



# MINESAFE

ISSUED BY THE MINING OPERATIONS DIVISION OF THE DEPARTMENT OF MINERALS AND ENERGY (WA)



## "QUICK-FIX METHOD OF WORKING"

One wrong step and you are gone

MORE ON PAGE 2.

## MINESAFE IS PUBLISHED BY

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*Satisfactory - traditional.*

# LADDERWAYS AND ACCESSWAYS TO UNDERGROUND WORKPLACES



*Good standard - contemporary.*

The advent of the new Mines Safety and Inspection Act 1994 provides an appropriate opportunity to underline an important element of the duty of care which is regularly found to be deficient in underground mines.

The requirement to provide a safe place of work and a safe system of work includes the fundamental obligation for provision of a safe access.

The cover photograph of this issue illustrates a totally inadequate installation.

By contrast, the photograph at left demonstrates the standard demanded by the duty of care in contemporary mining practice.

The photograph above shows a satisfactory traditional installation.

All underground mining operations should critically review the standard of installations and equipment used in providing access to workplaces, to ensure compliance with duty of care obligations.

This aspect of workplaces and work systems is one of a number of issues to which the mining inspectorate will direct particular attention over the coming year.

# EDITORIAL

The proclamation of the Mines Safety and Inspection Act 1994, which is expected to take place by the end of April/May 1995, will place the mining industry under an up-to-date framework of legislation.

The Duty of Care obligations in the Act are underlined by particular obligations in relation to the management of mines, which reflect the specific needs of this industry.

The regulations supporting the Act are still extensive in scope, but many sections and elements are less prescriptive than those being replaced. The intent of this is that such regulations are more consistent with the duty of care, in that they do not prescribe a minimum standard, but place an obligation on employers and employees to put in place and carry out systems of work to a standard commensurate with the hazards involved and levels of risk identified.

There remain quite specific regulations in some sections, to deal with high level hazards which have been identified by hard

won experience over an extended time period.

Effective management of safety can be done only in complete integration with the production process.

The fundamental steps in any program to develop safe systems of work are well known:

- identify hazards;
- assess associated risks;
- implement control measures;
- monitor and review effectiveness.

All systems of work and production programs require the building in of a margin of safety to ensure that targets can be met without cutting corners and thereby exposing persons to risks.

Companies who are leaders in the safety field have recognised the need for a process of continuing internal audits on safety systems and performance, which focus both on behavioural and process and equipment aspects.

After some years of sustained and rapid improvement the mining industry in Western Australia, has achieved a respectable level of performance.

The opportunity now exists to move forward to a recognised high class performance by world standards.

Benchmarking the performance of the enterprise against that of recognised world's best practice performers is a challenging but necessary step in the process.

*We extend our deepest sympathy to Catherine Stedman and family on the death of her husband Dick, who passed away on Sunday 19th February after a long illness.*

*Staff of MOD*

## SAFE DRIVING TECHNIQUES - DO YOU NEED A REFRESHER?

4 wheel drive vehicles, and emergency service vehicles are part of minesite scenery. They are everywhere, but how long has it been since any of the drivers have updated their skills behind the wheel, and who is checking?

In November, Cape Lambert personnel most likely to be driving company vehicles in an emergency took part in an advanced driver training course using a car, ambulance and small bus in the exercises.

To quote Peter Casey from the Driver Training and Education Centre "most drivers have no further education once they pass their licence. They need to learn modern techniques for handling modern vehicles." (Robe News December 1994).

Passenger comfort is one issue, driver



*Instructor Peter Casey (centre) with L-R Barry White, Ric Curve, Sandy Brockwell and John Treanor (Cape Lambert).*

competence quite another, and the necessary skills behind the wheel of 4 wheel drive mine vehicles need to be monitored, and updated.

Advanced driver training and 4 wheel driver training is available from a number of sources all of whom are listed in the yellow pages.

# EMERGENCY EYE/FACE WASH AND SHOWER STATIONS

Eye/face wash and showers stations are a necessary safety feature on any minesite. Ideally they should never have to be used. When things do go wrong, an eye wash or shower can save a life, or prevent extensive injury. They must therefore, be fully operational and maintained 24 hours a day.

There is no current Australian Standard covering the installation of emergency eye/face wash and shower stations.

Ron Greenwood of Wesfarmers LPG, with the assistance of equipment manufacturers and suppliers has produced a guideline, sections of which are reprinted in MINESAFE.

Fundamental Criteria for evaluating emergency water equipment

## 1) Hazard Identification

Count and classify all hazards.

Ranked in importance, the following are identified as the types of hazard to be looked for:

- Splashing, spilling, spraying or vapourisation of acids, caustics and other hazardous chemicals.
- Fire and Explosion.
- Splashing, spilling or spraying of corrosive, hot or cryogenic liquids.
- Spraying or projection of small particles.
- Contact with toxic or other harmful dusts.

## 2) Facility type requirement

Specify appropriate facility for each hazard (The type of hazard dictates the basic type of fixture.)

- Facial Area - Eye/Face Wash Facility.
- Upper Body - Deluge Shower.
- Entire Body - Multiple Spray Shower.

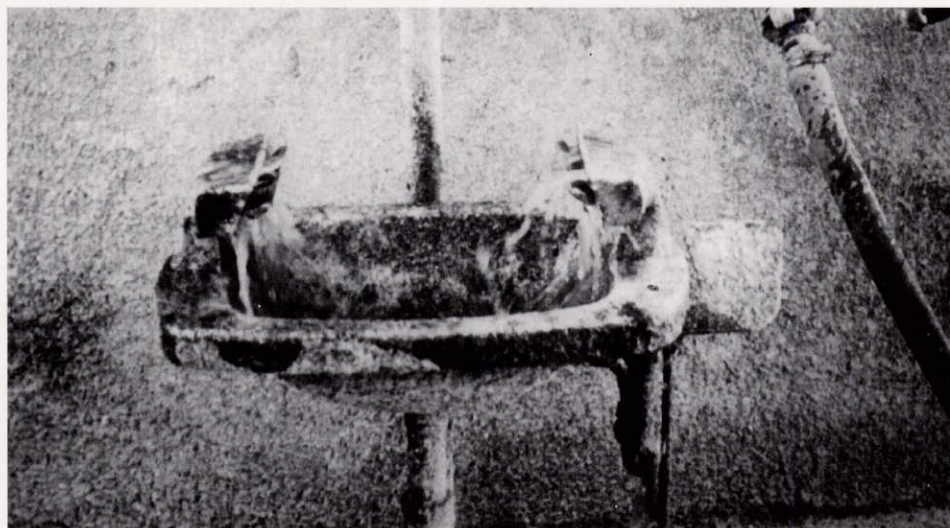
The combination of a Deluge Shower and an Eye/face wash facility may be required to provide optimum protection where a variability of hazards exist.

If the hazard involves both face and eyes, fixtures which flood the entire facial area are indicated.

## 3) Location Compatibility and Performance Requirements.

Selection of design features.

It is important to access the following design features that affect the usefulness and compatibility of the emergency water facility:



Eye washes - The not so good.

- Ample water flow.
- Water output of fixtures.
- Water pressure from outlets.
- Non-clogging fixtures.
- Non-corrosive eye/face wash fixture supply line strainers.
- Water delivery pattern with no discernible voids.
- Water coverage to affected body areas.
- Location, simple operation size and visibility of controls.
- Water temperature control.

The Mining Operations Division issued a guideline covering safety showers in January 1992.

This document outlines the standard requirement of the provision of adequate washers and showers for treatment of injuries received from corrosive and dangerous chemicals. Location and maintenance of these units for prompt use helps to minimise injury.

If splashed with a chemical immediately stand under the shower for at least 15 minutes, then seek medical attention. If the eyes are affected then direct water onto them for a least 15 minutes, then seek medical attention.

### ITEM:

1. At least one readily accessible combined safety shower and eyewash should be installed in the vicinity of each chemical storage tank, each chemical mixing tank, and close to each chemical addition point.
2. Each shower and eyewash should have a green light, and its position highlighted.

3. Pipework and / or header tanks should be insulated to protect against the sun which could heat up the contained water, presenting a scalding hazard. In hot weather, regular testing (refer 6) will limit the problem.

4. Water supply to the shower must be of high integrity (from a dedicated source), preferably from a self-filling header tank.

5. The eyewash should be activated by a hand lever and foot pedal.

NOTE: One type is activated by resting the forehead against a lever.

6. The system should be tested daily to ensure eyewash outlets are not blocked, and that the unit operates correctly, ie: that controls are not stiff or broken, and that there is sufficient water supply.

When considering the installation of emergency eye/face wash and shower stations it should be noted that there are at least three major equipment manufacturers.

For further information contact Trevor Robinson on Tel: (09) 222 3543.

# OCCUPATIONAL HEALTH FILE:

## SSHHH! MINE SECONDARY VENTILATION FAN AT WORK

Mine secondary ventilation systems have expanded in scale to large diameter (>1000 mm) ducting and two stage contra-rotating axial fans that generate high pressures. Stage one generates the volume of air, and stage two is responsible for generating the pressures. Typically, these fans are powered by two 55 kW electric motors and used underground where jumbos, diesel trucks and loaders are working.

Noise emissions for these fans range between 111 dB and 113 dB(A), and can be substantially reduced by installing cylindrical silencers on the intake and discharge side of the fan. (See diagram)

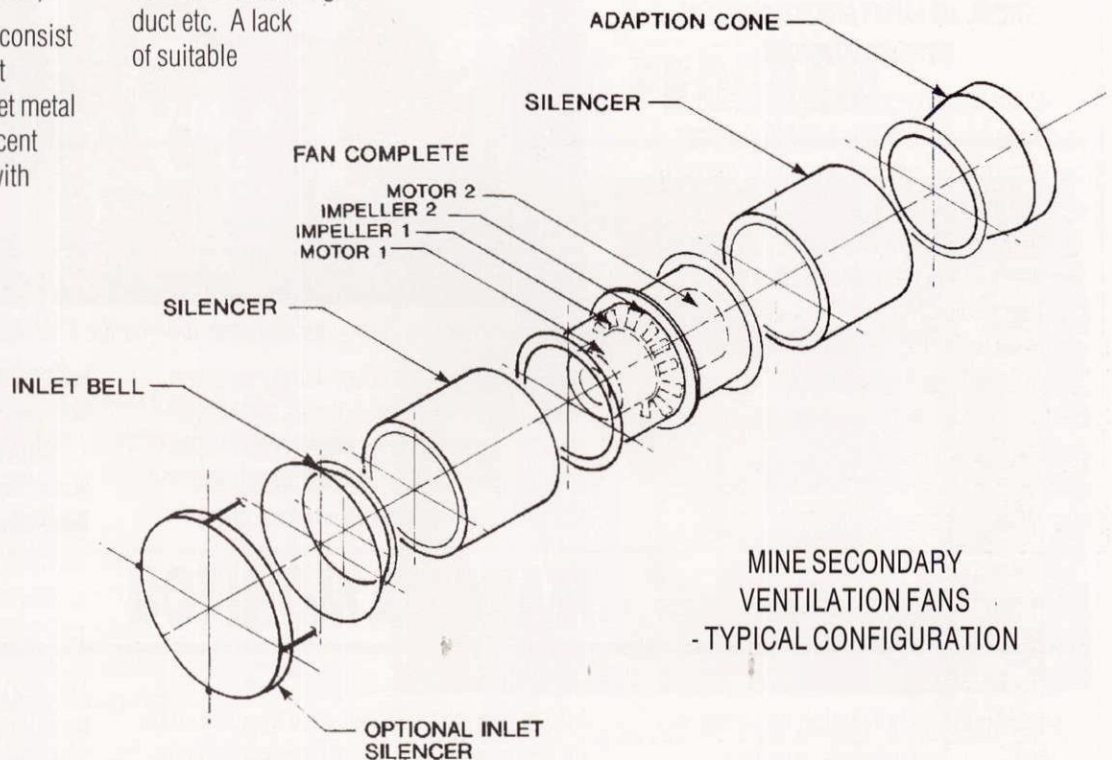
The silencers are absorptive and consist of a duct lined with sound absorbent material with either a perforated sheet metal liner or mesh to locate material. Recent noise emission tests on fans fitted with silencers resulted in noise levels between 95 and 96 dB(A) recorded at a distance of 1 metre from the fan inlet. It is reasonable to expect further noise

reduction of 3 dB with the installation of additional noise control treatments such as lagging of the fan housing and discharge ducting. One manufacturer claims that he can now offer an optional inlet silencer capable of reducing noise emission by a further 10 dB to the overall level of 85 dB(A) at the quoted distance.

Remember that the acoustic performance of silencers can deteriorate considerably if dust build-up on the surface of lagging material occurs. Further, performance deterioration can result from a dust-slurry build-up on the fan blades, discharge duct etc. A lack of suitable

vibration isolation of fan mountings will also limit the effectiveness of the noise control treatments. It is therefore very important to have a maintenance instruction issued when the fan is installed so that each noise control treatment is regularly inspected and maintained.

For further information contact Jerry Wilczewski on (09) 222 3128.



## AXTAT FLYER MONTHLY NUMBER OF INJURIES - KALGOORLIE

Since April 1994 the monthly number of injuries for Kalgoorlie has been on the increase. For instance, for the 12 months ending April 94 there were a total of 255

LTI's, however for the 12 months ending October 1994 the number of LTI's had blown out to 275. The additional injuries have all occurred underground with 85%

(17) of them occurring in production/development and access/haulage ways. Of these underground injuries 65% (11) were rockfalls.

# FLY IN/ FLY OUT - LEARNING MORE ABOUT DOING IT WELL

In July 1993 the Mining Operations Division conducted a lifestyle impact survey on six representative fly in/ fly out mines that canvassed issues related to lifestyle, shiftwork, family impact and the implications of many of those issues for safety at work. The comprehensive survey was put together with the help of commuters which ensured that it asked the right questions. The wealth of data produced is taking time to process not only because of the sheer volume, but also the limited resources available to tackle the many open ended questions that were part of the survey.

The absence of a written report to-date, does not mean that the information from the survey is not being acted upon.

There is a wide recognition in the industry that both FI/FO and compressed work schedules are popular with industry personnel and assisting people to adjust to the lifestyle and do it well is an important element of the system.

Over 300 people took part in the survey, and a striking feature of the completed questionnaires was the consistency of the responses. As an example, most said that they did not know enough about the FI/FO system and the impact it would have on

family and social life. Most agreed that the system was a preferred option, but that managing the impact on families particularly, was an issue that needed more attention. Roster design, hours of work, standards of accommodation, and the quality of camp life were canvassed, and many constructive suggestions for improvement were put forward.

Compressed work schedules are becoming common across WA industry, but commuting to work is still very much a feature of the resource sector. Work on the survey results is continuing, and reports on the major findings should be available by mid-year.

## EXTRACT

### STRESS, AIR SAFETY AND INTERMITTENT HUSBANDS SYNDROME

While fatigue and sleep deprivation increase errors, the effect of life stresses, such as marital conflict, are rarely considered after major air accidents. A study of expatriate aircrew wives found a striking similarity to the Intermittent Husband Syndrome described in the families of off-shore oil workers. Problems included: intermittently being a one-parent family with frequent readjustment: disappointed expectations on the husband's return; and difficulty in involving the husband in activities he missed while away.



*"I used to take the 8.05 until someone told me the 7.45 was non-stop" - Marymia commuters.*

Suggestions to reduce family stresses were to plan rosters far ahead, avoid last-minute roster changes and involve wives with aircrew life as much as possible. Further study may show whether these

factors apply equally to the families of aircrew based in their own countries.

**Source: Rigg R.C., Cosgrove M.P., Aviation Space and Environmental Medicine 1994:65 654-660.**

## MARCSTA MONITOR

The Mining and Resource Industry Contractors' Safety Training Association (MARCSTA) has received a positive response from the industry on the proposal to develop a common core induction program for Western Australian Minesites.

The idea has been floated in the industry several times before, and it only needed a focussed approach from an organisation to pull the idea into shape.

In December 1994, MARCSTA circulated a brochure outlining a proposal of a package that would be developed in conjunction with TAFE that would ensure

that a common core standard was introduced, and allowed sites to concentrate on site specific issues. A comment sheet was included with the brochure, and to-date the response to the concept has been both positive and enthusiastic.

MARCSTA Secretary, Bob Halse (Monadelphous) would still like to get comments on the proposal from Managers, Site Co-ordinators and Health and Safety Representatives and Committees. Anyone who has not seen the brochure, and would like an opportunity to comment may obtain one from Bob who can be contacted on

Tel: (09) 316 1255, Fax: (09) 316 1950 or by writing to the Secretary, MARCSTA, PO Box 314, BELMONT WA 6104.

The Standards Committee of MARCSTA is working hard on producing a set of standards covering common procedures on mines. The committee has identified and prioritised 19 work procedures, and a time frame for development and presentation of a document to the Association has been set. Companies represented on the Committee are Eltin, AWP, Roche, Minepro and Boral.

# ROPE POWER SHOVEL FATALITY

During December 1994 a maintenance fitter received fatal injuries whilst checking the swing drive transmission on a rope power shovel. This check necessitated the removal of an inspection cover, located in a tight (confined) space, between the adjacent hoist drum and the gearbox. 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.

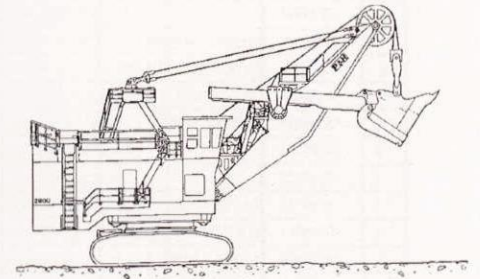
The brakes on the hoist drums were inadvertently released when the swing drive brakes were released. Both brakes were operated by a common switch. During the lateral movement of the upper part of the shovel the hoist drums rotated, under the action of gravity on the bucket of the shovel,

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 a 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 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 consideration.



## DUMP TRUCK DRIVER TRAINING PROGRAM

From: the ELTIN Magazine, December 1994.

As a result of a survey conducted by the Commonwealth Employment Service (CES) and the Department of Employment Education and Training (DEET), a pilot Dump Truck Driver Training Program was developed.

The community based program used Government funding, ELTIN expertise and equipment, and focussed on providing job related skills training for long term unemployed and other disadvantaged unemployed people.

Two modules are in the program: The skillshare module (4 weeks) covers job search skills training, occupational health and safety, B Class Drivers Licence, Senior First Aid Certificate, and dump truck driver training theory. The ELTIN module (2 weeks) covers induction, dump truck training, work experience and evaluation.

The participants undergoing the ELTIN training module are treated in the same manner as ELTIN employees, from the selection and pre-employment process to disciplinary action and termination procedures.

From 2 May 1994 to 10 June 1994, ELTIN Open Pit Operations at Kanowna Belle participated in the Skillshare program.

Seven people made it to site for their individual two week program, with only one participant failing to attend for the duration of the program.

The trainees progressed at a rate that would be expected of normal operators, and in most cases showed enthusiasm and willingness to learn.

Each person was trained by an experienced dump truck driver on the facets of operating a dump truck, including driving in wet conditions.

This program is a pilot for a number of similar programs, such as driller training courses, serviceman training courses, etc. Eventually, these courses may be part of Australian Vocational Certificates (AVC) training, a new system incorporating the Australian Standards framework combining work training and education, driven by industries' specific needs.

AVC will recognise current and previous experience, and will be competency based in all fields of work.



*Dump truck driver Charlie Dodson at the wheel of a 150 tonne Cat 785*

NO. FIRE	DATE	SOURCE				CAUSE OF FIRE				IF VEHICLE				
		VEHICLE (DIESEL)	ELECT. DISTRIB.	TIMBER	OTHER (state)	FRICTION eg. brakes	FUEL OR OIL	ELECT- RICAL	HEAT eg.welding	FUEL	EXHAUST	TURBO (ENG.)	ELECTRICS	HYD- FLU
1	3/07/93	CAT 769 TRUCK					H/OIL							YI
2	3/08/93	CAT 126 TRUCK						YES					CABLE	
3	19/08/93	TORO 500					H/OIL				TURBO			
4	6/09/93	TORO 150					FUEL			YES	YES			
5	21/09/93	CAT 769 TRUCK							RAG		YES			
6	23/09/93				COMPR		OIL							
7	2/10/93	DIESEL JUMBO							CARBON?					
8	7/10/93	TORO 35D TRUCK					E/OIL					TURBO		
9	9/10/93	TOYOTA 4 X 4						YES					HARNES	
10	13/10/93	DIESEL JUMBO					H/OIL					ENG.		YI
11	14/10/93				GAS				BLASTING					
12	19/10/93				CRANE			YES						
13	19/10/93	ELPH R2800					H/OIL				YES			YI
14	20/10/93	CAT DJB 25TONNE					FUEL			YES		TURBO		
15	25/10/93	ELPH R2800					YES					TURBO		YI
16	3/11/93	CAT 769C (EJECT)				BRAKES								
17	10/11/93	CAT 350D					FUEL			YES		YES		
18	12/11/93	ELPH R1500					H/OIL				YES			YI
19	8/12/93	ELPH R2800					H/OIL							
20	4/01/94	CAT 769C TRUCK				TYRES								
21	7/01/94	BELL B40 TRUCK					H/OIL					YES		YI
22	8/01/94	TORO 501					H/OIL					YES		YI
23	11/01/94	CAT 769C TRUCK						YES					STARTER	
24	17/01/94	CHARGE -UP				BRAKES								
25	19/01/94	VOLVO A35 TRUCK					H/OIL				MANIF.			
26	20/01/94	ELPH R2800						YES					STARTER	
27	21/01/94	VOLVO A25 TRUCK				BRAKES								
28	27/01/94	CAT 120G GRADER					OIL	YES					WIRING	YI
29	3/02/94	SECOMA JUMBO						YES					SHORT	YI
30	10/02/94	ELPH R2800					H/OIL					YES		YI
31	11/02/94	ELPH 69C TRUCK							RAG		YES			
32	18/02/94	EJECTOR TRUCK					H/OIL							YI
33	19/02/94	ELPH R 2800					H/OIL				YES			YI
34	21/02/94				D/FUEL		FUEL							
35	4/03/94	JUMBO DRILL RIG							RAG		YES			
36	7/03/94	CAT D400 TRUCK						YES				E/OIL		
37	18/03/94	TOYOTA 4 X 4					FUEL							
38	22/03/94	TORO 40D TRUCK				BRAKES	H/OIL							YI
39	7/04/94	TAMROCK DRILL					E/OIL					YES		
40	9/04/94				OXY ACET.				OXYACE					
41	10/04/94	ELPH R1500 (R.C.)					H/OIL				YES			YI
42	13/04/94		STARTER					YES						
43	20/04/94	CAT 769 TRUCK				BRAKES								
44	22/04/94	EIMCO 913						BATTERY					YES	
45	1/05/94	DRILLING JUMBO						CONT.BOX					YES	
46	6/05/94	TOYOTA 4 X 4					FUEL			YES				
47	10/05/94	BELL B25 TRUCK				PK/BRAKE								
48	26/05/94	WAGNERTRUCK30t					FUEL			YES	YES			
49	31/05/94	ELPH R2800						WIRING				ENGINE		
50	2/06/94	TORO 150						BAT. TERM					YES	
51	7/06/94	ELPH R1500							EXH.		YES			
52	8/06/94	ELPH R2800					DEGREASE				YES			
53	24/06/94	ELPH 69C (EJECT)					OIL				YES			
53		47	1	0	5	7	28	13	7	5	13	12	9	1

PERCENTAGE SUMMARY

NO. FIRE U/G	%	SOURCE				CAUSE OF FIRE				VEHICLE COMPONENTS INVOLVED				
		VEHICLE (DIESEL)	ELECT. DISTRIB.	TIMBER	OTHER	FRICTION eg. brakes	FUEL OR OIL	ELECT- RICAL	HEAT eg.welding	FUEL	EXHAUST	TURBO (ENG.)	ELECTRICS	HYD- FLU
53	%	89%	2%	0%	9%	13%	53%	25%	13%	9%	25%	23%	17%	26%

T.H.FISHER  
 PRINCIPAL MINING ENGINEER  
 JULY 1994



ANALYSIS OF  
AND FIRES  
ENDING 30 JUNE 1994

RESEARCH & TECH. SERVICES  
MINING SECTION  
PROJECT 1 1993/94  
UNDERGROUND FIRES

OTHER (state)	METHOD(S) OF EXTINCTION			MINE RESCUE DEPLOYED		PERSONS TO HOSPITAL	NO. SELF RESCUERS USED	INSPECTORATE	COMMENT	* CAUSE OF AFFF SYSTEM'S FAILURE TO SUPPRESS
	AFFF	HAND HELD		YES	NO					
		RATING	TYPE							
		B(E)	1 OFF		NO			KALGOORLIE	HYDR. OIL ON ENGINE BLOCK	
			WET RAG		NO			KALGOORLIE	BATTERY CABLES CHAFFED	
		B(E)	1 OFF		NO			PERTH	CONVERTER OIL ONTO TURBO	
		B(E)	1 OFF		NO			PERTH	FUEL FROM SPLIT LINE ONTO EXH.	
		B(E)	1 OFF		NO			KALGOORLIE	RAG LEFT ON EXHAUST PIPE	
		B(E)	1 OFF		NO			KALGOORLIE	OIL FIRE ON DRILL COMPRESSOR	
		B(E)	1 OFF		NO			KARRATHA	COMP. HOSE ON JUMBO	
		B(E)	1 OFF		NO			KALGOORLIE	LOOSE ROCKER COVER	
		B(E)	1 OFF		NO			PERTH	FUSIBLE LINK BETWEEN BATA/LT	
	YES	B(E)	1 OFF		NO			KALGOORLIE	HOLE IN HYDRAULIC HOSE	
					NO			KALGOORLIE	SUSPECTED GAS EXPLOSION	
					NO			KALGOORLIE	ARCING FIRE, CRC ON CONTROLS	
	YES				NO			KALGOORLIE	H/OIL FROM STEERING ONTO EXH.	
	YES	B(E)	1 OFF		NO			KALGOORLIE	SPLIT FUEL TANK, FUEL ON TURBO	
	YES				NO			KALGOORLIE	TURBO FIRE WHEN IN R. C. MODE	
BRAKES		B(E)	1 OFF		NO			KALGOORLIE	DRAGGING FRONT BRAKE	
	YES*	B(E)	1 OFF		NO			KALGOORLIE	LOOSE FUEL LINE	CO2 CYLINDER MISSING
		B(E)	1 OFF		NO			PERTH	FAILED CROUD CYLINDER HOSE	
	YES	B(E)	1 OFF		NO			PERTH	FIRE IN CENTRE HITCH AREA?	
MECHAN					NO			KALGOORLIE	REAR STABILIZER PIN FAILED	
	YES	B(E)	1 OFF		NO			KALGOORLIE	H/OIL LEAK ONTO TURBO	
	YES				NO			KALGOORLIE	H/HOSE FAILED, OIL ONTO TURBO	
		B(E)	1 OFF		NO			KALGOORLIE	STARTER MOTOR EARTH STRAP	
BRAKES	YES*	A+B(E)	2 OFF		NO			KALGOORLIE	JAMMED PARK BRAKE	
		B(E)	1 OFF		NO			KARRATHA	H/HOSE FAILED, OIL ON MANIFOLD	
		B(E)	1 OFF		NO			PERTH	WIRING NEAR STARTER MOTOR	
BRAKES		B(E)	1 OFF		NO			KALGOORLIE	R.H.FRONT BRAKE CALIPER LOCK	
		B(E)	1 OFF		NO			PERTH	FAULTY WIRING & OIL LEAK	
		B(E)	1 OFF		NO			PERTH	REVERSE ALARM WIRE SHORTED	
	YES				NO			KALGOORLIE	STEERING HOSE FAILED	
RAG		B(E)	1 OFF		NO			KALGOORLIE	RAG LEFT ON ENGINE	
	YES				NO			KALGOORLIE	ROCK SHEARED H/HOSE	
		B(E)	1 OFF		NO			KALGOORLIE	H/CYL CRACKED, OIL ON EXHAUST	
		B(E)	1 OFF		NO			KALGOORLIE	H/P STEAM CLEANER, COILS BROKE	
RAG		B(E)	1 OFF		NO			KALGOORLIE	RAG LEFT ON ENGINE	
	YES			YES			11	KALGOORLIE	ELECT SHORT CREATED OIL LEAK	
THROTTLE		B(E)	1 OFF		NO			KALGOORLIE	THROTTLE JAMMED OPEN	
BRAKES		B(E)	1 OFF	YES				KALGOORLIE	REAR (WET) BRAKES	
OIL		B(E)	1 OFF		NO			PERTH	ENGINE OIL ONTO TURBO	
		B(E)	1 OFF		NO			KALGOORLIE	LEAK FROM OXY GAUGE	
		B(E)	1 OFF		NO			PERTH	BRAKE LEAK ONTO EXHAUST	
		B(E)	1 OFF		NO			PERTH	DEFECTIVE THERMAL RELAY	
BRAKES	YES	B(E)	1 OFF		NO			KALGOORLIE	WARNING LIGHT FLICKERING	
	YES				NO			KALGOORLIE	BATTERY SHORTED & MELTED	
					NO			KALGOORLIE	EXTINGUISHED WHEN ISOLATED	
					NO			KARRATHA	ENGINE RAN BACKWARDS	
PK/BRAKE		B(E)	1 OFF		NO			KALGOORLIE	FSR HIT PARK BRAKE BUTTON	
		B(E)	1 OFF		NO			KALGOORLIE	INJECTOR PIPE LEAK	
		B(E)	1 OFF		NO			PERTH	WIRES RESTING ON MOTOR	
		B(E)	1 OFF		NO			KALGOORLIE	METAL CONTACTED BAT. TERM	
RAG		B(E)	1 OFF		NO			PERTH	RAG ON EXHAUST MANIFOLD	
	YES*	B(E)	1 OFF	YES				PERTH	DEGREASER ON EXHAUST INSUL.	CHAIN TWISTED ON ACT. PIN
	YES	FOAM	LOW EXP.	YES			14	KALGOORLIE	OIL VAPOUR ON EXHAUST	
12	16	40	41	4	49	0	25	53		2

OTHER	METHOD(S) OF EXTINCTION			MINE RESCUE DEPLOYED		INSPECTORATE	NUMBER OF FIRES PER INSPECTORATE	PERCENTAGE OF FIRES BY INSPECTORATE	INCIDENCE OF ALL U/G FIRES PER 1000 DIESEL PERMITS ISSUED
	AFFF	EXTINGUISHER	HAND HELD	YES	NO				
23%	30%	75%	8%	92%	KALGOORLIE	36	68%	34	
					KARRATHA	3	6%	23	
					PERTH	14	26%	40	
					COLLIE	0	0%	0	
					TOTAL	53	100%	34	

AFFF FAIL  
RATE = 13%

**UNDERGROUND FIRES  
VEHICLE INCIDENCE ANALYSIS  
1 JULY 1993-30 JUNE 1994**

DIESEL EQUIPMENT	KALGOORLIE				KARATHA				PERTH			
	NO. OF UNITS	PERCENT	NO. OF FIRES	INCIDENCE PER 1000	NO. OF UNITS	PERCENT	NO. OF FIRES	INCIDENCE PER 1000	NO. OF UNITS	PERCENT	NO. OF FIRES	INCIDENCE PER 1000
NUMBER OF ENGINES	1068				129				350			
TOTAL POWER (KW)	122,964				11,845				37,039			
AVERAGE POWER (KW)	115				92				106			
LIGHT VEHICLES	441	41	1	2	56	43	1	18	147	42	1	7
LHD / FEL	199	19	8	40	27	21	0	0	69	20	9	130
HAUL/TRUCKS	110	10	18	164	8	6	1	125	31	9	0	0
DRILL RIGS	103	10	3	29	11	9	1	91	44	13	2	45
GRADERS	20	2	0	0	5	4	0	0	12	3	1	83
TRACTORS	21	2	0	0	0	0	0	0	1	0	0	0
SKID STEERED	9	1	0	0	2	2	0	0	2	1	0	0
OTHERS	165	15	1	6	20	16	0	0	44	13	0	0
<b>TOTAL</b>	<b>1068</b>	<b>100</b>	<b>31</b>	<b>29</b>	<b>129</b>	<b>100</b>	<b>3</b>	<b>23</b>	<b>350</b>	<b>100</b>	<b>13</b>	<b>37</b>
<b>DIESEL EQUIPMENT</b>												
<b>TOTAL METALLIFEROUS</b>				<b>COLLIE</b>				<b>TOTAL INDUSTRY</b>				
NUMBER OF ENGINES	1547				29				1576			
TOTAL POWER (KW)	171,848				1,398				173,246			
AVERAGE POWER (KW)	111				48				110			
LIGHT VEHICLES	644	42	3	5	0	0	0	0	644	41	3	5
LHD / FEL	295	19	17	58	5	17	0	0	300	19	17	57
HAUL/TRUCKS	149	10	19	128	0	0	0	0	149	9	19	128
DRILL RIGS	158	10	6	38	0	0	0	0	158	10	6	38
GRADERS	37	2	1	27	1	3	0	0	38	2	1	26
TRACTORS	22	1	0	0	6	21	0	0	28	2	0	0
SKID STEERED	13	1	0	0	4	14	0	0	17	1	0	0
OTHERS	229	15	1	4	13	45	0	0	242	15	1	4
<b>TOTAL</b>	<b>1547</b>	<b>100</b>	<b>47</b>	<b>30</b>	<b>29</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>1576</b>	<b>100</b>	<b>47</b>	<b>30</b>

T. H. Fisher  
PRINCIPAL MINING ENGINEER  
JULY 1994

PRINTED 10/2/95

# NEW INITIATIVE TO PROMOTE OCCUPATIONAL HEALTH AND SAFETY IN REGIONAL AREAS

A new initiative announced by the Chamber of Mines and Energy is expected to raise the profile of occupational health and safety in regional areas where most mining operations are located.

Commencing with the February meeting of the various regional occupational health and safety committees, all groups will be networked to the Chamber's Standing Committee to enable full involvement in all industry occupational health and safety issues and in the decision making process on matters of policy.

Regional Committees currently operate in the South-West, Murchison, North-Eastern and Eastern Goldfields areas with some sixty site-based health and safety personnel involved. Contractors are represented in all regions.

The initiative comes at a time when, although industry performance in health and safety compares favourably with major mining operations around the world, the Chamber's Executive Council is aware that much still needs to be done if the industry is to achieve world leadership in health and safety performance.

Meetings are conducted bi-monthly in regional areas and will be attended by senior Department personnel and a range of occupational health and safety professionals to ensure availability of expertise to the respective Committee membership.

## SHIFT WORK: AN ISSUE

In August 1994, the Chamber of Mines and Energy of Western Australia held a two day seminar on variable work schedules that was attended by over two hundred industry personnel.

The two day program canvassed the issue of shiftwork and the implications for health and safety in the Western Australian Mining Industry. Both overseas and Australian experts on shiftwork, compressed work schedules and atmospheric contaminants took part, and added to the success of the seminar. The expert knowledge they provided was backed by local expertise - mine managers, safety co-ordinators and shiftworkers themselves all of whom made valuable contributions to furthering an understanding of the issues that surround 24 hour operations in the resource industry.

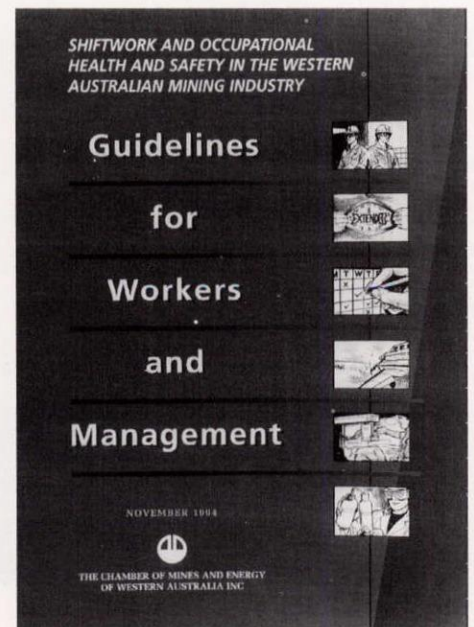
Following the seminar, the Chamber released a Guideline in November 1994, "Shiftwork and Occupational Health and Safety in the Western Australian Mining Industry - GUIDELINES FOR WORKERS AND MANAGEMENT". This Guideline is not intended to be a list of do's and don'ts but is intended to provide guidance and to assist the industry with understanding and managing the issues.

The Guideline looks at shiftwork and its effects on health and body functions as well as family and social life. It looks at extended work shifts and compressed work schedules and comments on both the reported benefits and problems as well as highlighting matters that should be considered by management.

Roster design and implementing roster change are discussed, and the specific issues of remote locations (fly in/fly out) are a feature of the guideline. Worker health care management, particularly exposure standards and monitoring and managing exposures on variable work schedules, is also covered.

The guideline is a credit to not only the Chamber, but also the many seminar participants, speakers and panellists whose collective knowledge has been drawn together to produce this working document.

Copies of the Guideline are available from the Chamber of Mines and Energy, Tel: (09) 325 2955.



# WHAT'S NEW IN UNDERGROUND MINING TECHNOLOGY – THE POLISH SCENE

During a recent holiday trip to Poland, John Jance, Principal Technical Engineer, took the opportunity to investigate the research and development projects being pursued by the research staff at the University of Mining and Metallurgy in Krakow.

The more notable technological innovations included:

- (a) The progressive installation of rubber coated flat balance ropes in lieu of the conventional round strand balance ropes used on friction winders. These rubber coated flat balance ropes have been credited with effective "lives" in excess of 10 years and may be introduced in Australia by the Polish manufacturer SAG Industries Ltd in the near future.
- (b) Overwind arrestor systems for friction winders which provide a predetermined rate of retardation of conveyances in the event of accidental overwind. The system developed in Krakow is similar, in principle, to the SELDA system currently used in Australia, however, unlike the SELDA system, this system can be tested and adjusted on site to obtain the required retardation rates and appears to be more economical to install.
- (c) A non-destructive testing machine for wire ropes, which has a significantly higher value of magnetic field strength (up by 56%) than other similar machines with optimised magnetic field flow characteristics with the assembled testing "head" reduced in weight from 75 kg to 37 kg.

This machine can be used for locked-coil ropes and the effectiveness of detection of flaws in wire ropes is significantly better than previously possible.

It is pleasing to note that the Kalgoorlie School of Mines is applying this latest technology when testing winding haulage ropes in Western Australia.



*A typical headframe associated with ground mounted friction winders - this one at Ormontowice "Budryk" Coal Mine.*

SAFETY MAKES SENSE



## MOBILE EQUIPMENT MAINTENANCE – FIRE PREVENTION AND PROTECTION

### CHECKLIST

	YES	NO
■ Have any rags been left in the engine compartment following maintenance? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ Have hydraulic hoses and fuel lines been checked to determine whether they are chaffing or worn? ..	<input type="checkbox"/>	<input type="checkbox"/>
■ Have hydraulic hoses and fuel lines been examined for leaks? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ Are hydraulic and fuel line connections in good condition and of the correct type? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ Are the brakes being adequately maintained? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ Has the electrical system been inspected for integrity and loose wires secured? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ Is the battery isolation switch operational? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ Has the engine been properly cleaned and inspected for leaks? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ Are portable fire extinguishers of the correct size and type available on the vehicle? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ Is there a portable fire extinguisher within easy reach of the operator? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ Has the portable fire extinguisher been serviced in accordance with AS3676 and is it fully charged? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ Is the vehicle fitted with a fixed fire suppression system? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ Has the fixed fire suppression system been activated and tested in accordance with the manufactures recommendations? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ If the fixed fire suppression system has been disconnected or interfered with during maintenance, has it been fully re-commissioned? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ Are the fixed fire suppression system actuators clearly visible and unobstructed? .....	<input type="checkbox"/>	<input type="checkbox"/>
■ Are the suppression system nozzles properly directed and fitted with dust caps? .....	<input type="checkbox"/>	<input type="checkbox"/>

**WHERE THERE IS DOUBT - FIND OUT**

# WHAT'S ON

## MAINTAINING A HEALTHY LIFESTYLE IN THE SOUTH-WEST MINING INDUSTRY

Lord Forrest Hotel, Bunbury  
Friday, 17 March, 1995

### PRELIMINARY PROGRAM

John Colquhoun  
Health Department Of W.A.  
"Eating to Live"

Carlo Caligero  
Alcohol and Drug Authority  
"Drug and Alcohol Programs"

Clive Deverall  
Cancer Foundation of W.A.  
"Avoiding Skin and Other Cancers"

Colin Sussex  
Western Collieries Ltd  
"Implementing an Employee Assistance Program"

Terri Poole  
Health Pro Consultants  
"Keeping Fit to Prevent Workplace Injury"

Brian Edwards  
Mount Hospital Medical Centre  
"Back Injuries - Can they be Prevented?"

Brad King  
Eltin Limited  
"Alternative Duties - Are they Feasible?"

Dr Andrew Marsden  
"Rehabilitating Employees for Return to Work"

A number of case studies will be presented relative to the above topics by south-west mining companies and ample opportunity will be provided for discussion and questions from the floor.

Registration Forms are available from:

The Chamber of Mines and Energy  
7th floor, 12 St George's Terrace  
PERTH WA 6000  
TEL: (09) 325 2955 FAX: (09) 221 3701

## MINESAFE INTERNATIONAL 1996

PERTH WESTERN AUSTRALIA: 9 - 13 SEPTEMBER 1996 THE 3RD INTERNATIONAL CONFERENCE ON OCCUPATIONAL HEALTH AND SAFETY IN THE MINERALS INDUSTRY

Theme: *Towards a Safer and Healthier Mining Industry in the 3rd Millennium.*

Objectives:

- To evaluate international trends in safety and occupational health performance;
- To identify and evaluate significant factors which can influence such performance;
- To develop strategies for continuous improvement in global performance.

### CALL FOR PAPERS

The Organising Committee invites submission of abstracts (300-500 words) by November 1994 for plenary or poster sessions on topics related to the above objectives. Selected authors will then be required to submit manuscripts of their papers. Papers accepted for presentation will be published in the Conference Proceedings.

A major exhibition will be mounted in conjunction with the Conference.

## EXAMINATIONS MONDAY, 1 MAY 1995 WA CERTIFICATES OF COMPETENCY

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RESTRICTED QUARRY MANAGER'S

Contrary to previous advice the Board of Examiners has found it necessary to hold examinations in the above certificates of competency. These written examinations will be based on the existing Mines Regulation Act 1946 and Regulations.

Interested persons must lodge applications with the Secretary, Board of Examiners by FRIDAY, 24 MARCH 1995.  
TEL: (09) 222 3269 FAX: (09) 325 2280

## WANT PROFESSIONAL QUALIFICATIONS IN OCCUPATIONAL HEALTH AND SAFETY?

The Australian Centre for Work Safety is to run a unique, accredited and nationally registered Certificate in Occupational Health and Safety course which is to run in two fortnightly blocks in May and September. Graduates who score B+ in either block will be certificated to facilitate the training of those subjects in their workplace.

BLOCK A 1 - 12 MAY

- Current concepts in Work Safety and Health
- Common and Statute Law
- Accident Prevention
- Workplace Inspections
- Risk Engineering

BLOCK B 18 - 29 SEPTEMBER

- Hazardous Substance Management
- Hazard Management
- Health at work
- Work Environment
- Safety Management

For a free brochure contact: The Australian Centre for Work Safety, South East Metropolitan College of TAFE, Hayman Road, Bentley WA 6102, Tel: (09) 470 0633 Fax: (09) 470 0692

# NEW PUBLICATIONS

## 1. Australian Standard AS2865 - 1995: "Safe Working in Confined Spaces"

This Standard was amended jointly by representatives of the National Occupational Health and Safety Commission and the Standards Australia Committee to supersede AS2865 - 1986. The group amending this Standard took into consideration the Victorian Occupational Health and Safety Commission's draft regulation and code of practice.

The Standard was originally prepared to meet the need for requirements and procedures for the prevention of occupational illness, injuries and fatalities associated

with persons entering and working in a confined space. It is designed not only to ensure that confined spaces are made safe for those entering them, but also to highlight the likely hazards associated with such work areas and the relevant safe work processes necessary to deal with these hazards.

## 2. "Shiftwork and Occupational Health and Safety in the Western Australian Mining Industry - Guidelines for Workers and Management."

This publication is detailed in the article "Shiftwork : An Issue" on page 11 of this issue of MINESAFE.

# SPONSORS WANTED!

The Safety Posters produced by the Division and sponsored by Industry are proving to be as popular interstate as they are in Western Australia. We would like to produce more in 1995.

If you would like to sponsor a poster, all it takes is a phone call - you may nominate

your topic or choose to sponsor a topic nominated by the Division.

For information please contact Catherine Stedman on Tel: (09) 339 4219, Mobile 015 774 793, or Kim Williams on Tel: (09) 222 3532 for copies of these Posters:

Topic	Sponsor
Rockfalls	Western Mining
Pit Traffic Control	Leightons
Eye Protection	Theiss
Tipping Over Edges	Boral
Line of Vision	Roche
Conveyor Belts	Coal Mines Union of W.A.
Light Vehicle Maintenance	Henry & Walker
Seatbelts	Roche
Speed	Eltin
Machinery Access	Eltin
Safe System of Work	Monadelphous
Chemical Hazards (Mixing)	Liquid Engineering
Dressed To Kill	Brandrill

# STAFF CHANGES

Our Kalgoorlie Office farewells District Inspectors of Mines **Ian Ronald** and **Rob Murdoch**, both of whom have taken up positions in industry.

**Stephen Humphray** is the Kalgoorlie Inspectorate's new District Inspector of Mines. He is joined by **Eugene Bouwhuis**, the new Environmental and Rehabilitation Officer.

**Mark Cannon**, Environmental and Rehabilitation Officer in Kalgoorlie, has transferred to the Perth Office.

**Simon Ridge**, (District Inspector of Mines, Karratha) and **David Bills** (Environmental and Rehabilitation Officer, Perth) have both transferred to the Collie Office.

**Keith Lindbeck** and **Chris Mills** have both resigned from the Environmental and Rehabilitation section (Perth), to work in industry.

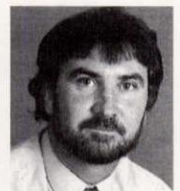
**Mick French** joins the Perth Office (initially for a period of three months) as Special Inspector of Mines (Machinery). He will then be transferred to the Collie Inspectorate.

**Roger Hampson**, District Inspector of Mines, resigned from the Perth Office on 31 January 1995.

**Mick Hayhow** has recently taken up the position of Senior Electrical Inspector with the Office of Energy, Goldfields Region. He is based in the Kalgoorlie Office and can be contacted for all electrical matters on Tel: (090) 219 418 (all hours) and Fax: (090) 213 612.



Mick French



Stephen Humphray



Eugene Bouwhuis



Mick Hayhow

# INCIDENT ALERT

## THE INCIDENT

A sag mill trommel spiral was being moved closer to a forklift by a fitter who was attempting to place the spiral in a better position to be lifted by the forklift.

## RESULT

The spiral rolled, and the left hand side of the spiral pierced the fitter on the left hand side of his neck resulting in a deep laceration to his neck and cheek. The fitter also lost a tooth.

## CONTRIBUTING FACTOR

The normal procedure of using a crane to lift the spiral was not followed.

## PREVENTATIVE ACTION

1. Ensure that all personnel are aware of the correct procedures.
2. Ensure that the procedures are followed at all times.
3. Ensure that new employees are thoroughly inducted in all relevant procedures.
4. Ensure that sufficient back-up is available to carry out the procedures safely.



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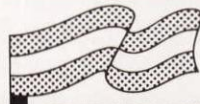
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