

SAFE OPERATING PROCEDURES IN THE PROPOSED NEW REGULATIONS

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INTRODUCTION

The draft Coal Mining Bill has been out in the industry since March. Many people have expressed interest in the new, but as yet incomplete regulations. This paper attempts to outline the regulation development process that is being used, the current status and a broad outline of how the new regulations might look. The most significant new regulatory component - minesite safe operating procedures, will be explained.

BRIEFLY RECAPITULATING THE ACT REVIEW PROCESS.

The Act review committee, a tripartite body (QCO/Union/DME), developed the policy directive which has, with legal drafting, become the draft Bill.

At the same time - three regulation review committees were set up, one for surface regulation review and two for underground review. The establishment of two underground committees recognised the greater complexity of developing regulations for underground mines. Later in the process the two underground committees found it more effective to merge.

A TRIPARTITE APPROACH

A key element in the whole process has been the tripartite support for coal mining legislation review. Each regulation review committee comprises nominally 2 members representing each of the DME, Unions and the QCO. However the numbers were kept flexible, particularly to ensure union viewpoints were catered for. At least one member of the Act review committee attended most regulation review meetings and this was valuable in providing consistency with the principles being applied to the Act review.

Initially none of us had much idea of how to go about the process and it was tempting to simply apply individual prejudices to the existing regulations and then argue the matter out. Fortunately, we were given useful advice - in part from BRRU, the Business Regulation Review Unit of the Department of Business, Industry and Regional Development.

This was a surprisingly refreshing view of lateral-thinking, paradigm-shifting and breaking-of-moulds which helped us to break free of the old ideas and think about what the industry needs for the next decade and beyond.

THE GROUND RULES

This led us to the "clean sheet of paper" approach. We also determined that we would draw heavily upon the principles of quality assurance, notably worker involvement, documented procedures and systematic audits. The Plan-Do-Check-Action cycle. The policy directive gave clear direction for application of duty-of-care and the use of safe operating procedures. We were also told that each new regulation had to be justifiable with a written justification statement.

In summary the regulation review process involved:

- A clean sheet of paper approach.
- The incorporation of the principles of duty-of-care.
- The application of quality assurance principles.
- Justification of each new regulation.
- The anticipation of and facilitation of new technologies.
- Reference to community standards.
- An overriding focus on health and safety outcomes.

DEFINING THE TASK

The regulation committees identified the following general areas for review:

- Mining Practices
- Equipment
- The Working Environment
- Safety Management
- Mine Design

For both the surface and underground development process, each general area was divided up into separate activity areas.

For example the surface general areas were divided as follows:

- | | |
|---------------------|---------------------------------|
| Mining Practices | - Dredging Operations |
| | - Explosives |
| | - Ground Control |
| | - Highwall Mining |
| | - Stockpiles/Tipping |
| Equipment | - Electrical |
| | - Mobile Equipment |
| | - Fixed Equipment |
| Working Environment | - Hygiene |
| | - Hearing Loss |
| | - Protective Devices/ Equipment |
| | - Hazardous Substances |
| | - Working at or near heights |
| | - Working near Fixed Equipment |
| | - Exposure to heat |
| | - Equipment Operation |
| | - Manual Handling |
| | - Dust |

Working Environment

- Contaminated Air
- Lighting
- Explosion Potential
- Fire
- Slipping/Tripping
- Working in or near Water
- Explosive Powered Tools
- Trenching
- Physiological conditions
- Radiation
- Vibration
- Confined space
- Stored Energy

Safety Management

- Accidents
- Incidents
- Fitness for Duty
- Emergencies

Mine Design - Standards

Activity areas were further subdivided into primary and, in some areas, secondary sub activities.

For example the underground committee subdivided the activity "Mine Design" into:

- Inundations
- Barriers
- Plans of Workings
- Geology
- Subsidence
- Technical Input
- Pollution
- Means of Escape
- Surface Facilities

Underground activities were divided similarly with the underground list considerably larger - as would be expected.

DEVELOPING THE METHOD

Looking back, it took an extraordinary amount of time to get to this stage as the committees had to not only invent a method but each committee member had to become comfortable with it.

We next had to work out how we could consider each of the activities to be able to determine the hazards in each activity, the mechanism by which each hazard causes damage to a person and the controls, which if implemented, could prevent the damage.

The greatest asset we had as a committee was access to some very experienced people. Individual committee members took responsibility for particular activities and went away to form sub committees of appropriately experienced industry people to analyse each area. As a result a lot of industry people have contributed to the task.

The next requirement was a systematic method of analysing the activities.

Drawing on QA documentation techniques a cover sheet was developed (Sheet A, Fig. 1) which included an objective statement, the scope or limits for the activity, any definitions required together with referenced documents.

Sheet B (Fig. 2) became the main analytical tool enabling a systematic listing of hazards, mechanisms and controls with an accompanying assessment for each control which represented the collective opinion of the committee or sub committee as to whether a control was:

- (a) a normal requirement of duty of care or;
- (b) of such importance that duty of care should be reinforced by a regulatory statement.

Where a regulatory statement was considered necessary this was set out in plain english together with its plain english justification on Sheet C (for regulations) and Sheet D (for safe operating procedures) (Figures 3 & 4).

THE REVIEW PROCESS

The regulation committees reviewed in detail each area, hazard by hazard, referring back to sub committees, in some cases several times for explanation or with a request to make it more simple.

At present (July 1994) the surface regulation development process is complete and the underground development is nearing completion.

The completed development work is to go via the Act review committee to the Parliamentary draftsman and, with reference to the wishes of the Minister, to industry for comment.

THE DATABASE

It was recognised that in years to come people in the industry may wonder what these review committees were thinking of when they proposed certain regulatory statements. It was also recognised that a huge number of years of experience has been distilled into these review documents.

Accordingly the total contents of hundreds of analysis sheets is being put into a computerised database (example sheet, Fig. 5) which will be made available to the industry for persons who will have the task of developing minesite safe operating procedures.

SAFE OPERATING PROCEDURES

A regulation has to be pretty specific in what it says. If prescriptive, it has to define exactly the requirement, and, if enabling it, must still be fairly definite about what should be done. So it was not a surprise when it came to writing justification statements to find that relatively few regulatory statements were actually justifiable. We did however find many areas where some reinforcement of duty-of-care was considered necessary.

Consequently there will be regulations however in the vast majority of cases the most appropriate form of reinforcement will be a minesite developed safe operating procedure customised to the mine and developed by the people who will be using the procedure.

Obviously the new Coal Mining Regulations will specify where Safe Operating Procedures are to be developed. They will also specify how it is to be done.

A flowchart (Fig. 6) shows that the SOP development process requires:

- Training in development
- Hazard assessment
- Access to external advice
- Stakeholder consultation
- User training
- An auditing process

The process will involve a lot of work for minesites and we make no apology for that. We are convinced that the minesite safe operating procedures, together with the database are an enormous step forward in coal mine safety programmes and will be highly relevant to the coal mines of the future.

CONCLUSION

In conclusion, I would like to pay tribute to the spirit of good will and harmony that has accompanied this ground breaking tripartite coal industry enterprise. The whole industry will, I hope, come to appreciate the amount of work that has gone into this process by very many people. It is, I believe, a symbol of the maturing of our industry that such an exercise has been possible. It shows an encouraging way for the future.

QUEENSLAND COAL MINING REGULATION REVIEW PROCESS

ACTIVITY ANALYSIS COVER PAGE

Date: 27/01/94

Authorised by: A Campbell

Issue: 1

Reference: Surface Operations

Title/Position: Chairman
Surface Operations Committee

Activity: 11.2 Explosives

GOAL:

To provide a means of controlling the hazards associated with the transport, storage, use and disposal of explosives to minimise the risk to health and safety.

APPLICABILITY: (This part considers the hazards associated with)

All surface mines and the surface of Underground Coal Mines.

REFERENCES:

- Coal Mining Act Policy Document
- Form B - Pages 11.2/1 to 11.2/26
- Form C - Pages 11.2/1 to 11.2/2, Form D - Pages 11.2/1 to 11.2/6
- Australian Code for the Transport of Explosives by Road and Rail (Australian Explosives Code)
- National Competencies Set - Mining Industry Training Council
- Australian Standards 2187, 2188 and 2189

DEFINITIONS:

- Authorised - authorised by the named person.
- Charging - preparation of explosives in blasting area in readiness for initiation but excludes connection of initiating medium.
- Firing - actual initiation of explosives including connection of initiating medium.
- Misfire - a charge or part of a charge that has failed to explode.
- Explosives - includes initiating equipment.

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QUEENSLAND COAL MINING REGULATION REVIEW PROCESS

Date: 27.7.94

Issue: 5

HAZARD CONTROL & REGULATION ASSESSMENT

Authorised by: R. N. CONWAY

Main Activity Area: 11.3 Ground Control

Primary Sub Activity: 11.3.1 Access to and working under Spoil Piles

Reference: Surface Operations

Title/Position: Chairman
Ground Control Sub-Committee

Secondary Sub Activity:

<p><i>The control of all hazards is covered by the Duty of Care provisions reinforced by the regulatory statements indicated below:</i></p>					
HAZARD	MECHANISM	CONTROL	Enabling Regulation	Prescriptive Regulation	Safe Operating Procedure
1. Person/machine engulfed in material	<ul style="list-style-type: none"> • Slumping of spoil • Equipment/person falls into void 	<ul style="list-style-type: none"> - Design of spoil piles - Restrict access - Monitoring of spoil piles for movement - Operator aware of dangers (regular communication) - Risk Assessment - Competence - Preparation of base area for spoil - Method of dumping - Restrict access - Operator aware of dangers - Competence - Method of working - Risk Assessment 	<p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p>	<p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p>	<p>NA</p> <p>S 11.5(8)</p> <p>S 11.3(1)</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>S 11.3(2)</p> <p>S 11.5(6)</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>S 11.3(2)</p> <p>NA</p>
Preparation Notes:					

Date: 23/03/94

QUEENSLAND COAL MINING REGULATION REVIEW PROCESS

Issue: 1

Main Activity Area: 7.1 Electrical

HAZARD CONTROL & REGULATION ASSESSMENT

Authorised by: R Golding

Primary Sub Activity: Installation and Maintenance

Reference: Surface Operations

Title/Position: Chairman

Regulation Type: Enabling

Prescriptive

JUSTIFICATION		DRAFTING NOTES	
<p>Sub Reference:</p> <p>7.1/</p> <p>PROTECTION SYSTEM DISCRIMINATION</p> <p>Correctly graded installation discrimination will prevent unnecessary interruption of mine supply and ensure electrical energy released under fault conditions is contained to acceptable levels.</p>	<p>Sub Reference:</p> <p>7.1/(22)</p>	<p>(a) The short circuit fault clearance time between any two consecutive circuit breakers shall be as low as practicable and in any case shall not exceed 500 milli seconds.</p> <p>(b) The discrimination time between any two earth leakage protection units shall be as low as practicable and in any case shall not exceed 400 milli seconds, provided that the total of the discrimination times within any system does not exceed 2 seconds.</p> <p>(c) The operating time of ground fault protection equipment on any dragline or shovel may be extended to allow completion of an operating cycle under fault conditions. In such case the machine operator shall be provided with an immediate clear indication that a ground fault has occurred so that a controlled stop can be initiated before power is tripped off.</p>	
SAMPLE ONLY			

QUEENSLAND COAL MINING REGULATION REVIEW PROCESS

Date: 10/06/94

Issue: 3

Main Activity Area: 12.3 Mobile equipment SAFE OPERATING PROCEDURES ASSESSMENT

Authorised by: A Campbell

Primary Sub Activity:

Reference: Surface Operations

Title/Position: Chairman/
Surface Operations Committee

Secondary Sub Activity:

JUSTIFICATION		DRAFTING NOTES
<p>Sub Reference: 12.3/11-14 12.3/17 12.3/26/27</p>	<p>The maintenance of mobile equipment in field locations can be associated with risks. these risks can be caused by:</p> <ul style="list-style-type: none"> (a) Less than ideal working environment. (b) Other equipment colliding with equipment being serviced or maintained. (c) Maintenance being carried out on components at large distances above ground level. (d) Parts being dropped from heights whilst equipment is being maintained. (e) Component parts of equipment being moved without warning. 	<p>A safe operating procedure shall be developed to cover the maintenance of mobile equipment in field locations. The safe operating procedure shall as a minimum incorporate :</p> <ul style="list-style-type: none"> (a) Repairs carried out at heights (b) Immobilisation of equipment and components (c) Interaction of other equipment (d) Prevention of component parts from falling
	<p>Sub Reference: 8 12.3 (10)</p>	
<p>SAMPLE ONLY</p>		

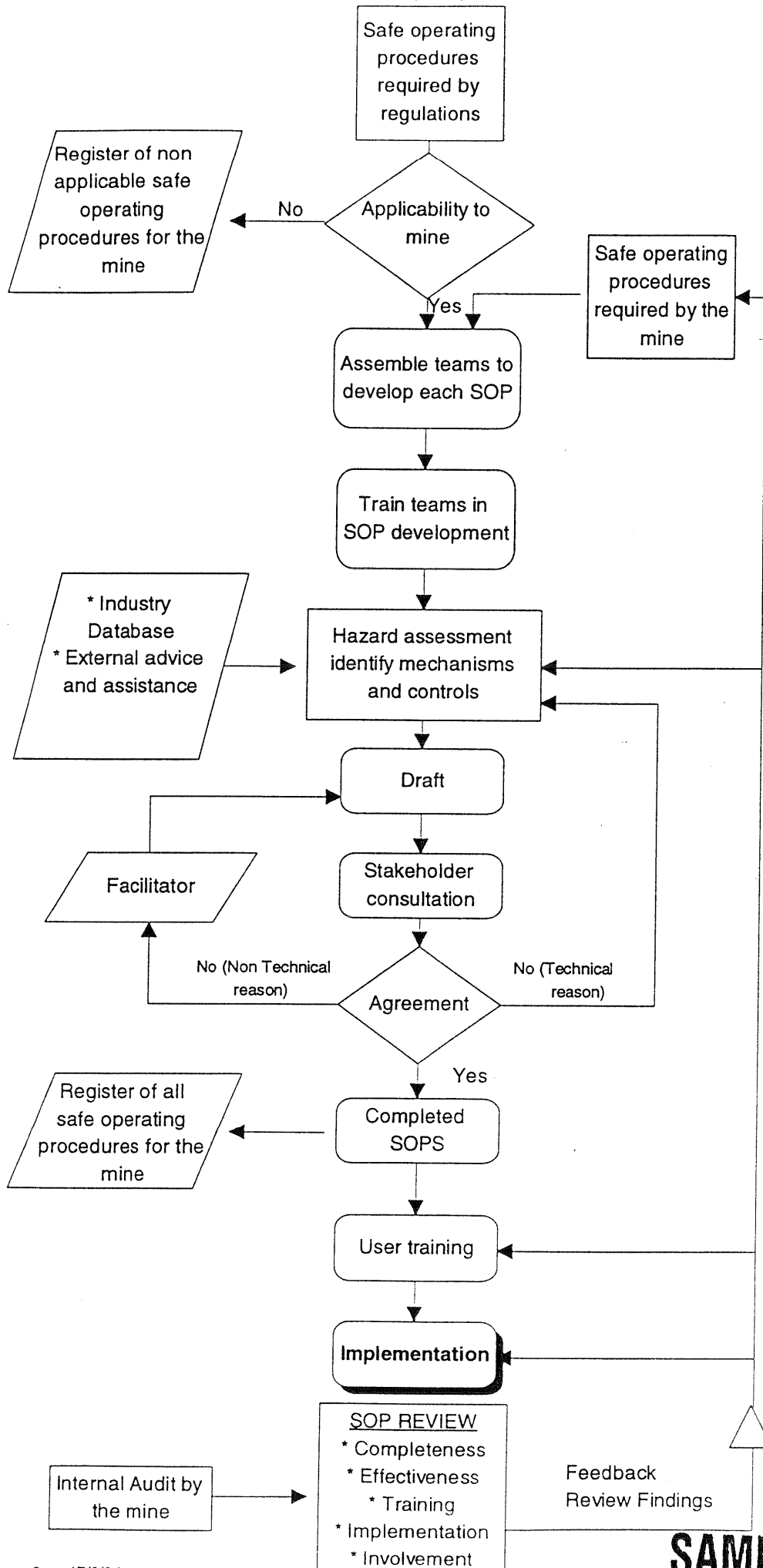
FIGURE 5

Index Number: 2.2.13 Mine Type: UNDERGROUND General Area: EQUIPMENT
 Main Activity: MECHANICAL Primary Sub Activity: INSTALL/MAINT ACTIV Secondary Sub Activity:

Hazard	Mechanism	Control	P Reg	E Reg	Sop
FIRE	FLAMMABLE SUBSTANCES SPRAYING ONTO HOT SURFACE	FUEL DISPENSING PROCEDURE	NA	NA	S 2.2(11)
		LIMIT POTENTIAL/DESIGN	NA	NA	NA
		LIMIT SURFACE TEMPERATURE	R 2.2(7)		
		MAINTENANCE PROCEDURE	NA	NA	NA
		STORAGE AND CONTROL OF FLAMMABLE SUBSTANCES (SEE OTHER REGS)	X		
		COMPETENCE	NA	NA	NA
	HOT WORK (OXY/ACETYLENE) GRINDING/WELDING	FIRE FIGHTING EQUIPMENT (SEE F.F. REGULATIONS)	R 2.2(62)		
		FIRE PROOF AREA	R 2.2(62)		
		HOUSEKEEPING	NA	NA	NA
		MINIMISE NEED THROUGH DESIGN	NA	NA	NA
		OPERATIONAL LIMITS	R 2.2(62)		
		PROHIBIT IN ER ZONES		R 2.2(58)	
		REMOVAL OF FLAMMABLE OBJECTS	NA	NA	NA
		RISK ASSESSMENT	R 2.2(62)		
		VENTILATION CONTROL	R 2.2(62)		
		WORK PROCEDURES	R 2.2(62)		
	FLYING OBJECTS STRIKING EYE	BARRIERS (PPE)			S 2.2(3)
	INSTALLATION MAINTENANCE ACTIVITY	WORK PROCEDURES	NA	NA	NA

SAMPLE ONLY

SAFE OPERATING PROCEDURE (SOP) FLOWCHART FOR MINESITES



Mandated SOPs are safe operating procedures required by regulations

Non mandated SOPs are safe operating procedures required by a mine in addition to those required by regulations.

Teams should comprise mainly the involved workgroup representatives together with supervision and mine safety professional staff as appropriate.

Teams will refer to the hazard control database and access advice from authorities if required. They should also make their own assessments of the hazards and controls needed for safety in the activity.

In the review process, if agreement cannot be reached for non-technical reasons, facilitators should be called upon.

Training must ensure that all persons affected by the SOP know and maintain their knowledge of the SOP.

The nature and frequency of the internal audits should be determined by the teams and documented in the SOPs.

SAMPLE ONLY