represent the maximum obtained during the different type test modes and do not necessarily relate to each other.

	DES No.	Engine Type	Max. Approved Power Rating (kW)	Max Power R.M.P	NO Load (R.P.M)	Fuel Consum. (kg/hr)	Efficiency kWh/kg	Min. Vent air m <sup>3</sup> (sec)	CO <sub>2</sub> % in Raw Exhaust at max. power	CO p.p.m	NOx p.p.m.	inlet VAC m.m.Hg	Exhaust PRESS m.m.Hg
Eimco	25	MWM916-4	47	2500	2620	14.2	3.3	3.5	8.0	190	350	7	16
Eimco	26	CAT 3304PCNA	62.6	2150	2330	21.2	3.0	3.8	9.4	150	540	18	15
Baldwin	27	Perkins 4.154	30	2450	2820	8.3	3.6	3.5	8.4	170	450	14	22
Eimco	28	CAT 3306PC	103.4	2200	2300	29.8	3.5	6.2	10.3	330	440	22	22
PJB	29	KIA 6-247	50	2650	3100	13.5	3.7	3.5	6.3	120	430	22	37
Domino	30	CAT 3306 PC NA	97.4	2100		27.9	3.5	5.9				28	34
Hawker Noyes	31	Kubota V1100-B	14	2500		4.26	3.3	3.5	9.5	290	380	17	12
Advance Hydraulic	32	Kubota 2203	20	2450	2670	5	4.0	3.5	6.0	440	490	11	47
Eimco	33	CAT 3306 PC NA	106.6	2150		29.7	3.6	6.4	10.4	160	480	17	4
Baldwin	34	CAT 3304	61.28	2200		17.91	3.4	3.7	10.0	210	560	28	4
Domino	35	CAT 3306	91.5	2100		28.5	3.2	5.5	10.7	250	520	8	2
PJB	36	Cummins 6A3.4	48.5	2850		20.4	2.4	3.5	11.0	240	390	16	4
Hunter Hydraulic	37	Hino W04D	42	2300		12.1	3.5	3.5	9.1	350	530	35	35
Jeffrey	38	MWM 916-6	70	2300		19.6	3.6	4.2	9.4	300	520	37	73
Westfalia Becorit	39	CAT 3306NA	94.6	2100	2290	26.5	3.7	5.7	9.7	410	480	14	28
PJB	40	CAT 3306 PCTA	185	2250	2400	64.2	2.9	3.5	10.6	110	585		40
Dartbrook	41	Perkins 1004-4	36.1	2200		9.69	4.3		7.3	140	465	12.6	23.5

<sup>1</sup> Note: Emission levels represent the maximum obtained during the different type test modes and do not necessarily relate to each other.

SUBJECT -: Requirements regarding the Use of Aluminium in U.S.A.

Under the Code of Federal Regulations - title 30: Mineral Resources Part 18 deals with Electric Motor-Driven Mine Equipment and Accessories.

The purpose of this part under Sub-part A: General Provisions Section 18:1 is as follows:

The regulations in this part set forth the requirements to obtain MSHA: Approval of electrically operated machines and accessories intended for use in gassy mines or tunnels, certification of components intended for use on or with approved machines, permission to modify the design of an approved machine or certified component, acceptance of flame-resistant cables, hoses, and conveyor belts, sanction for use of experimental machines and accessories for applying for such approval, certification, acceptance for listing.

The following is an extract of Section 18.31: Enclosures - Joints and fastenings in relation to use of Aluminium:

- (a) Explosion-proof enclosures:
- (b) External rotating parts shall not be constructed of aluminium alloys containing more than 0.5 percent magnesium.

The generally accepted view expressed by the industry and equipment manufacturers/suppliers that there is no prohibition on the use of Aluminium is thus proven to be incorrect. Whilst the U.S restriction could be seen as to apply only in limited applications it nevertheless prohibits the use of this material in certain circumstances.

From the attached list of specified Aluminium Alloys it can be seen that the U.S limit would restrict most of all alloys specifications with the exception mainly for those in the 1000 series. It is to be noted that alloys to this specification series are very soft and would not be generally used for equipment used in the mining industry.

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
All inspectors of Mechanical Engineering.



File No.: Not Available  
Date: 12 May 1994

The Manager  
Appin Coal Mine  
C/- Post Office  
APPIN NSW 2560

### **NOTICE OF SPECIFICATION FOR CONTINUOUS MINER OUTBURST CABIN**

It is hereby notified that the Chief Inspector of Coal Mines, pursuant to the provisions of Clause 42 of the Coal Mines Regulation (Mechanical - Underground Mines) Regulation, 1984, SPECIFIED that the operator cabin installed on any Continuous Miner operated under Full Outburst Procedure shall comply with the following design and operational requirements.

These requirements are in addition to those in Clause 32 of the above Regulation.

The Specification, issued on 12 May 1994 shall be implemented as soon as practicable but no later than 31 July 1994.

#### **Design and Operational Requirements**

- 1 Structure
  - (a) The cabin shall, as far as practicable, be sealed against the intrusion of any gases or coal dust.
  - (b) Provision shall be made to permit a complete air change in the cabin within one minute.
  - (c) The result of an outburst may cause the operator to be displaced from his driving position. The inside of the cabin shall be designed to prevent injury to the operator in such an event.
  - (d) The side door of the cabin shall be sealed but not bolted and able to be easily opened from inside and outside.

To facilitate driver exit after an outburst the top half of the door shall be able to be opened independently of the bottom half.

(e) A second means of egress shall be provided in the rear of the cabin of sufficient size to permit easy removal of an unconscious operator fitted with a mask and respirator by persons wearing masks and respirators. This rear door shall be able to be easily opened and removable from inside and outside.

(f) The pressure wave created during an outburst may be of sufficient strength to move a continuous miner. The design of the cabin shall be able to withstand such forces.

The front of the cabin and door shall be ranked to help detect these forces.

(g) The front shield shall be fitted with provisions for washing and drying to improve the operator's vision.

## **2 Life Support System**

(a) An air supply hoses shall be permanently connected to the chain air supply. The existing air supply connected to the continuous miner may be used for this purpose.

The air supply will be connected to the following:

i An air shower mounted above the above the operator to maintain a comfortable respirable atmosphere.

ii A provision to deluge the cabin for rapid flushing.

iii Face mask supply.

(b) There shall be an on board air supply of at least 45 minutes duration through the face mask.

(c) If the air supply hose is ruptured, supply will automatically switch to the on board air supply.

(d) Provision shall be made at the outbye end of the discharge conveyor to connect an air supply hose.

Cabin supply will automatically switch to this source whenever it is brought into use.

(e) There shall be a portable air supply in the cabin to allow the operator to safely reach the fresh air base. He shall be able to plug into that supply without removing his mask.

- (f) The mask supply hose is to be kept as short as possible to avoid it becoming caught on protrusions in the cabin.
- (g) A device shall be fitted to the air supply which visibly indicate to the operator the quantity of air flow

**3 Miscellaneous**

- (a) To prevent eye injury from the effects of CO<sub>2</sub> gas, eye protection shall be worn at all times. The use of a full face mask is recommended.
- (b) The respiratory air shall be continually monitored at the compressor to prevent carbon monoxide being inadvertently supplied for respiratory use.

Detection of an increase in the carbon monoxide level shall cause the air supply to be shut off automatically before it can reach the supply to the cabin.

B R McKensy  
Chief Inspector of Coal Mines

COAL MINES REGULATION ACT, 1982, as amended

**NOTICE OF REVOCATION**

FILE NO: C95/0236  
DATE: 26 November 1996

It is hereby notified that the Chief Inspector of Coal Mines, pursuant to the provisions of Section 5(17) of the Coal Mines Regulation Act 1982, as amended, **REVOKES** the requirement for machines generically classified as **Feeder Breakers** to be issued with a Certificate of Examination before being taken into an underground coal mine.

The requirement for a Certificate of Examination for this class of machinery was issued under the provision of Clause 8 of the Coal Mines Regulation (Approval of Items) Regulation, 1984, on 5 December 1984.

This revocation takes effect on 1 January 1997.

B R McKensey  
CHIEF INSPECTOR OF COAL MINES

# SECTION D

## SPECIFICATIONS

**DEPARTMENT OF INDUSTRIAL RELATIONS**

Coal Mines Regulation Act, 1982  
Notice of Approval

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Approval No.: MDA 845005  
File No.: M84/5005  
Date: 12th March, 1984

IT is hereby notified that the Chief Inspector of Coal Mines for the purposes of Sections 21 and 35 of 'Coal Mines Regulation (Transport-Underground Mines) Regulation 1984' approved the following specification for fuel for use in diesel engines underground.

<u>Property</u>	<u>Limits</u>	<u>Test Method</u>
Viscosity Kinematics (at 40° C)	1.9 Centistokes min 5.5 Centistokes max.	ASTM D44-1P71
Carbon Residue (on 10% residue)	0.2% max. by mass	ASTM D524-1P14
Distillation (85% recovered)	350° C maximum	ASTM D86-1P123
Flashpoint	61.5 degrees max.	AS 2106.2
Sulphur content	0.5% max. by mass	ASTM D129-1P61

M. J. MUIR  
Chief Inspector of Coal Mines

[Published in Government Gazette No. 44 of 23rd March, 1984]

Department of Industrial Relations  
Sydney, 12th March, 1984

Coal Mines Regulation Act, 1982  
Notice of Approval

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Specification: 845004  
File No.: M. 84-5004

TEST METHOD FOR DETERMINATION OF MATERIAL FLASHPOINT

IT is hereby notified that the Chief Inspector of Coal Mines for the purposes of the Regulations cited as the "Coal Mines Regulation (Fire Control-Underground Mines) Regulations - 1984" and Coal Mines Regulation (Fire Control - Open Cut Mines) Regulation, 1984", under the Coal Mines Regulation Act, 1982, has specific that the test method for the determination of material flashpoint under Clause 5 of the Regulations shall be in accordance with the Standards Association of Australia AS 2106 -1980 "Determination of the Flashpoint of Flammable Liquids (Closed Cup)."

The optional method of test permitted by AS 2106 -1980 to determine the flashpoint shall be nominated in the test report and may be nominated in advance by the Chief Inspector of Coal Mines.

M.J. MUIR  
Chief Inspector of Coal Mines

[Published in Government Gazette No. 44 of 23rd March, 1984]

Department of Industrial Relations  
Sydney, 23rd March, 1984

Coal Mines Regulation Act, 1982  
Notice of Approval

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Specification: 845002  
File No.: M84-5002

HEAD ROPES FOR FRICTION WINDERS

IT is hereby notified that the Chief Inspector of Coal Mines, for the purposes of the Regulation cited as the "Coal Mines Regulation (Shafts and Roadways-Underground Mines) Regulation 1984". under the Coal Mines Regulation Act, 1982, It is specified that the factor of safety for head ropes when newly installed on a friction winder under Clause 13 (2) shall as indicated below. Each set of winding apparatus shall have a combined factor of safety not less than F1, (transport of persons) and F2, (transport of mineral or material) as defined in the following formulae:

1. Personnel Transportation

For the purposes of the above the factor F1, is defined as:

$$F1 = ( 1.0 + ((4.5(R+C))/(R(1 + 0.0051*SQR(L)) - 13.5))$$

where

- F1 = the factor of safety (personnel)  
R= the ratio of the diameter of the winding sheave to the diameter of the winding rope  
C = 35 where there is not a nearby deflective sheave, or 43 where there is nearby deflective sheave  
L = the vertical distance in metres between the level of the top of the highest winding sheave and the level at which the winding ropes meet the suspension gear of the cage when as its lowest position in the shaft.



2. Mineral or Material Transportation

For the purpose of the above the factor F2 is defined as:

$$F2 = F1 - 1.0$$

F2 = the factor of safety (mineral or material)

F1 = the factor of safety (personnel)

This notice take effect on and from 26th March, 1984.

M. J. MUIR,  
Chief Inspector of Coal Mines.

**DEPARTMENT OF INDUSTRIAL RELATIONS**

**COAL MINES REGULATION ACT, 1982  
NOTICE OF SPECIFICATION**

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File No.: M84/5001  
DATE: 3rd May, 1984

**ALUMINIUM AND LIGHT METAL ALLOYS**

IT is hereby notified that the Chief Inspector of Coal mines, for the purposes of the Regulation cited as the 'Coal Mines Regulation (Mechanical-Underground Mines) Regulation 1984' under the Coal Mines Regulation Act, 1982, has specified that the material described below is aluminium or light metal alloy for the purposes of Clause 39 of the Regulation.

"Any metal or alloy which includes aluminium and/or magnesium and/or titanium in which the total content of these three constituents exceeds 15% by weight but in any case in which the content of magnesium and titanium together exceeds 6% by weight."

M.J. MUIR  
Chief Inspector of Coal Mines

**DEPARTMENT OF INDUSTRIAL RELATIONS**

**SYDNEY  
COAL MINES REGULATION ACT 1982**

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File No.: M84/5010  
Date: 26 June 1985

**CHAINS FOR TRANSPORTING - PERSONS**

In accordance with the requirements Of Clause 22 (2) of the Coal Mines Regulation (Shafts and Roadways - Underground Mines Regulation 1984, I hereby notify that the specification of material to be used for the manufacture of chains used in shafts and roadways for the transporting of persons shall be as follows:-

**SCOPE**

This specification covers the composition and heat treatment of steel to be used for the manufacture of chains, shackles, D-links and blocks where such equipment is to be used for the transporting of persons in a coal mine.

**MATERIAL**

The material hereby specified shall be in accordance with one of the following standards.

- (1) Australian Standard A.S. M3 - 1951 (withdrawn). "1.5 per cent Manganese Steel".
- (2) Australian Standard A.S. 1442-1983. "Carbon Steels and Carbon Manganese Steels". Grade XK 1315 F. Fine grained.
- (3) Australian Standard A.S. 1442 - 1983. "Carbon Steels and Carbon Manganese Grade XK 1320 F. Fine grained.
- (4) British Standard BS 2772: Part 2 - 1977. "Iron & Steel for Colliery Haulage and Winding Equipment". Grade 150 M 12.

HEAT TREATMENT

Chains, shackles, D-links or blocks made from specified steel shall be heat treated either:-

- (a) by normalising at a temperature from 880° C to 920° C by cooling followed in still air. Normalised items are to be re-normalised at intervals not exceeding three years.
- (b) by hardening and tempering. Harden in water from a temperature of 870° C to 910° C and temper at a suitable temperature between 550° C and 650° C. Items which have been hardened and tempered shall receive no further heat treatment during their service life which is not to exceed 15 years.

GENERAL

Other steels and/or treatments may be used subject to Individual approval by the Chief Inspector of Coal Mines.

J.G. Bailey  
Acting Chief Inspector of Coal Mines

File Number: M82/2104  
Date: 2nd February, 1988

Union Rubber & Engineering Pty Ltd.,  
30-35 Sydney Street,  
MARRICKVILLE 2204 10

ATTENTION: Mr. K. Weintritt

Dear Sir,

Re: FABREEKA SA47 Brake Pad Material

It has been brought to our attention that problem have been experienced with the bonding of the above material to the steel shoe plates used as part of the emergency dump brake systems fitted drift haulage mancars and self propelled rail mounted vehicles.

Accordingly it has been decided to accept your recommendation to only endorse the following organisations to carry out the bonding process.

- (1) Union Rubber & Engineering Pty. Ltd., Marrickville.
- (2) Hexham Engineering Pty. Ltd., Mayfield.
- (3) Better Brakes Holdings Pty. Ltd., Smithfield.
- (4) Toronto Brake Service Pty. Ltd., Toronto West.
- (5) Central Brake Service (Newcastle) Pty. Ltd., Newcastle West.

It is understood that the bonding process shall be carried out in accordance with the attached specification.

It is requested that you advise the organisations above of this endorsement and that they provide certification in writing that all shoes supplied to coal mines after 1st March, 1988 are in compliance with the endorsement and the attached bonding specification.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering

**UNION RUBBER & ENGINEERING PTY. LTD**

**FABREEKA SA47 BRAKE PAD BONDING SPECIFICATION**

The process of bonding Fabreeka brake pads to brake shoes is to be carried out strictly in accordance to the following specification. Supervision is to be responsible in maintaining that the job is carried out to the specification.

**SURFACE PREPARATION**

1. Brake shoe bonding surface to be dressed with rotary burr such that fresh parent metal is exposed.
2. Brush surface so that it is free of all waste metal.
3. Fabreeka SA47 brake pad to be buffed with a rotary burr. The grain of the Fabreeka is to be determined by buffing the material in different directions. Once the direction of the grain is established, the material will be buffed against the grain to obtain the roughest surface finish.
4. The Fabreeka is to be brushed clean of all residue.

**MIXING**

5. The adhesive to be used is REMA TIPTOP SC2000, Cement/hardener to be mixed.
6. Mix well cement SC2000 with 10% RF hardener. Mixture is to be used within 2hrs of mixing.

**APPLICATION**

8. Two coats of SC2000 plus hardener have to be applied to both metal and Fabreeka surfaces.
9. Allow first coat to dry for a minimum of 2 hrs.
10. Second coat is to dry only until it is slightly tacky to back of fingers (approx 10 minutes).
11. In the case of over drying, apply a third coat to both surfaces.

ADHESION

12. Join surfaces and impact Fabreeka with a rubber.
13. Clamp joint such that pressure is applied evenly to the entire braking surface. Leave clamps on overnight.
14. Each end of the brake pad is to be clamped with a copper retaining strip and fastened with countersunk brass screws.

DEPARTMENT OF INDUSTRIAL RELATIONS

Coal Mines Regulation Act, 1982  
Notice of Approval

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Approval No: MDA 86308

File No: M86/308

Date: 22nd January, 1988

PROTECTIVE CANOPIES FOR CONTINUOUS MINERS

It is hereby notified that the Chief Inspector of Coal Mines, for the purpose of Clause 6(8) of the "Coal Mines Regulation (Approval of Items) Regulation, 1984" amends all approvals for protective canopies for continuous mining machines issued under Clause 32(1) of the "Coal Mines Regulation (Mechanical-Underground Mines) Regulation, 1984" and General Rule 49, Section 54 of the Coal Mines Regulation Act, 1912 as follows:-

(a) Materials

Main load bearing component materials used in the construction of protective canopies shall be in accordance with SAA Steel Structures Code: AS 1250-1981.

(b) Welding

- (1) Welding carried out in the construction of protective canopies shall be in accordance with SAA structural Welding code: AS 1554-Part 1-1985 for Weld Category SP.

Welded joints shall be non-destructively examined in accordance with the above Code.

This Notice of Approval will apply to all approved protective canopies manufactured or repaired from 1st June, 1988 and is subject to the following conditions:-

- (1) A copy of this Notice shall be attached to the original approval document and both shall be provided with each protective canopy supplied to a coal or shale mine.



**Notice D7 continues**

- (2) The manufacturer is to certify in writing that the protective canopy supplied is in accordance with requirements of the original approval and this Notice and shall provide any relevant reports as specified within AS 1554-Part 1.
- (3) In the event of a protective canopy being subjected to damage, which may impair its structure integrity, the Mine Mechanical Engineer shall ensure that any repairs conform with the requirements of the original approval, this Notice and are to the satisfaction of an Inspector of Mechanical Engineering.

Note:

A condition of the original approval is that there shall be no variation in the design, construction or material of the canopy without prior approval of the Chief Inspector of Coal Mines.

J.G Bailey

CHIEF INSPECTOR OF COAL MINES.

**Notice D7 continues**

File No.: M86/308  
Date: 18th March, 1988.

Dear Sir,

RE: CONTINUOUS MINER CANOPIES

Occurrences involving approved canopies fitted to continuous mining machines during the past 2 years have made it necessary to review the manufacture and design aspects of these structures.

In order to overcome manufacturing deficiencies in the fabrication of the canopy structure and address the matter of repairs which may be required as a result of damage, the attached Notice of Approval has been issued.

This notice amends all approvals issued for canopies incorporating a specification to cover material and welding. The notice will apply to all canopies manufactured or repaired after 1st June, 1988.

This advice is to enable the necessary arrangements to be made to ensure that the appropriate action is undertaken with regard to this Notice.

In addition there have been a number of canopy failures reported which involved the use of hydraulic cylinder supports. It would appear that the complete reliance on the hydraulic cylinder for structural support may not be completely warranted.

The reports also indicate that canopies should also be checked for their ability to resist the effects of side loading in addition to the vertical load component.

These matters in conjunction with those matters addressed in the Notice of Approval have been reviewed and a document titled "Mechanical Design Guidelines for the Construction of Continuous Miner Protective Canopies" has been prepared. This document states that hydraulic supports are unacceptable.

The document is available for comment upon receipt of a written request to Mr. L. Roberts - Senior Inspector of Mechanical Engineering at the above address.

Yours faithfully,

J.G. Bailey  
CHIEF INSPECTOR OF COAL MINES.

COAL MINES REGULATION ACT, 1982

Specification of Requirement of Approval  
Powered Winding System

File No.: C93/0195

Date: 01 June 1993

It is hereby notified that the Chief Inspector of Coal Mines, pursuant to the provisions of Clause 6 (6) and (7) of the Coal Mines Regulation (Approval of Items) Regulation 1984 as amended specifies as being required to be approved generally any powered winding system or any modification or extension to any powered winding system and which is used to transport persons or materials between different levels from the surface to underground of an underground coal mine where any of the following criteria are met:

1) the powered winding system is composed of items or apparatus which fall within the scope of interpretations contained in Part-I Coal Mines Regulation (Shafts and Roadways) Regulation 1984 as amended

and

the powered winding system falls within the scope of interpretation of either the Coal Mines Regulation (Electrical - Underground Mines) Regulation 1984 as amended or the Coal Mines Regulation (Mechanical-Underground Mines) 1984 as amended.

2) the powered winding system is modified or extended to effect changes to the controls or ratings or means of protection from any hazard associated with the safe operation and the maintenance in safe working order of the powered winding system.

Approvals issued under this provision shall be based on a documented Risk Assessment which shall be provided by the applicant at the time of application for approval. The risk assessment is required to identify all of the hazards to health and safety which arise out of the operation of the powered winding system and to rank the assumed risk associated with each hazard after protective measures have been considered or adopted.

Any documented Risk Assessment which is provided in pursuance of approval under this provision may be the subject of an independent audit of the methodology used to assess the risks.

A A RECZEK  
Senior Inspector  
Electrical Engineering  
For Chief Inspector  
of Coal Mines

L J ROBERTS  
Senior Inspector  
Mechanical Engineering  
For Chief Inspector  
of Coal Mines

COAL MINES REGULATION ACT 1982, AS AMENDED

File No.: CM83/2300

Date: 2 December 1993

Notice of Code for Air Compressors in Underground Mines

IT is hereby notified that the Chief Inspector of Coal Mines pursuant to the provisions of Clause 33 of the Coal Mines Regulation (Mechanical - Underground Mines) Regulation 1984, specifies that Air Compressors which absorb more than 4 kW of power and are operated underground in a coal mine comply with a Code in relation to their design, construction, installation, operation, inspection and maintenance.

The Code entitled "Air Compressors - Underground Use", dated September 1993, and numbered MDG 18, shall apply to all air compressors supplied from 1 June 1994 and to all air compressors by 31 December 1996.

B.R.McKENSEY  
Chief Inspector of Coal Mines.

COAL MINES REGULATION ACT, 1982, as amended

**NOTICE OF SPECIFICATION FOR FEEDER BREAKERS**

FILE NO: C95/0236  
DATE: 26 NOVEMBER 1996

It is hereby notified that the Chief Inspector of Coal Mines, pursuant to the provisions of Clause 42 of the Coal Mines Regulation (Mechanical - Underground Mines) Regulation, 1984, SPECIFIES that machines generically classified as Feeder Breakers comply with a design standard.

MDG 31 - "Design Guidelines for Construction of Feeder Breakers" issued July 1996 under File Reference C95/0236 is nominated as the design standard.

MDG 31 shall be utilised as an integral part of any occupational health and safety assessment conducted for the design of machinery classified as Feeder Breakers manufactured after 1 January 1997.

B R McKensey  
CHIEF INSPECTOR OF COAL MINES

# SECTION E

RESERVED FOR DEPARTMENTAL USE ONLY

# SECTION F

NOTICE OF APPROVAL or AMENDMENT

## Notice F1

File No.: M81/5467  
Date: 9th March, 1982

Works Manager  
Neil Moxon Pty Ltd  
Vale Road  
MOSS VALE NSW 2577

Dear Sir

### Approval of Accumulator Mounting Brackets

I refer to your letter dated 5th February, 1982, regarding accumulator mounting brackets for use with diesel engines in underground coal and shale mines in New South Wales.

The mounting bracket design shown detailed on the drawings listed below is satisfactory to this Department.

Each accumulator shall have a warning notice affixed to state that the units must be described prior removal for maintenance purposes. Also a metal shroud is required to be fitted to the outlet end of the unit to provide protection for operating and maintenance personnel requiring access to this area of the machine.

Yours faithfully

Chief Inspector of Coal Mines

Drawing No: 2622 dated 1st March, 1982  
2601 dated 24th August, 1981



File No.: M80/5439  
Date: 13th September, 1982

To: Colliery Managers  
Chief Mechanical Engineers

Dear Sir,

Coal Mines Regulation Act, 1912

The Rules and Special Conditions issued in conjunction with the letter of approval for diesel engine powered equipment is hereby amended for the section entitled 'Ventilation and Control of Exhaust Gases', as follows:-

"Once every six months, the chemical analysis of undiluted engine exhaust gas samples shall be carried out by an approved laboratory."

This amendment shall come into force from 1st January, 1983.

Yours faithfully

M.J. MUIR  
Chief Inspector of Coal Mines

SYDNEY  
COAL MINES REGULATION ACT, 1982  
NOTICE OF APPROVAL

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Approval No.: MDA 845009  
File No: M84/5009  
Date: 24th December, 1984

It is hereby notified that the CHIEF INSPECTOR OF COAL MINES, for the purpose of Clause 41(c) of the 'Coal Mines Regulation (Transport - Underground Mines) Regulation, 1984', APPROVED the following as roll-over protection to protect the operator for use on mechanical vehicles on the surface of a mine:-

- (a) All rubber-tyred or crawler-mounted self-propelled scrapers, front-end loaders, dozers, graders, loaders, and tractors with or without attachments shall be provided with roll-over protective structures (ROPS) in accordance with the requirements of Standards Association of Australia AS 2294-1979-Protective Structures for Operators of Earthmoving Machines as applicable for such structures or alternatively to any other standard acceptable to the Chief Inspector.
- (b) All mobile cranes shall be provided with falling object protective structures (FOPS) in accordance with the requirements of Standards Association of Australia AS 2294-1979-Protective Structures for Operators', of Earthmoving Machines as applicable for such structures or alternatively to any other standard acceptable to the Chief Inspector.
- (c) All forklift or high-lift rider trucks shall be provided with overhead guard structures in accordance with the requirements of the Standards Association of Australia AS 2359-Part 1-1980-SAA Industrial Truck Code-Design and Manufacture as applicable for such guards, or alternatively to any other standard acceptable to the Chief Inspector.

The approval of such structures will apply from the 1st July 1985 and is subject to the following conditions:- .

- (1) Each structure shall be provided with a notice in writing certifying that the structure complies with the requirements of the relevant standard or any other approved standard when supplied to coal mines in New South Wales.
- (2) There shall be no variation in the manufacture or use of the structure which may effect its compliance with the relevant standard or any other approved standard used for its design.

M.J. MUIR  
Chief Inspector of Coal Mines.

File No.: M82/9089  
Date: 23rd May, 1985.

Approval of Hoses

Please be advised that the amended notice regarding air and stone dust hose as detailed below will shortly appear in the Government Gazette:-

NSW DEPARTMENT OF INDUSTRIAL RELATIONS  
Sydney  
COAL MINES REGULATION ACT, 1982  
APPROVAL OF ITEMS

FILE NO: M82/9089  
DATE: 17th May, 1985

It is hereby notified that the Chief Inspector of Coal Mines in accordance with the requirements of Clause 6(8) of the Coal Mines Regulation (Approval of Item) Regulation, 1984, amends the approval notice, reference number 9828 published in the Government Gazette No. 175 of 14th December, 1984, to the following

All hoses when used in underground coal mines in connection with compressed air equipment or for stone dusting, shall be approved.

Approval of such hoses is hereby satisfied if the hose is made in accordance with Australian Standard 'AS2660-1983 Industrial Hose and Hose Assemblies - Air/Water - for Underground Coal Mines' insofar as that standard requires fire resistant and anti-static properties".

It is to be noted that the requirement for approval relates to underground coal mines and only for the duties referred to in the notice. Existing compressed air hose and anti-static stone dusting hose presently being used may continue to be used, however, replacement hose shall be of an approved type.

Yours faithfully,

M.J. MUIR  
Chief Inspector of Coal Mines

COAL MINES REGULATION ACT, 1982  
NOTICE OF APPROVAL

File No.: M84/5006  
Date: 20th June, 1984

It is hereby notified that the CHIEF INSPECTOR OF COAL MINES, for the purposes of Clause 17(4)(b) of the "Coal Mines Regulation (Mechanical-Underground mines) and (Mechanical-Open-Cut Mines) Regulations, 1984", APPROVED the following as an indicator suitable for exhibition on a registered pressure vessel:-

A disc or plate manufactured from either brass or stainless steel with a minimum diameter of 50 mm or equivalent area and a minimum thickness of 0.25 mm distinctly metal stamped in letters and numerals not less than 4 mm high nominating the following:-

- (a) Registered number
- (b) Safe working pressure
- (c) Expiry date.

The above information shall be in accordance with that shown on the current Certificate of Inspection.

The indicator shall be attached to an accessible part of the pressure vessel, using a non-corrosive material, as determined by the District Inspector.

The use of an approved indicator is subject to retention of the current Certificate of Inspection by the Manager in a manner acceptable to the District Inspector.

CHIEF INSPECTOR OF COAL MINES.

## Notice F6

File No.: M82/4773  
Date: 17th January, 1985

The Manager  
Maitland Laboratory  
A.C.I.R.L. Ltd  
P.O. Box 26  
MAITLAND 2320 62

Dear Sir

Attached is an approval for Australian Coal Industry Research Laboratories, Maitland Laboratory and associated mobile laboratory to undertake statutory sampling and analysis of diesel exhaust gases.

This approval supersedes the approval dated 17th July, 1984.

The new approval is modified from the previous approval in that it now formally refer to approvals issued under Clause 40 of the (Mechanical-Underground Mines) Regulation and the final line of paragraph (11) has been altered by replacing the word 'more' with the word 'less'.

In addition your attention is drawn to the Clauses 23(8) and 37(8) of the (Transport-Underground Mines) Regulation which requires that exhaust gases be 'sampled and analysed by an approved laboratory'. This requirement precludes sampling being done by other than permanent laboratory people.

Yours faithfully

P.R. TORR  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

**Notice F6 continues**

Our reference: M82/4773  
17th January, 1985

The Manager,  
Maitland Laboratory  
A.C.I.R.L. Ltd.  
P.O. Box 26  
MAITLAND 2300 62

Dear Sir,

**RE: STATUTORY DIESEL EXHAUST GAS TESTING**

You are hereby notified that, in accordance with the requirements of Clause 23 and Clause 37 of the "Coal Mines Regulation (Transport - Underground Mines) Regulation, 1984" and in relation to approvals issued under Clause 40 of the "Coal Mines Regulation (Mechanical - Underground Mines) Regulation 1984" of the Coal Mines Regulation Act, No.67, 1982 Australian Coal Industry Research Laboratories, Maitland Laboratory and associated mobile laboratory has been approved as an organisation to undertake statutory sampling and analysis of diesel exhaust gases. The approval relates to the testing as indicated hereafter and is subject to full compliance with the conditions following the various levels of testing.

**Subclause 23(1), 23(2),37(1) & 37(2) Weekly Atmosphere Test**

- (1) Sampling and measurements shall be as specified in the above listed subclauses.
- (2) A record of each such test shall be supplied to the manager of the mine and shall show:-
  - \* Date of test
  - \* Identification of machine
  - \* Concentration (by volume) of carbon monoxide
  - \* Concentration (by volume) of oxides of nitrogen
  - \* Quantity of air passing the stationary vehicle
  - \* Name of person who carried out the test
  - \* Action taken as a result of the test

**Subclause 23(4) and 37(4) - 28 Day Testing**

- (1) Sampling and analysis shall be done in accordance with approval number MDA 845007 (copy attached).
- (2) The testing shall be done in accordance with the requirements of Subclauses 23(7) and 37(7).

- (3) If any gas concentration exceeds the limits defined in the regulations the result shall be made known to the vehicle driver or an official forthwith.

Subclauses 23(8) & 37(8) - 6 Months & First Installation Tests

- (1) Equipment and reports shall at all times comply with the conditions of registration with the National Association of Testing Authorities.
- (2) Gas detection tubes shall not be used to provide results for this prescribed testing.
- (3) N.A.T.A. certified gas mixtures only shall be used to calibrate gas analysers.
- (4) The test report is to be a N.A.T.A. certificate and shall include the following information:-
  - (a) Colliery name and date of test plus, where the information is available, the date of the previous test on this engine.
  - (b) Engine type
  - (c) Engine identifying number
  - (d) The concentration (by volume) of the following constituents of the raw exhaust gases:-
    - Carbon Dioxide
    - Carbon Monoxide
    - Oxides of Nitrogen
  - (e) Method of loading and whether sampled directly or by use of gas sample bags.
- (5) Where possible analysis is to, be conducted using a Mobile Laboratory (or equivalent) and employing a direct sampling technique.
- (6) Where samples are to be collected using a gas sample bag then the bag shall be manufactured from the polymer polyvinylidene chloride (commercially available under the trade names saran and saranex) or other alternative polymers as acceptable to the Chief Inspector of Coal Mines. Where such bags contain an aluminium outer layer then the bag must be placed in a suitable cover and shall not be discarded, disposed of or removed from the cover underground in a New South Wales coal mine.

## Notice F6 continues

- (7) Where bag samples are taken and not analysed within ten minutes of sampling and if oxides of nitrogen are to be determined by chemiluminescence then the following shall apply unless otherwise directed by the Chief Inspector of Coal Mines.
- (a) With the engine two samples are exhaust and one previously been nitrogen operating under test conditions to be taken. One sample of raw sample in a bag that has about half filled with dry.
- (b) Both bag samples are to be analysed and using the carbon monoxide results the amount of dilution calculated. This provides a factor that allows a reliable NO<sub>x</sub> result to be obtained from the diluted sample.
- (8) Where an engine is fitted with a catalytic oxidiser (purifier) then the statutory limits shall be applied to gas results obtained from samples taken prior to the exhaust gases reaching the oxidiser.
- (9) For statutory six monthly testing engines are to be tested under conditions of maximum fuel input and this is best done at maximum power output. This is not the same as full throttle, no load, maximum engine speed. The engine must be operated at full throttle with sufficient load applied to bring the engine speed down from its maximum by 200-300 r.p.m. or as directed by a Mechanical Engineering Inspector.
- The Department's Mechanical Engineering Inspectors can advise of the most appropriate test method to use with a particular machine.
- (10) Engines which have not previously been tested, which have been overhauled or are to be first installed shall be tested under conditions of :-
- \* Maximum power output
  - \* Half blocked intake at maximum power output Idle
  - \* Maximum power output is as defined 'in condition No. 9
- (11) Test conditions shall be satisfactory only if the test results at maximum power output for undiluted samples indicate that the CO<sub>2</sub> content by volume is not less than 6%

Yours faithfully

P.R. TORR  
Senior Inspector of Mechanical Engineering



**DEPARTMENT OF INDUSTRIAL RELATIONS**

Coal Mines Regulation act, 1982

Notice of Approval

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Approval No.: MDA 845007/1

File No.: M84/5007

Date: 18th February, 1986

**DIESEL ENGINE EXHAUST GAS TESTING**

IT is hereby notified that the Chief Inspector of Coal Mines, for the purposes of Clause 23(4) and Clause 37(4) of "Coal Mines Regulation (Transport -Underground Mines) Regulation 1984" approved the following methods of sampling and analysis of diesel engine exhaust gases as required at 28 day or less intervals.

Notice supersedes the Notice of Approval, reference number 6999 published in the Government Gazette No. 116 of 27th July 1984.

- (1) Sampling and analysis shall be done by a person nominated in writing by the Manager or by an approved laboratory.
- (2) The gas sample shall be taken before the gas is passed through any form of conditioner or purifier.
- (3) Gases may be analysed by the use of an approved tube type gas detector. Where such a detector is used the gases shall be cooled to less than 30 degrees Celsius before entering any detector tube and the manufacturer's instructions relative to the use of the detector shall be followed.
- (4) The Manager may determine that the gases be sampled and analysed by an approved laboratory to standards nominated to be used for statutory six monthly tests.
- (5) The gas sample shall be taken with the engine at normal operating temperature.
- (6) The gas samples shall be taken in accordance with Clause 23(7) (a) and Clause 37(7)(a) viz. when the diesel engine is being run:-
  - (a) at maximum speed on full load; and
  - (b) at normal idling speed on no load.

Note: The procedure to determine 6 (a) shall be in accordance with the following:-

"Set the engine throttle to maximum opening without load (normally referred to as engine flight speed") then apply sufficient load to reduce the engine speed down from its maximum by 200 - 300 r.p.m. or as directed by an Inspector of Mechanical Engineering."

(7) A record of each such test shall be retained at the colliery for not less than one year and shall show:-

- \* Date of test
- \* Identification of engine including engine and DE numbers.
- \* Engine load condition and speed.
- \* Concentration (by volume) of carbon monoxide for each test condition.
- \* Concentration (by volume) of oxides of nitrogen for each test condition.
- \* The name of the person who sampled and analysed the gas.
- \* Any action taken as a result of the test.

P. R. TORR  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines.

DEPARTMENT OF MINERAL RESOURCES  
Coal Mines Regulation Act, 1982  
Approval of Items

Approval No.: MDA 860144  
File No.: M86/144  
Date: 10/6/86

TRANSMISSION DRIVE BELTING

IT is hereby notified that the Chief Inspector of Coal Mines, in accordance with the requirements of Clause 6 (5) of the "Coal Mines Regulation (Approval of Items) Regulation, 1984" directs that all transmission drive belting, commonly referred to as "V - Belts", when used underground in coal mines, shall be approved.

Approval of such drive belts is hereby satisfied if:-

- (1) The belt is made in accordance with Australian Standard "AS 2784-1985 Endless Wedge Belt and V-Belt Drives" in so far as that standard requires fire resistant and anti-static properties.
- (2) The belt has the following indelibly moulded into the outer surface of the belt:-

AS 2784 - F.R.A.S.

This requirement shall apply only to transmission belt which is first taken underground after 31st December, 1986.

M.J. MUIR  
Chief Inspector of Coal Mines

**DEPARTMENT OF MINERAL RELATIONS**  
Coal Mines Regulation Act, 1982  
Notice of Approval

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Approval No: MDA 845009/1  
File: M84 /5009  
Date: JUNE, 1986

It is hereby notified that the CHIEF INSPECTOR OF COAL MINES, for the purpose of Clause 41(c) of the 'Coal Mines Regulation (Transport - Underground Mines) Regulation, 19841, APPROVED the following as roll-over protection to protect the operator for use on mechanical vehicles normally used on the surface of a mine.

This notice supersedes the Notice of Approval, reference No. 1099 published in the Government Gazette No. 40 of 15th February, 1985.

- (a) All rubber-tyred or crawler-mounted self-propelled scrapers, front-end loaders, dozers, graders, loaders, and tractors with or without attachments which are normally used on the surface at an underground coal mine, shall be provided with roll-over protective structures (ROPS) in accordance with the requirements of Standards Association of Australia AS 2294-1979-Protective Structures for Operators of Earthmoving Machines as applicable for such structures or alternatively to any other standard acceptable to the Chief Inspector.
- (b) Where a potential exists for injury to a crane driver from falling objects then mobile cranes shall be provided with falling object protective structures (FOPS) in accordance with the requirements of Standards Association of Australia AS 2294-1979-Protective Structures for Operators of Earthmoving Machines as applicable for such structures or alternatively to any other standard acceptable to the Chief Inspector.
- (c) All forklift or high-lift rider trucks shall be provided with overhead guard structures in accordance with the requirements of the Standards Association of Australia AS 2359-Part 1-1980-SAA Industrial Truck Code-Design and Manufacture as applicable for such guards, or alternatively to any other standard acceptable to the Chief Inspector.

The approval of such structures will apply from the 1st July, 1986 and is subject to the following conditions:-

## Notice F11 continues

- (1) Each structure shall be provided with a notice in writing certifying that the structure complies with the requirements of the relevant standard or any other approved standard when supplied to coal mines in New South Wales.
- (2) As from 1st July, 1987, all machines to which approved R.O.P.S. are fitted shall have each seat equipped with seat belts adequate for their proposed use.
- (3) There shall be no variation in the manufacture or use of the structure which may effect its compliance with the relevant standard or any other approved standard used for its design.

M.J. MUIR  
Chief Inspector of Coal Mines

NOTICE DIRECTING INSTALLATION OF VEHICLE OPERATOR PROTECTION  
OPEN CUT MINES

FILE NO.: M84/5009

DATE.: 29th June, 1989

It is hereby notified that the Chief Inspector of Coal Mines pursuant to the provisions of Clause 6(5) of the Coal Mines Regulation (Approval of Items) Regulation, 1984, and for the purposes of the Coal Mines Regulation (Vehicle and Transport - Open Cut Mines) Regulation, 1984, requires that protective structures and seat belts fitted to protect operators of certain types of equipment and machinery used in and around open cut mines be approved and installed in accordance with the requirements of this Notice.

1. APPLICATION:

This Notice applies to:-

- (a) Roll-over protective structures (ROPS) fitted to earthmoving equipment and machinery and agricultural wheeled tractors.
- (b) Falling - object protective structures (FOPS) fitted to mobile cranes where potential exists for injury to a crane operator frame falling objects.
- (c) Overhead guard structures fitted to fork lift and high-rider lift trucks.

2. DEFINITIONS

- (a) "roll over protective structure" (ROPS) - a system of structural members arranged on a machine in such a way as to reduce the possibility of the machine crushing the operator if the machine overturns.
- (b) "falling object protective structure" (FOPS) - a system of structural members and sheeting arranged on a machine in such a way as to provide operators with limited protection against localised penetration by falling objects.
- (c) "overhead guard structure" - a framework, cabin or similar structure fitted to an industrial truck and providing overhead protection for an operator.

3. REFERENCES

- (a) AS2294 is a reference to the Australia Standard entitled "Protective Structures for Operators of Earthmoving Machines" and published by the Standards Association of Australia, as in force on 1 January 1988.
- (b) AS1636 is a reference to the Australian Standard entitled "Agricultural Wheeled Tractors - Roll Over Protection Structures - Criteria and Tests" and published by the Standards Association of Australia as in force on 1 January 1988.
- (c) AS2359 is a reference to the Australian Standard entitled "Industry Truck Code - Design and Manufacture" and published by the Standards Association of Australia as in force on 30 June 1988.
- (d) AS2664 is a reference to the Australian Standard entitled "Earthmoving Machinery - Seat Belts and Seat Belt Anchorage's" and published by the Standards Association of Australia, as in force on 30 June 1988.

- Note: (i) Standards referred to above are those to be used in design and construction. The reference to Australian Standards is a reference to those standards published by the Standards Association of Australia; as revised and republished from time to time.
- (ii) Alternate standards may be acceptable to the Chief Inspector.

4. APPLICATION

4.1 Roll-over Protection

- (a) All items of equipment and machinery, being wheeled primemovers, wheeled off-highway dump trucks, rubber tyred or crawler mounted dozers, scrapers, graders, loaders and tractors (with or without attachments) on the workings at any open cut coal mine shall be provided with roll-over protection and seat belts.

Vehicles not subject to this notice are:-

- (i) Vehicles registered or capable of being registered in accordance with the requirements of the NSW Road and Traffic Authority.
  - (ii) Purpose built low loaders.
- (b) Roll over protective structures shall be in accordance with AS2294 or AS1636 as applicable.

- (c) Seat belts shall be in accordance with AS2664.

4.2 Falling Object Protection

- (a) All mobile cranes on the workings at any open cut coal mine shall be provided with falling object protection where a potential exists for injury to a crane driver from falling objects.
- (b) Falling object protective structures shall be in accordance with AS2294.

4.3 Overhead Protection

- (a) All forklift or high-rider trucks operating at any open cut coal mine shall be provided with overhead protection.
- (b) Overhead guard structures shall be in accordance with AS2359 - Part 1.

5. GENERAL

- (a) This notice applies to all new items of equipment or machinery delivered after 30th June, 1990.
- (b) Each structure shall be provided with a notice in writing certifying that the structure complies with the requirements of the relevant standard or any other approved standard when supplied to coal mines in New South Wales.
- (c) There shall be no variation in the manufacture of the structure which may effect its compliance with the relevant standard or any other approved standard used for its design.
- (d) If a roll over protective structure, falling object protection structure or protective guarding attached to an item of equipment or machinery to which this notice applies suffers discernible deformation as a result of an incident, the manager of the mine shall ensure that the equipment or machine is not used until the structure has been replaced or restored to a condition which, in the written certified opinion of the manufacturer, the manufacturer's agent or a qualified mechanical or structural engineer, is equal in strength to the structure as originally fitted.



## Notice F13 continues

- (e) The operator of an item of equipment or machinery to which this notice applies shall ensure that any seat belt provided is adjusted correctly and worn at all relevant times.
- (f) A person in charge of an item of equipment or machinery to which this notice applies shall ensure that no person rides on the equipment or machinery while it is moving unless:-
  - (a) the person is provided with a seat equipped with adequate and convenient footrests and a safety belt that will safely support a passenger during transit;

OR

- (b) provision is made within the Manager's Rules and Schemes for persons to ride on the equipment or machinery for the purpose of training, testing or servicing of that equipment or machinery.

R.W. Scott  
Acting Chief Inspector of Coal Mines

DEPARTMENT OF MINERALS AND ENERGY  
COAL MINES REGULATIONS ACT 1982 - NOTICE OF AMENDMENT TO  
APPROVAL CONDITIONS

File No. C89/1048

Date:

F.R.A.S. Skirting

It is hereby notified that the Chief Inspector of Coal Mines, for the purpose of Clause 28 of the "Coal Mines Regulation (Belt Conveyor) Regulation, 1984" amends existing requirements for the marking of all F.R.A.S. skirting used in Underground Coal Mines in NSW as follows:-

“All belt conveyor skirting material used in Underground Coal Mines in NSW after 30th June 1990 shall as a condition of its approval be marked at maximum intervals of 1 metre with the approval number in letters at least 20 mm. high. The designated approval number shall be so placed that it cannot be easily obliterated during use of the skirting material”.

L. Roberts

Senior Inspector Mechanical Engineering for Chief Inspector of Coal Mines

## Notice F15

File No.: C89/1089  
Date: 2 January 1990

The Manager  
Bullivants Lifting Gear  
P O Box 19  
ALEXANDRIA

Dear Sir

Re: Approval for Non-Destructive Testing

It is hereby notified that the Chief Inspector of Coal Mines, for purposes of clause 16(1) (b), (c) and (d) of the "Coal Mines Regulation (Shafts and Roadways - Underground Mines) Regulation, 1984" acknowledges "Bullivants Lifting Gear of O'Riordan Street, Alexandria" as an approved testing authority subject to the following conditions.

- 1 The laboratory shall be registered by NATA for the non-destructive testing of wire ropes and shall comply with the terms and conditions of that registration.
- 2 The type of equipment shall be limited to the following unless otherwise approved by the Chief Inspector:-

Rotescograph NDT machine model/Serial No. X6RX 8902 part No. RX 2C  
TAG 88.

- 3 The non-destructive testing of wire ropes shall comply with the requirements of the Coal Mines Regulation Act, 1982, as relevant for the equipment and its use.
- 4 A copy of this letter together with Laboratory Registration details and names of the authorised signatories shall be supplied to each coal mine where testing is performed.

Yours faithfully

L J Roberts,  
Senior Inspector Mechanical Engineering  
for Chief Inspector of Coal Mines

Coal Mines Regulation Act, 1982  
Notice of Approval

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Approval No.: MDA 866264  
File No.: M86/6264  
Date: 5th February, 1990

HYDRAULIC FLUID FOR BREAKER LINE SUPPORTS

It is hereby notified that the Chief Inspector of Coal Mines, for the purposes of Clause 32 of Coal Mines Regulation (Fire Control - Underground Mines) Regulation, 1984, has approved the use of hydraulic fluid in Breaker Line Supports.

The approval is subject to the following conditions:-

- (a) The hydraulic fluid shall be suitable for use in Breaker Line Supports and have a flash point in excess of 200 degrees Celsius, as determined in accordance with the Standards Australia AS 2106-1980 - "Determination of the Flashpoint of Flammable Liquids (Closed Cup)".
- (b) The Breaker Line Supports shall be fitted with over-temperature protection to remove power from their hydraulic system should the hydraulic fluid temperature in any part of those systems exceed 100°C.
- (c) Loss of power in the over-temperature protection circuit shall be fail safe in operation with loss of power to the hydraulic system.

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

**NOTICE OF REQUIREMENT FOR HYDRAULIC SYSTEMS - POWER  
OPERATED ROOF SUPPORTS**

File No.: C89/0055  
Date: 1 February 1991

It is hereby notified that the Chief Inspector of Coal Mines pursuant to the provisions of Clause 33 of the Coal Mines Regulation (Mechanical - Underground Mines) Regulation, 1984 REQUIRES that hydraulic systems for power operated roof supports used in Longwall/shortwall mining systems and breaker line supports be designed, installed and operated in accordance with the following requirements:

- 1 Protection shall be provided to prevent either the pressure intensification of any hydraulic cylinder or over pressurisation of hydraulic system return flowlines through the occurrence of any of the following:-
  - (a) inadvertent operation of controls,
  - (b) incorrect connection of flowlines,
  - (c) failure of a single line component.
  
- 2 Hydraulic hoses shall have a minimum burst to working pressure ratio relevant for the hydraulic system design as specified by the International Standard ISO 6805-1984 - "Rubber Hoses and Hose Assemblies for Underground Mining - Wire Reinforced Hydraulic Type for Coal Mining" or alternatively a ratio of 4 to 1.

This notice shall apply to the hydraulic systems for all new power operated roof supports installed after 1 August 1991.

B R McKensy  
CHIEF INSPECTOR OF COAL MINES

File No.: Not Available  
Date: 16th January, 1986

COAL REGULATION (APPROVAL OF ITEMS) REGULATION 1984

The following information is provided to clarify "Approval of Items" by the Chief Inspector of Coal Mines. It is not intended to either supplant or interpret the requirements of the Coal Mines Regulation Act. Its objective is to assist manufacturers and suppliers to the coal mining industry by explaining that not everything supplied to a coal mine is required to be approved.

1. An item nominated in the Regulations or "Specified" in the Government Gazette MUST be approved la law.
2. An item NOT nominated in the Regulations or "Specified" -in the Gazette does not require ANY endorsement by the Chief Inspector of Coal Mines, unless it is apparent that there is a hazard associated with such item when, the Chief Inspector of Coal Mines may consider the aspects associated with the item that will ensure safety underground and issue a Certificate of Examination which will contain conditions which should be observed.

An applicant for a Certificate of Examination should have first considered relevant Australian Standards and industry based Standards which apply to the product and bring these to the attention of the potential user.

An application to the Chief Inspector of Coal Mines for a Certificate of Examination must clearly state the hazards or potential hazards so that appropriate tests can be carried out at the applicants expense.

It should be clearly understood that an application for a Certificate of Examination may not be successful.

3. Chemicals for use in coal mines, are proposed to be dealt with by regulations.
4. Attention is drawn to Section 18 (2) (c) of the Occupational Health and Safety Act which sets out special requirements for manufacturers or suppliers in relation to the provision of information on the safe use of their product. Such information is of use in evaluating the potential use of a product at a coal mine.
5. Letters of no objection are no longer issued.

Chief Inspector of Coal Mines

NEW SOUTH WALES  
DEPARTMENT OF MINERAL RESOURCES

Department of Mineral Resources  
Sydney

Coal Mines Regulation Act, 1982  
Notice of Revocation of Approval

Approval No.: MDA: CAN 13  
File No.: M80/1768  
Date: 9th October, 1991

Joy Continuous Miner Protective Canopy

It is hereby notified that the Chief Inspector of Coal Mines for the purposes of Clause 6(8) of the "Coal Mines Regulation (Approval of Items) Regulation, 1984", REVOKE the approval issued for the protective canopies identified as MDA CAN 13 issued to Joy Manufacturing subject to the following conditions:-

- (1) The use of the protective canopy on a continuous miner operating in any form of secondary workings such as pillar extraction and the splitting of pillars is revoked as from 1st May, 1992.
- (2) The use of the protective canopy on a continuous miner operating in the driveage of any form of first workings such as development headings is revoked as from 1st November, 1993.

L.J. Roberts  
Senior Inspector of Mechanical Engineering for Chief Inspector of coal Mines

NEW SOUTH WALES  
DEPARTMENT OF MINERAL RESOURCES

Department of Mineral Resources  
Sydney

Coal Mines Regulation Act, 1982  
Notice of Revocation of Approval

Approval No.: MDA: CAN 71  
File No.: M82/0770  
Date: 9th October, 1991

Wongawilli Colliery Continuous  
Miner Protective Canopy

It is hereby notified that the Chief Inspector of Coal Mines for the purposes of Clause 6(8) of the "Coal Mines Regulation (Approval of Items) Regulation, 1984", REVOKE the approval issued for the protective canopies identified as MDA CAN 71 issued to Wongawilli Colliery subject to the following conditions:-

- (1) The use of the protective canopy on a continuous miner operating in any form of secondary workings such as pillar extraction and the splitting of pillars is revoked as from 1st May, 1992.
- (2) The use of the protective canopy on a continuous miner operating in the driveage of any form of first workings such as development headings is revoked as from 1st November, 1993.

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines



NEW SOUTH WALES  
DEPARTMENT OF MINERAL RESOURCES

SYDNEY

COAL MINES REGULATION ACT, 1982 NOTICE OF REVOCATION OF  
APPROVAL

Approval No.: MDA CAN 26

File No.: CM80/823

Date: 24th October 1991

Jeffrey Continuous Miner Protective Canopy

It is hereby notified that the CHIEF INSPECTOR OF COAL MINES, for the purposes of Clause 6(8) of the " Coal Mines Regulation (Approval of Items) Regulation, 1984", REVOKE the approval issued for the protective canopies identified as MDA CAN 26 issued to Jeffrey Mining Machinery Division Dresser Australia Pty Ltd subject to the following conditions :

- (1) The use of the protective canopy on a continuous miner operating in any form of secondary workings such as pillar extraction and the splitting of pillars is revoked as from 1st May, 1992.
- (2) The use of the protective canopy on a continuous miner operating in the driveage of any form of first workings such as development headings is revoked as from 1st November, 1993.

L J Roberts  
Senior Inspector of Mechanical Engineering  
for CHIEF INSPECTOR OF COAL MINES

NEW SOUTH WALES  
DEPARTMENT OF MINERAL RESOURCES

NOTICE OF  
CODE FOR PORTABLE PNEUMATICALLY POWERED  
ROTARY ROOF BOLT

File No.: C89/0383  
Date: 12th November, 1991

It is hereby notified that the Chief Inspector of Coal Mines, pursuant to the provisions of Clause 33 of Coal Mines Regulation (Mechanical - Underground Mines) Regulation, 1984, SPECIFIES that Portable Pneumatically Powered Rotary Roof Bolters comply with a code for the design, construction, installation, operation, inspection and maintenance.

The Code, issued on 12 November, 1991 under File Reference C89/0383 shall apply to all roof bolters of this type manufactured after 31 March, 1992 and all roof bolters of this type by 31 December, 1993.

L.J. Roberts  
Senior Inspector of Mechanical Engineering for Chief Inspector of Coal Mines

NOTICE OF CODE FOR BREAKER LINE SUPPORTS

File No: CM86/6264

Date: 6 January 1992

It is hereby notified that the Chief Inspector of Coal Mines, pursuant to the provisions of Clause 33 of Coal Mines Regulation (Mechanical - Underground Mines) Regulation, 1984, SPECIFIES that Breaker Line Supports comply with a Code for the design, construction, installation, operation, inspection and maintenance

The Code, issued on 6 January, 1992 under File Reference CM86/6264 shall apply to all Breaker Line Supports manufactured after 1 July, 1992 and all Breaker Line Supports by 1 July, 1994.

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

## Notice F23

File No.: C93/0223  
24th June, 1993

Dear Sir,

RE: SAFE WORKING IN A CONFINED SPACE

Your attention is drawn to the provisions of Section 5(2) of the Occupational Health and Safety Act, 1983 whereby any regulations issued under the ambit of this Act do not apply to mining legislation. Under Division 4 of Part IV of the Act the Coal Mines Regulation Act, 1982 is classified as mining legislation.

A number of regulations have been promulgated under the Act with the "Occupational Health and Safety (Confined Spaces) Regulation, 1990" having a commencement date of 1st August, 1990. This regulation sets out minimum standards to ensure the safety of persons working in a confined space. It does this by requiring employers to comply with Australian Standard AS2865 - "Safe Working in a Confined Space."

As there is no comparable existing legislation or specific requirement for this type of activity under the Coal Mines Regulation Act, 1982 it is considered necessary to implement the provisions which are mandatory for other industries in this regard.

The attached Notice of Code issued under the provisions of Clauses 38 and 25 of the Coal Mines Regulation (Mechanical - Underground Mines) and (Mechanical - Open Cut Mines) respectively require all coal mines to comply with the objectives of the Occupational Health and Safety (Confined Spaces) Regulation, 1990. The Code applies to surface buildings or structures or appurtenances thereof for both underground and open cut coal mines.

The Notice is to be displayed on the mine notice board for a minimum of 30 days to permit its contents to be viewed by employees at the mine.

Yours faithfully,

L.J Roberts  
Senior Inspector of Mechanical Engineering

Coal Mines Regulation Act, 1982  
Notice of Code  
Safe Working in a Confined Space

File No.: C93/0223  
Date: 22 June, 1993

It is hereby notified that the Chief Inspector of Coal Mines, pursuant to the provisions of Clause 38 of the Coal Mines Regulation (Mechanical - Underground Mines) Regulation 1984 and Clause 25 of the Coal Mines Regulation (Mechanical - Open Cut Mines) Regulation 1984 specifies that the design, construction, installation, operation inspection and maintenance of buildings and structures on the surface of a coal mine shall be in accordance with Standards Association of Australia AS2865 - 1986 "Safe Working in a Confined Space" or any subsequent issue thereof.

This Standard shall apply:

- 1) where personnel are required to enter and/or work in a confined space; and
- 2) as appropriate where personnel are required to perform hot work on the external surfaces of a confined space.

In this Standard:

"confined space" means a building or structure or any space located in, on or connected to a building or structure which:

- a) is not intended as a regular workplace;
- b) has restricted means for entry and exit;
- c) may have inadequate ventilation and/or an atmosphere which is either contaminated or oxygen-deficient; and
- d) is at atmospheric pressure during occupancy.

Confined spaces include but are not limited to:

- (i) bins, storage tanks, tank cars, process vessels, boilers, pressure vessels, silos and tank-like compartments;

(ii) open-topped spaces of more than 1.5m in depth such as degreasers, or pits which are not subjected to good natural ventilation; and

(iii) pipes, sewers, shafts, ducts and similar structures;

and "hot work" means welding, thermal or oxygen cutting, heating and other fire or spark producing operations.

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

DEPARTMENT OF MINERAL RESOURCES  
SYDNEY

COAL MINES REGULATION ACT, 1982, AS AMENDED  
NOTICE OF REQUIREMENT FOR AIR COMPRESSORS

File No.: CM83/2300  
Date: 2 December 1993

It is hereby notified that the Chief Inspector of Coal Mines pursuant to the provisions of Clause 33 of the Coal Mines Regulation (Mechanical - Underground mines) Regulation, 1984 SPECIFIES that Air Compressors which absorb more than 4kW of power and are operated underground in a coal mine comply with a code for the design, construction, installation, operation, inspection and maintenance.

The Code for Air Compressors - Underground Use - MDG 18, dated September, 1993, under File Reference CM83/2300 shall apply to all air compressors supplied from 1 June 1994 and to all air compressors by 31 December 1996.

B.R. McKensey  
CHIEF INSPECTOR OF COAL MINES

DEPARTMENT OF MINERAL RESOURCES  
NEW SOUTH WALES GOVERNMENT

**PROCEDURE**  
**(TRANSFER OF APPROVAL)**

To ensure appropriate and efficient method for obtaining "Transfer of Approval" notification from the department, it is the responsibility of the approval holder to provide the following:

1. An official letter from the organisation requesting "Transfer of Approval" be processed. The letter must state clearly who the previous approval holder was. The letter must also state the description of the approval(s), the MDA number(s), and the file reference number(s).
2. An official letter from the existing owner of the approval. The letter must be signed by an officer of the company, relinquishing ownership of the approval. The letter must clearly state the name of the organisation to which the approval is to be transferred, also, the description of the approval(s), the MDA number(s), and the file reference number(s).

Yours faithfully

A.A. Reczek  
Senior Inspector of Electrical Engineering  
for The Chief Inspector of Coal Mines



File No.: C93/0382  
Date: 15 June, 1995

Dear Sir,

RE: - DIESEL ENGINED MACHINERY APPROVALS

The policy of the Department of Mineral Resources regarding underground diesel machines is to encourage continual upgrading of safety aspects for all machines used in underground coal mines in NSW.

Broadly speaking diesel machinery available to coal mines be grouped into five categories as follows:

1. "Recycles" machines available at mine site auctions.
2. Hire machinery owned by external companies.
3. Machines currently in use with a local approval.
4. Machines currently in use with an older DEV type approval.
5. Machines currently in use, or available from OEM's with update DEV type approvals (including supplement approvals where appropriate), that incorporate latest safety features and requirements.

Frequently no attempt has been made to upgrade the machine in categories 1 to 4 modern safety requirements incorporated in later type approved machines found in category 5.

In recent years a number of accidents have occurred where the fact that the machine/vehicle had not been upgraded to the latest specification was a causal factor. Hence, in accordance with the aim to encourage continual upgrading of safety aspects for all machines used in underground coal mines in NSW, all local approvals for hire diesel machinery are to be revoked effective on 30 June 1996. It will also be required that all hire diesel machinery be type approved by 30 June 1996.

In addition it will be required that any diesel machinery purchased second hand after 31 August 1995, be upgraded to type approved standards prior to being placed into future operational use.

Consideration is also being given to revoking existing particular (local or mine specific) approvals for resident mine machines effective 30 June 1997, to ensure upgrades of diesel machines do in fact take place. It is recognised that during the necessary "period of grace" for this initiative to be accommodated circumstances may exist where machines already granted particular approvals are being used in environments for which they have not had their suitability adequately assessed previously.

## Notice F31 continues

Similar comments apply to some hired machines or machines on loan currently being utilised in underground coal mines. It would be expected that in these situation site specific R.A. methodology has been applied.

You should also be aware that Australian Standard AS3584 -1991 - Flameproofing of Diesel Engines for Underground Coal Mines Provided more comprehensive assessment and testing criteria than that which was utilised in the approval process applied for much of the machinery that is currently in service. For example the evaluation of the exhaust gas water conditioner as a flametrap is more detailed. It is therefore recommended that all diesel engine packages be evaluated for compliance to the above standard as an integral part of the program outline above. However irrespective of this recommendation it is proposed to require compliance with AS3584 -1991 within 2 years of completion of the program outlines above.

Your comments are invited on the program prosed to improve the quality of safety for diesel machinery. Any such comments should be forwarded in writing to the Senior Inspector of Mechanical Engineering Mr. L Roberts by 24 July 1995. Contact your local Inspector of Mechanical Engineering should clarification be required for any aspect of the proposed program.

In addition for your information MDG 1 - “ Guideline for Free Steered Vehicles” has been substantially revised with the assistance of representative from vehicle manufacturers and it is expected that publication copies will be available from 30 June 1995. Should information regarding the contents of this document be required prior to this date should contact the OEMs for your diesel vehicle fleet.

Yours faithfully

B. McKensey  
Chief Inspector of Coal Mines

File No.: CM81/8543  
Date: 16th September, 1995

**RE: - APPROVAL OF CONVEYOR BELTING**

Dear Sir,

The Coal Mines Regulation Act 1982 and Regulations made pursuant to this Act certain items to be approved by the Chief Inspector for Coal Mines.

Clause 28(a) of the Coal Mines Regulation (Belt Conveyor) Regulation 1984 specifies conveyor belting used in underground coal mines as being one such item requires approval.

For the purpose of granting an approval under Clause 28(a) conveyor belting is required to be static electricity conducting fire resistant as detailed in the following Australian Standards for Grade S - conveyor belting:-

- (a) AS 1332 Conveyor Belting - Textile Reinforced
- (b) AS 1333 Conveyor Belting of Elastomeric and Steel Cord Construction

It is to be noted that the fire resistant properties required by the above Standards are regularly reviewed. Consequently any approval issued will relate to the requirement of the current relevant Standard enforced at that time.

Yours faithfully,

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
FOR CHIEF INSPECTOR OR COAL MINES

File No.: M86/0349  
Date: 23 October 1995

Dear Sir,

**re: FREE STEERED VEHICLES SAFETY**

Further to the Safety Alert No SA 95-01 published following a recent fatality in which a fitter accidentally run over by an unattended LHD vehicle the attached Notice has been prepared for publication in the Government Gazette.

The Notice deals specifically with Recommendation 3 of the Safety Alert on the issue of automatic application of the free steered vehicle park brake. The investigation of the accident conducted subsequent to the preparation of the Safety Alert did not result in any need to alter the above recommendation.

The Notice is to vary the existing approvals for all diesel engine powered free steered vehicles at the mine issued under Clause 28(a) of the Coal Mines Regulation (Transport - Underground Mines) Regulation, 1984 to include a condition of the approval of diesel engine powered free steered vehicles. As a consequences electric cable and battery powered are excluded as these classes of vehicles have not been associated with accidents of the type referred to above over the recent past.

You will note that this new condition of approval takes effect from 23rd October, 1996.

The installation of automatic brakes is to be carried out in conjunction with the relevant Original Equipment Manufactures or an Accredited Assessing Authority. The automatic brake is to be approved type.

Should advice in relation to any aspect of the attached Notice be required, you are requested to contact the Inspector of Mechanical Engineering for the mine. Further guidance is available in Section 5.512 of MDG 1- Guideline for Free Steered Vehicles issued July 1995.

Yours faithfully

B.R. McKensey,  
Chief inspector of Coal Mines

DEPARTMENT OF MINERAL RESOURCES  
COAL MINES REGULATION ACT 67/1982  
NOTICE OF VARIATION OF APPROVAL

File No.: M86/0349  
Date: 23th October, 1995

It is hereby notified that the Chief Inspector of Coal Mines, in accordance with the Provision of Clause 6(8) of the "Coal Mines Regulation (Approval of Items) Regulation 1984 amends all approvals for diesel engine powered free steered vehicles issued pursuant to Clause 28(a) of the Coal Mines Regulation (Transport - Underground Mines) Regulation 1984 by the inclusion of the following of the approvals:

"By the 23 October 1996, all previously approved vehicles shall be fitted with an approved system that automatically applies the park brake."

For the purposes of approval a system must satisfy the following criteria:

1. The automatic brakes shall be automatically applied whenever:
  - (a) the operator leaves the vehicles operator compartment;
  - (b) the operator stops the engine; and
  - (c) the engine stops for any cause (eg, the operation of the engine safety protection system).This provision shall apply to all vehicles, except small skid steer loaders, where an inadvertent stoppage may cause instability.
2. Automatic brakes shall be applied automatically on the loss of brake/hydraulic fluid or air pressure (fail to safety).
3. Automatic brakes shall hold the vehicle including the maximum permissible load which may be carried or hauled thereby, stationary on the maximum gradient on which that vehicle is designed to operate.
4. Automatic brakes shall be capable of bring the vehicles to rest when travelling at maximum speed with maximum permissible load.
5. The rate of applicable of the automatic brake system shall be such that the risk of injury to personnel within the vehicle during operation (including inadvertent operation).
6. Automatic brakes shall not rely on stored fluid pressure for their applicable or retention.
7. Cables shall not be used for the application of the automatic brake.

B.R. McKensey  
CHIEF INSPECTOR OF COAL MINES

File No.: M84/5008  
Date: 5, September, 1984

## Department of Industrial Relations

Coal Mines Regulation Act, 1982

Notice Directing System Approval

It is hereby notified that the Chief Inspector of Coal Mine, as authorised by Clause 6(6) of the Coal Mines Regulations (Approval of Items) Regulation 1984 Requires that all slop drift rope haulage systems be approved.

M.J. MUIR  
Chief Inspector of Coal Mines

## Notice F35

File No.: C93/0132  
Date: 14 February, 1996

### MINUTE

SUBJECT: DIESEL VEHICLE APPROVALS

This is to confirm verbal advice given to all Inspectors of Mechanical Engineering that the Chief Inspector of Coal Mines had requested that no further approvals under his delegation be issued for diesel vehicles to individual coal mines where such vehicles currently possess an existing colliery approval. This type of approval based on the engine DE number was that commonly used up to the introduction around 1982 of the MDA DEV xx status. The need to issue such MDA DE approvals for individual items of equipment has subsequently diminished with the advent of the alternative type approval system.

The reason for the Chief Inspector's decision is to remove the potential for difficulties arising from district Inspectors of Mechanical Engineering having to consider recommending re-approval of MDA DE diesel vehicles for use at another coal mine where a specific vehicle may not meet the safety criteria used for assessment of new vehicle types. This will effectively mean that such equipment will be required to be subjected to upgrading to the current issue of MDG #1 at a level considered to be appropriate by the Inspector or alternatively a Mechanical Competent Person. The upgraded vehicle would then be issued with a MDA DEV type approval number.

Should any problems arise with the implementation of this requirement they are to be brought to my attention so that an appropriate response can be determined.

A copy of this minute has also be sent to all Mechanical Competent Persons with DEV classification.

This matter will be included on the agenda for the next Inspectors of Mechanical Engineering in March should clarification on any aspect of this Minute be necessary.

In addition the development of programs of continuous improvement for the safety aspects of all free steered vehicles in general by the underground mining sector is to be encouraged .

L.J.ROBERTS  
Senior Inspector of Mechanical Engineering

To: ALL Inspectors of Mechanical Engineering  
Copy to: Chief Inspector of Coal Mines

## Notice F36

File No.: C92/0198  
Date: 27 June, 1996

New South Wales  
Department of Mineral Resources

Sydney

Coal Mines Regulation Act, 1982, as amended

### NOTICE SPECIFYING AMENDED CRITERIA FOR APPROVAL OF AUXILIARY FANS

File No. C92/0198  
Date: 27 June 1996

It is hereby notified that the Chief Inspector of Coal Mines pursuant to the provisions of Clause 6 of the Coal Mines Regulation (Approval of Items) Regulation, 1984 and for the purposes of Clause 5(1) of the Coal Mines Regulation (Ventilation - Underground Mines) Regulation, 1984 AMENDS existing criteria for assessment of Auxiliary Fans for approval in accordance with the following requirement:-

"All Auxiliary Fans newly manufactured and installed in any underground coal mine in NSW after 1 January 1997 are required to be in compliance with the Design Guideline for Auxiliary Fans MDG No 3 dated June 1996 as published by the Department of Mineral Resources of New South Wales."

W.J. Koppe  
Acting Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines



# SECTION G

## SAFETY ALERTS

## INDEX OF SAFETY ALERTS

MDG No.	Title	Issue Date
MDG 3009 SA91/01	Fatality from fluid ejected at high pressure (Gretley)	14/11/91
MDG 3009 SA92/01	Fatality on underground belt conveyor (Metropolitan)	15/04/92
MDG 3009 SA92/02	Minesite accident involving contractors	23/06/92
MDG 3009 SA92/03	A damaged explosion transit box containing 30kg of explosives (Myuna)	21/08/92
MDG 3009 SA92/04	Contractor fatally injured when his head hit the roof whilst operating a LHD vehicle (Oakdale)	13/03/92
MDG 3009 SA93/01	Failure of fire extinguisher canister causes fatality (Saxonvale)	21/05/93
MDG 3009 SA93/02	The effects of earth fault current & electro-magnetic induction on metallic structures underground, due to the location of high voltage overhead transmission lines at the surface of coal mines (Cooranbong)	18/11/93
MDG 3009 SA94/01	Gas outburst results in fatality (Westcliff)	10/02/94
MDG 3009 SA94/02	Compressor fires results in carbon monoxide being circulated through compressed air reticulation system	05/05/94
MDG 3009 SA94/03	Deputy fatality injured when carried through the crusher of a longwall BSL	15/10/94
MDG 3009 SA95/01	Fitter fatally injured when run over by a load haul dump vehicle	01/05/95
MDG 3009 SA96/01	Electrician sustained fatal injuries from a fall of roof material	13/05/96
MDG 3009 SA 96/02	An insurge of inflammable gas from old workings	13/08/96
MDG 3009 SA 96/03	Unplanned movement of skip in shaft	10/10/96
MDG 3009 SA 96/04	Four killed in inrush of water from old workings	20/12/96

**SAFETY ALERT**

This SAFETY ALERT has been issued to provide coal mines with earliest possible advice in order that appropriate action can be undertaken to avoid any occurrence of a similar nature.

**SUBJECT: MAINTENANCE ENGINEER FATALLY INJURED BY FLUID EJECTED AT HIGH PRESSURE.**

On 14 November 1991 a maintenance engineer was fatally injured while installing a 200 tonne capacity hydraulic support cylinder in a roof support chock.

During the installation procedure the leg was being extended with the engineer positioned to apply effort to restrain the leg in the vertical position for the purpose of guiding the leg to its mounting location in the shield roof canopy. Intensification of the hydraulic fluid occurred in the major stage of the double extension cylinder. A cylinder hose connection attachment had been fitted with a steel plug which appears to have not been removed prior to powering up the leg.

The resultant intensification estimated at 50,000 psi caused the gland seal assembly to fail and the engineer was struck in the abdomen by fluid ejected through the failed seal.

**RECOMMENDATIONS:**

- (a) Thoroughly review existing maintenance procedures for installation, commissioning and removal of hydraulic cylinders used in power operated roof supports.
- (b) Minimise risk of exposure to personnel involved in the above procedures by providing appropriate guide/locating devices.
- (c) Ensure that all personnel are adequately trained to carry out these activities.

L J Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

**SAFETY ALERT**  
**FATALITY ON UNDERGROUND BELT CONVEYOR**

This SAFETY ALERT has been prepared to provide all coal mines with the earliest possible advice of a fatal accident so that appropriate action can be undertaken at each mine to avoid any occurrence of a similar nature.

On 9 April 1992 a workman who had not reported in at end of shift was found 1 1/2 to 2 hours later lying on the bottom belt with his foot between belt and return hold down roller. The workman was approximately 600 metres outbye of his allocated belt cleaning duty area. He was working alone at the time and the conveyor belt had been operating prior to him being found.

From preliminary investigations conducted to date it would appear that the workman was transported on the top side of the belt from a location adjacent to the inbye transfer point feeding the belt. As yet it has not been determined as to how he was dislodged from the top belt to the bottom belt at place of discovery. Evidence would indicate that he had been carrying out belt cleaning duties at the belt transfer point.

It has not yet been fully determined as to how the workman came to be on the conveyor belt. Inspection of area found that access was available to both sides of the transfer point via the rear of the boot-end pulley, a belt isolation switch was located in this area albeit there was no prestart warning signalling system installed.

**RECOMMENDATIONS:**

The investigation is still continuing however it is recommended that procedures for workmen carrying out belt cleaning, inspection or maintenance duties at the mine be reviewed to ensure that:

- (a) hazards from operating conveyors are clearly identified and understood;
- (b) isolation procedures for conveyor belt systems are adequate for all circumstances;
- (c) communication systems for effective coordination of conveyor management, which includes requirement for deputies to confer with persons during the shift. and
- (d) a system is in place for appropriate training of personnel.

B.R. McKensy  
Chief Inspector of Coal Mines

## **SAFETY ALERT**

This SAFETY ALERT has been prepared to provide all coal mines the earliest possible advice of an accident so that appropriate action can be undertaken at each mine to avoid any occurrence of a similar nature which could involve either employees of contractors or of the mine.

### **ACCIDENT:**

On 16 June 1992 a contractor's employee suffered a fracture of a small bone in his knee when a load he was lifting with a chain block suddenly descended without warning. The injury occurred when he jumped clear to avoid being struck. The clutch mechanism in the contractor's chain block was found to be faulty.

### **COMMENT:**

From a review of the reportable Serious Bodily Injuries that occurred in 1990/91 of a total of 52 accidents 10 or approx. 20% were sustained by personnel employed by contractors whilst working at a mine. A resume of the Precis for some of those accidents has been attached to illustrate the range of accidents that occurred during the above period. Further details of these and other accidents and Dangerous Occurrences involving contract personnel are contained in the "Summary of Reportable Accidents and Dangerous Occurrences for the Year 1990/91."

During 1991/92 a further number of similar accidents have occurred with the most recent prior to the event referred to above being a fatal accident that occurred on 24 May 1992. The brief details are that an electrician suffered fatal injuries after falling 18 metres to the ground whilst installing an electrical conduit at a workshop that was being constructed.

### **RECOMMENDATION:**

Investigation of this accident has been initiated, however in view of the significant number of reportables involving personnel employed by contractors over the past two (2) years there is a need for all matters regarding the safety of non-mine personnel to be thoroughly reviewed by mine management.

**L.J. ROBERTS**  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

**RESUME OF PRECIS FOR A RANGE OF REPORTABLE ACCIDENTS  
INVOLVING CONTRACTORS DURING 1990/91.**

- A. A contract carpenter severed his right thumb when a piece of wood he was holding was drawn into the blade of a drop saw.
- B. After a fuel line from an underground petrol tank had been repaired by two contractors one of them entered the tank without a ladder to remove some residual water with a bucket and was overcome by fumes and collapsed.
- C. A contract boilermaker sustained fractured wrist and ribs together with lacerations as a result of falling 3 metres onto a hard surface. Protective fencing had not been provided around the worksite.
- D. A contract surveyor suffered a dislocated shoulder when he fell while climbing down from the back of a shuttle car.
- E. A contractor, s labourer engaged in splicing a Conveyor belt fell and broke his ankle whilst pulling a canvas cover over a vulcanising station.
- F. A contract boilermaker sustained a fractured skull, broken nose, lacerations and contusions when he fell through a hole in the floor of the coal prep plant while replacing floor panels.

**SAFETY ALERT**

This SAFETY ALERT has been prepared to provide all coal mines with the earliest possible advice of a potentially dangerous situation which occurred away from a mine site but was a direct result of in activities at the Mine. This is being done so that appropriate action can be undertaken at each mine to avoid any further occurrence of a similar nature.

**SUBJECT:**

A Damaged Explosives Transit Box containing 30 kg of Explosives was discovered at B.H.P. Steelworks at the scrap metal depot.

**CIRCUMSTANCES:**

On Friday, 10th July, 1992 at approximately 2.30 p.m., 150 sticks of Powergel 2000 were discovered in the Steelmaking Department scrap loading area at B.H.P. Steelworks in Newcastle.

From preliminary investigations conducted to date it would appear that a damaged Transit Box containing the explosives was brought to the surface from an underground coal mine.

The transit box which was presumed to be empty was put into a scrap metal bin and then transported to B.H.P. Steelworks Newcastle.

**REQUIREMENTS OF COAL MINES REGULATION ACT:**

1. The Manager of a Coal Mine is required by Clause 6(1) of the Coal, Mines Regulation (Explosives & Shotfiring - Underground Mines) Regulation 1984, to ensure that the requirements under the above regulation are complied with, and more, specifically.
2. The Manager of a Coal Mine is required by Clause 24(1) of the Coal Mines Regulation (Explosives & Shotfiring - Underground Mines) Regulation 1984, to prepare Rules specifying the procedures to be adopted for the conveyance of Explosives Underground.

**RECOMMENDATIONS:**

An in depth audit conducted at each coal mine in New South Wales to ascertain the adequacy of the above prescribed rules as applied at the mine, with special attention being given to the following-specific areas.

1. Provision for dealing with damage to transport appliances and equipment.
2. Provision for dealing with breakdown situations whilst explosives are being transported.
3. Provision for dealing with unusual circumstances.

B.R. McKENSEY  
Chief Inspector of Coal Mines

**SAFETY ALERT**

This SAFETY ALERT has been prepared to provide all coal mines with the earliest possible advice of a fatal accident so that appropriate action can be undertaken at each mine to avoid any occurrence of a similar nature.

**SUBJECT:           CONTRACTOR FATALLY INJURED WHEN HIS HEAD  
                          HIT THE ROOF WHILST OPERATING A LHD VEHICLE**

On 3 March 1992 a contractor operating a LHD vehicle suffered severe head injuries from which he died. At the time of the accident he was cleaning roof stone at a roof fall in the working adjacent to the mine transport road. He was working alone operating a diesel powered LHD vehicle and when found he was slumped in the driver's compartment.

From preliminary investigations conducted to date it would appear that the injuries were sustained when he became jammed between the vehicle and the roof at the lip of the fall whilst reversing the vehicle out of the fall cavity.

The vehicle was not fitted with any form of protection for the driver.

**RECOMMENDATIONS:**

1. Conduct an audit on the operation of all Free Steered Vehicles used in the underground workings of the mine where the risk of injury exists to drivers from contact with roof, rib, associated roadway supports or other obstructions eg. overcasts, conveyors, etc.
2. Review the mine's Transport Rules for the use of FSV's to ascertain whether they adequately address those issues identified by the audit and revise the rules in an appropriate manner to cover all FSV's currently in service at the mine.
3. Review the procedures for the employment of contractors at the mine in relation to their and the mine's responsibilities with regard to the safety of all personnel working at the mine.

B.R. McKensy  
CHIEF INSPECTOR OF COAL MINES



**SAFETY ALERT**

This safety alert has been prepared to provide all Coal Mines with the earliest possible advice of a fatal accident which occurred at an open cut coal mine. This is being done so that appropriate action can be undertaken at each mine to avoid any further occurrence of a similar nature.

**FAILURE OF FIRE EXTINGUISHANT CANISTER CAUSES FATALITY.**

**Circumstances:**

A mechanical tradesman employed at a mine was recharging a stored pressure foam fire suppression system installed on an off-highway dump truck which was in the workshop for a routine service. During the recharging process the system extinguishant canister failed violently. The tradesman who was adjacent to the canister located on the truck deck 4m above floor level was struck by the debris emanating from the failure. He sustained severe injuries from which he subsequently died.

The process of recharging fire suppression systems installed on mobile equipment was an activity carried out by workshop personnel as part of the routine service of trucks. The systems were discharged at the start of a service to: test the fire suppression system; and to provide a clean engine to work on. No particular tradesman carried out these tasks.

The procedure involved the use of a gas cylinder charged with dry nitrogen to permit the system to be pressurised to 1200kPa. It would appear that the cylinder pressure was inadvertently set to a higher pressure. This higher pressure was applied to the canister which failed as its burst pressure rating was exceeded.

**RECOMMENDATIONS:**

1. Conduct an audit of existing work procedures for servicing all types of fire suppression systems and portable fire extinguishers at the mine. Australia Standard AS3676-1989 "Portable Fire Extinguishers - Guide for Servicing" should be utilised as guidance to engineering practice.
2. Ensure that adequate protection from the risk of overpressurisation in one or more hard barriers as determined by assessment are provided for any pressurised system, an example of a hard barrier being a suitably rated relief valve.

B.R.McKensey  
Chief Inspector of Coal Mines.

## **SAFETY ALERT**

This safety alert has been prepared to provide all Coal Mines with advice on potential hazards so that appropriate action can be undertaken at each mine to avoid incidents which may result from the presence of such hazards.

### **THE EFFECTS OF EARTH FAULT CURRENT AND ELECTROMAGNETIC INDUCTION ON METALLIC STRUCTURES UNDERGROUND, DUE TO THE LOCATION OF HIGH VOLTAGE OVERHEAD TRANSMISSION LINES AT THE SURFACE OF COAL MINES.**

#### **ATTENTION: ALL COLLIERY MANAGERS AND ELECTRICAL ENGINEERS IN CHARGE.**

At an underground coal mine, voltage rises on conveyor structure installed below ground were detected between the conveyor structure and the surrounding coal seam. The voltage rise was of sufficient magnitude to cause danger to personnel from the risk of electric shock and the potential for the ignition of flammable gas.

It was consequently determined that the voltage rise was caused by electromagnetic induction from 330 kV, overhead power transmission lines traversing the colliery holding and located on the surface, some 40 metres above the conveyor structure. Subsequent shielding of the transmission lines and the segregation and earthing of the conveyor structure underground reduced the magnitude of the induced voltage to a safe value.

Voltage rise can occur from this source on all metallic structures underground such as conveyor structure, trackwork, water pipe, catenary support wires, cable earth conductors and armouring.

The possible sources of voltage rise on metallic structures underground in the presence of high voltage transmission lines on the surface can be :-

- (i) Phase current imbalance on transmission lines.
- (ii) The geometric imbalance of induction from each of the transmission line inductors.
- (iii) Phase to ground currents confined to low value leakage currents.
- (iv) Very high phase to ground transmission line fault currents.
- (v) Lightning strikes on transmission lines.

During the recent assessment of some colliery holdings (for mining purposes), it has become clear that consideration of the potential hazard of overhead transmission lines in respect to voltage rises on metallic structures underground have not been addressed.

#### **RECOMMENDATIONS.**

It is recommended that current and future colliery holdings be reviewed for the presence of high voltage transmission lines and that the necessary assessment be conducted to ensure that the potential hazards outlined above, do not occur.

Where there is risk of voltage rises dangerous to personnel, occurring on metallic structures underground, immediate action should be taken to reduce such voltages to a safe value.

B.R.McKensey  
Chief Inspector of Coal Mines.

**SAFETY ALERT**

This safety alert has been prepared to provide all Coal Mines with the earliest possible advice of a fatal accident which occurred at an open cut coal mine. This is being done so that appropriate action can be undertaken at each mine to avoid any further occurrence of a similar nature.

**OUTBURST RESULTS IN FATALITY**

**Circumstances:**

An outburst occurred in a longwall development roadway within a Bulli Seam mine. The outburst ejected coal material to some 35 metres from the face, virtually covering the continuous miner. A large volume of carbon dioxide was rapidly released.

Pre-drainage had been undertaken with 3 longitudinal boreholes for up to 4 weeks prior to mining. Drilling hadn't detected the presence of any structure which would indicate outburst potential. A core sample, taken 60 metres from the outburst site, indicated a gas content of 6.3 cubic metres of carbon dioxide per tonne of coal. The mines's Outburst Management Plan allowed normal mining to occur.

During the previous shift the deputy identified potential outburst signs and outburst mining procedures commenced. The outburst occurred after cutting only half a car of coal on the shift in question. Due to the procedures in force only the miner driver was in the immediate face vicinity. The shuttle car driver was parked approximately 30 metres outbye having withdrawn after loading the initial half car.

The continuous miner driver died as a result of the outburst. The direct cause of death was given as anoxia although he also sustained a fracture to the rear of the head. He was found with the straps to an air supply mask around his neck and the mask off his face. The air supply hose was detached from the mask and the air supply was on. There was evidence indicating the mask to have been on his face at some time before or during the event.

The shuttle car driver was affected by the released carbon dioxide but escaped with assistance. The volume of carbon dioxide released was sufficient to jeopardise the safety of other crew members at the 'fresh air base'.

**RECOMMENDATIONS:**

Outburst Management Plans should be reviewed forthwith to address the following:

- \* Suitability of adopted gas threshold levels;
- \* Effective use of core sampling techniques prior to mining;
- \* Integrity and actual coverage of gas drainage boreholes;
- \* Levels and types of protection afforded to the continuous miner, shuttle car drivers and other crew members; and
- \* Suitability of supplied air respirators/face masks currently in use. Pursuant to Clause 36(c) Coal Mines Regulation (General Welfare and First Air - Underground Mines) Regulation 1984 respirators must be of an approved type.

B.R.McKensey  
Chief Inspector of Coal Mines.

**SAFETY ALERT**

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**COMPRESSOR FIRES RESULT IN CARBON MONOXIDE BEING CIRCULATED THROUGH COMPRESSED AIR RETICULATION SYSTEM**

**Circumstances:**

**Case 1**

A major fire occurred internally in a rotary screw compressor sited underground in a Bulli seam coal mine. The fire burnt undected for a significant period of time, allowing the products of combustion to be "pumped" into the air reticulation system. The mine had general body tube bundling systems in place but did not monitor the quality of the compressed air. The tube bundling systems were incapable "real time monitoring" resulting in delayed data transfer for problem evaluation purposes.

**Case 2**

An internal fire occurred within compressed air pipework on the surface of a Bulli seam coal mine when the accumulated hydrocarbons inside the pipework ignited. The mine's compressor station is situated on the surface and reticulated air to both surface facilities and underground.

Workmen underground reported smelling "fire affected" compressed air discharging from several outbye air pumps.

One tube sample point underground detected 10ppm of carbon monoxide.

Smoke alarms in the compressor station building were automatically activated when the smoke escaped through the burning pipe flange gaskets.

**RECOMMENDATIONS:**

Mines which utilise compressed air for respiratory purposes should ensure that the air quality is monitored on a real-time basis to prevent carbon monoxide from being inadvertently supplied for respiratory use.

The provisions of Mechanical design Guideline MDG18 "Code for Air Compressor - Underground Use" should be incorporated as a priority for any compressor systems used to supply air underground, albeit that a Notice of requirement dated 2 December 1993 is already in place.

B.R.McKensey  
Chief Inspector of Coal Mines.

**SAFETY ALERT**

This SAFETY ALERT has been issued to provide coal mines with earliest possible advice in order that appropriate action can be undertaken to avoid any occurrence of a similar nature.

**SUBJECT: DEPUTY FATALLY INJURED WHILST WORKING IN  
LONGWALL MAINGATE**

On 15 September 1994 a Night Shift deputy was fatally injured whilst believed to be in the course of conducting normal duties in the face area of longwall mining operations.

It would appear that the deputy had completed his inspections at the tailgate as an entry had been made to the inspection board. He was then observed walking to the maingate carrying boltcutters and then subsequently observed to be in the general vicinity of the maingate at approximately 3.00am. He had not made any entry on the outbye noticeboard.

At around 4.30am his absence was noticed and he was subsequently assumed to have been fatally injured by the maingate crusher. It has not been ascertained as to how he came to be there.

**OBSERVATIONS:**

The ribs of the longwall block are stabilised with steel mesh and bolts which are required to be removed during the course of normal operations.

The removal process requires the use of boltcutters.

The maingate crusher conveyor had deflector plates installed on the normal walkway side of the roadway.

There was negligible spillage adjacent to the deflector plates.

**RECOMMENDATION:**

The following recommendations are not based on any definite conclusions that have been made as a result of the accident investigation.

Management to review their current practices for longwall operations with particular emphasis to:

- (a) Minimise the potential for personnel to access the coal clearance system;
- (b) The method used for temporary rib support, and its removal.

B R McKensy  
Chief Inspector of Coal Mines

**SAFETY ALERT**

This SAFETY ALERT has been prepared to provide all coal mines with the earliest possible advice of a fatal accident so that appropriate action can be undertaken at each mine to avoid any occurrence of a similar nature.

**SUBJECT: FITTER FATALLY INJURED WHEN RUN OVER BY A LOAD HAUL DUMP VEHICLE**

On 26 April 1995 a fitter carrying out repairs to a rubber typed passenger vehicle suffered fatal injuries when run over by a load haul dump vehicle with an operator. There were no witnesses to the accident and investigations are continuing to establish how a load haul dump vehicle may run away without a driver.

**Recommendations:**

1. Conduct an audit of Managers Transport Rules to ensure all vehicles are parked safe by with brake on, bucket down (if applicable) and turned into the rib. This should apply whenever the operator leaves the operator compartment. Please ensure that all drivers are trained with respect to the latter.
2. Ensure where possible that underground repair areas (workshops), diesel service areas and parking areas for vehicles are on relatively level ground allowing gradient recovery for runoff drainage only.

Underground repair areas, service areas and parking areas should be separate and effectively isolated from each other.

3. Review means of braking of parked vehicles to ensure that brake will automatically apply in a fail to safety manner when
  - (i) an operator leaves the operator compartment.
  - (ii) when the engine stops.
4. Review information from original manufacturer to ensure that improvements in vehicle safety features are incorporated in existing vehicles.

B.R. McKensy  
Chief Inspector of Coal Mines

**SAFETY ALERT**

This safety alert has been prepared to all coal mines with the earliest possible advice of a fatal accident so that appropriate action can be undertaken at each mine to avoid any occurrences of a similar nature.

**SUBJECT: ELECTRICIAN SUSTAINED FATAL INJURIES FROM A FALL OF ROOF MATERIAL**

**Circumstances:**

On Tuesday 23 April 1996 an electrician assisting the panel crew with the erection of roof support was buried by a fall of roof material.

The crew was engaged in roof brushing operations at the time of the accident.

Material had been cut from above the normal roof horizon leaving roof material cantilevered along the side of the excavation. The lip was being supported when approximately 400mm of coal ply fell over an area of several square metres, burying electrician. The fallen material was estimated at 6 to 7 tonnes.

**Recommendation:**

Conduct an audit of the support rules brushing operations as required under Clause 21 of the Coal Mines Regulation (Support - Under Mines) Regulation 1984 to ascertain that the following issues are being addressed:

- 1 This risk to employees is considered where coal mining impact upon the integrity of normal roof conditions or installation of support and that appropriate management controls are in place.
2. Pre-supporting the roof before brushing to avoid roof hanging in cantilever.

B.R. McKensey  
Chief Inspector of Coal Mines.

**SAFETY ALERT**

This SAFETY ALERT has been prepared to provide all coal mines with the earliest possible advice of a dangerous occurrence so that appropriate action can be undertaken at each mine to avoid any occurrence of a similar nature.

**SUBJECT: AN INSURGE OF INFLAMMABLE GAS FROM OLD WORKINGS**

On 29 May 1996 a plaster board stopping within a longwall area bleeder return failed causing a rapid build up of methane gas on the operating longwall face and within the return roadways. The gas build up led to the isolation of underground power, stoppage of the main fans and withdrawal of workmen from the mine. The mine was satisfactorily recovered after the event.

**RECOMMENDATIONS**

- 1 Use prediction techniques to identify the effects caused by ventilation changes and potential risks to employees.
- 2 Install substantial stoppings between critical ventilation roadways.
- 3 A full time ventilation officer, with computer ventilation modelling skills is recommended for mines with complex ventilation systems and potential gas problems.
- 4 A safe and controlled method of gas discharge from goaf areas to bleeder roadways is required to avoid dangerous concentrations of gas.

B R McKensey  
Chief Inspector of Coal Mines



**SAFETY ALERT**

This SAFETY ALERT has been prepared to provide all coal mines with advice of a dangerous occurrence which occurred at an underground mine utilising a bulk coal winding shaft. This is being done so that appropriate action can be taken at each mine utilising shaft winding operations to avoid any recurrence of a similar incident.

**SUBJECT UNPLANNED MOVEMENT OF SKEP IN SHAFT**

An electrician, whilst stepping into the manriding compartment of a bulk coal winding skip, to perform routine maintenance activities sustained cuts and abrasions to his lower left leg, ankle and foot when the skip was lowered into the shaft.

**RECOMMENDATIONS**

ALL underground coal mines utilising winding shafts should consider the following:

- Review of Manager's Rules and Standard Operating Procedures relating to shaft winding operations.
- \* Effectiveness of isolation procedures and lock-out switches to isolate winding equipment for maintenance purposes.
- \* Communication between persons performing work on shaft winding equipment and the winder driver.

B R McKensey  
Chief Inspector of Coal Mines

**SAFETY ALERT**

This SAFETY ALERT has been prepared to provide all coal mines with the earliest possible advice of a fatal accident so that appropriate action can be undertaken at each mine to avoid any occurrence of a similar nature.

**FOUR KILLED IN INRUSH OF WATER FROM OLD WORKINGS**

On 14 November 1996 four miners were killed when a development heading of the Gretley mine holed into old, abandoned workings of another mine. There is indication that incorrect information of those old workings may have contributed to the accident.

Mine managers are urged to ensure that original record tracings of old workings are checked as part of mine planning. In particular, any information which may have been derived from original record tracings should be viewed with caution and not used where the accuracy of the information cannot be verified.

Where managers cannot satisfy themselves as to the nature and extent of old workings from record tracing based information alternate means of delineating old workings should be utilised.

Managers are further reminded that record tracings have for a considerable time been supplied to the Department after the abandonment of mines. The Department acts as a repository for that material some of which may be very old. Due regard should be paid to the age and nature of record tracings in their use for mine planning or other purposes.

Attention is also drawn to relevant provisions of the Coal Mines Regulation (Survey and Plan) Regulation 1984 and the Coal Mines Regulation (Methods and Systems of Working - Underground Mines) Regulation 1984.

B R McKensey  
Chief Inspector of Coal Mines

# SECTION H

## SIGNIFICANT INCIDENT REPORTS

## INDEX OF SIGNIFICANT INCIDENTS

MDG No.	Title	Issue Date
MDG 3010 SIR 88/1	Shuttle car rims	21/12/88
MDG 3010 SIR 88/2	Drift haulage runaway	21/12/88
MDG 3010 SIR 89/1	Long wall roof support	24/02/89
MDG 3010 SIR 89/2	Spring causes fatality – Westfalia Chock	26/05/89
MDG 3010 SIR 89/3	Electric shock	21/06/89
MDG 3010 SIR 89/4	Burns to face & hands – Diesel engine fire	15/07/89
MDG 3010 SIR 89/5	Burns to hand and buttocks – Electric shock	26/07/89
MDG 3010 SIR 89/6	Access beneath heavy machinery	04/08/89
MDG 3010 SIR 90/1	Injury to driver whilst reversing vehicle	02/02/90
MDG 3010 SIR 90/2	Accident involving a thermal lance	06/02/90
MDG 3010 SIR 90/3	Machine man crushed between feeder breaker and rib	07/08/90
MDG 3010 SIR 90/4	Unsafe work practice (Ulan) (O.C. bucket reclaimer)	04/10/90
MDG 3010 SIR 90/5	Earth fault or short circuit conditions power restoration	27/3/91
MDG 3010 SIR 91/1	Self starting machinery results in injury	28/05/91
MDG 3010 SIR 91/2	Fatality from emission of high pressure hydraulic fluid	06/01/92
MDG 3010 SIR 92/1	Fitter injured by conveyor winch wire rope	17/01/92
MDG 3010 SIR 92/2	Four tyres exploded on a rear dump truck	13/05/92
MDG 3010 SIR 92/3	Workman injured by chain which came loose whilst towing pantehnicon	08/05/92
MDG 3010 SIR 92/4	Workman struck by load binder attached	25/05/92
MDG 3010 SIR 92/5	Failure of brackets supporting overhead pipes	16/10/92
MDG 3010 SIR 92/6	Injury from emergency brake application on drift winder	16/10/92
MDG 3010 SIR 92/7	Injuries from conveyor pinch point	16/10/92
MDG 3010 SIR 93/1	Failure of operation of electrical protective devices	15/05/93
MDG 3010 SIR 93/3	Danger from automatic fire protection system	06/05/93

<b>MDG No.</b>	<b>Title</b>	<b>Issue Date</b>
MDG 3010 SIR 93/4	Misunderstood isolation indicator	09/07/93
MDG 3010 SIR 93/5	Two skips fall to bottom of shaft	13/09/93
MDG 3010 SIR 93/6	Welding personnel burnt in methane and coal dust ignition	27/08/93
MDG 3010 SIR 93/7	Environmental rating of electrical equipment	06/10/93
MDG 3010 SIR 94/1	Workman inadvertently fall onto conveyor belt	02/02/94
MDG 3010 SIR 94/2	Conveyor belt fire causes evacuation underground mine	08/04/94
MDG 3010 SIR 94/3	Roof bolt injures LHD driver	08/04/94
MDG 3010 SIR 94/4	Operator injured by drill rig	13/10/95
MDG 3010 SIR 94/6	Conveyor near miss	16/06/94
MDG 3010 SIR 94/7	Fire in auxiliary ventilation fan	16/06/94
MDG 3010 SIR 94/9	Belt fabric causes belt fire	25/07/94
MDG 3010 SIR 94/10	Danger from gouging equipment	16/09/94
MDG 3010 SIR 94/11	Machine man injured operating belt tensioner	16/09/94
MDG 3010 SIR 95/1	Blown out shot in open cut	27/09/95
MDG 3010 SIR 95/3	General purpose utility vehicle causes injury	13/10/95
MDG 3010 SIR 96/1	C/R fires – Polymide bearing	24/04/96
MDG 3010 SIR 96/2	C/R brake heating – Limit switch failure	24/04/96
MDG 3010 SIR 96/3	Misuse of underground vehicle park brake	19/01/96
MDG 3010 SIR 96/4	Misuse of underground diesel vehicle	19/01/96
MDG 3010 SIR 96/5	Ignition of flammable gas	13/08/96
MDG 3010 SIR 96/6	Failure of electrical protection trip supply	13/08/96
MDG 3010 SIR 96/7	Injury from unguarded conveyor pinch point	01/11/96
MDG 3010 SIR 96/8	Remote control machinery	20/11/96
MDG 3010 SIR 96/9	Welding electrocution at an Indonesian mine	20/12/96

## **SIGNIFICANT INCIDENT REPORT**

### **SHUTTLE CAR WHEEL RIMS**

#### **INCIDENT**

A shift undermanager was fortunate to escape serious injury when the split ring of a shuttle car rim sprang off.

#### **CIRCUMSTANCES**

The undermanager was standing against the rib to allow the loaded shuttle car to proceed to the boot end. It had just passed him when the inbye tyre wheel rim failed violently (hurling) parts of the rim into the rib. The tyre was inflated to 700 kPa. Had the failure occurred a moment earlier he would have received the full impact of the debris.

#### **INVESTIGATION**

The investigation revealed that the split ring retaining groove in the wheel rim had failed over part of its circumference, as shown on the attached figure. The failure had been initiated from a fatigue crack which had developed in the base of the groove. The wheel rim failure allowed the split ring to spring-off violently.

The rim was identified as being of the type fitted as standard equipment on shuttle cars. Further investigations revealed that similar failures have occurred at other coal mines.

These additional investigations have also established that wheel rims have failed at the inner flange. An example of this type of failure is illustrated in the attached photograph.

Following this incident coal mines have initiated a program to have the rim sand blasted and crack tested prior to fitment of a new tyre. To date one third of the rims tested have been identified as being faulty. These rims have been scrapped and replaced with rims constructed of a heavier section.

#### **RECOMMENDATION**

1. All shuttle car rims to be sand blasted and rack tested as part of an on-going program.
2. Any found with cracks to be replaced with new rims preferably of the heavier section type.
3. All new shuttle car specifications to nominate the heavier section rim.

J.G. BAILEY  
CHIEF INSPECTOR OF COAL MINES

## **SIGNIFICANT INCIDENT REPORT**

### **DRIFT HAULAGE RUNAWAY**

#### **INCIDENT.**

An Onsetter sustained a fractured pelvis when the drift haulage control car he was riding in ran out of control.

#### **CIRCUMSTANCES.**

The Onsetter was in the control car with two 10 tonne Jeffrey Locomotives attached for transportation to pit bottom. An uncontrolled descent to drift bottom culminated in the derailment of the control car and both locomotives. The Onsetter was injured when the control car impacted the rib.

#### **INVESTIGATION.**

The investigation revealed that the addition of the second locomotive caused the safe working load for the winder when hauling materials to be exceeded.

The drift haulage winder dynamic and two mechanical braking systems were unable to arrest and hold the load which resulted in runaway and the derailment of the load.

The Winding Engine Driver was not notified by the Onsetter that he had decided to couple the additional locomotive.

The Onsetter's actions and disregard of the Manager's Transport Rules clearly displayed at the portal, endangered his life and resulted in damage to the drift haulage system and attached locomotives.

#### **RECOMMENDATIONS**

Ensure that strict adherence to the Transport Rules is observed as the aim of these is to provide a safe working environment for the welfare of employees. The Manager and Training Officer of each coal mine operating a drift or shaft haulage materials system where personnel are transported should ensure personnel are acquainted with and fully understand such rules.

J.G. BAILEY  
Chief Inspector of Coal Mines.

## **SIGNIFICANT INCIDENT REPORT**

### LONGWALL ROOF SUPPORT LEG FAILURE

#### **INCIDENT**

A Federation employee was seriously injured when hydraulic fluid under high pressure was released from a longwall roof support leg.

#### **CIRCUMSTANCES**

The Federation employee was assisting a fitter to change a rear roof support leg. Oil under extreme pressure suddenly bypassed the leg seal striking the Federation employee under the armpit and across the upper chest causing severe lacerations requiring hospitalisation.

#### **INVESTIGATION**

The investigation revealed that the leg outer cylinder had dilated so that the leg gland bearing raised 25 mm resulting in the release of fluid at very high pressure.

The exact cause of the intensification could not be determined conclusively but several situations that can potentially lead to intensification were identified.

- (i) Simultaneous operation of the power lower module and the leg set module.
- (ii) Faulty operation of the power lower module resulting in the module sticking in the 'ON' position, leaving the return line closed.
- (iii) Blockage of the return circuit either inadvertently by crimping hoses, contamination etc., or through human error e.g. closed valves, looped return lines etc.

#### **RECOMMENDATIONS**

1. All mines using longwall mining methods carry out an investigation to identify the potential for pressure intensification to occur on the return side of the legs. If the potential exists arrange for suitable modifications to be made to prevent the inadvertent over pressurisation of the return lines.
2. All roof support legs in service to be checked for possible dilation of the outer cylinder and replaced as necessary.

J.G. BAILEY  
CHIEF INSPECTOR OF COAL MINES



## **SIGNIFICANT INCIDENT REPORT**

### **SPRING CAUSES FATALITY**

#### **INCIDENT**

A workman employed at a repair facility remote from a minesite was killed as a result of being struck on the head by a pin which ejected from the canopy of a Longwall Roof Support.

#### **CIRCUMSTANCES**

Whilst the workman was oxy cutting a damaged block adjacent to a spring loaded pin which controls the side shields of the roof support, the pin suddenly ejected from the canopy. The pin struck the workman violently on the forehead causing serious injuries which ultimately resulted in his death.

#### **INVESTIGATION**

Investigation revealed the primary cause of the accident to be a lack of knowledge by the workman.

The pin which caused the injury weighed 37 kilograms. This pin is normally retained under a compressed spring which is capable of imparting a force of 7 kilonewtons (approximate, 1600 lbs force).

The workman was standing in front of the pin when he was injured.  
No method of controlling the release of the stored spring energy was used.

#### **RECOMMENDATIONS**

1. Ensure that all workmen, including external contractors are instructed both verbally and in writing of the dangers associated with stored energy and the safe methods of controlling the stored energy when removing or replacing roof support side shields.
2. Ensure that workmen do not stand in front of the spring loaded pins when removing or replacing side shields.
3. Ensure that the equipment used for the controlled release of spring energy is readily available and is adequate.

J.G. Bailey  
Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **ELECTRIC SHOCK**

#### **INCIDENT**

A leading hand electrician received an electric shock and burns to his hand when he came into contact with electrical apparatus energised at 6,600V.

#### **CIRCUMSTANCES**

The leading hand electrician was accompanying a manufacturer's representative to get details of carbon brushes used on a coal handling plant coal reclaimer.

Isolation and check for dead procedures were not carried out correctly. The leading hand electrician partially removed a cover to gain access to the 6,600V slip ring assembly and an electrical interlock failed to trip the 6,600V supply. On touching a 6,600V brush he received an electric shock and sustained his injuries.

#### **INVESTIGATION**

Due to bad custom and practice at the mine proper isolation and test procedures were not carried out.

Incorrect identification of the isolation point by the leading hand electrician led to the equipment he was to work on remaining energised. Switchgear identification was adequate.

The leading hand electrician did not use a "non-contact voltage indicating device" before entering an electrical enclosure, resulting in the leading hand electrician not discovering his mistake of incorrect isolation without endangering his life.

#### **RECOMMENDATION**

Management should ensure that:-

1. isolation procedures are adequate.
2. personnel are trained in the isolation procedures, clearly understood them, are issued with "non-contact voltage indicating devices" and trained in their proper use.

J.G. Bailey  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **Burns To Face and Hands**

#### **Accidents**

A Federation employee was burnt on the face and hands by burning transmission fluid.

#### **Circumstances**

The employee was driving a large rear dump truck when the top cover of the transmission filter came loose allowing a considerable volume of oil to spray over the hot turbo charge of the adjacent diesel engine. The oil ignited and flames eventually engulfed the drivers cabin and entered the cab through an open window. The driver was burnt whilst leaving the cab.

#### **Investigations**

The investigation revealed that:-

1. The driver continued to drive the truck after he saw the fire.
2. He did at no stage stop the engine or initiate the onboard pressurised fire extinguishing system.
3. He had not been properly trained in the required fire drill.
4. The bolts on the transmission filter failed due to the manufacturer's instructions not being adhered to.
5. Maintenance personnel had not been instructed in the correct maintenance procedures.
6. A floor grate positioned below the open cabin window allowed flames to travel from under the mudguard to within the cabin. The floor grate was a colliery modification intended to reduce dirt entry into the cabin.

#### **Recommendations**

1. Train all drivers of mobile equipment in the appropriate procedure to be adopted should a fire occur.
2. Ensure that maintenance and service personnel have access to manufacturer's maintenance/service information.
3. Equipment manufacturers should avoid component selection which requires unnecessary specialised service requirements e.g. oil filter cover bolts with material strength in excess of grade B.
4. Avoid modifications to equipment which may increase the exposure of the driver to flames from the engine compartment.

J.G. Bailey  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **INCIDENT**

A linesman received burns to his hand and buttocks and received an electric shock when he came into close proximity of conductors energised at 11,000V.

### **CIRCUMSTANCES**

The linesman (employed under contract ) was part of a crew doing maintenance in a 66,000/11,000V switchyard.

A source of electricity was overlooked and the switching instruction sheet was not followed in an exact manner. All points within the switchyard where personnel were at work were not checked for dead.

The linesman climbed on a rotary air break switch and commenced cleaning insulators. On attempting to reach across the air break switch he came into close proximity of energised conductors and received his injuries.

### **INVESTIGATION**

A backfeed from an alternative source of supply was not included on the switching schedule.

The shift engineer in charge of the isolation was not fully conversant with the whole distribution system and did not know of the possible backfeed and consequently failed to check for DEAD at all points within the switchyard.

The contractor firm supervisor failed to take action on the advice of the shift engineer with regards to earthing.

There was confusion as to whom was in charge of the job and whom had what responsibility. The linesman failed to check the apparatus he was to work on was "DEAD".

### **RECOMMENDATION**

Management should ensure that:-

1. When switching schedules are raised, that all possible sources of energy are identified and effectively isolated.
2. When isolation is being carried out, the person who does the isolation is familiar with the system being isolated.
3. That all persons working on electrical equipment check for "DEAD" before they proceed to come into contact with or come within close proximity of energised conductors.
4. That mine personnel in charge of contractors are aware of their responsibilities and that contractors are aware of their obligations to obey directions given by such personnel.

J.G. Bailey  
Chief Inspector of Coal Mines

**SIGNIFICANT INCIDENT REPORT**

**ACCESS BENEATH HEAVY MACHINERY**

**INCIDENT:** A mechanical fitter received severe bruising and lacerations when crushed under a continuous miner.

**CIRCUMSTANCES:**

While replacing two of the 'Stab Jack' rams at the rear of the miner, the temporary support ('Micky Block') holding the 'Stab Jack' in the lowered position split and collapsed when the control was operated. This allowed the continuous miner to fall to the floor, pinning the fitters head, shoulder and chest. It was only due to the limited clearance under the miner that a fatality did not result.

**INVESTIGATION:**

While fitting a new 'Stab Jack' ram, the victim found it necessary to work under the continuous miner. At the same time, a second mechanical fitter, also working on the repairs, instructed the continuous miner driver to operate the 'Stab Jack' controls. Neither the second fitter or the miner driver were aware that anyone was under the machine at the time. The incident was attributed to a combination of poor communication, poor work practice and lack of experience of those involved.

**RECOMMENDATIONS:**

1. A group of employees involved in a task should have a good understanding of what is required and how the task is to be undertaken. - **TEAM EFFORT**
2. Machinery is not to be operated while personnel are carrying out repairs. - **USE DANGER AND OUT OF SERVICE TAGS**
3. Only supports of sufficient strength, appropriate to the task and properly positioned, are to be used while working under heavy equipment.

J G Bailey  
Chief Inspector of Coal Nines

## **SIGNIFICANT INCIDENT REPORT**

### **INJURY TO DRIVER WHILE REVERSING VEHICLE**

#### **INCIDENT:**

A vehicle operator sustained severe injury to his left foot, which was crushed, while reversing a vehicle in an underground mine.

#### **CIRCUMSTANCES:**

The operator was reversing an articulated, multi-purpose free-steered vehicle. In order to improve visibility he elevated himself from the seat by kneeling on the seat with the left leg.

The vehicle design allowed the operators left foot to protrude from the driver's compartment when being operated in this mode. As the vehicle was being operated in close proximity to a parked multi-purpose vehicle material carrier, the operators left foot was crushed, resulting in the amputation of a substantial part of that foot.

#### **RECOMMENDATIONS:**

1. Review procedures for the operation of vehicles of this type where the operator may be forced to not occupy the normal driving position.
2. Investigate modification of the driver's compartment of such vehicles to eliminate risk of exposure of the operator's legs while manoeuvring the vehicle when not in the normal driver's position. Care should be taken to ensure that modifications do not introduce any new hazards to operators by restricting access to and from the drivers compartment.

J G Bailey  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **ACCIDENT INVOLVING A THERMAL LANCE**

**INCIDENT:** A fitter receive facial burns when a home-made thermal lance exploded.

**CIRCUMSTANCES:**

The fitter was attempting to 'punch' a hole through a siezed articulation pin using a home-made thermal lance. Due to incorrect technique, and the presence of grease in the pin there was a reaction within the lance which caused disintegration of some of its components. This resulted in a fireball travelling under the fitter's face shield and causing facial burns. Due to his also wearing safety glasses beneath the face shield his eyes were not injured.

**INVESTIGATION:**

The fitter had fabricated the thermal lance from a variety of components which were unsuitable for the task. An attempt was made to use the lance in a vertical position, which contravened accepted good practice. This was compounded by pushing the lance end into a lubrication tapping only slightly larger in diameter than the lance rod.

The presence of grease in the hole, combined with oxygen under pressure, resulted in a violent reaction which propagated up the lance destroying the control valve and some of its housing.

**RECOMMENDATION:**

Thermal lancing is a potentially, highly dangerous practice and should be avoided where possible. Where specific problems necessitate the use of a thermal lance, then, only a quality, purpose built and commercially available lance should be used. All personnel involved must be specifically trained and authorised to use the equipment.

B R McKensey  
Chief Inspector of Coal Mines

**SIGNIFICANT INCIDENT REPORT**

**MACHINEMAN CRUSHED BETWEEN FEEDER BREAKER AND RIB**

**INCIDENT:**

A machineman suffered a fracture of the pelvis and internal bleeding while tramping a feeder breaker in an underground mine.

**CIRCUMSTANCES:**

Two machinemen were carrying out preparatory work associated with the extension of a panel conveyor belt. One of the machineman was at the operator control station, located on the side of a feeder breaker, and tramping the machine inbye when he was crushed between the control station guard and the rib, as the machine slewed.

**RECOMMENDATIONS:**

1. Modification of controls so that feeder breakers can be tramped via a remote control facility. This would eliminate exposure of personnel operating directly mounted controls and should enhance overall visibility.
2. Marking of the direction of travel clearly on feeder breakers and control stations to clearly indicate "FORWARD" and "REVERSE" directions in order to minimise confusion which may occur on equipment which is infrequently tramped. Direction designation must be uniform for all feeder breakers at a mine.
3. Incorporation in 103 Schemes of provision for checking that direction of travel is not reversed as a result of maintenance work carried out on tramping circuits.

B R McKensey  
Chief Inspector of Coal Mines



## **SIGNIFICANT INCIDENT REPORT**

### **UNSAFE WORK PRACTICE**

#### **INCIDENT:**

In the course of carrying out a bucket direction change, on a coal stock pile reclaiming, the bucket wheel motor was inadvertently started. A workman sustained damage to a leg, sufficient to subsequently require amputation at the knee.

#### **CIRCUMSTANCES:**

The configuration of the stockpile reclaiming required its buckets to be manually load direction changed. This process was carried out regularly and required keeper pins to be removed and replaced on each bucket. The buckets were progressively positioned with the main drive by means of a key operated control switch.

The injured employee was working in close proximity to exposed gears of the bucket wheel drive. The key from the motor control circuit switch had not been removed prior to job commencement. Danger tags were not used. There was no documented safe working procedure for the job. One of the workman was experienced in the job, the other not.

#### **RECOMMENDATIONS:**

1. Management should ensure that:

- (a) Safe working procedures are provided for all jobs;
- (b) All worksites and equipment are safe;
- (c) All employees are trained to adequately avoid all dangers; and
- (d) All safety requirements are regularly monitored for compliance.

2. Particular attention should be given to:

- (a) Correct isolation of machinery including appropriate use of danger tags;
- (b) Adequate guarding of all exposed machinery; and
- (c) Conduct of job safety or risk analysis to identify and control hazards before injury occurs.

B R McKensy  
Chief Inspector of Coal Mines

**SIGNIFICANT INCIDENT REPORT**

**EARTH FAULT OR SHORT CIRCUIT CONDITIONS -  
POWER RESTORATION**

**INCIDENT:** An electrician suffered leg injuries when operating and 11kV underground isolator.

**CIRCUMSTANCES:**

An experienced leading hand electrician was re-powering an underground 11kV system **AFTER** power had tripped on short circuit. He arranged the opening of underground isolators then, without testing, restored the power from the surface. Since the power remained on, the first in line of the underground isolators was closed. Power again remained on. Groups of isolators were then closed, one at a time. Closure of the fourth isolator resulted in **CATASTROPHIC FAILURE** of the adaptor insulant. The resulting explosion sheared two metal covers which ejected into the electricians legs.

**INVESTIGATION:**

The incident was attributed primarily to failure of the electrician to adequately test the circuit prior to re-powering. There was potential for a fatality and sufficient energy released to initiate a coal dust explosion - rendering the mine idle, uneconomic or closed.

**RECOMMENDATIONS:**

1. After power has tripped on **EARTH FAULT** or **SHORT CIRCUIT** the circuit **MUST** be adequately **TESTED - BEFORE** power is restored.
2. Management should ensure that safe procedures are formulated and followed whenever power is being restored.
3. Only test equipment that can apply **TWICE** the working voltage is able to adequately detect this type of insulation fault.

B R McKensy  
Chief Inspector of Coal Mines

**SIGNIFICANT INCIDENT REPORT**

**SELF STARTING MACHINERY RESULTS IN INJURY**

**INCIDENT:**

A mine electrician sustained an amputation to a finger when his hand became caught in the drive belts of an air compressor.

**CIRCUMSTANCES:**

The electrician was inspecting the drive of an electric motor driven aircompressor installed on a battery powered locomotive when the motor suddenly started without warning. The resulting motion of drive belts pulled his hand into the drive pulley.

**INVESTIGATION:**

The air compressor starts automatically when pressure drops below a minimum setting. The electrician removed a guard type cover from the compressor drive system with power applied to the electric motor control circuit and isolation only effected by the pressure switch. When the pressure fell the compressor started without any warning injuring the electrician.

**RECOMMENDATIONS:**

1. Do not remove guards or covers without fully isolating machinery and danger tagging the controls.
2. All self starting machinery should be identified and notices fitted to inform of the danger of removing covers without first isolating the power supply.
3. Adequate training and instructions must be given to all personnel.

B R McKensy  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **FATALITY FROM EMISSION OF HIGH PRESSURE HYDRAULIC FLUID**

**INCIDENT:** A Longwall Engineer was killed when hydraulic fluid under high pressure was released from a longwall roof support leg.

**CIRCUMSTANCES:** The Longwall Engineer was assisting a fitter to install a roof support leg. Fluid under extreme pressure suddenly by-passed the leg gland seal striking the Longwall Engineer in the abdomen resulting in him receiving fatal injuries.

**INVESTIGATION:** The investigation revealed that a steel staple retained blanking plug had been left in the annulus port of the leg as pressure was applied to extend the leg.

This caused the pressure in the annulus side to be intensified until the gland seal failed, resulting in a jet of high pressure fluid being released. (For detail of the cylinder refer sketch).

#### **RECOMMENDATIONS:**

1. All mines to investigate and identify the potential for intensification within their equipment or systems;
2. All relevant personnel be made aware of potential intensification of hydraulic legs and rams;
3. Clearly defined instructions and procedures for removal, installation and repair of hydraulic legs and rams to be implemented and adhered to;
4. A hydraulic fuse or other pressure relief device be integrated into the annulus side of all hydraulic cylinders with the potential for intensification; and
5. For transportation and storage purposes, feed ports should be protected by a safer means than fitting steel blanks.

L J Roberts, Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **FITTER INJURED BY CONVEYOR WINCH ROPE**

**INCIDENT:** A mechanical fitter sustained severe lacerations to his arm when struck by a conveyor winch wire rope.

**CIRCUMSTANCES:** The fitter was stopping and starting a conveyor in order to examine bet clip joints whilst positioned at the rear of the drive head loop takeup frame. Whilst operating the conveyor he was struck on the arm by the unsecured end of the loop takeup adjustment winch wire rope which had run back through the takeup carriage and thence ejecting from the rear of the loop takeup with the end of the rope striking him.

**INVESTIGATION:** The investigation revealed that the takeup carriage was near its minimum belt storage capacity and the wire rope on the equalising shaft was fully extended without any turns of rope on the shaft. Repeated stop/starting the conveyor subjected the clamps attaching the wire rope to the shaft to full rope tension during each starting sequence and eventually the attachment failed which allowed the rope to eject.

### **RECOMMENDATIONS:**

1. A minimum of two (2) rope turns should be maintained on any shaft or drum which is used to anchor wire ropes in any stored tension loop takeup system so that the rope attachment is not exposed to the full rope tension.
2. Guards fitted to the rear of loop takeup systems be reviewed to determine if the protection provided for personnel working in the vicinity is adequate.
3. Conveyor belt signal line switches be located clear of the line of tension to any rope in a loop takeup assembly.

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

**SIGNIFICANT INCIDENT REPORT**  
**FOUR TYRES EXPLODED ON A REAR**  
**DUMP TRUCK**

**INCIDENT**

Whilst tipping top soil in an Open Cut Reclamation area, the raised tray of a Rear Dump Truck contacted a 33,000V overhead power line. This contact with the power line was unknown to the driver.

After returning to the loading area (A distance of approximately 600m), the tyres began to explode one at a time. Four tyres exploded violently causing severe structural damage to the vehicle and hurling rim and truck components up to 100 metres. The driver, although not injured physically, suffered acute shock after the incident.

**CAUSE**

The explosions resulted from the vehicle's contact with the power line. The electrical current caused burning inside the tyres and the build up and ignition of flammable gases. These type of explosions occur when gas concentrations exceed a critical level and parts of the tyre(s) remain sufficiently hot to initiate an explosion.

Depending on the energy levels the reactions may be almost instantaneous or could take place many hours later.

**COMMENTS**

Contact with power lines is of Serious concern and all persons involved should be aware of the consequences i.e.:

Tyre explosions can be devastating, with fragments being projected over 300 metres. Brief contact with power lines can cause one or more tyres to explode immediately or possibly hours later. Fire also may be initiated.

If the power lines have fallen they can remain alive and energise the vehicle or other metallic structures. They are also capable of unexpected movement. Electric shock may be suffered on contact.

**PREVENTATIVE ACTION**

All mines are urged to carry out a full audit on all power lines with emphasis on the possibility of vehicle contact. Remote areas such as future or existing reclamation works should be considered in this audit.

All mines should embark on an awareness program with Operators and Mine Officials. Re: Power lines and Tyre explosions.

Avoid the erection of future power lines in mobile equipment operating areas including road crossings.

**ACTION IF CONTACT KNOWN**

If tyres are still inflated, the operator - should proceed immediately to a clear safe area and institute emergency procedures.

The operator should remain in the vehicle. operator evacuation should be effected using a similar vehicle approaching radiator to radiator to allow the driver to step across. Rescue vehicle should leave directly in reverse.

Do not approach within 300m of the vehicle for 24 hours.

**NOTE! FLAT TYRES CAN STILL EXPLODE.**

Following 24 hours, stand down period, all tyres will -require an internal inspection, by competent persons before normal use.

**ACTION IF CONTACT UNKNOWN (I.E. TYRES BEGIN TO EXPLODE)**

Operator should immediately institute emergency procedures and the immediate area should be evacuated. -

If there is no residual fire, evacuate operator as above.

If a 'residual fire occurs, the operator should vacate the vehicle FORWARD and proceed away from the vehicle at least 200m in the forward direction.

Fire fighting should only. be carried out using remote control monitors forward or directly behind the vehicle.

The risk of fighting the fire should be carefully assessed by Officials.

R. L. SMITH  
Inspector of Mechanical Engineering

**SIGNIFICANT INCIDENT REPORT**  
**FAILURE OF PULLER ATTACHMENT**  
**- LONGWALL PANTECHNICON RETRACTION**

**INCIDENT:**

A workman sustained fractures to a leg, ankle and foot when struck by a pantechnicon puller chain.

**CIRCUMSTANCES:**

In the course of pulling a longwall pantechnicon, utilising a puller chock and 2 connected puller chains, a retaining pin became dislodged allowing one chain to suddenly release, striking the workman standing nearby.

**INVESTIGATION:**

A crew of four men were deployed to retract the pantechnicon outbye in a routine manner. Due to repeated withdrawals of the pantechnicon a retaining split pin exposed to contact with the floor had sheared, allowing one of the relay bar clevis pins to be pushed up into the clevis body, becoming completely unconnected to the lower arm of the clevis. The top arm of the clevis then became distorted allowing one chain to release under tension causing the cross bar to move violently, resulting in the sudden lateral movement of the remaining puller chain.

The injured employee had placed himself between the puller chock and pantechnicon as had one of his workmates who fortunately was uninjured.

There was no documented safe working procedure for the job. The workmen were all experienced in the job.

**RECOMMENDATIONS:**

Management should ensure that procedures for pulling and winching equipment are reviewed to ascertain that:

- (a) Equipment is adequate for the duty i.e. the Factor of Safety for each element of the system is appropriate.
- (b) Equipment is inspected by a competent person prior to its use and is deemed to be safe for the intended duty.
- (c) Access to the area in the vicinity of the pulling/winching activity is prohibited when load is being applied.

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines



## **SIGNIFICANT INCIDENT REPORT**

### **WORKMAN STRUCK BY LOAD BINDER ATTACHMENT**

#### **INCIDENT:**

A workman sustained a fractured skull whilst assisting in securing an item of machinery to a sled for transportation underground.

#### **CIRCUMSTANCES:**

Two workmen were securing the apron of a continuous miner to a transport sled, using an over - centre locking chain load binder. The load binder was tensioned using a pipe extension on the lever arm which jammed when the load binder closed over centre. In removing the extension pipe the load binder released suddenly, rotating the lever arm and pipe violently. The 1.5m long pipe struck one of the workmen inflicting a fractured skull.

#### **INVESTIGATION:**

The investigation revealed that:

1. Neither workmen had received instruction on the safe use of the equipment.
2. No information was provided to the mine about the safe use of the equipment and in particular no information was provided about setting forces on the lever arm to attain the safe working load.
3. Neither workmen was wearing a safety helmet.

#### **RECOMMENDATIONS:**

Management should ensure that:

1. Employees are trained in the safe use of equipment, particularly equipment which can store energy.
2. Information is obtained from suppliers about the safe use of equipment, and where rigging equipment is concerned, the means of achieving safe working loads.
3. Employees are required to wear appropriate personal protection.
4. An assessment of the risk of accident is carried out before an operation commences so that appropriate measures may be emplaced.

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **FAILURE OF BRACKETS SUPPORT PIPES OVERHEAD**

#### **INCIDENT:**

Two workmen employed at two separate coal mines sustained injuries as a result of the failure of brackets which were used to suspend pipe lines from the mine roof.

#### **CIRCUMSTANCES:**

In both cases the brackets were being used to suspend pipelines connected to the discharge of "Supervac" slurry pumping units. These units discharge "slugs of slurry" into the delivery line creating shock loads which cause loosely supported pipes to swing on their supports. In both cases the dynamic loading resulted in the brackets failing, allowing the pipelines to fall without warning, in one case striking a workman and in another creating an unsafe working environment which led to the injury of a workman. In both cases the potential for more serious injuries was obvious.

#### **INVESTIGATION:**

The two brackets were of similar designs but supplied by different manufacturers. Neither supplier had provided adequate technical data to identify the safe intended functions of the brackets. Neither mine were controlling the use of the brackets, nor were they in possession of adequate information to identify the safe limits of the brackets.

#### **RECOMMENDATIONS:**

All mines should identify the range of service brackets in use and:-

- (i) As a quality control exercise audit bracket manufacturer's compliance with the Occupational Health and Safety Act, specifically PART III, Division 1, Clause 18.
- (ii) Investigate the range of applications in which the existing brackets are being utilised and ensure that there are no unsafe applications left in service in accordance with Occupational Health & Safety Act, Part III, Division I, Clause 15.

**B. McKENSEY**  
Chief Inspector of Coal mines

**SIGNIFICANT INCIDENT REPORT**  
**INJURY FROM EMERGENCY BRAKE**  
**APPLICATION ON DRIFT WINDER**

**INCIDENT:**

A workman travelling a drift winder man transport received a fractured elbow when the emergency brake was applied.

**CIRCUMSTANCES:**

The drift man transport was travelling outbye near the top of the drift when the radio signal was interrupted which caused the winder emergency brake to apply. The momentum of the transport caused it to continue to travel resulting in slack rope. The transport subsequently rolled freely down the drift until it came to a jarring stop when the slack rope was absorbed.

A number of persons were dislodged from their seats resulting in general bruising and a fractured elbow.

**INVESTIGATION:**

A faulty plug between the transport cars caused the loss of radio signal but by design, any fault detected by the control circuit generally applies the winder emergency brake. The minimal rope length at the top of the drift resulted in minimum rope resilience and maximum jarring.

**RECOMMENDATIONS:**

1. All mines using drift winders are to investigate the potential for this type of accident to occur.
2. Take appropriate steps to protect personnel from injury in such an event. The following methods of protection should be considered:-
  - (a) All transport cars with seating arranged to face down the slope to have means provided to retain occupants in their seats and or
  - (b) All seats re-arranged to face up the slope and provided with padded headrests.

B.R. McKensy  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **INJURIES FROM CONVEYOR PINCH POINTS**

**INCIDENT:** This year two men employed at two separate coal mines sustained injuries when their arm was dragged into the pinch point between a return belt and a return roller.

The first incident involved a person testing the belt surface with his finger which led to his hand, then arm being pulled over the return roller. He was held off the ground by one arm until another workman stopped the conveyor. His injuries included abrasions and burns.

The second incident involved a workman stooping as he walked under a jib when his arm was inadvertently pulled around a return roller. After a number of attempts he managed to free himself. He suffered bruising, abrasive damage to his left upper arm, shoulder and back and lacerations to his head, right hand and legs.

#### **INVESTIGATION:**

1. Neither area was guarded.
2. Neither person could reach the conveyor stop system from their trapped position.
3. Many return idlers have the same potential for trapping a person.
4. In both incidents the potential existed for the injuries to have been far more serious.
5. Practices which are recognised as being commonplace with operating conveyors can lead personnel to be exposed to unacceptable risks.

#### **RECOMMENDATIONS:**

1. Management review potential for similar incidents and take relevant corrective action.
2. Ensure conveyor stop systems are accessible from anywhere persons need to travel or work. This is particularly critical where personnel are working alone in the nearby vicinity for operating conveyors.
3. Review training systems concerned with maintenance and operation of conveyors.
4. Review all conveyor systems and ensure that pinch points are provided with the appropriate protection in the form of a guard or barrier.

B.R. McKensy  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **FAILURE OF OPERATION OF ELECTRICAL PROTECTIVE DEVICES**

#### **INCIDENT**

A shuttle car cable was damaged in a hazardous zone. Electrical protection did not operate on the occurrence of a three phase to earth fault. Intermittent arcing continued until the electric power supply to the cable was switched off at the panel DCB.

#### **INVESTIGATION**

The neutral to earth connection on the secondary side of a panel transformer was left disconnected, thus preventing three earth leakage relays from operating. Earth leakage relay test circuits were designed for an injection test only, hence during test the relays indicated satisfactory operation but could not operate under phase to ground fault conditions.

Short circuit protection at the DCB was set above the prospective fault level at the site of the fault and hence could not operate.

Short circuit protection located on the secondary side of the panel transformer was not provided with 'back-up' protection and therefore could not operate upon failure of the short circuit protection located at the DCB.

#### **RECOMMENDATIONS**

1. Mine management must ensure that adequate short circuit protection is provided and is graded for all circuits.
2. When grading short circuit protective devices, management must consider failure of operation of any one device and hence provide adequate back-up protection.
3. Mine management must ensure that systems are in place to verify that the settings of protective devices are in accordance with those nominated by the Electrical Engineer in Charge. Such systems should require that any variation detected by the person carrying out the examination, be immediately referred to a senior member of the electrical staff for corrective action.
4. For medium voltage circuits, management must ensure that earth leakage test circuits are designed such that during test conditions, the earth leakage device detects and trips under actual phase to ground fault conditions.
5. Mine management must ensure that systems are in place, for personnel who are required to carry out the systematic examination and testing of electrical apparatus, to conduct sufficient tests to ensure that the integrity of the neutral to earth connection of transformers is maintained after insulation tests of the transformer windings have been conducted.

AA Rezcek Senior Inspector of Electrical Engineering  
for Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **DANGER FROM AUTOMATIC FIRE PROTECTION SYSTEM**

#### **INCIDENT**

Three people working in a switchroom narrowly escaped serious injury when the compressed carbon dioxide automatic fire protected system unexpectedly discharged and very quickly filled the surrounds rendering the atmosphere irrespirable.

#### **INVESTIGATION**

Prior to commencing work the electricians had isolated the fire protection system in accordance with the manufacturer's procedure by operating a key switch for each detector.

The investigation determined that the system was inadvertently triggered by a radio frequency signal emitted from a portable 2 way radio within the substation. This was confirmed by subsequent tests.

#### **RECOMMENDATIONS**

1. Assess the potential for a similar occurrence at the mine where such fire protection systems are installed to ensure that personnel are not exposed to the risk of inadvertent discharge of extinguishant under any circumstances that may prevail in the area covered by the system.
2. Ensure that the procedure to isolate the system is both foolproof and failsafe.

B.R. McKensey  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **MISUNDERSTOOD ISOLATION INDICATOR**

#### **INCIDENT**

A "near miss" at a colliery involved the use of a low voltage circuit breaker for the purposes of isolation.

Due to a misunderstanding of the symbols used to indicate whether the circuit breaker was 'OFF' or 'ON', the circuit breaker was actually in the 'ON' position.

Fortunately the mistake was identified and the equipment correctly isolated without any injuries to personnel.

#### **INVESTIGATION**

The personnel isolating were non-Electrical staff. The personnel did not understand the symbols used to indicate 'ON', 'TRIPPED' and 'OFF'. The personnel were confused with the use of background colours for the symbols.

#### **RECOMMENDATIONS**

- 1 All personnel required to isolate equipment should be provided with information/training for the interpretation of symbols, And the correct method of operation of isolation devices.
2. Where isolation switches are located, the appropriate 'ON' and 'OFF' positions should be clearly marked, or information interpreting symbols should be clearly displayed.

B. R. McKENSEY  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **TWO SKIPS FALL TO BOTTOM OF SHAFT**

#### **INCIDENT**

During commissioning of a shaft winder which had been modified to bulk coal winding a skip within the headframe became detached from the rope and fell to the bottom of the shaft. The failing skip struck the lower skip which also detached from its rope.

#### **CIRCUMSTANCES**

During the operation of the system the top skip appears to have been jammed by the door operating mechanism which resulted in approximately 8 metres of slack rope occurring. The skip then fell until the slack rope was absorbed at which stage the resultant impact caused the wedge type capel to fail and hence allowed the skip to free fall for over 370 metres and subsequently strike the lower skip. Impact of the skips caused failure of the lower skip capel which resulted in this skip also failing to pit bottom.

#### **INVESTIGATION**

The system did not include anything to prevent the generation of excessive slack rope.

The control system did not prevent winder movement before the door was clear of the skip.

Theoretically the capels were stronger than either the rope or the skip but subsequent destructive testing of a spare capel showed that it was the weakest link.

#### **RECOMMENDATIONS**

1. Conduct a risk assessment to cover all changes to winding systems and all commissioning procedures.
2. Positively identify the mechanical strength capability of all components in a winding system.
3. Where the strength of critical components relies on analysis of complex shapes or variable friction factors insist on destructive type testing so that strength can be positively identified.
4. Provide devices to prevent excessive slack rope.
5. Ensure that the slack rope that can occur will not cause impact loading in excess of the strength of any components in the winding system.

L J Roberts  
Senior Inspector of Mechanical Engineering  
for Chief Inspector of Coal Mines



## **SIGNIFICANT INCIDENT REPORT**

### **WELDING PERSONNEL BURNT IN METHANE AND COAL DUST IGNITION**

Two Welding Personnel received serious burns requiring hospitalisation when methane and coal dust inside the top of a 2000 tonne coal storage bin on the surface of an underground coal mine ignited.

#### **CIRCUMSTANCES**

Two Welding Personnel were burnt whilst oxy-cutting on top of a 2000 tonne coal bin. Environs outside the bin and vent areas from the top of the bin were checked and found absent of methane. Molten metal resulting from oxy-cutting fell into the coal bin igniting methane on top of the coal which in turn ignited coal dust. Flame enveloped the top of the bin emitting from the conveyor chute entry and inspection hatch resulting in the burns sustained.

#### **INVESTIGATION**

The investigation revealed the primary cause of the accident to be lack of knowledge by the workman of hazards associated with oxy-cutting on coal bins. Methane in washed coal stored in the bin was not realised as a hazard. Hence it is felt the assumption was made that no methane would be present in the bin or the vicinity of the bin where molten metal was sure to drop. All hazards associated with the work were not identified nor were controls set up to deal with such hazards.

#### **RECOMMENDATIONS**

The following recommendations are made to prevent a recurrence.

- 1 Management systems be initiated to determine hazardous areas on the surface of mines. Once such areas are identified controls should be put to effectively deal with identified hazards
- 2 The welding personnel were working on the external surface of the bin (confined space). Considering the high likelihood of molten steel entering the bin, had the Australian Standard AS 2865 - "Safe Working in a Confined Space" been employed, hazards may be identified and procedures put in place to avoid the incident.

B. McKensey  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **ENVIRONMENTAL RATING OF ELECTRICAL EQUIPMENT**

#### **INCIDENT**

An electrician received minor burns to his right hand. The injuries were received when a 600 volt moulded case circuit breaker failed as the electrician attempted to reset the tripped circuit breaker.

#### **INVESTIGATION**

The prime causal factor was the ingress of dust into the circuit breaker. The dust caused a premature deterioration of the circuit breaker contacts.

#### **RECOMMENDATIONS**

Electrical equipment should be installed within enclosures suitable for the environment in which it works.

Attention is drawn to:-

AS1939-1990 "Degrees of protection provided by enclosures for electrical equipment (IP Code)"

B.R McKensey  
Chief Inspector of Coal Mines

**SIGNIFICANT INCIDENT REPORT**  
**WORKMEN INADVERTENTLY FALL ONTO**  
**OPERATING BELT CONVEYORS**

**INCIDENT**

In two separate incidents, workmen fell onto a moving conveyor. One suffered a dislocated shoulder after travelling some 50 metres; the other sustained a minor injury to the right hand and fortunately avoided being drawn into a sizer crusher that was 15 metres away.

**CIRCUMSTANCES**

In the first instance the person was walking on the longwall pantech when he slipped, fell against the structure and onto the belt.

In the second instance, the person was standing on the structure to free a piece of timber jammed in the bucket of an LHD type vehicle when he lost his footing and fell onto the belt. He was able to stop the belt only when he reached a point on the conveyor where a pull switch wire support chain was located. He was then able to anchor himself against the moving belt and apply sufficient force to operate the switch.

**INVESTIGATION**

In both case lanyard (pull wire) type stop switches were installed along the conveyor . The victims endeavoured to stop the conveyor by pulling on the lanyard however were unsuccessful in operating the switch whilst travelling along the belt and thus were unable to stop the conveyor drive.

The reason the belt would not stop was that the installation of the switch in each case was such the direction of pull required on the lanyard to operate the switch was opposite to the direction of belt travel

**RECOMMENDATIONS**

- 1 All conveyor stop switches should be of the lanyard type AND installed so that they can be turned off in the direction of belt travel.
- 2 Access walkways alongside conveyors are kept to a standard which will permit safe passage by pedestrians.
- 3 Employees are to be trained on safe working procedures required to be adopted when performing duties in the vicinity of operating conveyors.

B.R McKensy  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **CONVEYOR BELT FIRE CAUSES EVACUATION OF UNDERGROUND MINE**

#### **INCIDENT**

A severe fire occurred in the loop take-up area of a 1.6m wide conveyor. The fumes from the fire required the mine to be evacuated with some personnel needing to use self rescuers.

#### **CIRCUMSTANCES**

The anti-friction bearing of the pulley in the loop take up carriage had collapsed allowing the pulley to contact adjacent steelwork and generate heat. Once the belt stopped running the heat was sufficient to ignite the conveyor belting. In addition grease, coal spillage and coal on the belt also commenced to bum fiercely. Three layers of belting in the conveyor loop take up were subsequently burnt.

#### **INVESTIGATION**

During a routine inspection the pulley bearing had been found to be running hot so a water hose had been positioned to cool it. The person conducting the inspection did not appreciate the potential consequences should a complete failure of the bearing occur.

The hot bearing was reported to the shift engineer by phone. The communication was ineffective as the engineer presumed it was a trough idler and took no immediate action.

There was no follow up inspection after the water hose was positioned on the bearing. The bearing failed approximately 3 hours later.

Subsequent testing of the conveyor belting showed that it complied with the "small finger" laboratory flame test to Australian Standard AS 1334.10 but failed to comply with the "gallery flame test" to AS 1334.12.

#### **RECOMMENDATIONS**

- 1 Train all relevant personnel to recognise and identify hazards which require immediate attention.
- 2 Ensure verbal communication is clear and unambiguous.
- 3 Mine management to ensure all underground conveyor belting is fire resistant and anti static. It is suggested that this will require some periodic gallery flame testing to AS 1334.12
- 4 The Inspectorate request Standards Australia re-evaluate the appropriateness of the small scale laboratory flame test.

B.R. McKensev  
Chief Inspector of Coal Mines

**SIGNIFICANT INCIDENT REPORT**  
**ROOF BOLT INJURES LHD DRIVER**

**INCIDENT**

The driver of a LHD vehicle sustained a fractured left fibula when a roof bolt penetrated past the base of the door into the driver's compartment.

**CIRCUMSTANCES**

The door was protruding below the floor of the driver's compartment. A gap existed between the door and the floor. The loose roof bolt was picked up by the protruding edge and entered through the gap and struck the driver's leg.

**INVESTIGATION**

To allow the LHD to be used in a low seam height the driver's compartment was redesigned including the previously approved compartment door. The design of the compartment and the door was the result of a risk assessment but the guideline for driver's compartment doors in MDG 1 was not considered during the assessment. Had the guideline been followed the fault responsible for the accident would not have been present.

**RECOMMENDATIONS**

1. It is important during the course of a risk assessment that all available standards, codes, guidelines, etc are included in that process and they form the basis as the minimum requirements. Alternative solutions should be selected to provide equivalent or improved protection.
2. Housekeeping procedures in place at the mine be reviewed to establish their effectiveness in elimination of loose material such as roof bolts, etc.

B.R McKensy  
CHIEF INSPECTOR OF COAL MINES

**SIGNIFICANT INCIDENT REPORT**  
**OPERATOR INJURED BY DRILL RIG**

**INCIDENT:** A drill rig operator was injured when the rotation-motor assembly shot forward while he was working on the guides of the boom.

**CIRCUMSTANCES:** The operator was in the process of picking up the rear of the uncoupled lead drill rod when the drill rotation slide assembly inadvertently moved quickly forward. The movement resulted in the amputation of the operators left ring finger.

**INVESTIGATION:**

- 1 The drill rig consisted of a mobile rubber tyred vehicle containing an electric motor which provided power to a hydraulic power pack for drilling operations.
- 2 Although the operator was positioned on the drill guide the electric power driving the hydraulic pump to the drill rig had not been isolated.
- 3 The controls provided for drilling operations remained in the set position once selected and required manual effort to alter them.
- 4 If the power was removed and then re established the rig would operate as previously set.
- 5 The drill feed control was not proportional over its full operating range. It varied from inch control to fast movement for a short movement of the control lever.
- 6 The operator was able to reach and activate controls by coming in contact with them with his foot or other parts of his body.

**RECOMMENDATIONS:**

Management should ensure that drill rigs in use at their mines comply with the following:

- 1 All controls shall spring return to neutral or be protected by other means to prevent injury.
- 2 Restoration of power shall not cause a hazard as stated by Australian Standard AS2671. When restarting power resetting of controls to achieve motion is required.
- 3 Where possible/practical controls should not be in a position where the operator can come in contact with them while working on parts of the machine which may move.  
  
Inching controls need not comply with this recommendation.
- 4 Controls should be guarded to such an extent that they can not be accidentally bumped by an operator or activated by falling roof or rib material.

B.R. McKensy  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **CONVEYOR NEAR MISS**

An employee was crossing when it started. He was carried through a side loading transfer point and twenty metres towards an overpass before he was able to roll off the conveyor. The employee received injuries requiring hospital treatment.

#### **CIRCUMSTANCES**

The employee had turned a belt switch off. The belt had been switched off elsewhere then restarted. The employee operated switch failed to stop the conveyor.

#### **INVESTIGATION**

The switch was found to be wired into the return or common leg of the two wire system. Earth faults were found on the common or return leg of circuits both inbye and outbye the switch. These earths had the effect of bypassing any switches installed in the return or common leg between the earth faults.

#### **RECOMMENDATIONS**

- 1 Switches should only be installed to the manufacturers recommendations.
- 2 Periodic examination and testing should be carried out to determine the condition of the installation.
- 3 Persons employed to install or maintain equipment or systems should be suitably trained in the work given.

B. McKensey  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **FIRE IN AUXILIARY VENTILATION FAN**

An auxiliary ventilation fan suffered a catastrophic failure. The motor shaft (carrying the fan impeller) became so hot the shaft bent and jammed the impeller against the housing and the power tripped off. A fire inside the housing had to be extinguished.

#### **CIRCUMSTANCES**

During a non production two deputies, a leading hand electrician and two fitters had cause to inspect the fan due to odd noise concerns. The inspections were spread over a five hour period. The removal of the fan from service was not considered necessary. The mine operates in the Bulli Seam and is considered to be gassy.

#### **INVESTIGATION**

The fan was a type where the impeller is directly mounted on the shaft. The fan system was found in the following conditions: The motor shaft was bent 8 to 10 degrees, there was substantial wear to the shaft and housing where the shaft passes through the housing, severe damage had occurred to the motor bearing housing and flamepath, paint adjacent to bearing housing was burnt and the drive end bearing cage and inner race was destroyed.

Sufficient heat had been generated to cause plastic deformation of the failed bearing and the motor shaft. The original quantity and quality of the bearing lubricant are unknown, but expert advice has confirmed that even slight increases in operational temperature can cause a decrease in the bearing running clearance and a reduction in the film strength of lubrication, increasing in severity over a number of hours. Ultimately this resulted in the bearing failing catastrophically.

There was no monitoring equipment in use on the fan system other than normal electric motor protection.

#### **RECOMMENDATIONS**

Due to the potential for similar incidents to occur in any auxiliary fan immediate steps should be taken to ensure that automatic protection devices are fitted to all auxiliary fans.

These protection devices should, as a minimum:

- (I) Detect increases in bearing temperature.
- (ii) Detect abnormal vibration.
- (iii) Isolate power to the fan motor when acceptable operational levels are exceeded.

B. McKensy  
Chief Inspector of Coal Mines



**SIGNIFICANT INCIDENT REPORT**  
**BELT FABRIC CAUSES BELT FIRE**

**INCIDENT**

- Case 1 A fire occurred in floor coal below a return idler when solid woven belt fabric was ignited by a failed idler bearing.
- Case 2 A fire occurred in coal dust impregnated solid woven belt fabric in contact with a failed idler bearing.

**CIRCUMSTANCES**

In both cases the belt fabric was wrapped around the conveyor idler shaft in contact with the idler bearing. Other idlers in the vicinity of the fire were found similarly covered with belt fabric.

**INVESTIGATION**

Although the belt fabric does not readily support a flame it becomes a suspension medium for fine dry coal dust which is highly flammable. Poor belt clearance, alignment and tracking causes belt edge damage which results in fibres wrapped around idler shafts.

**RECOMMENDATIONS**

Management should ensure that:

1. All existing belt fabric around idler shafts or deposited on belt structure is removed immediately.
2. Belts are correctly tracked and aligned and have sufficient clearance to prevent the build up of belt fabric.

B McKensey  
CHIEF INSPECTOR OF COAL MINES

## **SIGNIFICANT INCIDENT REPORT**

### **DANGER FROM GOUGING EQUIPMENT**

#### **INCIDENT**

Case 1 A fitter/welder was almost trapped in a stainless steel lined chute when carbon arc gouging equipment supply hoses burst into flames within the only means of egress from the chute. The incident could have resulted in more serious consequences had "confined space" procedures not been followed.

The equipment was assembled using a single wire braid air hose which became an electrical conductor when the two metal ends contacted adjacent steel, acting as a more efficient earth, melting rubber from the hose caused a fire to propagate while the power was connected.

Case 2 A contract fitter/welder suffered severe burns to his left wrist and hand when using an oxy lance to remove a large pinion that had seized.

Investigation showed that the oxy hose was too short causing a tight radius where it connected to the lance and marks on this area of the hose indicated this was the area where the left hand held the lance. Therefore with the hose bent, worn from handling, it only required a small spark of slag to rupture same.

#### **RECOMMENDATIONS**

Management should ensure that:

1. The equipment is inspected prior to use.
2. The equipment is only used if it is suitable for the task.
3. The work area is arranged in accordance with relevant legislation and Australian Standards.
4. The systems in place for inspection of equipment in the work place are auditable.

B. R. McKensy  
CHIEF INSPECTOR OF COAL MINES

**SIGNIFICANT INCIDENT REPORT**  
**MACHINEMAN INJURED OPERATING**  
**BELT TENSIONER**

**INCIDENT**

A machineman sustained severe facial injuries when struck by a lump of wood which had been jammed into the loop take-up tensioning device.

**CIRCUMSTANCES**

The pawl had been broken off the ratchet on the belt tensioning device. Pieces of wood had been wedged against the ratchet to retain tension. When the device was operated the wood sprang out striking the operator in the face.

**INVESTIGATION**

The tensioning device was a "home made" unit and consisted of a reduction box and hand wheel mounted to the end of the original tensioning shaft. This created a situation where the direction of rotation of the hand wheel was opposite to that of the original tensioning wheel. As a result, when intending to loosen the ratchet away from the pawl, the operator actually wound onto it and, with the benefit of the reduction box, eventually broke it. All take-ups at the mine using this tensioning device had the pawl broken off and the ratchet held in place by timber, roof bolts, etc.

**RECOMMENDATION**

All tensioning wheels on loop take-ups should be clearly marked to indicate direction of rotation for tensioning.

A preferred option is to use the type of system which incorporates a clutch and is not subject to this type of error.

B R McKensey  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **BLOWN OUT SHOT IN OPEN CUT**

On 18th July 1995 at an open cut coal mine in the Singleton District a round of shots consisting of four rows of six holes was charged and fired. Following the round, it was noticed that the area around one hole was "hanging up" and fragmentation was not what would be considered normal. Investigation revealed no remnants of the down hole lines but two days later on 20th July 1995 whilst a bulldozer was clearing burden from the top of the hole, evidence of explosives was seen. The location of the hole was difficult to ascertain but about 400 mm of two down hole lines were seen. It was considered inappropriate (for safety reasons) to continue removal of the burden.

Since the area around the located down lines had sufficient burden around it, a decision was made to attempt refiring the one shot. The shot was subsequently fired at 11.05 am on the 20th July, 1995. It is believed that the hole contained approximately 850kg of explosive. An assumption that sufficient stemming was over the hole was proven incorrect when the shot "Blew out". This resulted in the generation of unacceptably high airblast overpressure at a residence located approximately 1 km from the blast. This level of airblast is unprecedented in the District, significantly exceeding the residential comfort criteria limit of 120dB, and exceeding the accepted limit of 133dB for risk of damage (United- States Bureau of Mines, USBM , 1980).

The airblast caused public disturbance over a wide area and many complaints were registered. Some residents report damage and are pursuing claims.

An independent report by an explosives company suggests that the managers rules are similar to most in the Hunter Valley for dealing with a misfired shot but rarely do any of these address the issue of sufficient stemming or burden to contain the explosive that is to be fired.

### RECOMMENDATIONS

1. Manager's rules to be examined and modified if necessary to address the issue of misfired shots and the adequacy of stemming/burden to contain the explosive.
2. Careful examination of the in-hole delays to ensure adequate time delay is provided between the initiation of a downline and the detonation of an adjacent blast hole. This, can reduce the likelihood of downline cutoffs Explosives manufacturers have more information on this issue.
3. A protocol for communications be established with surrounding neighbours to proactively address blasting activity. Such protocol should include incident assessment, prior consultation, complain handling and response.

B. R. McKensey  
Chief Inspector Of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **SERIOUS BODILY INJURIES SUSTAINED FROM A WINDBLAST ON A LONGWALL FACE**

#### **CIRCUMSTANCES**

A large windblast occurred on a longwall face, flinging two workman into stationary equipment in the maingate. Both men were hospitalised; one in a serious condition, one in a critical condition. The latter had been flung over 10m by the force of the blast.

The violence of the windblast was sufficient to:-

- i) activate the panel water barrier.
- ii) activate the panel isolation stonedust barriers.
- iii) knock down brick stoppings.
- iv) destroy the ventilation network.
- v) raise a dust cloud into suspension that cut visibility to 300mm.
- vi) moved heavily loaded, steel fitter tool boxes.
- vii) destroy the crib room.

The panel goaf width to cover depth ratio was 0.5 with a 30m thick strong, stiff stone bed some 4 to 6m above the seam. The interburden was a laminated siltstone. Mid face cutting height was 4.3m.

#### **RECOMMENDATIONS**

1. Collieries assess their goaf windblast potential via a review of:-
  - i) Goaf width to cover depth ratio.
  - ii) The cavability of roof beds up to 30m above seam horizontal.
  - iii) The potential for air gaps to develop above the immediate goaf pile and a stronger upper bed.
2. Where a Windblast potential exists, amelioration measures outlined in the Windblast Code of Practice be implemented.

B. R. McKensey  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **GENERAL PURPOSE UTILITY VEHICLE CAUSES INJURY**

#### **CIRCUMSTANCES**

On Wednesday, 19th September, 1995 at approximately 9.30am, a survey assistant suffered a broken left cheek bone and loss of sight to his left eye when an attachment from the underside of the front bumper bar of a TOYOTA Land Cruiser broke away while towing the vehicle out of a bog.

Investigations conducted have revealed that although the attachment has the appearance of a towing lug, it has severe limitations on its use. The attachment is installed on the vehicle for the purpose of "holding the vehicle down" during road, rail or ship transport.

The TOYOTA Owners Manual for the vehicle clearly states (referring to an illustration within the manual).

**"TOWING IN THIS MANNER MAY BE DONE ONLY ON HARD SURFACED ROADS FOR A SHORT DISTANCE AND AT LOW SPEEDS."**

This clearly indicates that the attachment is not designed for vehicle recovery under arduous conditions.

#### **RECOMMENDATIONS**

It is recommended that the attachment be removed and a purpose built towing attachment be installed.

B. R. McKensey  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **CONVEYOR FIRES POLYAMIDE CAGED BEARINGS**

#### **INCIDENT**

On 29 January 1996 a fire occurred below ground after the failure of a bearing in a conveyor head pulley. The pulley had been inspected less than two hours before the event and condition monitoring only 5 days earlier.

The reason for the sudden failure was the collapse of the polyamide cage in the bearing. The bearing seized, rotated the shaft in its mounting causing them to become red hot.

Only 3 months earlier on 27 October 1995 another failed polyamide caged bearing caused a fire on a conveyor head pulley within 3 hours of its least inspection.

#### **INVESTIGATION**

In both cases the failure was very sudden. There was no wear in the bearing components indicating that once failure had commenced there was a sudden collapse. There was no "rattle time" which can be picked up by condition monitoring or regular inspections.

#### **RECOMMENDATIONS**

- 1 Identify all pulleys installed in underground conveyor systems fitted with polyamide caged bearings.
- 2 Instigate a program to replace all polyamide caged bearings with metal caged equivalents. The replacement program should incorporate an assessment of the risk from fire for each location.

Note: The occurrence of fires in underground coal mines for the period 1989 - 1995 has been analysed in Special Report MDG No 3004 SR95/3 published in September 1995. Fires attributed to conveyor pulley bearing failures occur regularly on an infrequent basis. The significant aspect of such fires is that they occur in areas of the mine that are not generally continuously manned.

It would therefore seem appropriate to consider the installation of temperature monitoring of conveyor pulley bearings which will stop the belt in the event of an abnormal temperature rise. Such temperature monitoring should be installed so that it also stops the conveyor if a bearing seizure results in the rotation of a dead shaft in its mounting.

B. R. McKensey  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **CONVEYOR BRAKE HEATING LIMIT SWITCH FAILURE**

#### **INCIDENT**

A thruster brake applied while the conveyor was running causing the brake to overheat which could have resulted in a fire below ground.

#### **CIRCUMSTANCES**

Although the thruster limit switch was operated by the brake linkage, a broken wire in the control circuit allowed the conveyor to keep running through the applied brake.

#### **INVESTIGATION**

The thruster limit switch circuit was found not to fail to safety. In fact it was found that if the power cable to the limit switch had been severed there would be no indication this had occurred.

The cause of the thruster unit failure could not be determined. Subsequent testing found the unit operated as required.

#### **RECOMMENDATIONS**

Management should ensure that:

- 1 Persons involved in Installation and Maintenance of Safety protection are competent.
- 2 All control circuits comply with Coal Mines Regulations (Electrical-Underground Mines) Regulation 1984 Clause 48. - "be safeguarded against a single fault causing malfunction".
- 3 Braking systems are designed o never achieve a temperature above 150°C on an external surface.

B. R. McKensey  
Chief Inspector of Coal Mines



## **SIGNIFICANT INCIDENT REPORT**

### **MISUSE OF UNDERGROUND VEHICLE AUTOMATIC PARK BRAKE**

#### **INCIDENT:**

The Inspectorate has been advised that vehicle operators have been observed utilising the automatic park brake system as a service brake, eg. opening the operator compartment door which has been modified to incorporate park brake actuating mechanism.

#### **COMMENTS:**

As a result of investigations conducted into previous accidents involving unattended runaway vehicles it now a requirement that automatic park brake mechanism be installed on Diesel Free Steered Vehicles as it had been determined that the park brake had not been applied in all instances.

The last person known to operated the vehicle in two (2) of the previous accidents referred to above were fatally injured when struck by the runaway vehicle.

#### **RECOMMENDATION:**

- 1 Operators of underground vehicles be instructed that automatic park brake systems are not to be used to stop a moving vehicle and that the system is only installed for the purpose of ensuring that the vehicle will not inadvertently move after the operator has alighted.
- 2 The Transport Rules for the mine required under the provisions of Section 101 of the Coal Mines Regulations Act 1982 be reviewed to determine if they need to be amended to included to include provisions that effectively address this issue.

L.J. Roberts  
Senior Inspector of Mechanical Engineering  
for CHIEF INSPECTOR OF COAL MINE.

## **SIGNIFICANT INCIDENT REPORT**

### **MISUSE OF UNDERGROUND DIESEL VEHICLE HAND THROTTLE CONTROL**

#### **INCIDENT**

The Inspectorate has been advised that vehicle operators have been observed operating hand throttle control mechanisms for the purpose of trammng the vehicle as a form of "cruise" control instead of the normal foot throttle.

#### **COMMENT**

Hand throttle control mechanisms are usually fitted to provide power from the diesel engine to operate ancillary equipment either mounted directly or indirectly connected to the vehicle eg. drilling rigs. Risk assessments conducted for applications of this nature invariably conclude that a barrier be provided to prevent the vehicle from being trammed when ancillary equipment is to be used. Such hand throttle controls should only be used when the auxiliary function has been selected.

Where vehicles are fitted with this form of control that permits vehicle to be trammed when it is used an unnecessary hazard is present. This hazard arises when the response time to apply the conventional service brake system may be significantly increased as the operator's feet may not be adjacent to the foot pedals.

#### **RECOMMENDATIONS**

1. Operators of underground diesel vehicles be instructed that hand throttle control mechanisms are not to be used for normal vehicle trammng purposes.
2. Vehicles fitted with this form of control be modified so that it cannot be used to tram the vehicle.
3. The Transport Rules for the mine required under the provisions of Section 101 of the Coal Mines Regulations Act 1982 be reviewed to determine if they need to be amended to include provisions that effectively address this issue.

L.J. Roberts  
SENIOR INSPECTOR OF MECHANICAL ENGINEERING  
for CHIEF INSPECTOR OF COAL MINES

**SIGNIFICANT INCIDENT REPORT**  
**IGNITION OF FLAMMABLE GAS**

**INCIDENT:**

A continuous miner operator and shuttle car driver sustained serious burns when an ignition of flammable gas occurred whilst normal coal cutting operations were being conducted.

**CIRCUMSTANCES:**

The continuous miner was driving a cut-through towards the location where a dyke was expected to be intersected. A dyke in the vicinity of the existing operations had been intersected previously on several occasions which was known to be up to 12 metres thick. Minute percentages of flammable gas only had been encountered in the vicinity of the dyke and other areas in the seam. These has Class 'B' classification.

**INVESTIGATION:**

- \* Investigations indicate that the most probable source of ignition emanated from the cutting action of the continuous miner picks and the flammable gas was most probably methane. It is believed that the release of flammable gas from the seam is related to cutting operations in the vicinity of the dyke.
- \* Tests carried out on the continuous miner which had recently been overhauled did not reveal any defects with the machine or with its associated cables that may have been potential ignition sources.
- \* Approximately 50% of the water sprays on the continuous miner were found to be inoperative. The type and the and the location of the sprays as fitted were not as effective as they could have found been to prevent possible ignitions.
- \* Ventilation stoppings were damaged for a distance of approximately 200m from the face. Following temporary repairs to these stoppings a ventilation survey was carried out. Results of the survey suggest that ventilation quantities were insufficient to dilute concentrations of flammable gas.
- \* All roadways in the panel panel had been stonedusted however the standard was not as required.

**RECOMMENDATIONS:**

The barrier that were in place to prevent ignition of gas were not effective in this particular instance and there have been a number of similar incidents investigated over the past 18 months. The need to be ever aware of the potential presence of methane during the miner cutting cycle must be reinforced by mine management and the effectiveness of all existing barriers and the systems in place that monitors their performance or records change to the work environment be assessed for adequacy.

The report titled "Summary of Investigation of the Explosion at Endeavour Colliery" published May 1996 should be referred to particularly with reference to ventilation and stonedust issues.

B R McKensy  
CHIEF INSPECTOR OF COAL MINES

## **SIGNIFICANT INCIDENT REPORT**

### **FAILURE OF ELECTRICAL PROTECTION TRIP SUPPLY**

#### **INCIDENT:**

A 33,000 volt overhead lines fell across a public road, energised a number of kilometres of public fencing, energised the structure of an overland conveyor and caused a number of grass fires. The incident exposed workers and the public to an unacceptable risk of electric shock and other injury.

#### **CIRCUMSTANCES:**

A short circuit occurred on the 33,000 volt overhead line of an open cut mine. The short circuit remained on the overhead line for two minutes. Electrical protection at the mine failed to clear the fault because the 36 volt dc trip supply was not functioning.

Electrical protection at the Local Supply Authority sub-station eventually tripped off the supply to the mine.

#### **RECOMMENDATIONS:**

1. Where electrical protection systems rely on a battery supply to operate trip coils, the system should be designed such that:
  - 1.1. If the battery supply falls to a pre-set level, then the trip coils supplied by that system should be activated and de-energise the circuit being protected.
  - 1.2. Where battery supplies are used to operate a number of trip coils, multiple redundancy of battery systems should be used.
  - 1.3. Switches that isolate the batteries or associated battery chargers should be arranged so that the risk of inadvertent operation is minimised.
  - 1.4. The electrical supply to any associated battery charger should be a dedicated circuit with risk of failure minimised.
2. The incorporation of the regular testing and maintenance of ALL electrical protection devices and associated circuits, including batteries, into Section 103 schemes.

B. R. McKensey  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **INJURY FROM UNGUARDED CONVEYOR PINCH POINT**

#### **INCIDENT**

A workman became caught in the head pulley of a conveyor. The injuries resulted in the amputation of the left arm above the elbow.

#### **INVESTIGATION**

The conveyor was feeding into the top of a hopper at a height where the head pulley was inaccessible. A platform was built around the to the top edge of the hopper for better access to unblock the feed. This made the head pulley very accessible but no guard was fitted.

#### **RECOMMENDATIONS**

- 1 When building any platforms ensure all moving parts accessible from that platform are well guarded.
- 2 Carry out an audit of all access platforms, underground and on the surface, to ensure no such problems have been created in the past.

B.R. McKensey  
Chief Inspector of Coal Mines

**SIGNIFICANT INCIDENT REPORT**  
**REMOTE CONTROL MACHINERY**

**INCIDENT**

A miner driver started the pump of a continuous miner using the radio control and at the same time the cutter head and the conveyor started.

**INVESTIGATION**

A failure had occurred within the radio transmitter which allowed the signal for the cutter head and the conveyor to be transmitted causing them to start when the pump was started.

**RECOMMENDATIONS**

Suppliers

Should consider the possible uses of their machines and determine whether hard mixed or soft barriers are adequate for the process.

Where mixed or soft barriers are recommended, this needs to be communicated to the purchaser so that they can be considered when developing standard operating procedures.

Users

Should check that safety systems are built into their machines to prevent this type of event occurring when a single failure occurs.

Where this is not the case develop standard operating procedures which take into account the suppliers recommendations to ensure the risk to employees is minimised.

B.R. McKensey  
Chief Inspector of Coal Mines

## **SIGNIFICANT INCIDENT REPORT**

### **WELDING ELECTROCUTION AT AN INDONESIAN MINE**

#### **INCIDENT:**

A welder was fatally electrocuted at an Indonesian Mine on the 10 October 1996. The circumstances pertaining to the electrocution are relevant to local operations.

#### **CIRCUMSTANCES:**

Welding repairs were being undertaken inside a leach / adsorption tank. Unknown to the repair crew, the welder had developed a low resistance insulation fault between the alternator and the welder fame. The welder was also connected in reverse polarity (i.e. the electrode terminal was connected to the tank rather than the work terminal). The AC power outlet on the welder was being used to power a portable light situated on the floor of the tank. This meant the AC outlet was earthed to the frame of the welder.

The combination of the above factors meant that a electric circuit existed between the welder, the tank and the portable light. The presence of this circuit was unknown to the people working in the tank. (see attached diagram).

The floor of the tank was almost entirely wet from a slurry spillage that occurred earlier. The welder was seen to have wet gloves, boots and clothes when he picked up the lamp from the floor and was fatally electrocuted.

#### **RECOMMENDATIONS:**

1. The above situation and other electrical safety concerns are reflected in clause 40, Coal Mines Regulation (Electrical - Underground Mines) Regulations 1984 and clause 32, Coal Mines Regulation (Electrical - Open Cut Mines) Regulation 1984:

##### Welding apparatus

The mine electrical engineer shall ensure that the installation and use of electric welding apparatus at the mine complies with the requirements and recommendations of any specified Australian Standards in so far as they affect-

- (a) the design of the welding machine;
- (b) the outgoing circuit from the welding machine;
- (c) the operation of welding machines installed adjacent to each other, and
- (d) any situation where welders are required to work in proximity to one another.



**2. The following list of Australian Standards, although not exhaustive, are to used as applicable:**

- AS 1470 Health and safety at work - Principles and practices;
- AS 1674.2 Safety in Welding and Allied Processes - Electrical;
- AS 1966.1, 2 &3 Electric arc welding power sources;
- AS 1995 Welding Cables;
- AS 2745 Electrical welding safety;
- AS 2799 Resistance welding equipment - single phase AC transformer type;
- AS 3000 SAA Windng Rules;
- AS 3190 Current operated (core balance) earth leakage devices;
- AS 3195 Portable electric arc welding machines - transformer types.

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